

# **Maryland School Assessment 2004**

**Technical Report 2004**

**for**

**Maryland School Assessment**

**Submitted to Maryland State Department of Education**

**September 04**

**(Revised June 2005)**

**A subsidiary of The McGraw-Hill Companies**

**CTB/McGraw-Hill**

Developed and published under contract with Maryland State Department of Education by CTB/McGraw-Hill LLC, a subsidiary of The McGraw-Hill Companies, Inc., 20 Ryan Ranch Road, Monterey, California 93940-5703. Copyright © 2004 by Maryland State Department of Education. All rights reserved. No part of this publication may be reproduced or distributed in any form or by any means, or stored in a database or retrieval system, without the prior written permission of Maryland State Department of Education.

## Contents

|   |           |
|---|-----------|
| <b>HISTORICAL OVERVIEW</b> .....  | <b>5</b>  |
| <b>OVERVIEW</b> .....   | 5         |
| <b>PURPOSES/USES OF THE MSA STATEWIDE ACADEMIC LEARNING STANDARDS</b> ..... | 6         |
| <b>TEST DESIGN AND SPECIFICATIONS</b> .....                                 | 6         |
| <b>PROCESSING AND SCORING OF TEST MATERIALS</b> .....                       | 11        |
| <b>SCORING PROCESS OVERVIEW</b> .....                                       | 11        |
| <b>HANDSCORING PROCESS</b> .....  | 16        |
| <b>CONSTRUCTION OF SCORE FORMS</b> .....                                    | 19        |
| <b>CHARACTERISTICS OF THE TEST POPULATION</b> .....                         | 19        |
| <b>NORM REFERENCED TEST (NRT)</b> .....                                     | <b>22</b> |
| <b>NRT TEST DESIGN</b> .....  | 22        |
| <b>DISTRIBUTIONS OF NRT SCORES</b> .....                                    | 22        |
| <b>CRITERION REFERENCED TEST (CRT)</b> .....                                | <b>34</b> |
| <b>CRT TEST DESIGN</b> .....  | 34        |
| <b>CLASSICAL ITEM ANALYSIS</b> .....  | 41        |
| <b>RATER AGREEMENT</b> .....  | 42        |
| <b>DIFFERENTIAL ITEM FUNCTIONING (DIF)</b> .....                            | 43        |
| <b>ITEM FIT ASSESSMENT</b> .....  | 44        |
| <b>CALIBRATION AND EQUATING</b> .....                                       | 45        |
| <i>IRT Model</i> .....  | 45        |
| <i>Calibration and Equating Procedure</i> .....                             | 46        |
| <i>Calibration and Equating Results</i> .....                               | 47        |
| <b>DISTRIBUTION OF THE MARYLAND SCORE SCALE</b> .....                       | 49        |
| <b>THE RELATIONSHIP BETWEEN NRT AND CRT</b> .....                           | 56        |
| <b>THE SCORE DISTRIBUTIONS AND CORRELATIONS OF CONTENT STANDARDS</b> .....  | 57        |
| <b>FACTOR ANALYSIS OF SCORES ON ITEMS AND CONTENT STANDARDS</b> .....       | 70        |
| <b>PERCENT AT OR ABOVE A CUT (PAC)</b> .....                                | 71        |
| <b>REFERENCES</b> .....   | <b>86</b> |
| <br>Appendix A Summary Item Statistics.....                                 | <br>A-1   |
| Appendix B Rater Agreement and CR/SPR Item Distributions.....               | B-1       |
| Appendix C Differential Item Functioning (DIF).....                         | C-1       |
| Appendix D Non-Converging Item Plots.....                                   | D-1       |
| Appendix E IRT Item Parameters.....   | E-1       |
| Appendix F Common Item and Anchor Item Check.....                           | F-1       |
| Appendix G Figures of Scale Score Distributions.....                        | G-1       |
| Appendix H Factor Analysis.....   | H-1       |

## Tables

|  |    |
|--|----|
| Table 1 Test Designs by Grade / Content .....  | 7  |
| Table 2 Summary of Score Points .....  | 10 |
| Table 3 2004 MSA Sample Characteristics by Ethnicity .....                                   | 20 |
| Table 4 2004 MSA Sample Characteristics by Gender .....                                      | 21 |
| Table 5 The Number of Items and Scale Score Range .....                                      | 22 |
| Table 6 NRT Summary Statistics based on Number-Correct Scores .....                          | 23 |
| Table 7 NRT Summary Statistics based on Scale Scores and NP .....                            | 23 |
| Table 8 NRT Summary Statistics based on 2003 and 2004 State Means .....                      | 24 |
| Table 9 NRT Performance Level (%).....   | 24 |
| Table 10 NRT Scale Score Descriptive Statistics by Ethnicity .....                           | 25 |
| Table 11 NRT Scale Score Descriptive Statistics by Gender .....                              | 27 |
| Table 12 Grade 3 Mathematics NRT Item p-values .....   | 29 |
| Table 13 Grade 5 Mathematics NRT Item p-values .....   | 30 |
| Table 14 Grade 8 Mathematics NRT Item p-values .....   | 31 |
| Table 15 Grade 10 Reading NRT Item p-values .....  | 32 |
| Table 16 Grades 4, 6, and 7 Mathematics NRT Item p-values.....                               | 33 |
| Table 17 The Number of Items by Item Type .....  | 35 |
| Table 18 The Number of Items by Function .....   | 36 |
| Table 19 The Number of Items and Score Points by Maryland Content Standard for Grade 3.....  | 37 |
| Table 20 The Number of Items and Score Points by Maryland Content Standard for Grade 4.....  | 37 |
| Table 21 The Number of Items and Score Points by Maryland Content Standard for Grade 5.....  | 38 |
| Table 22 The Number of Items and Score Points by Maryland Content Standard for Grade 6.....  | 38 |
| Table 23 The Number of Items and Score Points by Maryland Content Standard for Grade 7.....  | 39 |
| Table 24 The Number of Items and Score Points by Maryland Content Standard for Grade 8.....  | 39 |
| Table 25 The Number of Items and Score Points by Maryland Content Standard for Grade 10..... | 40 |
| Table 26 Item Parameters Averaged for the Score Form .....                                   | 48 |
| Table 27 LOSS and HOSS .....   | 49 |
| Table 28 CRT Raw Score Descriptive Statistics .....  | 51 |
| Table 29 CRT Scale Score Descriptive Statistics .....  | 52 |
| Table 30 CRT Scale Score Descriptive Statistics by Ethnicity .....                           | 53 |
| Table 31 CRT Scale Score Descriptive Statistics by Gender .....                              | 55 |
| Table 32 Correlation between NRT and CRT .....   | 56 |
| Table 33 Distribution of Raw Scores on Content Standards .....                               | 58 |
| Table 34 Distribution of Scale Scores on Content Standards .....                             | 62 |
| Table 35. Raw Score Correlations (Pearson Product-Moment) between Content Standards .....    | 66 |
| Table 35a Raw Score Correlations (Spearman Rho) between Content Standards.....               | 67 |
| Table 36 Scale Score Correlations (Pearson Product-Moment) between Content Standards.....    | 68 |
| Table 36a Scale Score Correlations (Spearman Rho) between Content Standards .....            | 69 |
| Table 37 Scale Score Ranges for Each Performance Level.....                                  | 71 |
| Table 38 Percentages of Students at Each Performance Level.....                              | 72 |
| Table 39 Percentages of Students at Each Performance Level by Ethnicity .....                | 73 |
| Table 40 Percentages of Students at Each Performance Level by Gender .....                   | 74 |
| Table 41 Percentages of Students at Grade 3 Performance Levels by LEA.....                   | 75 |
| Table 42 Percentages of Students at Grade 4 Performance Levels by LEA.....                   | 76 |
| Table 43 Percentages of Students at Grade 5 Performance Levels by LEA.....                   | 77 |
| Table 44 Percentages of Students at Grade 6 Performance Levels by LEA .....                  | 78 |
| Table 45 Percentages of Students at Grade 7 Performance Levels by LEA .....                  | 79 |
| Table 46 Percentages of Students at Grade 8 Performance Levels by LEA.....                   | 80 |
| Table 47 Percentages of Students at Grade 10 Performance Levels by LEA.....                  | 81 |

## Figures

|   |    |
|---|----|
| Figure 1 NRT Mathematics Mean Scale Score for Each Ethnicity .....                            | 28 |
| Figure 2 Percent at or Above Proficiency Cut Score (PAC) by LEA for Mathematics Grade 3 ..... | 82 |
| Figure 3 Percent at or Above Proficiency Cut Score (PAC) by LEA for Mathematics Grade 5 ..... | 83 |
| Figure 4 Percent at or Above Proficiency Cut Score (PAC) by LEA for Mathematics Grade 8 ..... | 84 |
| Figure 5 Percent at or Above Proficiency Cut Score (PAC) by LEA for Reading Grade 10 .....    | 85 |

## Historical Overview

### Overview

The Maryland School Assessment (MSA) program replaces the Maryland Student Performance Assessment Program (MSPAP), which had been administered from 1992 to 2002. In 2003, Reading and Mathematics for Grades 3, 5, 8, and 10 were administered. In 2004, Reading and Mathematics were added to Grades 4, 6, and 7. CTB/McGraw-Hill was responsible for the Mathematics assessments in Grades 3 through 8 and the Reading assessment in Grade 10. In this technical report, MSA represents Mathematics Grades 3 through 8 and Reading Grade 10 only. The MSA Mathematics and Grade 10 Reading assessments include CTB/McGraw-Hill's *TerraNova* survey (TN) as well as custom selected response (SR), student-produced response (SPR), and constructed-response (CR) items written to measure performance on the Maryland content standards. *TerraNova* survey Form C was administered at Grades 3, 4, 5, 7, 8 and 10; *TerraNova* survey Form D was administered at Grade 6.

Two types of scores were reported: Norm Referenced Test (NRT) scores and Criterion Referenced Test (CRT) scores. The NRT scores were computed using *TerraNova* items only. The CRT scores were calculated using the custom items written to the Maryland content standards plus a subset of *TerraNova* items that align with the state content standards.

As 2004 was the first testing year for Grades 4, 6, and 7, a Bookmark standard setting was conducted in summer 2004 for the Mathematics tests administered at these grades. The performance level cut scores obtained from the standard setting were used to assign students to three proficiency levels (basic, proficient, and advanced) which will be used for AYP reporting under the "No Child Left Behind" act. Proficiency level cut scores for Grades 3, 5, 8, and 10 were set in a previous Bookmark standard setting in 2003. Information about the Bookmark standard setting procedures and results can be found in a separate technical report, entitled "Maryland Standard Setting Technical Report," submitted to the Maryland Department of Education in August, 2004.

## **Purposes/Uses of the MSA Statewide Academic Learning Standards**

The MSA Statewide Academic Learning Standards for Mathematics are, for the purposes of item development and review, referred to as the “Content Standards and Assessment Limits.”

The item development process used for MSA is an iterative process, involving multiple rounds of item review and revision. The processes used for developing items for the 2003 test administration were as described below. Item writing began in early September, and the item content review meeting was held September 30 – October 4, 2003.

1. MSDE and CTB staff attended item writer training sessions in Tacoma, Washington. MSDE staff trained the item writers on the Maryland content standards and assessment limits. CTB staff provided training on the item specifications documents.
2. Items were edited by CTB staff. MSDE staff came to Monterey and reviewed the items with CTB staff during a nine day “side-by-side” review to prepare for item content review.
3. Separate committees comprised of Maryland educators were convened for content and sensitivity. The content review committee members recommended edits, and then the sensitivity committee reviewed items. MSDE and CTB staff reviewed and reconciled all recommended edits during “side-by-side” reviews for five days. Form selection also occurred at this time.
4. Following the item content review meeting, test book manuscripts were prepared and the items were reviewed for style at the time manuscripts were processed. During the page production cycles, items underwent further content and style refinements.

## **Test Design and Specifications**

Table 1 below shows the test designs for Mathematics Grades 3 through 8 and Reading Grade 10. The test designs presented below represent the targeted test design for each grade. The targeted test designs may not have been actualized by the final score form for each grade level and test form.

Table 1  
Test Designs by Grade / Content

Grade 3 Mathematics

|   | Content Standard                     | TerraNova Items that Contribute to CRT Score | Number of CRT SR Items | Number of CRT BCR Items | Points    | Percent     |
|---|--------------------------------------|--|------------------------|-------------------------|-----------|-------------|
| 1 | Algebra, Patterns, and Functions     | 12   | 11                     | 1                       | 13        | 18%         |
| 2 | Geometry                             | 16, 17                                       | 5                      | 1                       | 8         | 11%         |
| 3 | Measurement                          | 10, 14                                       | 4                      | 1                       | 7         | 10%         |
| 4 | Statistics                           | 24   | 10                     | 1                       | 12        | 17%         |
| 5 | Probability                          |  | 2                      |                         | 2         | 3%          |
| 6 | Number Relationships and Computation | 1, 2, 4, 13, 18                              | 8                      | 3                       | 16        | 22%         |
| 7 | Process of Mathematics               |  |                        | 7                       | 14        | 19%         |
|   | <b>Total Score Points</b>            | <b>11</b>                                    | <b>40</b>              | <b>21</b>               | <b>72</b> | <b>100%</b> |

Grade 4 Mathematics

|   | Content Standard                     | TerraNova Items that Contribute to CRT Score | Number of CRT SR Items | Number of CRT BCR Items | Number of CRT ECR Items | Points    | Percent     |
|---|--------------------------------------|--|------------------------|-------------------------|-------------------------|-----------|-------------|
| 1 | Algebra, Patterns, and Functions     |  | 13                     | 1                       |                         | 14        | 20%         |
| 2 | Geometry                             | 20   | 5                      | 1                       |                         | 7         | 10%         |
| 3 | Measurement                          | 31   | 5                      | 1                       |                         | 7         | 10%         |
| 4 | Statistics                           |  | 6                      | 1                       |                         | 7         | 10%         |
| 5 | Probability                          |  | 6                      | 1                       |                         | 7         | 10%         |
| 6 | Number Relationships and Computation | 1,2,3,4,10, 17,18,27                         | 4                      | 2                       |                         | 14        | 20%         |
| 7 | Process of Mathematics               |  |                        | 7                       |                         | 14        | 20%         |
|   | <b>Total Score Points</b>            | <b>10</b>                                    | <b>39</b>              | <b>21</b>               |                         | <b>70</b> | <b>100%</b> |

Grade 5 Mathematics

|   | Content Standard                     | TerraNova Items that Contribute to CRT Score | Number of CRT SR Items | Number of CRT BCR Items | Number of CRT ECR Items | Points    | Percent    |
|---|--------------------------------------|--|------------------------|-------------------------|-------------------------|-----------|------------|
| 1 | Algebra, Patterns, and Functions     | 27, 28                                       | 11                     | 1                       | 1                       | 15        | 20%        |
| 2 | Geometry                             | 13   | 4                      | 1                       |                         | 6         | 8%         |
| 3 | Measurement                          | 17, 23, 26                                   | 4                      | 1                       |                         | 8         | 11%        |
| 4 | Statistics                           | 12   | 7                      | 1                       |                         | 9         | 12%        |
| 5 | Probability                          | 32   | 2                      | 1                       |                         | 4         | 5%         |
| 6 | Number Relationships and Computation | 2, 4, 6, 8, 31                               | 8                      | 2                       |                         | 15        | 20%        |
| 7 | Process of Mathematics               |  |                        | 7                       | 1                       | 17        | 23%        |
|   | <b>Total Score Points</b>            | <b>13</b>                                    | <b>36</b>              | <b>21</b>               | <b>4</b>                | <b>74</b> | <b>99%</b> |



Table 1 (cont.)  
Test Designs by Grade / Content

Grade 6 Mathematics

|   | Content Standard                     | TerraNov<br>a Items<br>that<br>Contribute<br>to CRT<br>Score | Number<br>of CRT<br>SR Items | Number<br>of CRT<br>BCR<br>Items | Number<br>of CRT<br>ECR<br>Items | Points    | Percent     |
|---|--------------------------------------|--|------------------------------|----------------------------------|----------------------------------|-----------|-------------|
| 1 | Algebra, Patterns, and Functions     | 13   | 11                           | 1                                | 1                                | 14        | 20%         |
| 2 | Geometry                             | 17   | 6                            | 1                                |                                  | 8         | 11%         |
| 3 | Measurement                          |  | 5                            | 1                                |                                  | 6         | 9%          |
| 4 | Statistics                           |  | 8                            | 1                                |                                  | 9         | 13%         |
| 5 | Probability                          |  | 4                            |                                  |                                  | 4         | 6%          |
| 6 | Number Relationships and Computation | 6, 18, 20  | 9                            | 2                                |                                  | 14        | 20%         |
| 7 | Process of Mathematics               |  |                              | 6                                | 1                                | 15        | 21%         |
|   | <b>Total Score Points</b>            | <b>5</b>   | <b>43</b>                    | <b>18</b>                        | <b>4</b>                         | <b>70</b> | <b>100%</b> |

Grade 7 Mathematics

|   | Content Standard                     | TerraNova<br>Items that<br>Contribute<br>to CRT<br>Score | Number of<br>CRT SR<br>Items | Number of<br>CRT SPR<br>Items | Number of<br>CRT BCR<br>Items | Number of<br>CRT ECR<br>Items | Points    | Percent     |
|---|--------------------------------------|--|------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------|-------------|
| 1 | Algebra, Patterns, and Functions     |  | 9                            | 3                             | 1                             | 1                             | 14        | 19%         |
| 2 | Geometry                             |  | 4                            | 2                             | 1                             | 1                             | 8         | 11%         |
| 3 | Measurement                          | 24   | 3                            | 1                             |                               |                               | 5         | 7%          |
| 4 | Statistics                           |  | 5                            | 2                             | 1                             | 1                             | 9         | 12%         |
| 5 | Probability                          |  | 3                            | 1                             | 1                             |                               | 5         | 7%          |
| 6 | Number Relationships and Computation | 3, 9, 13,<br>15, 32                                      | 6                            | 3                             |                               |                               | 14        | 19%         |
| 7 | Process of Mathematics               |  |                              |                               | 5                             | 3                             | 19        | 25%         |
|   | <b>Total Score Points</b>            | <b>6</b>   | <b>30</b>                    | <b>12</b>                     | <b>14</b>                     | <b>12</b>                     | <b>74</b> | <b>100%</b> |

Grade 8 Mathematics

|   | Content Standard                     | TerraNova<br>Items that<br>Contribute<br>to CRT<br>Score | Number of<br>CRT SR<br>Items | Number of<br>CRT SPR<br>Items | Number of<br>CRT BCR<br>Items | Number of<br>CRT ECR<br>Items | Points    | Percent     |
|---|--------------------------------------|--|------------------------------|-------------------------------|-------------------------------|-------------------------------|-----------|-------------|
| 1 | Algebra, Patterns, and Functions     | 29   | 6                            | 4                             | 2                             | 1                             | 14        | 19%         |
| 2 | Geometry                             | 27   | 4                            | 2                             | 1                             | 1                             | 9         | 13%         |
| 3 | Measurement                          | 16   | 2                            | 1                             |                               |                               | 4         | 5%          |
| 4 | Statistics                           | 13   | 5                            | 1                             | 1                             | 1                             | 9         | 13%         |
| 5 | Probability                          |  | 2                            | 2                             | 1                             |                               | 5         | 7%          |
| 6 | Number Relationships and Computation | 6, 7, 20,<br>26  | 6                            | 2                             |                               |                               | 12        | 17%         |
| 7 | Process of Mathematics               |  |                              |                               | 5                             | 3                             | 19        | 26%         |
|   | <b>Total Score Points</b>            | <b>8</b>   | <b>25</b>                    | <b>12</b>                     | <b>15</b>                     | <b>12</b>                     | <b>72</b> | <b>100%</b> |

Table 1 (cont.)  
Test Designs by Grade / Content

Grade 10 Reading

|   | Content Standard                   | TerraNova<br>Items that<br>Contribute<br>to CRT<br>Score     | Number of<br>CRT SR<br>Items | Number of<br>CRT CR<br>Items | Score<br>Points | Percentage<br>of Score<br>Points |
|---|------------------------------------|--|------------------------------|------------------------------|-----------------|----------------------------------|
| G | General Reading Processes          | 3, 4, 23,<br>25, 32, 33,<br>34, 37, 43,<br>44, 45, 47,<br>48 | 4                            |                              | 17              | 28%                              |
| I | Informational Reading<br>Processes | 13, 14,<br>15, 16,<br>17, 22,<br>24, 26,<br>27, 46           | 6                            | 2                            | 22              | 36%                              |
| L | Literary Reading Processes         | 1, 2, 5, 6,<br>35, 36,<br>38, 51,<br>52, 53,<br>54           | 5                            | 2                            | 22              | 36%                              |
|   | Total Score Points                 | <b>34</b>  | <b>15</b>                    | <b>12</b>                    | <b>61</b>       | <b>100%</b>                      |

Table 2 below presents the summary of score points by reporting category for Mathematics at each grade from 3 through 8.

Table 2  
Summary of Score Points

| Content Standard Reporting Category | Grade 3      |            | Grade 4      |            | Grade 5      |            |
|-------------------------------------|--------------|------------|--------------|------------|--------------|------------|
|                                     | Score Points | Percentage | Score Points | Percentage | Score Points | Percentage |
| 1                                   | 13           | 18.1%      | 14           | 20.0%      | 15           | 20.3%      |
| 2&3                                 | 15           | 20.8%      | 14           | 20.0%      | 14           | 18.9%      |
| 4&5                                 | 14           | 19.4%      | 14           | 20.0%      | 13           | 17.6%      |
| 6                                   | 16           | 22.2%      | 14           | 20.0%      | 15           | 20.3%      |
| 7                                   | 14           | 19.4%      | 14           | 20.0%      | 17           | 23.0%      |
| <b>Total</b>                        | 72           | 100%       | 70           | 100%       | 74           | 100%       |

| Content Standard Reporting Category | Grade 6      |            | Grade 7      |            | Grade 8      |            |
|-------------------------------------|--------------|------------|--------------|------------|--------------|------------|
|                                     | Score Points | Percentage | Score Points | Percentage | Score Points | Percentage |
| 1                                   | 14           | 20.0%      | 14           | 19.0%      | 14           | 19.4%      |
| 2&3                                 | 14           | 20.0%      | 13           | 17.5%      | 13           | 18.1%      |
| 4&5                                 | 13           | 18.5%      | 14           | 19.0%      | 14           | 19.4%      |
| 6                                   | 14           | 20.0%      | 14           | 19.0%      | 12           | 16.7%      |
| 7                                   | 15           | 21.5%      | 19           | 25.5%      | 19           | 26.4%      |
| <b>Total</b>                        | 70           | 100%       | 74           | 100%       | 72           | 100%       |

## **Processing and Scoring of Test Materials**

CTB's primary goal in the scoring and processing of test documents is to deliver quality results to MSA according to established timelines. The accuracy and timeliness of reports are the primary concern of the team devoted to providing scoring services.

CTB's MSA scoring team is based in Monterey, California and Delran, New Jersey. This team of trained technical specialists has been responsible for coordinating all scoring and reporting activities related to the processing of MSA test documents. Document preparation, interdepartmental coordination and communication, processing specifications, and problem resolution are functions to be performed by a designated Scoring Project Manager from this team. The scoring team works closely with all CTB departments to ensure successful scoring and reporting of MSA.

## **Scoring Process Overview**

CTB's scoring process includes many quality assurance steps that are integrated into each step. Presented below, in order of occurrence, are quality assurance procedures applicable to the Scoring and Reporting process.

### **Pework**

Prior to document arrival at CTB, the scoring team utilizes available customer data to prepare materials to expedite the document-handling process. Team members verify the accuracy of the following materials:

- Expected number of students by grade and school
- Test date
- Precoded headers generated from school/district enrollment files
- Return Shipping Labels
- Report services specifications
- Sample reports
- Report collation examples
- Report packing schematics
- Document type (i.e., selected response/constructed-response)
- Packing lists generated for report shipments
- Other requirements to meet MSA specifications

Prior to receipt of answer documents, detailed scoring specifications for MSA are distributed to the various workstations involved in the scoring and editing process.

### **Receiving**

Shipments are tracked electronically, from the time of pickup at the sites, until delivery at CTB. After receipt, documents are organized by LAC. For each LAC the following steps were performed:

1. The box count is verified against the carrier's bill of lading and/or box count indicators as printed on the outside of the box. If a discrepancy is encountered, boxes are placed in a problem resolution area and discrepancy procedures are enforced. If missing boxes are not located within 24 hours, the Scoring Team is notified and they contact the LAC for resolution.
2. The shipment is checked for damaged materials. If the integrity of the documents is affected by any kind of damage, the Scoring Team is notified. Depending on the severity of the problem, the team member contacts the LAC for resolution. A record of all damaged materials is maintained.
3. Before documents leave the Receiving area they are logged into the computerized tracking system which provides real-time information regarding the status of the documents throughout the scoring and editing process. The electronic profile for each LAC is updated with at least the following information:
  1. LEA name
  2. Date of receipt
  3. Box count
  4. Shipping carrier

CTB follows-up with each LAC whose test materials are not received by the date agreed upon by CTB and MSDE.

### **Login**

Documents released by Receiving are transferred to Log-In, where the following activities are performed:

1. The headers (Group Information Sheets) are checked against School Group Lists (SGLs) to verify the number of students tested within each group (class).
2. The documents are grouped in manageable stacks and document alignment is checked to ensure proper scanning.
3. A scannable header is placed on top of each stack and a number is assigned to identify each unique stack of documents within a group.

## **Scanning**

After login verifies all of the information has been received and has prepared the documents for scanning, the documents are moved to the scanning area. Here they are cut into single sheets and electronically scanned. Scanners are calibrated periodically.

The scanners used by CTB have built-in checks for miscalibration. Hardware bias checking is used in real-time to verify that the scanner calibration is maintained during the scanning process. Additional checks are implemented by CTB to reinforce the built-in hardware checks and to ensure optimal scanner setup.

CTB's scanning software utilizes the speed of the NCS 5000I optical scanners to capture document images and bubbled data without requiring specific document editing and resolution rules. Scanners are thus able to run at rated speed with no interruptions except for problems with the physical documents. All editing of the scanned documents is performed, in a subsequent step, in the raw scoring/editing system.

The scanning program evaluates every detectable mark on both sides of each page, and records the intensity and coordinates of solid marks for resolution in the subsequent raw scoring step. The form identification (i.e., "skunk marks") determines the type of document, and the headers determine customer identification and district, school, and class.

## **Editing/Updates**

Raw scoring and editing of scanned data is performed in a client/server system (WinScore), where a sophisticated system of edits are invoked to review the integrity of each batch scanned and to produce a list of error suspects. While the editors can view data from any document on-line, the error suspect list concentrates on the most likely problems based on pre-defined guidelines. This system reduces editing time and provides a high degree of quality control.

CTB continues to enhance the capability of editing software to simplify the detection and correction of errors. On-line editing screens focus an editor on potential problems and then provide related information. The actual scanned documents are always available to the editor, and the software supports the review and correction of any field in the scanned record. Entry and verification of the necessary corrections are enhanced to ensure each error is actually corrected.

As batches are extracted for scoring, a final edit is performed to ensure all requirements for scoring are met. This automated final edit flags a batch for further editing if any error is still detected. A batch containing errors cannot be extracted for reporting. This ensures a high level of accuracy of the scored data.

CTB has maintained a professional staff of specialized data processing technicians to lead the verification process to ensure the integrity of the student response data at both group and individual levels. This process includes the following error checks:

1. **Reliability.** This check ensures that the raw scores for each subtest are above chance levels. Scores not passing this edit are checked by a trained specialist to ensure that responses are being read correctly and that the correct form and level of the test is being used.
2. **Biographical data.** Electronic edits are performed on such elements as student name to ensure leading or embedded blanks are corrected when possible.
3. **Student counts.** Actual counts based on scanned records are electronically compared with expected counts, and discrepancies are flagged.
4. **School name/number.** Pre-assigned school numbers and names are verified against an electronic file.
5. **Custom edits.** Special edits can be performed using custom software that works in conjunction with our standard scoring process.

### **Document retention**

When the editing process is completed, documents are moved to a staging area to be prepared for retention. Bundles are caged, warehoused in a recoverable location, and retained for possible retrieval during the specified retention period. Once this period is over, documents are destroyed according to procedures that ensure security is maintained.

### **Scoring/Reporting Software**

The primary set of products utilizing CTB's mainframe scoring software (EISS) is *TerraNova* Survey and MSA.

- **Shelf software** supports each test available in the CTB annual catalog. When a customer's scoring request is entered on a scoring order screen, the software activates the scoring and reporting requested by the customer. Parameters from the scoring order screen control which scoring and reporting programs are executed, as well as the content and sequence of the printed output.
- **Custom software** is necessary to support contracts with unique requirements. CTB has developed many modules to meet customized scoring and reporting requirements. In addition, our large programming staff can develop new software to meet the needs of a new customization. CTB has the resources to develop custom software for very large and complex contracts.

EISS receives data from WinScore. The data is scored, summarized, sorted/selected, and reported according to the contract requirements. This system is optimized for efficient high volume processing, and providing for maximum flexibility to fulfill the contract's specific needs.

### **Advanced Function Printing (AFP)**

The IBM Advanced Function Printing (AFP) system is a key factor in CTB's ability to print large volumes of reports with varied content and sequences. CTB provides the functionality to print reports in the actual shipping sequence, with no manual sorting or collation required. In addition, each page may contain complex graphics and the visual aids necessary to clearly convey the information to the wide variety of people who read the reports. CTB converted all mainframe systems to AFP and developing all new reports in this environment.

AFP operates on high-speed laser printers using large roll feeders for several hours of uninterrupted printing at a rate of over 200 pages per minute. The printers' output processors then separate packages, or sets, of reports.

AFP supports report collation. Reports can be printed in any desired sequence, since the contents of each set of reports can be predefined. The sequence in which these packages are printed is also predefined. A "break page" of control and routing information precedes each package of reports. For example, for a district-wide school package, the break page may contain test, type of report, report level/grade, school name, principal's name and school address information. Packages are produced in the final order for quality checks and packaging for shipment.

With AFP graphic capabilities, CTB can design more meaningful reports. Form and content can be varied at any time while printing, fonts can be mixed on a page, graphics can be added, and complex graphics can be inserted to represent variable data.

CTB adopts procedures to provide unprecedented flexibility in the reporting software. In many cases, an application program need not be changed to modify or enhance a report; the much simpler AFP page definition can be changed, leaving the application program intact. Thus, programming, testing, and quality assurance are all simplified.

### **Scoring Quality Assurance**

The Technology and Scoring Departments at CTB both have quality assurance sections specifically charged with reviewing scoring data and reports during all stages of the process. The Technology quality assurance team verifies the accuracy of all reporting programs before they become operational. The Scoring quality assurance team verifies the accuracy of report information during the scoring process. After all data is entered into the scoring system and all reporting programs are completed, a sample of reports are printed and submitted to the Scoring quality assurance group. They review the sample reports extensively to verify the accuracy and correct presentation of all data.

### **Red Team Review**

During the scoring process, numerous quality assurance checks are in place to ensure the complete accuracy of reports. Prior to delivering any electronic files or hard-copy score reports, all reports underwent one final, extensive quality check, known as a "Red Team



Review.” Red Teams are comprised of individuals from every CTB department coming together to form an interdisciplinary team. Samples of each type of report are printed from the active scoring system, and the Red Team carefully reviews these samples for accuracy and correct format, as well as a number of other issues including:

- Verify contents of reports against scoring specifications, report schematics and the Department approve format
- Reports print on correct form/color
- Reports collate correctly
- Data reported is reasonable (A complete data reasonableness check done by Research is completed prior to Red Team Review)
- Student-level data is accurate, compared by hand with student rosters and other documentation
- Required footnotes are in place
- Proficiency ranges reported match with scaled score ranges
- Cut scores are correct
- Reports are not sent out until all necessary corrections determined by the Red Team are resolved and samples of all reports sent to the Department are approved for distribution.

### **Handscoring Process**

For MSA, the electronic handscoring system is used to score constructed response (CR) items. The imaging handscoring system presents images of scanned test books to trained readers, who assign scores for constructed response items. Scanned output is viewed on high quality 19" workstation monitors. Images of each student's responses are automatically routed to two or more readers when required, and images of specific subsets of test items are routed to designated groups of readers trained to score these items. In addition to increased reader reliability, significant gains in reader productivity are noticed following the implementation of this technology.

CTB is committed to using the finest imaging equipment, software presentation system, data management system, and quality control to provide valid, reliable, cost-efficient scoring.

## **Constructed-Response Scorers**

### **Scoring Personnel**

CTB recruits, trains, and manages a sufficient number of staff to complete all handscoring operations within the time lines of this contract. CTB's experience involves extensive consultations between CTB Scoring, Publishing, and the customer to review scoring rubrics, develop anchor papers and other reader training materials, and provide analyses of student responses to tryout forms.

### **Readers**

Many CTB readers have a great deal of classroom teaching experience. Our reader pool includes editors, published authors, and a number of individuals with advanced degrees. The minimum qualification for all Scoring Center readers is a Bachelor's degree.

All MSA CR items are scored in Delran, NJ. Handscoring readers were recruited from the southern New Jersey and Philadelphia areas. In order to work as a Handscoring reader at CTB, one must possess, and show evidence, of having either a BA or BS degree. The evaluator staff is comprised of individuals from many walks of life -- from retired or current educators to engineers, all possessing BAs to PhDs.

### **Team Leaders**

Team leaders are selected on the basis of having demonstrated a high degree of scoring accuracy and consistency, often across multiple subjects and grades. They must also possess good interpersonal and leadership skills in order to be effective when training and counseling readers. The ratio of readers to team leaders is no more than 10 to 1. While it is possible to conduct handscoring with more readers per team leader, it has been CTB's experience that inter-rater reliability and production goals are jeopardized unless a trained leader can frequently monitor all readers.

### **Scoring Supervisors**

Scoring Supervisors are the core group at CTB scoring centers. They direct and organize the assessment process, and train team leaders and readers. Scoring Supervisors have extensive experience as Team Leaders prior to their qualification and selection. The Scoring Supervisors are subject area experts in the content(s) that they supervise and train.

### **Anchor and Training Papers**

Prior to the actual scoring, the CTB Scoring Center creates training materials. CR items for the MSA are assessed using MSDE holistic rubric with an X-point score scale. CTB randomly samples student answer documents to ensure that we are looking at a representative sample of the possible responses. A Rangefinder meeting is held with

MSDE staff and representatives to select sample papers of each score point. These samples are used to construct scoring guides and training papers. CTB's scoring team collaborates with MSDE to make any revisions to the rubrics and selection of scoring guide and training papers.

The process includes several presorting steps and subsequent iterative/consensus processes in order to achieve ever-increasing agreement and precision through a kind of "round robin" scoring, followed by discussion and selection.

When all papers for a form are selected and assigned status as good anchors training, qualifying, or check-set papers, they are consolidated into training formats. Once approved by MSDE, the Scoring Guides (consisting of rubrics, anchors, and annotations) serves as a constant, setting the course for all subsequent training and scoring.

### **Training**

Validation is a critical task in the assessment training process. It is the final determinant in reader readiness. All readers, including team leaders, must achieve 80 percent exact agreement on the qualifying round following training. Those readers not validating on the first attempt receive further training prior to taking an additional qualifying round. Only those training who successfully validate are qualified as readers and could score tests. Team leaders are required to complete two validation rounds with 80 percent exact agreement in each round.

### **Intra-rater Reliability**

Throughout the course of the handscoring process, calibration sets of pre-scored papers (check-sets) are administered daily to the team leaders as well as to the readers, to monitor scoring accuracy and to maintain a consistent focus on the established rubric and guidelines. Imaging permits this monitoring without reader knowledge of when a check-set is administered. Readers whose check-set scores fall below the qualifying level are removed from live scoring and are given additional training and another qualifying (validation) round. Readers unable to qualify are dismissed.

The "read-behind" is another valuable intra-rater reliability monitoring technique. On a daily basis, each team leader reads a random selection of each reader's scored items. The scores are compared, and if they agree, the team leader is able to offer feedback, which enhances the reader's confidence and ability to score quickly and accurately. However, if an individual is straying from the standard established in the training and validation samples, the aberrant scoring is detected, and the team leader is able to offer the guidance necessary to refocus the reader's effort. Readers whose scoring is inconsistent are read behind more frequently by their team leaders. Thus, any scoring variation is corrected.

### **Inter-rater Reliability**

Each constructed response is scored by at least two readers, and inter-rater reliability is monitored throughout the scoring process. If the scores of the two assigned readers differ by one point, the student will receive the higher of the two scores. If the scores of the two readers differ by more than one point, a third rating is provided by an expert rater, who will resolve the discrepancy and assign a final score.

### **Construction of Score Forms**

The selection of test items that contributed to a student's score at each grade level for each form of the test was an iterative process between CTB and MSDE. First, because content standards had changed since the time the test forms were constructed, MSDE staff reassigned each test item to a reporting category and assessment limit. Some items no longer measured an assessment standard at the grade level, so these items were marked "do not use." The criteria for selecting items that contributed to the CRT score were as follows:

1. The item measures an assessment limit.
2. The item fulfills the blueprint requirements.
3. The item has an acceptable p-value.
4. The item has an acceptable point-biserial value and no distractors have a positive point-biserial.
5. The item is not flagged for differential item functioning.

CTB provided the initial identification of items for the score forms using the classical item statistics, and MSDE reviewed the selection and requested substitutions. A few iterations occurred until CTB and MSDE were satisfied that the score forms represented the best possible balance of meeting content and psychometric requirements.

### **Characteristics of the Test Population**

Table 3 shows the ethnic characteristics of the students who took the 2004 MSA. Because percentages are rounded up to whole numbers, the percentages in this table do not always sum to 100. As the table indicates, most of the students were white (49%-54% across grades), approximately 34% to 39% of the students were African American, and approximately 5% to 7% of the students were Hispanic. As expected, these ratios were similar across all test forms, because the test forms were spiraled within the classroom. As shown in Table 4, there were slightly more male students (maximum 6% difference in Grade 4 Form A and Grade 6 Form A) than female students. The 2004 distributions of ethnicity and gender are essentially the same as the 2003 distributions.

Table 3  
2004 MSA Ethnic Composition by Grade Level and Test Form\*

| Grade | Test Form | Number of Students** | Percent White | Percent African American | Percent Hispanic | Percent Others |
|-------|-----------|----------------------|---------------|--------------------------|------------------|----------------|
| 3     | A         | 12915                | 50            | 38                       | 7                | 5              |
|       | B         | 12685                | 50            | 38                       | 7                | 5              |
|       | C         | 12545                | 50            | 38                       | 7                | 5              |
|       | D         | 12415                | 49            | 38                       | 7                | 5              |
|       | E         | 12267                | 50            | 37                       | 7                | 5              |
|       | Total     | 62827                | 50            | 38                       | 7                | 5              |
| 4     | A         | 11201                | 49            | 39                       | 7                | 5              |
|       | B         | 10962                | 50            | 38                       | 7                | 5              |
|       | C         | 10881                | 49            | 39                       | 7                | 5              |
|       | D         | 10778                | 49            | 39                       | 6                | 6              |
|       | E         | 10649                | 49            | 39                       | 6                | 5              |
|       | F         | 10542                | 49            | 39                       | 7                | 5              |
|       | Total     | 65013                | 49            | 39                       | 7                | 5              |
| 5     | A         | 13581                | 49            | 39                       | 7                | 5              |
|       | B         | 13363                | 49            | 39                       | 6                | 5              |
|       | C         | 13209                | 50            | 39                       | 6                | 5              |
|       | D         | 13018                | 50            | 39                       | 6                | 5              |
|       | E         | 12897                | 49            | 40                       | 6                | 5              |
|       | Total     | 66068                | 49            | 39                       | 6                | 5              |
| 6     | A         | 11592                | 49            | 40                       | 6                | 5              |
|       | B         | 11464                | 50            | 39                       | 6                | 5              |
|       | C         | 11393                | 49            | 39                       | 6                | 5              |
|       | D         | 11351                | 49            | 40                       | 6                | 5              |
|       | E         | 11244                | 50            | 39                       | 6                | 5              |
|       | F         | 11185                | 50            | 39                       | 6                | 5              |
|       | Total     | 68229                | 50            | 39                       | 6                | 5              |
| 7     | A         | 11751                | 50            | 39                       | 6                | 5              |
|       | B         | 11667                | 50            | 38                       | 6                | 5              |
|       | C         | 11603                | 50            | 39                       | 6                | 5              |
|       | D         | 11522                | 50            | 39                       | 6                | 5              |
|       | E         | 11452                | 50            | 39                       | 6                | 5              |
|       | F         | 11332                | 51            | 39                       | 6                | 5              |
|       | Total     | 69327                | 50            | 39                       | 6                | 5              |
| 8     | A         | 13845                | 52            | 37                       | 6                | 5              |
|       | B         | 13709                | 53            | 37                       | 6                | 5              |
|       | C         | 13692                | 53            | 37                       | 6                | 5              |
|       | D         | 13655                | 52            | 37                       | 6                | 5              |
|       | E         | 13497                | 52            | 37                       | 6                | 5              |
|       | Total     | 68398                | 52            | 37                       | 6                | 5              |
| 10    | A         | 21085                | 54            | 35                       | 5                | 6              |
|       | B         | 20913                | 54            | 34                       | 6                | 6              |
|       | C         | 20734                | 54            | 34                       | 5                | 6              |
|       | Total     | 62732                | 54            | 35                       | 6                | 6              |

\* Because percentages are rounded to whole numbers, some rows may not sum to 100.

\*\*Students of unspecified ethnicity are not included in this table.

Table 4  
**2004 MSA Student Gender by Grade Level and Test Form\***

| Grade | Test Form | Number of Students** | Percent Male | Percent Female |
|-------|-----------|----------------------|--------------|----------------|
| 3     | A         | 12915                | 52           | 48             |
|       | B         | 12685                | 51           | 49             |
|       | C         | 12545                | 51           | 49             |
|       | D         | 12415                | 50           | 50             |
|       | E         | 12267                | 51           | 49             |
|       | Total     | 62827                | 51           | 49             |
| 4     | A         | 11201                | 53           | 47             |
|       | B         | 10962                | 52           | 48             |
|       | C         | 10881                | 51           | 49             |
|       | D         | 10778                | 51           | 49             |
|       | E         | 10649                | 51           | 49             |
|       | F         | 10542                | 52           | 48             |
|       | Total     | 65013                | 52           | 48             |
| 5     | A         | 13581                | 52           | 48             |
|       | B         | 13363                | 51           | 49             |
|       | C         | 13209                | 50           | 50             |
|       | D         | 13018                | 51           | 49             |
|       | E         | 12897                | 51           | 49             |
|       | Total     | 66068                | 51           | 49             |
| 6     | A         | 11592                | 53           | 47             |
|       | B         | 11464                | 51           | 49             |
|       | C         | 11393                | 51           | 49             |
|       | D         | 11351                | 51           | 49             |
|       | E         | 11244                | 52           | 48             |
|       | F         | 11185                | 52           | 48             |
|       | Total     | 68229                | 52           | 48             |
| 7     | A         | 11751                | 52           | 48             |
|       | B         | 11667                | 51           | 49             |
|       | C         | 11603                | 51           | 49             |
|       | D         | 11522                | 51           | 49             |
|       | E         | 11452                | 51           | 49             |
|       | F         | 11332                | 50           | 50             |
|       | Total     | 69327                | 51           | 49             |
| 8     | A         | 13845                | 51           | 49             |
|       | B         | 13709                | 51           | 49             |
|       | C         | 13692                | 51           | 49             |
|       | D         | 13656                | 51           | 49             |
|       | E         | 13497                | 51           | 49             |
|       | Total     | 68399                | 51           | 49             |
| 10    | A         | 21085                | 50           | 49             |
|       | B         | 20913                | 50           | 50             |
|       | C         | 20734                | 50           | 50             |
|       | Total     | 62732                | 50           | 50             |

\*Students who did not specify gender are not included in this table.

## Norm Referenced Test (NRT)

### NRT Test Design

In 2004, the MSA Mathematics tests included the *TerraNova* Mathematics Survey (TN) Form C at Grades 3, 4, 5, 7, and 8 and Form D at Grade 6. The MSA Grade 10 Reading test included the *TerraNova* English Language Arts Survey Form C. CTB's *TerraNova* is an assessment system designed to measure concepts, processes, and skills taught throughout the nation. *TerraNova* Survey consists of SR items only. The number of items and scale score ranges can be found in Table 5. The *TerraNova* English Language Arts Survey for Grade 10 consists of 34 reading items and 26 language items. *TerraNova* Reading<sup>1</sup> and Mathematics scale scores based on IRT pattern scoring were reported.

Table 5  
The Number of Items and Scale Score Range

| Content Grade | SR Items | Scale Score Range |
|---------------|----------|-------------------|
| MA3           | 30       | 385-740           |
| MA4           | 32       | 403-770           |
| MA5           | 32       | 430-797           |
| MA6           | 31       | 477-820           |
| MA7           | 32       | 487-850           |
| MA8           | 31       | 502-872           |
| RD10          | 34       | 529-838           |

MA: Mathematics      RD: Reading

### Distributions of NRT Scores

NRT summary statistics for raw score (NCS), scale score (SS), national percentile rank (NP), and performance level are presented in Tables 6-9. The NP shows that Maryland students' performance on the NRT was higher (53<sup>rd</sup> through 59<sup>th</sup> percentile) than the national average. As can be seen from NCS, SS, and NP in Tables 8 and 9, students' performance between years 2003 and 2004 increased across grades 3, 5, 8, and 10. Note that performance cuts in Table 9 were obtained from the *TerraNova* standard setting, not the Maryland standard setting.

Tables 10 and 11 show the scale score statistics (including the mean, standard deviation, minimum and maximum) for ethnicity and gender subgroups on each form. Overall, White students performed better than the other ethnic groups. There was almost

<sup>1</sup> Although Grade 10 students took both reading and language arts items, only the Reading score was reported.

one standard deviation (40 points) difference between the scores of white students and African American students in many grades. Note that *TerraNova* scores are vertically scaled so that scale scores across grades can be compared. On average across grades, standard deviations were larger for White and Hispanic students' scores than for African American students' scores. There was no difference in performance between male and female students on the Mathematics tests, but female students performed slightly better than male students on the Grade 10 Reading test. Across all grades and content areas, standard deviations were larger for male students than for female students.

Figure 1 shows the 2004 Mathematics mean scale scores by grade level for each ethnic group. Differences across grade levels appear to be similar for all three ethnic groups.

Tables 12-15 show the proportion of students answering each NRT item correctly (i.e., item p-values) in 2003 and 2004. Tables 12-14 show the performance on the *TerraNova* mathematics items in Grades 3, 5, and 8; Table 15 shows the performance on *TerraNova* reading items in Grade 10. For most items, p-values were higher in 2004 than in 2003, indicating an improvement in student performance. Table 16 shows the 2004 performance of students on the *TerraNova* mathematics items in Grades 4, 6, and 7. The Mathematics tests were administered for the first time in 2004, so no comparative historical data are available for these items.

Table 6  
NRT Summary Statistics based on Number-Correct Scores

| Grade | N     | Mean  | SD    | Skewness | Kurtosis | KR20  | SEM   |
|-------|-------|-------|-------|----------|----------|-------|-------|
| 3     | 62701 | 23.52 | 4.559 | -0.885   | 0.590    | 0.818 | 1.946 |
| 4     | 64813 | 22.40 | 6.047 | -0.421   | -0.582   | 0.863 | 2.240 |
| 5     | 65887 | 23.65 | 5.869 | -0.620   | -0.373   | 0.861 | 2.186 |
| 6     | 67522 | 20.67 | 6.556 | -0.384   | -0.830   | 0.874 | 2.327 |
| 7     | 68414 | 21.15 | 7.004 | -0.376   | -0.854   | 0.890 | 2.328 |
| 8     | 67579 | 20.72 | 5.841 | -0.258   | -0.676   | 0.847 | 2.288 |
| 10    | 61259 | 21.74 | 7.092 | -0.423   | -0.737   | 0.748 | 3.561 |

Table 7  
NRT Summary Statistics based on Scale Scores and National Percentile Rank (NP)

| Grade | N     | Mean | SD   | Skewness | Kurtosis | NP |
|-------|-------|------|------|----------|----------|----|
| 3     | 62701 | 615  | 45.9 | 0.338    | 1.830    | 59 |
| 4     | 64813 | 632  | 44.8 | 0.191    | 3.234    | 54 |
| 5     | 65887 | 657  | 51.7 | 0.429    | 1.167    | 58 |
| 6     | 67522 | 668  | 50.4 | -0.157   | 2.033    | 55 |
| 7     | 68414 | 676  | 52.4 | 0.212    | 2.652    | 53 |
| 8     | 67579 | 700  | 49.9 | 0.349    | 2.183    | 58 |
| 10    | 61259 | 694  | 45.5 | -0.601   | 2.356    | 58 |



Table 8  
NRT Summary Statistics: 2003 and 2004 State Means

| Grade | 2003   |     |    | 2004   |     |    |
|-------|--------|-----|----|--------|-----|----|
|       | NCS    | SS  | NP | NCS    | SS  | NP |
| 3     | 22.829 | 608 | 54 | 23.522 | 615 | 59 |
| 5     | 22.664 | 649 | 52 | 23.646 | 657 | 58 |
| 8     | 20.183 | 695 | 56 | 20.719 | 700 | 58 |
| 10    | 21.317 | 692 | 56 | 21.738 | 694 | 58 |

NCS = number-correct score (i.e., raw score)

SS = scale score

NP = national percentile rank

Table 9  
Percentages of Students in Each NRT Performance Level in 2003 and 2004

| Grade | 2003 Performance Level |      |      |      |      | 2004 Performance Level |      |      |      |      |
|-------|------------------------|------|------|------|------|------------------------|------|------|------|------|
|       | 1                      | 2    | 3    | 4    | 5    | 1                      | 2    | 3    | 4    | 5    |
| 3     | 41.0                   | 34.4 | 17.9 | 3.2  | 3.4  | 35.4                   | 35.3 | 20.7 | 4.2  | 4.5  |
| 5     | 14.3                   | 25.0 | 28.8 | 18.5 | 13.4 | 11.2                   | 22.2 | 28.4 | 20.7 | 17.5 |
| 8     | 14.1                   | 18.2 | 30.4 | 23.9 | 13.3 | 12.8                   | 17.3 | 28.9 | 25.1 | 15.9 |
| 10    | 29.5                   | 24.8 | 27.7 | 13.4 | 4.5  | 26.9                   | 25.7 | 29.0 | 13.9 | 4.5  |

Table 10  
NRT Scale Score Descriptive Statistics by Ethnicity

| Grade | Test Form | White  |       |     |     | African American |       |     |     | Hispanic |       |     |     |
|-------|-----------|--------|-------|-----|-----|------------------|-------|-----|-----|----------|-------|-----|-----|
|       |           | Mean   | SD    | MIN | MAX | Mean             | SD    | MIN | MAX | Mean     | SD    | MIN | MAX |
| 3     | A         | 624.90 | 46.27 | 385 | 740 | 595.35           | 42.43 | 385 | 740 | 601.14   | 38.86 | 385 | 740 |
|       | B         | 626.29 | 45.14 | 385 | 740 | 596.87           | 39.34 | 385 | 740 | 601.74   | 41.67 | 385 | 740 |
|       | C         | 628.20 | 44.72 | 385 | 740 | 597.18           | 38.95 | 385 | 740 | 606.72   | 42.12 | 385 | 740 |
|       | D         | 628.14 | 45.06 | 385 | 740 | 598.36           | 39.94 | 385 | 740 | 602.68   | 41.16 | 385 | 740 |
|       | E         | 628.21 | 45.65 | 385 | 740 | 597.66           | 40.01 | 385 | 740 | 601.67   | 40.88 | 385 | 740 |
|       | Total     | 627.12 | 45.39 | 385 | 740 | 597.07           | 40.17 | 385 | 740 | 602.73   | 40.94 | 385 | 740 |
| 4     | A         | 642.41 | 44.01 | 403 | 770 | 610.89           | 42.27 | 403 | 770 | 617.76   | 41.93 | 403 | 770 |
|       | B         | 644.49 | 42.27 | 403 | 770 | 612.85           | 38.75 | 403 | 770 | 617.05   | 45.51 | 403 | 770 |
|       | C         | 645.53 | 42.16 | 403 | 770 | 614.52           | 38.39 | 403 | 770 | 621.09   | 40.55 | 403 | 770 |
|       | D         | 645.33 | 42.10 | 403 | 770 | 614.61           | 38.81 | 403 | 770 | 620.03   | 43.20 | 403 | 770 |
|       | E         | 645.43 | 43.74 | 403 | 770 | 615.69           | 37.81 | 403 | 770 | 620.61   | 39.15 | 403 | 770 |
|       | F         | 646.24 | 42.75 | 403 | 770 | 615.19           | 38.20 | 403 | 770 | 616.64   | 42.19 | 403 | 770 |
|       | Total     | 644.88 | 42.86 | 403 | 770 | 613.93           | 39.12 | 403 | 770 | 618.79   | 42.18 | 403 | 770 |
| 5     | A         | 670.27 | 52.15 | 430 | 797 | 631.24           | 44.34 | 430 | 797 | 640.96   | 48.56 | 430 | 797 |
|       | B         | 673.25 | 50.52 | 430 | 797 | 634.72           | 40.90 | 430 | 797 | 642.26   | 47.30 | 430 | 797 |
|       | C         | 674.27 | 50.69 | 430 | 797 | 636.99           | 41.71 | 430 | 797 | 642.73   | 44.95 | 499 | 797 |
|       | D         | 673.99 | 50.53 | 430 | 797 | 635.99           | 41.93 | 430 | 797 | 643.05   | 47.15 | 465 | 797 |
|       | E         | 674.41 | 51.71 | 430 | 797 | 635.15           | 42.87 | 430 | 797 | 637.99   | 47.81 | 430 | 797 |
|       | Total     | 673.22 | 51.14 | 430 | 797 | 634.79           | 42.42 | 430 | 797 | 641.45   | 47.21 | 430 | 797 |
| 6     | A         | 679.94 | 48.96 | 477 | 820 | 645.38           | 47.16 | 477 | 820 | 656.35   | 45.06 | 477 | 820 |
|       | B         | 683.04 | 47.54 | 477 | 820 | 646.14           | 44.66 | 477 | 820 | 653.24   | 51.24 | 477 | 820 |
|       | C         | 682.94 | 47.64 | 477 | 820 | 648.16           | 44.22 | 477 | 820 | 654.74   | 48.96 | 477 | 820 |
|       | D         | 684.15 | 46.43 | 477 | 820 | 646.97           | 46.19 | 477 | 820 | 657.69   | 45.58 | 477 | 820 |
|       | E         | 683.69 | 47.52 | 477 | 820 | 647.81           | 45.00 | 477 | 820 | 657.88   | 50.04 | 477 | 820 |
|       | F         | 683.61 | 46.81 | 477 | 820 | 646.15           | 46.68 | 477 | 820 | 655.97   | 46.52 | 477 | 820 |
|       | Total     | 682.89 | 47.51 | 477 | 820 | 646.76           | 45.68 | 477 | 820 | 655.96   | 47.98 | 477 | 820 |

Table 10 (cont.)  
NRT Scale Score Descriptive Statistics by Ethnicity

| Grade | Test Form | White  |       |     |     | African American |       |     |     | Hispanic |       |     |     |
|-------|-----------|--------|-------|-----|-----|------------------|-------|-----|-----|----------|-------|-----|-----|
|       |           | Mean   | SD    | MIN | MAX | Mean             | SD    | MIN | MAX | Mean     | SD    | MIN | MAX |
| 7     | A         | 690.51 | 49.70 | 487 | 850 | 653.21           | 46.11 | 487 | 850 | 659.24   | 45.92 | 487 | 850 |
|       | B         | 691.80 | 48.80 | 487 | 850 | 652.43           | 45.87 | 487 | 850 | 652.46   | 49.38 | 487 | 850 |
|       | C         | 693.30 | 50.47 | 487 | 850 | 653.01           | 45.60 | 487 | 850 | 655.36   | 52.49 | 487 | 850 |
|       | D         | 693.29 | 50.53 | 487 | 850 | 653.33           | 46.06 | 487 | 850 | 658.65   | 46.92 | 487 | 850 |
|       | E         | 692.73 | 49.91 | 487 | 850 | 653.45           | 45.18 | 487 | 850 | 662.67   | 50.38 | 487 | 850 |
|       | F         | 691.38 | 48.87 | 487 | 850 | 654.10           | 44.81 | 487 | 850 | 657.71   | 45.70 | 487 | 850 |
|       | Total     | 692.16 | 49.73 | 487 | 850 | 653.25           | 45.61 | 487 | 850 | 657.56   | 48.63 | 487 | 850 |
| 8     | A         | 712.50 | 48.81 | 502 | 872 | 676.21           | 42.15 | 502 | 872 | 685.39   | 43.45 | 502 | 872 |
|       | B         | 714.63 | 47.61 | 502 | 872 | 677.37           | 42.48 | 502 | 872 | 684.71   | 43.48 | 502 | 872 |
|       | C         | 714.41 | 46.88 | 502 | 872 | 678.46           | 41.70 | 502 | 872 | 684.18   | 47.32 | 502 | 872 |
|       | D         | 715.25 | 48.43 | 502 | 872 | 676.77           | 41.57 | 502 | 872 | 683.79   | 48.55 | 502 | 872 |
|       | E         | 714.33 | 47.55 | 502 | 872 | 677.18           | 42.62 | 502 | 872 | 681.84   | 43.40 | 502 | 872 |
|       | Total     | 714.22 | 47.86 | 502 | 872 | 677.19           | 42.11 | 502 | 872 | 683.99   | 45.31 | 502 | 872 |
| 10    | A         | 706.40 | 43.23 | 529 | 838 | 675.11           | 41.41 | 529 | 838 | 679.25   | 44.03 | 529 | 838 |
|       | B         | 707.52 | 42.54 | 529 | 838 | 674.82           | 41.31 | 529 | 838 | 677.28   | 47.27 | 529 | 838 |
|       | C         | 707.10 | 42.37 | 529 | 838 | 674.25           | 42.74 | 529 | 838 | 677.69   | 46.23 | 529 | 838 |
|       | Total     | 707.01 | 42.72 | 529 | 838 | 674.73           | 41.82 | 529 | 838 | 678.06   | 45.88 | 529 | 838 |

Table 11  
NRT Scale Score Descriptive Statistics by Gender

| Grade Content | Test Form | Male   |       |     |     | Female |       |     |     |
|---------------|-----------|--------|-------|-----|-----|--------|-------|-----|-----|
|               |           | Mean   | SD    | MIN | MAX | Mean   | SD    | MIN | MAX |
| MA3           | A         | 613.15 | 48.62 | 385 | 740 | 612.08 | 44.85 | 385 | 740 |
|               | B         | 614.94 | 47.61 | 385 | 740 | 613.11 | 43.33 | 385 | 740 |
|               | C         | 616.82 | 47.62 | 385 | 740 | 613.62 | 42.45 | 385 | 740 |
|               | D         | 617.20 | 48.16 | 385 | 740 | 613.72 | 42.81 | 385 | 740 |
|               | E         | 616.36 | 47.19 | 385 | 740 | 614.15 | 44.91 | 385 | 740 |
|               | Total     | 615.66 | 47.87 | 385 | 740 | 613.33 | 43.68 | 385 | 740 |
| MA4           | A         | 629.05 | 48.05 | 403 | 770 | 629.08 | 44.44 | 403 | 770 |
|               | B         | 631.54 | 46.91 | 403 | 770 | 630.91 | 42.10 | 403 | 770 |
|               | C         | 633.62 | 46.91 | 403 | 770 | 631.84 | 41.23 | 403 | 770 |
|               | D         | 633.39 | 46.92 | 403 | 770 | 632.15 | 42.07 | 403 | 770 |
|               | E         | 633.27 | 45.62 | 403 | 770 | 632.85 | 43.12 | 403 | 770 |
|               | F         | 634.47 | 46.38 | 403 | 770 | 631.24 | 42.41 | 403 | 770 |
|               | Total     | 632.50 | 46.86 | 403 | 770 | 631.35 | 42.58 | 403 | 770 |
| MA5           | A         | 653.71 | 55.35 | 430 | 797 | 654.12 | 50.87 | 430 | 797 |
|               | B         | 656.96 | 52.07 | 430 | 797 | 656.56 | 49.69 | 430 | 797 |
|               | C         | 659.31 | 52.09 | 430 | 797 | 657.56 | 49.57 | 430 | 797 |
|               | D         | 659.23 | 52.59 | 430 | 797 | 656.48 | 49.45 | 430 | 797 |
|               | E         | 657.74 | 54.07 | 430 | 797 | 656.78 | 50.45 | 430 | 797 |
|               | Total     | 657.34 | 53.30 | 430 | 797 | 656.30 | 50.02 | 430 | 797 |
| MA6           | A         | 664.59 | 52.33 | 477 | 820 | 666.68 | 49.69 | 477 | 820 |
|               | B         | 667.65 | 52.46 | 477 | 820 | 667.38 | 48.29 | 477 | 820 |
|               | C         | 667.71 | 51.63 | 477 | 820 | 669.11 | 47.88 | 477 | 820 |
|               | D         | 668.70 | 51.96 | 477 | 820 | 668.39 | 48.01 | 477 | 820 |
|               | E         | 668.79 | 52.33 | 477 | 820 | 669.55 | 48.03 | 477 | 820 |
|               | F         | 668.26 | 51.53 | 477 | 820 | 667.58 | 49.51 | 477 | 820 |
|               | Total     | 667.59 | 52.06 | 477 | 820 | 668.11 | 48.58 | 477 | 820 |
| MA7           | A         | 673.63 | 53.32 | 487 | 850 | 675.85 | 51.05 | 487 | 850 |
|               | B         | 675.33 | 54.14 | 487 | 850 | 674.70 | 49.77 | 487 | 850 |
|               | C         | 676.29 | 54.97 | 487 | 850 | 676.16 | 51.55 | 487 | 850 |
|               | D         | 676.53 | 55.07 | 487 | 850 | 676.23 | 51.12 | 487 | 850 |
|               | E         | 676.65 | 54.62 | 487 | 850 | 676.46 | 49.76 | 487 | 850 |
|               | F         | 675.55 | 53.14 | 487 | 850 | 676.23 | 49.31 | 487 | 850 |
|               | Total     | 675.65 | 54.22 | 487 | 850 | 675.94 | 50.43 | 487 | 850 |
| MA8           | A         | 700.76 | 53.84 | 502 | 872 | 696.23 | 45.82 | 502 | 872 |
|               | B         | 702.23 | 52.34 | 502 | 872 | 697.67 | 46.52 | 502 | 872 |
|               | C         | 701.70 | 51.52 | 502 | 872 | 699.14 | 46.87 | 502 | 872 |
|               | D         | 701.95 | 53.44 | 502 | 872 | 697.85 | 46.86 | 502 | 872 |
|               | E         | 701.71 | 52.62 | 502 | 872 | 697.42 | 46.85 | 502 | 872 |
|               | Total     | 701.67 | 52.76 | 502 | 872 | 697.66 | 46.59 | 502 | 872 |
| RD10          | A         | 690.25 | 47.17 | 529 | 838 | 698.38 | 42.96 | 529 | 838 |
|               | B         | 690.94 | 47.88 | 529 | 838 | 698.68 | 42.39 | 529 | 838 |
|               | C         | 690.29 | 48.62 | 529 | 838 | 698.28 | 42.51 | 529 | 838 |
|               | Total     | 690.49 | 47.89 | 529 | 838 | 698.44 | 42.62 | 529 | 838 |

Figure 1  
NRT Mathematics Mean Scale Scores by Grade and Ethnicity

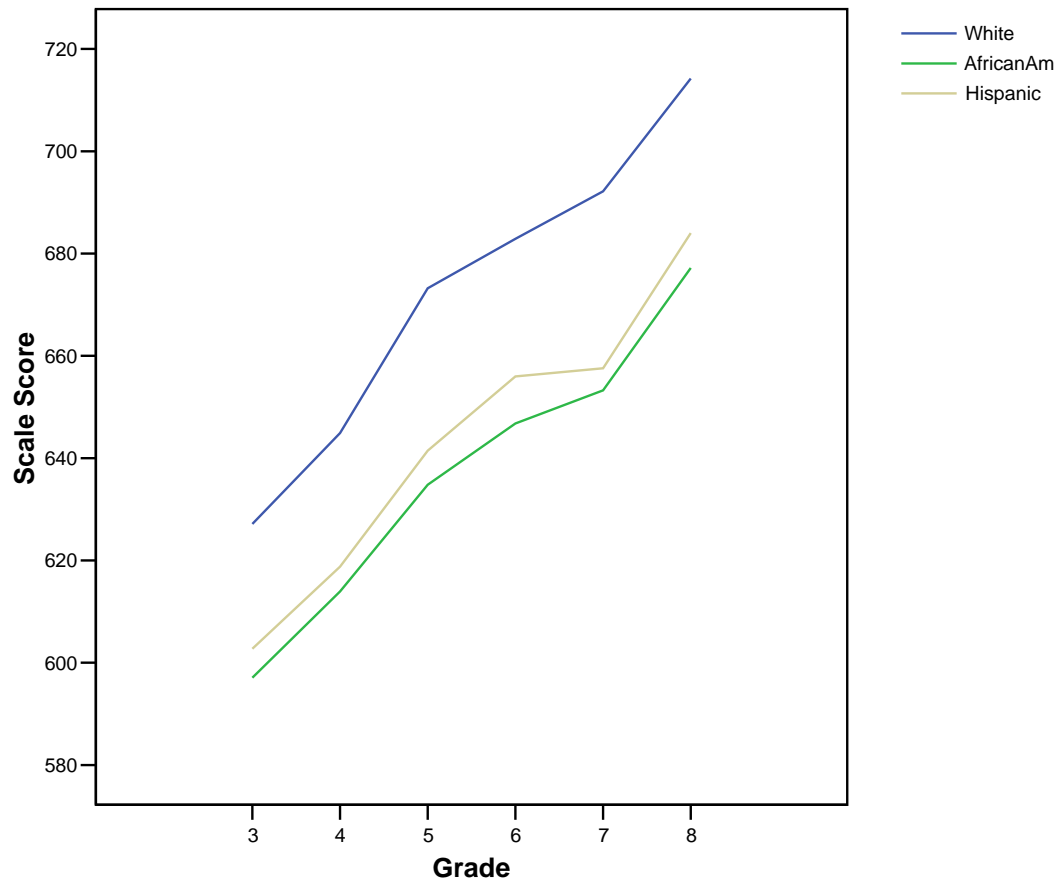


Table 12  
Grade 3 Mathematics NRT Item p-values

| Item    | 2003 | 2004 | Difference |
|---------|------|------|------------|
| 1       | 0.83 | 0.85 | -0.01      |
| 2       | 0.89 | 0.91 | -0.02      |
| 3       | 0.89 | 0.91 | -0.01      |
| 4       | 0.86 | 0.88 | -0.02      |
| 5       | 0.65 | 0.74 | -0.09      |
| 6       | 0.93 | 0.95 | -0.03      |
| 7       | 0.63 | 0.67 | -0.03      |
| 8       | 0.67 | 0.69 | -0.02      |
| 9       | 0.81 | 0.82 | -0.02      |
| 10      | 0.87 | 0.88 | -0.02      |
| 11      | 0.89 | 0.90 | -0.01      |
| 12      | 0.89 | 0.89 | -0.01      |
| 13      | 0.84 | 0.86 | -0.02      |
| 14      | 0.83 | 0.86 | -0.03      |
| 15      | 0.79 | 0.83 | -0.04      |
| 16      | 0.88 | 0.95 | -0.07      |
| 17      | 0.86 | 0.90 | -0.04      |
| 18      | 0.96 | 0.97 | -0.01      |
| 19      | 0.63 | 0.64 | -0.01      |
| 20      | 0.60 | 0.62 | -0.02      |
| 21      | 0.55 | 0.56 | -0.01      |
| 22      | 0.72 | 0.74 | -0.02      |
| 23      | 0.87 | 0.86 | 0.01       |
| 24      | 0.96 | 0.97 | -0.01      |
| 25      | 0.87 | 0.90 | -0.03      |
| 26      | 0.69 | 0.72 | -0.03      |
| 27      | 0.66 | 0.69 | -0.02      |
| 28      | 0.49 | 0.50 | -0.01      |
| 29      | 0.34 | 0.38 | -0.04      |
| 30      | 0.40 | 0.44 | -0.05      |
| Average | 0.76 | 0.78 | -0.02      |

Table 13  
Grade 5 Mathematics NRT Item p-values

| Item    | 2003 | 2004 | Difference |
|---------|------|------|------------|
| 1       | 0.80 | 0.84 | -0.04      |
| 2       | 0.64 | 0.71 | -0.07      |
| 3       | 0.68 | 0.73 | -0.05      |
| 4       | 0.60 | 0.65 | -0.05      |
| 5       | 0.70 | 0.71 | -0.01      |
| 6       | 0.76 | 0.80 | -0.04      |
| 7       | 0.71 | 0.74 | -0.03      |
| 8       | 0.57 | 0.60 | -0.03      |
| 9       | 0.89 | 0.91 | -0.02      |
| 10      | 0.89 | 0.91 | -0.02      |
| 11      | 0.91 | 0.93 | -0.01      |
| 12      | 0.69 | 0.73 | -0.03      |
| 13      | 0.75 | 0.80 | -0.05      |
| 14      | 0.66 | 0.70 | -0.03      |
| 15      | 0.79 | 0.81 | -0.02      |
| 16      | 0.89 | 0.90 | -0.02      |
| 17      | 0.65 | 0.66 | -0.01      |
| 18      | 0.97 | 0.97 | -0.01      |
| 19      | 0.60 | 0.60 | 0.00       |
| 20      | 0.94 | 0.95 | -0.01      |
| 21      | 0.78 | 0.81 | -0.03      |
| 22      | 0.71 | 0.73 | -0.02      |
| 23      | 0.63 | 0.66 | -0.03      |
| 24      | 0.46 | 0.53 | -0.08      |
| 25      | 0.53 | 0.54 | -0.01      |
| 26      | 0.48 | 0.51 | -0.02      |
| 27      | 0.53 | 0.62 | -0.09      |
| 28      | 0.61 | 0.64 | -0.03      |
| 29      | 0.79 | 0.81 | -0.02      |
| 30      | 0.67 | 0.70 | -0.04      |
| 31      | 0.57 | 0.59 | -0.02      |
| 32      | 0.72 | 0.78 | -0.06      |
| Average | 0.71 | 0.74 | -0.03      |

Table 14  
Grade 8 Mathematics NRT Item p-values

| Item    | 2003 | 2004 | Difference |
|---------|------|------|------------|
| 1       | 0.81 | 0.82 | -0.01      |
| 2       | 0.52 | 0.55 | -0.03      |
| 3       | 0.31 | 0.34 | -0.03      |
| 4       | 0.86 | 0.86 | -0.01      |
| 5       | 0.77 | 0.77 | -0.01      |
| 6       | 0.57 | 0.60 | -0.03      |
| 7       | 0.64 | 0.66 | -0.01      |
| 8       | 0.83 | 0.84 | -0.01      |
| 9       | 0.66 | 0.67 | -0.01      |
| 10      | 0.88 | 0.89 | -0.02      |
| 11      | 0.88 | 0.89 | -0.01      |
| 12      | 0.78 | 0.80 | -0.01      |
| 13      | 0.88 | 0.89 | -0.01      |
| 14      | 0.77 | 0.78 | -0.01      |
| 15      | 0.63 | 0.64 | -0.01      |
| 16      | 0.86 | 0.87 | -0.02      |
| 17      | 0.71 | 0.74 | -0.02      |
| 18      | 0.56 | 0.58 | -0.01      |
| 19      | 0.64 | 0.66 | -0.02      |
| 20      | 0.30 | 0.38 | -0.08      |
| 21      | 0.69 | 0.72 | -0.03      |
| 22      | 0.64 | 0.68 | -0.03      |
| 23      | 0.75 | 0.75 | 0.01       |
| 24      | 0.50 | 0.52 | -0.02      |
| 25      | 0.63 | 0.63 | 0.00       |
| 26      | 0.42 | 0.42 | 0.00       |
| 27      | 0.43 | 0.53 | -0.10      |
| 28      | 0.55 | 0.55 | 0.00       |
| 29      | 0.53 | 0.54 | -0.01      |
| 30      | 0.41 | 0.42 | -0.01      |
| 31      | 0.46 | 0.47 | -0.02      |
| Average | 0.64 | 0.66 | -0.02      |



Table 15  
Grade 10 Reading NRT Item p-values

| Item    | 2003 | 2004 | Difference | Item | 2003 | 2004 | Difference |
|---------|------|------|------------|------|------|------|------------|
| 1       | 0.70 | 0.71 | -0.01      | 31   | 0.68 | 0.71 | -0.03      |
| 2       | 0.56 | 0.56 | 0.00       | 32   | 0.53 | 0.53 | 0.00       |
| 3       | 0.77 | 0.78 | -0.01      | 33   | 0.52 | 0.53 | -0.01      |
| 4       | 0.84 | 0.86 | -0.02      | 34   | 0.53 | 0.54 | -0.01      |
| 5       | 0.42 | 0.42 | 0.00       | 35   | 0.71 | 0.73 | -0.02      |
| 6       | 0.74 | 0.75 | -0.01      | 36   | 0.67 | 0.69 | -0.02      |
| 7       | 0.80 | 0.82 | -0.02      | 37   | 0.58 | 0.61 | -0.04      |
| 8       | 0.58 | 0.60 | -0.03      | 38   | 0.62 | 0.64 | -0.02      |
| 9       | 0.37 | 0.39 | -0.02      | 39   | 0.65 | 0.66 | -0.01      |
| 10      | 0.64 | 0.66 | -0.03      | 40   | 0.66 | 0.68 | -0.03      |
| 11      | 0.63 | 0.64 | -0.02      | 41   | 0.54 | 0.54 | 0.00       |
| 12      | 0.82 | 0.84 | -0.02      | 42   | 0.59 | 0.60 | -0.01      |
| 13      | 0.76 | 0.78 | -0.02      | 43   | 0.77 | 0.78 | -0.01      |
| 14      | 0.64 | 0.66 | -0.02      | 44   | 0.72 | 0.75 | -0.02      |
| 15      | 0.50 | 0.52 | -0.01      | 45   | 0.76 | 0.79 | -0.03      |
| 16      | 0.40 | 0.42 | -0.01      | 46   | 0.40 | 0.42 | -0.01      |
| 17      | 0.55 | 0.56 | -0.01      | 47   | 0.70 | 0.72 | -0.02      |
| 18      | 0.68 | 0.69 | -0.01      | 48   | 0.58 | 0.61 | -0.03      |
| 19      | 0.65 | 0.67 | -0.02      | 49   | 0.56 | 0.57 | -0.01      |
| 20      | 0.56 | 0.57 | -0.01      | 50   | 0.66 | 0.68 | -0.02      |
| 21      | 0.67 | 0.69 | -0.02      | 51   | 0.68 | 0.71 | -0.03      |
| 22      | 0.52 | 0.54 | -0.02      | 52   | 0.57 | 0.58 | -0.01      |
| 23      | 0.68 | 0.71 | -0.02      | 53   | 0.41 | 0.42 | -0.02      |
| 24      | 0.55 | 0.57 | -0.02      | 54   | 0.55 | 0.57 | -0.03      |
| 25      | 0.53 | 0.54 | -0.02      | 55   | 0.46 | 0.48 | -0.01      |
| 26      | 0.70 | 0.72 | -0.02      | 56   | 0.56 | 0.59 | -0.03      |
| 27      | 0.51 | 0.53 | -0.02      | 57   | 0.70 | 0.73 | -0.03      |
| 28      | 0.62 | 0.65 | -0.03      | 58   | 0.43 | 0.45 | -0.02      |
| 29      | 0.53 | 0.56 | -0.03      | 59   | 0.49 | 0.52 | -0.03      |
| 30      | 0.45 | 0.46 | -0.02      | 60   | 0.68 | 0.71 | -0.03      |
| Average |      |      |            |      | 0.61 | 0.62 | -0.02      |

Table 16  
 Grades 4, 6, and 7 Mathematics NRT Item p-values

| Grade 4 |         |
|---------|---------|
| Item    | p-value |
| 1       | 0.79    |
| 2       | 0.63    |
| 3       | 0.78    |
| 4       | 0.58    |
| 5       | 0.52    |
| 6       | 0.89    |
| 7       | 0.53    |
| 8       | 0.74    |
| 9       | 0.57    |
| 10      | 0.48    |
| 11      | 0.80    |
| 12      | 0.82    |
| 13      | 0.76    |
| 14      | 0.64    |
| 15      | 0.88    |
| 16      | 0.89    |
| 17      | 0.85    |
| 18      | 0.52    |
| 19      | 0.69    |
| 20      | 0.40    |
| 21      | 0.54    |
| 22      | 0.40    |
| 23      | 0.47    |
| 24      | 0.57    |
| 25      | 0.46    |
| 26      | 0.43    |
| 27      | 0.70    |
| 28      | 0.51    |
| 29      | 0.57    |
| 30      | 0.81    |
| 31      | 0.67    |
| 32      | 0.72    |
| Average | 0.64    |

| Grade 6 |         |
|---------|---------|
| Item    | p-value |
| 1       | 0.69    |
| 2       | 0.73    |
| 3       | 0.69    |
| 4       | 0.74    |
| 5       | 0.66    |
| 6       | 0.45    |
| 7       | 0.37    |
| 8       | 0.23    |
| 9       | 0.55    |
| 10      | 0.63    |
| 11      | 0.60    |
| 12      | 0.50    |
| 13      | 0.96    |
| 14      | 0.53    |
| 15      | 0.55    |
| 16      | 0.24    |
| 17      | 0.46    |
| 18      | 0.43    |
| 19      | 0.26    |
| 20      | 0.51    |
| 21      | 0.57    |
| 22      | 0.45    |
| 23      | 0.51    |
| 24      | 0.33    |
| 25      | 0.37    |
| 26      | 0.38    |
| 27      | 0.59    |
| 28      | 0.40    |
| 29      | 0.73    |
| 30      | 0.48    |
| 31      | 0.63    |
| Average | 0.52    |

| Grade 7 |         |
|---------|---------|
| Item    | p-value |
| 1       | 0.53    |
| 2       | 0.69    |
| 3       | 0.61    |
| 4       | 0.88    |
| 5       | 0.59    |
| 6       | 0.52    |
| 7       | 0.46    |
| 8       | 0.46    |
| 9       | 0.22    |
| 10      | 0.19    |
| 11      | 0.45    |
| 12      | 0.64    |
| 13      | 0.48    |
| 14      | 0.96    |
| 15      | 0.48    |
| 16      | 0.96    |
| 17      | 0.61    |
| 18      | 0.60    |
| 19      | 0.56    |
| 20      | 0.58    |
| 21      | 0.34    |
| 22      | 0.56    |
| 23      | 0.27    |
| 24      | 0.27    |
| 25      | 0.26    |
| 26      | 0.47    |
| 27      | 0.35    |
| 28      | 0.28    |
| 29      | 0.41    |
| 30      | 0.39    |
| 31      | 0.57    |
| 32      | 0.67    |
| Average | 0.51    |

## Criterion Referenced Test (CRT)

### CRT Test Design

The MSA Criterion-Referenced Test is composed of *TerraNova* items that are closely aligned with the Maryland content standards, plus custom selected response (SR) and constructed response (CR) items written to measure performance on the Maryland content standards. The Mathematics tests in Grades 7 and 8 also contain student produced response (SPR) items, sometimes referred to as “gridded response” items. *TerraNova* Form D was administered in Grade 6; *TerraNova* Form C was administered in all other grades.

Table 17 shows the number of items, by item type, in each test form. The column “SR from NRT” in that table shows the number of NRT items that contribute to CRT scores. For Reading grade 10, all NRT items contribute to the CRT scores. For grades 3, 5, and 8, Forms A, C, and E contain the same operational items<sup>2</sup> and are designated as Form 1. Similarly, Forms B and D contain the same operational items<sup>2</sup> and are designated as Form 2. For grade 10, Forms A and C are designated as Form 1, and Form B is designated as Form 2. The only difference within Form 1 or Form 2 is the field test items.

Note that for grades 4, 6, and 7, all items are considered field-test items except for items from *TerraNova*. As can be seen in Table 17, for there were some variations in the number of items and total score points according to test form. Table 18 shows the number of items by item function (i.e., whether or not they were treated as common or unique items). Anchor items were used for placing the 2004 scale on the 2003 scale. There are no anchor items for grades 4, 6, and 7 because 2004 is the first administration for these grades. Common items were used for linking alternate forms. For some grades, the number of unique items was different across forms within the same grade.

Tables 19-25 present the number of items and score points by Maryland content standards. There are five standards for Mathematics across grades, and three standards for Reading Grade 10. The number of items and score points for each standard were similar across forms. Relatively large differences were found in Standard 07 for Grades 4, 6, and 7.

---

<sup>2</sup> These forms differ only in the field test items. They contain identical operational items, in the same operational item positions.

Table 17  
The Number of Items by Item Type

| Grade Content | Form | CRT         |    |    |     | Total CRT Items | Total CRT Score Points |
|---------------|------|-------------|----|----|-----|-----------------|------------------------|
|               |      | SR from NRT | SR | CR | SPR |                 |                        |
| MA3           | 1    | 11          | 40 | 14 | -   | 65              | 72                     |
|               | 2    | 11          | 40 | 14 | -   | 65              | 72                     |
| MA4           | A    | 10          | 40 | 14 | -   | 64              | 71                     |
|               | B    | 10          | 41 | 12 | -   | 63              | 69                     |
|               | C    | 10          | 40 | 14 | -   | 64              | 71                     |
|               | D    | 10          | 40 | 14 | -   | 64              | 71                     |
|               | E    | 10          | 41 | 12 | -   | 63              | 69                     |
|               | F    | 10          | 42 | 12 | -   | 64              | 71                     |
| MA5           | 1    | 13          | 35 | 16 | -   | 64              | 73                     |
|               | 2    | 13          | 35 | 16 | -   | 64              | 73                     |
| MA6           | A    | 5           | 42 | 14 | -   | 61              | 69                     |
|               | B    | 5           | 42 | 14 | -   | 61              | 69                     |
|               | C    | 5           | 43 | 14 | -   | 62              | 70                     |
|               | D    | 5           | 46 | 8  | -   | 59              | 64                     |
|               | E    | 5           | 43 | 12 | -   | 60              | 67                     |
|               | F    | 5           | 44 | 12 | -   | 61              | 67                     |
| MA7           | A    | 6           | 31 | 14 | 11  | 62              | 72                     |
|               | B    | 6           | 31 | 12 | 12  | 61              | 69                     |
|               | C    | 6           | 32 | 14 | 10  | 62              | 72                     |
|               | D    | 6           | 33 | 8  | 12  | 59              | 65                     |
|               | E    | 6           | 33 | 10 | 11  | 60              | 66                     |
|               | F    | 6           | 34 | 8  | 11  | 59              | 64                     |
| MA8           | 1    | 8           | 25 | 16 | 11  | 60              | 70                     |
|               | 2    | 8           | 25 | 16 | 12  | 61              | 71                     |
| RD10          | 1    | 34          | 15 | 4  | -   | 53              | 61                     |
|               | 2    | 34          | 15 | 4  | -   | 53              | 61                     |

- For grades 3, 5, & 8, Form 1 consists of Forms A, C, & E and Form 2 consists of Forms B & D.
- For grade 10, Form 1 consists of Forms A & C and Form 2 is Form B.
- Grades 3,5,8, & 10 counts are without field test items.

Table 18  
The Number of Items by Function

| Content Grade | Form | Total Items* | Anchor Items | Common Items | Unique Items | Field-Test Items |
|---------------|------|--------------|--------------|--------------|--------------|------------------|
| MA3           | A    | 65           | 30           | 41           | 24           | 17               |
|               | B    | 65           | 30           | 41           | 24           | 17               |
|               | C    | 65           | 30           | 41           | 24           | 11               |
|               | D    | 65           | 30           | 41           | 24           | 19               |
|               | E    | 65           | 30           | 41           | 24           | 17               |
| MA4           | A    | 64           | -            | 34           | 30           | -                |
|               | B    | 63           | -            | 34           | 29           | -                |
|               | C    | 64           | -            | 34           | 30           | -                |
|               | D    | 64           | -            | 34           | 30           | -                |
|               | E    | 63           | -            | 34           | 29           | -                |
|               | F    | 64           | -            | 34           | 30           | -                |
| MA5           | A    | 64           | 32           | 38           | 26           | 12               |
|               | B    | 64           | 32           | 38           | 26           | 17               |
|               | C    | 64           | 32           | 38           | 26           | 16               |
|               | D    | 64           | 32           | 38           | 26           | 16               |
|               | E    | 64           | 32           | 38           | 26           | 14               |
| MA6           | A    | 61           | -            | 31           | 30           | -                |
|               | B    | 61           | -            | 31           | 30           | -                |
|               | C    | 62           | -            | 31           | 31           | -                |
|               | D    | 59           | -            | 31           | 28           | -                |
|               | E    | 60           | -            | 31           | 29           | -                |
|               | F    | 61           | -            | 31           | 30           | -                |
| MA7           | A    | 62           | -            | 29           | 33           | -                |
|               | B    | 61           | -            | 29           | 32           | -                |
|               | C    | 62           | -            | 29           | 33           | -                |
|               | D    | 59           | -            | 29           | 30           | -                |
|               | E    | 60           | -            | 29           | 31           | -                |
|               | F    | 59           | -            | 29           | 30           | -                |
| MA8           | A    | 60           | 24           | 36           | 24           | 16               |
|               | B    | 61           | 24           | 36           | 25           | 16               |
|               | C    | 60           | 24           | 36           | 24           | 12               |
|               | D    | 61           | 24           | 36           | 25           | 15               |
|               | E    | 60           | 24           | 36           | 24           | 18               |
| RD10          | A    | 53           | 48           | 34           | 19           | 12               |
|               | B    | 53           | 48           | 34           | 19           | 11               |
|               | C    | 53           | 48           | 34           | 19           | 12               |

- \* Total = Common + Unique
- For grades 3, 5, & 8, common item means items that appear both on Form 1 (Forms A, C, & E) and Form 2 (Forms B & D).
- For grade 10, common item means items that appear both on Form 1 (Forms A & C) and Form 2 (Form B).

Table 19  
The Number of Items and Score Points by Maryland Content Standard for Grade 3

| Standards | Form A, C & E |    |        |    |       |    |        | Form B & D |    |        |    |       |       |     |        |   |
|-----------|---------------|----|--------|----|-------|----|--------|------------|----|--------|----|-------|-------|-----|--------|---|
|           | NRT           |    | Custom |    | Total |    |        | NRT        |    | Custom |    | Total |       |     |        |   |
|           | SR            | CR | SR     | CR | Items | %  | Points | %          | SR | CR     | SR | CR    | Items | %   | Points | % |
| 01        | 1             | 11 | 1      | 13 | 20    | 13 | 18     | 1          | 11 | 1      | 13 | 20    | 13    | 18  |        |   |
| 02/03     | 4             | 9  | 2      | 15 | 23    | 15 | 21     | 4          | 9  | 2      | 15 | 23    | 15    | 21  |        |   |
| 04/05     | 1             | 12 | 1      | 14 | 22    | 14 | 19     | 1          | 12 | 1      | 14 | 22    | 14    | 19  |        |   |
| 06        | 5             | 8  | 3      | 16 | 24    | 16 | 22     | 5          | 8  | 3      | 16 | 25    | 16    | 22  |        |   |
| 07        | 0             | 0  | 7      | 7  | 11    | 14 | 19     | 0          | 0  | 7      | 7  | 11    | 14    | 19  |        |   |
| Sum       | 11            | 40 | 14     | 65 | 100   | 72 | 100    | 11         | 40 | 14     | 65 | 100   | 72    | 100 |        |   |

Table 20  
The Number of Items and Score Points by Maryland Content Standard for Grade 4

| Standards | Form A |    |        |    |       |    |        | Form B |    |        |    |       |       |     |        |   |
|-----------|--------|----|--------|----|-------|----|--------|--------|----|--------|----|-------|-------|-----|--------|---|
|           | NRT    |    | Custom |    | Total |    |        | NRT    |    | Custom |    | Total |       |     |        |   |
|           | SR     | CR | SR     | CR | Items | %  | Points | %      | SR | CR     | SR | CR    | Items | %   | Points | % |
| 01        | 0      | 13 | 1      | 14 | 22    | 14 | 20     | 0      | 13 | 1      | 14 | 22    | 14    | 20  |        |   |
| 02/03     | 2      | 10 | 2      | 14 | 22    | 14 | 20     | 2      | 10 | 2      | 14 | 22    | 14    | 20  |        |   |
| 04/05     | 0      | 13 | 2      | 15 | 23    | 15 | 21     | 0      | 13 | 2      | 15 | 24    | 15    | 22  |        |   |
| 06        | 8      | 4  | 2      | 14 | 22    | 14 | 20     | 8      | 5  | 1      | 14 | 22    | 14    | 20  |        |   |
| 07        | 0      | 0  | 7      | 7  | 11    | 14 | 20     | 0      | 0  | 6      | 6  | 10    | 12    | 17  |        |   |
| Sum       | 10     | 40 | 14     | 64 | 100   | 71 | 100    | 10     | 41 | 12     | 63 | 100   | 69    | 100 |        |   |

| Standards | Form C |    |        |    |       |    |        | Form D |    |        |    |       |       |     |        |   |
|-----------|--------|----|--------|----|-------|----|--------|--------|----|--------|----|-------|-------|-----|--------|---|
|           | NRT    |    | Custom |    | Total |    |        | NRT    |    | Custom |    | Total |       |     |        |   |
|           | SR     | CR | SR     | CR | Items | %  | Points | %      | SR | CR     | SR | CR    | Items | %   | Points | % |
| 01        | 0      | 13 | 1      | 14 | 22    | 14 | 20     | 0      | 13 | 1      | 14 | 22    | 14    | 20  |        |   |
| 02/03     | 2      | 10 | 2      | 14 | 22    | 14 | 20     | 2      | 10 | 2      | 14 | 22    | 14    | 20  |        |   |
| 04/05     | 0      | 13 | 2      | 15 | 23    | 15 | 21     | 0      | 13 | 2      | 15 | 23    | 15    | 21  |        |   |
| 06        | 8      | 4  | 2      | 14 | 22    | 14 | 20     | 8      | 4  | 2      | 14 | 22    | 14    | 20  |        |   |
| 07        | 0      | 0  | 7      | 7  | 11    | 14 | 20     | 0      | 0  | 7      | 7  | 11    | 14    | 20  |        |   |
| Sum       | 10     | 40 | 14     | 64 | 100   | 71 | 100    | 10     | 40 | 14     | 64 | 100   | 71    | 100 |        |   |

| Standards | Form E |    |        |    |       |    |        | Form F |    |        |    |       |       |     |        |   |
|-----------|--------|----|--------|----|-------|----|--------|--------|----|--------|----|-------|-------|-----|--------|---|
|           | NRT    |    | Custom |    | Total |    |        | NRT    |    | Custom |    | Total |       |     |        |   |
|           | SR     | CR | SR     | CR | Items | %  | Points | %      | SR | CR     | SR | CR    | Items | %   | Points | % |
| 01        | 0      | 13 | 1      | 14 | 22    | 14 | 20     | 0      | 14 | 0      | 14 | 22    | 14    | 20  |        |   |
| 02/03     | 2      | 10 | 2      | 14 | 22    | 14 | 20     | 2      | 11 | 1      | 14 | 22    | 14    | 20  |        |   |
| 04/05     | 0      | 13 | 2      | 15 | 24    | 15 | 22     | 0      | 13 | 2      | 15 | 23    | 15    | 21  |        |   |
| 06        | 8      | 5  | 1      | 14 | 22    | 14 | 20     | 8      | 4  | 2      | 14 | 22    | 14    | 20  |        |   |
| 07        | 0      | 0  | 6      | 6  | 10    | 12 | 17     | 0      | 0  | 7      | 7  | 11    | 14    | 20  |        |   |
| Sum       | 10     | 41 | 12     | 63 | 100   | 69 | 100    | 10     | 42 | 12     | 64 | 100   | 71    | 100 |        |   |

Table 21  
The Number of Items and Score Points by Maryland Content Standard for Grade 5

| Standards | Form A, C & E |    |        |       |       |        |     | Form B & D |    |        |       |       |        |     |
|-----------|---------------|----|--------|-------|-------|--------|-----|------------|----|--------|-------|-------|--------|-----|
|           | NRT           |    | Custom |       | Total |        |     | NRT        |    | Custom |       | Total |        |     |
|           | SR            | SR | CR     | Items | %     | Points | %   | SR         | SR | CR     | Items | %     | Points | %   |
| 01        | 2             | 11 | 2      | 15    | 23    | 15     | 21  | 2          | 11 | 2      | 15    | 23    | 15     | 21  |
| 02/03     | 4             | 7  | 2      | 13    | 20    | 13     | 18  | 4          | 7  | 2      | 13    | 20    | 13     | 18  |
| 04/05     | 2             | 9  | 2      | 13    | 20    | 13     | 18  | 2          | 9  | 2      | 13    | 20    | 13     | 18  |
| 06        | 5             | 8  | 2      | 15    | 23    | 15     | 21  | 5          | 8  | 2      | 15    | 23    | 15     | 21  |
| 07        | 0             | 0  | 8      | 8     | 13    | 17     | 23  | 0          | 0  | 8      | 8     | 13    | 17     | 23  |
| Sum       | 13            | 35 | 16     | 64    | 100   | 73     | 100 | 13         | 35 | 16     | 64    | 100   | 73     | 100 |

Table 22  
The Number of Items and Score Points by Maryland Content Standard for Grade 6

| Standards | Form A |    |        |       |       |        |     | Form B |    |        |       |       |        |     |
|-----------|--------|----|--------|-------|-------|--------|-----|--------|----|--------|-------|-------|--------|-----|
|           | NRT    |    | Custom |       | Total |        |     | NRT    |    | Custom |       | Total |        |     |
|           | SR     | SR | CR     | Items | %     | Points | %   | SR     | SR | CR     | Items | %     | Points | %   |
| 01        | 1      | 11 | 2      | 14    | 23    | 14     | 20  | 1      | 11 | 2      | 14    | 23    | 14     | 20  |
| 02/03     | 1      | 11 | 2      | 14    | 23    | 14     | 20  | 1      | 11 | 2      | 14    | 23    | 14     | 20  |
| 04/05     | 0      | 11 | 1      | 12    | 20    | 12     | 17  | 0      | 11 | 1      | 12    | 20    | 12     | 17  |
| 06        | 3      | 9  | 2      | 14    | 23    | 14     | 20  | 3      | 9  | 2      | 14    | 23    | 14     | 20  |
| 07        | 0      | 0  | 7      | 7     | 11    | 15     | 22  | 0      | 0  | 7      | 7     | 11    | 15     | 22  |
| Sum       | 5      | 42 | 14     | 61    | 100   | 69     | 100 | 5      | 42 | 14     | 61    | 100   | 69     | 100 |
| Standards | Form C |    |        |       |       |        |     | Form D |    |        |       |       |        |     |
|           | NRT    |    | Custom |       | Total |        |     | NRT    |    | Custom |       | Total |        |     |
|           | SR     | SR | CR     | Items | %     | Points | %   | SR     | SR | CR     | Items | %     | Points | %   |
| 01        | 1      | 11 | 2      | 14    | 23    | 14     | 20  | 1      | 12 | 1      | 14    | 24    | 14     | 22  |
| 02/03     | 1      | 11 | 2      | 14    | 23    | 14     | 20  | 1      | 12 | 1      | 14    | 24    | 14     | 22  |
| 04/05     | 0      | 12 | 1      | 13    | 21    | 13     | 19  | 0      | 12 | 1      | 13    | 22    | 13     | 20  |
| 06        | 3      | 9  | 2      | 14    | 23    | 14     | 20  | 3      | 10 | 1      | 14    | 24    | 14     | 22  |
| 07        | 0      | 0  | 7      | 7     | 11    | 15     | 21  | 0      | 0  | 4      | 4     | 7     | 9      | 14  |
| Sum       | 5      | 43 | 14     | 62    | 100   | 70     | 100 | 5      | 46 | 8      | 59    | 100   | 64     | 100 |
| Standards | Form E |    |        |       |       |        |     | Form F |    |        |       |       |        |     |
|           | NRT    |    | Custom |       | Total |        |     | NRT    |    | Custom |       | Total |        |     |
|           | SR     | SR | CR     | Items | %     | Points | %   | SR     | SR | CR     | Items | %     | Points | %   |
| 01        | 1      | 12 | 1      | 14    | 23    | 14     | 21  | 1      | 12 | 1      | 14    | 23    | 14     | 21  |
| 02/03     | 1      | 10 | 2      | 13    | 22    | 13     | 19  | 1      | 11 | 2      | 14    | 23    | 14     | 21  |
| 04/05     | 0      | 12 | 1      | 13    | 22    | 13     | 19  | 0      | 12 | 1      | 13    | 21    | 13     | 19  |
| 06        | 3      | 9  | 2      | 14    | 23    | 14     | 21  | 3      | 9  | 2      | 14    | 23    | 14     | 21  |
| 07        | 0      | 0  | 6      | 6     | 10    | 13     | 19  | 0      | 0  | 6      | 6     | 10    | 12     | 18  |
| Sum       | 5      | 43 | 12     | 60    | 100   | 67     | 100 | 5      | 44 | 12     | 61    | 100   | 67     | 100 |

Table 23  
The Number of Items and Score Points by Maryland Content Standard for Grade 7

| Standards | Form A |        |    |    |       |     |        |     | Form B |        |    |    |       |     |        |     |
|-----------|--------|--------|----|----|-------|-----|--------|-----|--------|--------|----|----|-------|-----|--------|-----|
|           | NRT    | Custom |    |    | Total |     |        |     | NRT    | Custom |    |    | Total |     |        |     |
|           | SR     | SR     | CR | GR | Items | %   | Points | %   | SR     | SR     | CR | GR | Items | %   | Points | %   |
| 01        | 0      | 9      | 2  | 3  | 14    | 23  | 14     | 19  | 0      | 10     | 1  | 3  | 14    | 23  | 14     | 20  |
| 02/03     | 1      | 7      | 2  | 3  | 13    | 21  | 13     | 18  | 1      | 7      | 2  | 3  | 13    | 21  | 13     | 19  |
| 04/05     | 0      | 8      | 3  | 3  | 14    | 23  | 14     | 19  | 0      | 8      | 3  | 3  | 14    | 23  | 14     | 20  |
| 06        | 5      | 7      | 0  | 2  | 14    | 23  | 14     | 19  | 5      | 6      | 0  | 3  | 14    | 23  | 14     | 20  |
| 07        | 0      | 0      | 7  | 0  | 7     | 11  | 17     | 24  | 0      | 0      | 6  | 0  | 6     | 10  | 14     | 20  |
| Sum       | 6      | 31     | 14 | 11 | 62    | 100 | 72     | 100 | 6      | 31     | 12 | 12 | 61    | 100 | 69     | 100 |
| Standards | Form C |        |    |    |       |     |        |     | Form D |        |    |    |       |     |        |     |
|           | NRT    | Custom |    |    | Total |     |        |     | NRT    | Custom |    |    | Total |     |        |     |
|           | SR     | SR     | CR | GR | Items | %   | Points | %   | SR     | SR     | CR | GR | Items | %   | Points | %   |
| 01        | 0      | 10     | 2  | 2  | 14    | 23  | 14     | 19  | 0      | 11     | 0  | 3  | 14    | 24  | 14     | 22  |
| 02/03     | 1      | 7      | 2  | 3  | 13    | 21  | 13     | 18  | 1      | 7      | 2  | 3  | 13    | 22  | 13     | 20  |
| 04/05     | 0      | 8      | 3  | 3  | 14    | 23  | 14     | 19  | 0      | 9      | 2  | 3  | 14    | 24  | 14     | 22  |
| 06        | 5      | 7      | 0  | 2  | 14    | 23  | 14     | 19  | 5      | 6      | 0  | 3  | 14    | 24  | 14     | 22  |
| 07        | 0      | 0      | 7  | 0  | 7     | 11  | 17     | 24  | 0      | 0      | 4  | 0  | 4     | 7   | 10     | 15  |
| Sum       | 6      | 32     | 14 | 10 | 62    | 100 | 72     | 100 | 6      | 33     | 8  | 12 | 59    | 100 | 65     | 100 |
| Standards | Form E |        |    |    |       |     |        |     | Form F |        |    |    |       |     |        |     |
|           | NRT    | Custom |    |    | Total |     |        |     | NRT    | Custom |    |    | Total |     |        |     |
|           | SR     | SR     | CR | GR | Items | %   | Points | %   | SR     | SR     | CR | GR | Items | %   | Points | %   |
| 01        | 0      | 10     | 1  | 3  | 14    | 23  | 14     | 21  | 0      | 12     | 0  | 2  | 14    | 24  | 14     | 22  |
| 02/03     | 1      | 7      | 2  | 3  | 13    | 22  | 13     | 20  | 1      | 7      | 2  | 3  | 13    | 22  | 13     | 20  |
| 04/05     | 0      | 10     | 2  | 2  | 14    | 23  | 14     | 21  | 0      | 9      | 2  | 3  | 14    | 24  | 14     | 22  |
| 06        | 5      | 6      | 0  | 3  | 14    | 23  | 14     | 21  | 5      | 6      | 0  | 3  | 14    | 24  | 14     | 22  |
| 07        | 0      | 0      | 5  | 0  | 5     | 8   | 11     | 17  | 0      | 0      | 4  | 0  | 4     | 7   | 9      | 14  |
| Sum       | 6      | 33     | 10 | 11 | 60    | 100 | 66     | 100 | 6      | 34     | 8  | 11 | 59    | 100 | 64     | 100 |

Table 24  
The Number of Items and Score Points by Maryland Content Standard for Grade 8

| Standards | Form A, C & E |        |    |    |       |     |        |     | Form B & D |        |    |    |       |     |        |     |
|-----------|---------------|--------|----|----|-------|-----|--------|-----|------------|--------|----|----|-------|-----|--------|-----|
|           | NRT           | Custom |    |    | Total |     |        |     | NRT        | Custom |    |    | Total |     |        |     |
|           | SR            | SR     | CR | GR | Items | %   | Points | %   | SR         | SR     | CR | GR | Items | %   | Points | %   |
| 01        | 1             | 6      | 3  | 4  | 14    | 23  | 14     | 20  | 1          | 6      | 3  | 4  | 14    | 23  | 14     | 20  |
| 02/03     | 2             | 6      | 2  | 3  | 13    | 22  | 13     | 19  | 2          | 6      | 2  | 3  | 13    | 21  | 13     | 18  |
| 04/05     | 1             | 7      | 3  | 3  | 14    | 23  | 14     | 20  | 1          | 7      | 3  | 3  | 14    | 23  | 14     | 20  |
| 06        | 4             | 6      | 0  | 1  | 11    | 18  | 11     | 16  | 4          | 6      | 0  | 2  | 12    | 20  | 12     | 17  |
| 07        | 0             | 0      | 8  | 0  | 8     | 13  | 18     | 26  | 0          | 0      | 8  | 0  | 8     | 13  | 18     | 25  |
| Sum       | 8             | 25     | 16 | 11 | 60    | 100 | 70     | 100 | 8          | 25     | 16 | 12 | 61    | 100 | 71     | 100 |



Table 25  
The Number of Items and Score Points by Maryland Content Standard for Grade 10

| Standards | Form A & C |        |    |       |     |        |     | Form B |        |    |       |     |        |     |
|-----------|------------|--------|----|-------|-----|--------|-----|--------|--------|----|-------|-----|--------|-----|
|           | NRT        | Custom |    | Total |     |        |     | NRT    | Custom |    | Total |     |        |     |
|           | SR         | SR     | CR | Items | %   | Points | %   | SR     | SR     | CR | Items | %   | Points | %   |
| 01        | 13         | 3      | 0  | 16    | 30  | 16     | 26  | 13     | 2      | 0  | 15    | 28  | 15     | 25  |
| 02        | 10         | 6      | 2  | 18    | 34  | 22     | 36  | 10     | 6      | 2  | 18    | 34  | 22     | 36  |
| 03        | 11         | 6      | 2  | 19    | 36  | 23     | 38  | 11     | 7      | 2  | 20    | 38  | 24     | 39  |
| Sum       | 34         | 15     | 4  | 53    | 100 | 61     | 100 | 34     | 15     | 4  | 53    | 100 | 61     | 100 |

### **Classical Item Analysis**

Tables A1- A30 of Appendix A present item-level descriptive statistics for each of the test forms. These tables contain the following information: item function (common or unique), item type (SR, CR, or SPR), item  $p$ -value (P\_VAL), item correlation with the total test score (R\_ITT), and correlation between each item choice and the total test score (P\_BIS1, etc.). The  $p$ -value for an SR item represents the proportion of students who answered the item correctly. The  $p$ -value for a CR item represents the proportion of the obtained mean raw score for the item to the number of points possible for the item. A point-biserial correlation between the item score and the total score on the test was also computed for the SR items. For the CR items, a Pearson correlation between the item score and the total score on the test was computed. For the item analysis, the studied item was excluded from the computation of the total score so as to not inflate the correlation artificially. This effect would be most noticeable for CR items worth several points. For the correct answer choice, the correlation between item choice and total score is the same as the point-biserial correlation of the item. A similar formula was applied to compute the correlation between each distracter and the total score. In general, negative correlations are expected for all distracters when an item is good.

Note that items were evaluated using the following three criteria: a  $p$ -value below 0.30 for SR items and 0.20 for CR and SPR items, and a point-biserial below 0.15. Items flagged for any of these criteria were referred to CTB's content specialists for further review to ensure that each item was measuring the intended construct(s), that the scoring key or scoring rubric was correct, and (for multiple-choice items) that there was one and only one correct answer to the item.

## **Rater Agreement**

All CR items were scored by at least two raters. If the scores assigned by the raters differed by one point, the student received the higher of the two scores. Discrepancies of more than one point were resolved by a third expert rater.

Rater agreement was assessed using only the scores assigned by the first two raters. Indices of rater agreement and consistency were obtained using the scores from the first two raters. \*\*\* Appendix tables B1-B7 present rater agreement statistics for the CR items across all grades. These tables provide the percentages of pairs of raters' scores that did not differ (i.e., perfect agreement) and the percentages of pairs of raters' scores that differed by one point (i.e., adjacent agreement) for all CR items over all test forms. For Mathematics, the maximum score point for part A of each CR item is 1, while that for part B of each CR item is more than one. Thus, percent of perfect agreement for part A was usually higher than that for part B, ranging from 94.2% to 99.7% in Grade 3, 92.6% to 99.3% in Grade 4, 95.0% to 99.6% in Grade 5, 92.4% to 99.5% in Grade 6, 93.0% to 99.6% in Grade 7 and 96.6 to 99.6% in Grade 8.

When rater agreement was defined as the percentage of same scores plus adjacent scores, rater agreement across all grade levels ranged from 96.9% to 100% for Mathematics items and from 97.0% to 100% for Reading items.

In addition to the percentage of agreement, the tables present the mean item score and item standard deviation of the item scores assigned by each rater group. The mean score points awarded by the two rater groups are very close. The product moment correlations between first and second ratings are also included in these tables.

Appendix Tables B8-B16 show the distributions of CR items and SPR items (student-produced response items, also referred to as gridded response items). Only Mathematics Grades 7 and 8 contain SPR items. Note that each CR item for Mathematics consists of two parts, A and B. Each part was considered to be an independent item and was separately scored. Reading CR items do not have an A or B part. In the tables, ITEMNO represents item number in test book. "Omit" denotes the number of student cases that did not respond to the item. Code B is an answer that cannot be scored. Each number, 0, 1, 2, 3, represents a score of 0, 1, 2, and 3, respectively. "%\_omit" represents the percent of omits.

### **Differential Item Functioning (DIF)**

An item flagged for differential item functioning (DIF) is more difficult for a particular group of students than would be expected based on their total test scores, compared to the performance of the other group. The groups compared in the DIF analyses were female and male students, and African–American, Hispanic, and white students. Male and white were reference groups.

The statistical procedures used by CTB to identify items thought to exhibit substantial DIF are the same procedures used by the Educational Testing Service (ETS) and the National Assessment of Educational Progress (NAEP). For SR items, the Mantel-Haenszel ( $\chi^2_{MH}$ ) statistic was used to evaluate potential DIF items. In this procedure, the “C” - level DIF items are flagged, where a “C” item indicates a large amount of DIF and has an absolute value of the Mantel-Haenszel ( $\Delta_{MH}$ ) that is significantly greater than zero (at the .05 level) and  $|\Delta_{MH}|$  exceeds 1.5. Also, the “B” - level DIF items are flagged, where a “B” item indicates DIF and has an absolute value of the Mantel-Haenszel ( $\Delta_{MH}$ ) that is significantly greater than zero (at the .05 level) and  $-1.5 \leq \Delta_{MH} \leq -1$  or  $1 \leq \Delta_{MH} \leq 1.5$  (Zwick, Donoghue, & Grima, 1993).

For the CR items, an effect size (ES) statistic based on Mantel  $\chi^2$  was used. ES is obtained by dividing the standardized mean difference (SMD) statistics by the standard deviation of the item. A detailed description of these procedures can be found in Zwick, et al., (1993).

Tentative flagging criteria followed the same rules as are used in NAEP:

BB: If the Mantel statistic is significant ( $p < .05$ ) and the  $|ES|$  is between 0.17 and 0.25

CC: If the Mantel statistic is significant ( $p < .05$ ) and the  $|ES| \geq 0.25$

Appendix tables C1-C7 show items flagged based on the above criteria. In the column “Focal”, for those items flagged for ethnicity, the number 2 represents African American and the number 4 represents Hispanic. Positive values in the “DIF” column mean that the item favors the focal group, while negative values imply that the item disadvantages the focal group.

### **Item Fit Assessment**

Item fit was assessed using the  $QI$  statistic described by Yen (1984).  $QI$  is a Pearson chi-square statistic,

$$QI_j = \sum_{i=1}^I \frac{N_{ji}(O_{ji} - E_{ji})^2}{E_{ji}} + \sum_{i=1}^I \frac{N_{ji}[(1 - O_{ji}) - (1 - E_{ji})]^2}{1 - E_{ji}}$$

where  $N_{ji}$  is the number of examinees in cell  $i$  for item  $j$ , and  $O_{ji}$  and  $E_{ji}$  are the observed and expected proportion of examinees in cell  $i$  obtaining the maximum possible score on item  $j$ .

Because  $QI$  is influenced by sample size and by the number of possible score points for an item, this statistic was transformed to a Z-statistic,

$$Z_j = \frac{(Q_{1j} - DF_j)}{\sqrt{2DF_j}}$$

where  $Q_{1j}$  is the item chi-square statistic defined above,  
 $j$  is an item, and  
 $DF$  is the degrees of freedom for a given item  $j$ .

The Z-statistic is an index of the degree to which obtained proportions of students with each item score are close to the proportions that would be predicted by the estimated student ability and item parameters. These values, along with the associated chi-squares ( $Q_i$ ) are computed for ten intervals corresponding to deciles of the ability distribution. Because the expected value of Z increases as the sample size increases, critical values for Z were established using the following equation (Yen, 1991a):

$$Z_{crit,j} = \frac{4N_j}{1500}$$

where  $Z_{crit,j}$  is critical value of Z for item  $j$  and  
 $N_j$  is the number of students who responded to item  $j$ .

In the 2004 calibration of the Mathematics items, ten misfitting items were identified: Grade 4Form B item 109, grade 6 common item 47, grade 6 Form A item 95, Form B items 93, 94, and 95, Form E items 72, 92, and 94, grade 7 Form E item 66. In the calibration of the Reading items, one misfitting item was identified: Grade 10 Form C item #80. The figures in Appendix D show the estimated and observed item characteristic curves (ICC's) of these items. These misfitting items were treated as field test items and were not used to compute student scores.

## Calibration and Equating

### IRT Model

Student item responses were calibrated using the combination of two IRT models. The three-parameter logistic model (3PL) was used to scale the SR items, and the two-parameter partial credit (2PPC) model was employed to scale the CR items. A brief explanation of the models is provided below.

Two types of IRT models have most commonly been used to scale large-scale education assessments containing mixed item types or formats. For SR items, the 3PL model has been employed. The 3PL model (Lord & Novick, 1968; Lord, 1980) defines a SR item in terms of three item parameters: item difficulty or location, item discrimination, and probability of a student with very low ability answering the item correctly (guessing parameter). In this model, the probability that a student with scale score  $\theta$  responds correctly to item  $j$  is

$$p_j(\theta) = c_j + \frac{(1 - c_j)}{1 + \exp[-1.7a_j(\theta - b_j)]},$$

where  $a_j$  is the item discrimination,  $b_j$  is the item difficulty, and  $c_j$  is the probability of a correct response by a very low-scoring student.

The 2PPC model defines a CR item in terms of item discrimination as well as location parameter for each score point. The 2PPC model is a special case of Bock's (1972) nominal model. Bock's model states that the probability of an examinee with ability  $\theta$  having a score at the  $k$ th level of the  $j$ th item is

$$P_{jk}(\theta) = P(x_j = k - 1 | \theta) = \frac{\exp Z_{jk}}{\sum_{i=1}^{m_j} \exp Z_{ji}}, k = 1, \dots, m_j,$$

where  $m_j$  is the number of score levels, and

$$Z_{jk} = A_{jk} \theta + C_{jk},$$

$$A_{jk} = \alpha_j (k - 1), k = 1, 2, \dots, m_j, \text{ and}$$

$$C_{jk} = -\sum_{i=0}^{k-1} \gamma_{ji}, \text{ where } \gamma_{j0} = 0,$$

where  $A_{jk}$  is the discrimination parameter of the  $k$ th category of item  $j$ ,  $C_{jk}$  is the intercept parameter of the nonlinear response function associated with the  $k$ th category of item  $j$ ,  $\alpha_j$  and  $\gamma_{ji}$  are the parameters to be estimated from the data.

For each item there are  $m_j - 1$  independent  $\gamma_{ji}$  parameters and one  $\alpha_j$  parameter; a total of  $m_j$  independent item parameters are estimated.

## Calibration and Equating Procedure

In this report, **common items** indicate items that appear across all alternate forms and are used for Form-to-Form equating. **Anchor items** indicate items used for Year-to-Year equating. Most anchor items are common items. Note that for grades 3, 5, 8, and 10, all 2004 operational items were field-tested in 2003. Also note that no constructed response (CR) items and students produced response (SPR) items were used as common items and anchor items. Like last year, each Mathematics CR item is composed of two parts A and B. Each part is considered one item. As the first year, only calibration and Form-to-Form equating was applied to items for grades 4, 6, and 7.

The following procedures were applied to calibrate 2004 MSA CRT items and link several alternate forms:

### Calibration and Form-to-Form equating

Only items that contribute to the CRT score were calibrated. The following two steps were applied for Form-to-Form equating.

Step 1: Stability of equating items was checked using following the procedure.

- (1) Each alternative form was separately calibrated.
- (2) The  $a$  parameters (using log of  $a$ ) and the  $b$  parameters of each non-target form against those of the target form were plotted. Note that one of two alternative forms can be a target form for grades 3, 5, 8, and 10 because there are two forms F1 and F2. For grades 4, 6, and 7, one best form was selected as a target form based on content coverage.

Step 2: A set of common items that are reasonably stable across forms were selected based on Step 1.

- (1) Two alternate Forms 1 and 2 were simultaneously calibrated using these selected common items.
- (2) For a non-stable common item, two estimates were obtained. The mean of the two estimates was used as an operational item parameter.

### Year-to-Year Equating

The following two steps were applied for Year-to-Year equating.

Step 1: Stability of anchor items were checked using the following procedure.

- (1) Item parameters for the 2004 MSA CRT forms were transformed to the 2003 MSA CRT scale using the test characteristic curve procedure suggested by Stocking and Lord (1983).
- (2) The  $a$  and  $b$  parameters of anchor items for the 2004 MSA CRT against those of the 2003 MSA CRT were plotted. Also, item p-value was plotted.

Step 2: A set of anchor items that are reasonably stable across two consecutive years were selected based on Step 1. Finally, item parameters for the 2004 MSA CRT forms were transformed to the 2003 MSA CRT scale using the anchor items and Stocking and Lord's transformation procedure.

For grades 3, 5, 8, and 10, field test items were separately calibrated from the operational items. All field test items were calibrated along with operational items and transformed to the scale of operational items using the item parameters of operational items obtained from Step 2 of Year-to-Year equating.

### **Calibration and Equating Results**

The following is the general description and summary for calibration and equating results for 2004 MSA Mathematics Grades 3-8 and Reading Grade 10.

Two calibrations, a separate calibration using each form and a big concurrent calibration using all operational items, were done for 2004 MSA. Note that for grades 4, 6, and 7, operational items were selected based on item analysis, DIF, and item fit (non-converged item). For Form-to-Form equating, separate calibrations were used for selecting stable common items that were then used for the big concurrent calibration. Final operational item parameters for 2004 MSA were obtained using the big concurrent calibration.

Stability of common items was checked by Step 1 of Form-to-Form equating. Figures F1-F19 show the alignment of "a" parameters (using the Log of a) and the alignment of "b" parameters. Note that only selected response (SR) items were used for common items for 2004 MSA. Based on these plots, Grade 3 item 55, Grade 6 item 39, Grade 8 item 41 were decided as unstable common items. These items were treated as unique items for each form during the big concurrent calibration.

Table 26 shows items that were treated as unique items although these items appear across all test forms. The item parameters for these items were averaged, and these averages were used for all forms.

For grades, 3, 5, 8, and 10, the stability of anchor items was checked by Step 1 of Year-to-Year equating. Figures F20-F31 show the alignment of the "a" parameters of anchor items, and the alignment of the "b" parameters of anchor items, and p-values of anchor items. Figure F20 shows that grade 3 items 16 and 34 deviated from the



regression line. Figure F26 shows grade 8 that items 35 and 54 deviated from the regression line. These four items were dropped from the anchor item sets.

Figures F32-F38 show test characteristic curves (TCC) and standard errors of measurement (SEM) curves based on the final item parameters. TCCs and SEMs for all alternate forms were similar across all grades.

Table 26  
Item Parameters Averaged for the Score Form

| Grade | Item | Parameter | Form 1/A | Form 2/B | Form C | Form D | Form E | Form F  | Mean    |
|-------|------|-----------|----------|----------|--------|--------|--------|---------|---------|
| 3     | 55   | a         | 0.7802   | 0.4893   | .      | .      | .      | .       | 0.6348  |
|       |      | b         | -0.2346  | -1.1543  | .      | .      | .      | .       | -0.6945 |
|       |      | c         | 0.4514   | 0.2000   | .      | .      | .      | .       | 0.3257  |
| 6     | 39   | a         | 0.3253   | 0.5029   | 0.5580 | 0.4696 | 0.4998 | 0.2977  | 0.4422  |
|       |      | b         | -0.1700  | 0.7688   | 0.7893 | 0.6895 | 0.7885 | -0.1567 | 0.4516  |
|       |      | c         | 0.2000   | 0.3925   | 0.4194 | 0.3687 | 0.4046 | 0.2000  | 0.3309  |
| 8     | 41   | a         | 0.9424   | 0.9929   | .      | .      | .      | .       | 0.9676  |
|       |      | b         | 2.3458   | 2.2863   | .      | .      | .      | .       | 2.3161  |
|       |      | c         | 0.2000   | 0.2000   | .      | .      | .      | .       | 0.2000  |

### Distribution of the Maryland Score Scale

Table 27 presents the lowest obtainable scale scores (LOSS) and the highest obtainable scale scores (HOSS). For grades 3, 5, 8, and 10, in 2003 the LOSS and HOSS were determined based on Yen's (1991b) general rules for setting LOSS and HOSS. For grades 4, 6, and 7, LOSS=240 and HOSS=650 were determined by MSDE.

Table 27  
LOSS and HOSS

| Grade | LOSS | HOSS |
|-------|------|------|
| MA3   | 200  | 630  |
| MA4   | 240  | 650  |
| MA5   | 200  | 620  |
| MA6   | 240  | 650  |
| MA7   | 240  | 650  |
| MA8   | 200  | 620  |
| RD10  | 200  | 600  |

For grades 3, 5, 8, and 10, the 2004 scores were placed on the 2003 reporting scale using previously calibrated items from the 2003 administration as anchors in a Stocking and Lord test-characteristic curve equating procedure (Stocking & Lord, 1983). For grades 4, 6, and 7, the 2004 scale was established by first calibrating items on the logistic theta metric (with a theoretical mean of 0 and standard deviation of 1), then transforming the A and B parameters for each item as follows, using transformation constants of M1=40 and M2=400:

$$A_{ss} = \frac{A}{M1}, \text{ and}$$

$$B_{ss} = M2 + (M1 \cdot B)$$

$$C_{ss} = C$$

where

A = Original 3PL item discrimination in logits,

B = Original 3PL item difficulty in logits,

A<sub>ss</sub> = Transformed 3PL discrimination on the Maryland Score Scale

B<sub>ss</sub> = Transformed 3PL difficulty on the Maryland Score Scale.

C = Original C parameter

C<sub>ss</sub> = C Parameter on the Maryland Score Scale (same as original C parameter)

Student scores were computed using IRT pattern scoring with the transformed parameters. As shown in Tables 28 and 29, distributions of raw scores and scale scores were similar across forms.<sup>3</sup> Due to relatively long test lengths for every grade, reliability (Cronbach's alpha) was high for all grades. Reliability coefficients ranged from 0.92 to 0.96 across grades.

Tables 30 and 31 show the scale score statistics (means and standard deviations) for ethnic and gender subgroups on each test form. Across grades, white students generally performed better than African American and Hispanic students. The scale score differences ranged from about 30 to 40 scale score points. As grade increases, the standard deviation of scores also tends to increase. This pattern is the same for all three ethnic groups examined. Female students performed slightly better than male students on the Grade 10 Reading test, but there was no difference between male and female students on any of the Mathematics tests. Appendix Figures G1-G21 show histograms for the distribution of scale scores for the total population and for subgroups defined by ethnicity and gender.

---

<sup>3</sup> Note that because the distributions on the original logit scale were not identical to the theoretical distribution, the transformations did not result in scale scores with means and standard deviations of precisely 400 and 40.

Table 28  
CRT Raw Score Descriptive Statistics

| Grade | Form  | N<br>Count | Mean  | Mean<br>P-Value | SD    | Min | Max | Alpha | SEM  |
|-------|-------|------------|-------|-----------------|-------|-----|-----|-------|------|
| 3     | 1     | 37727      | 54.35 | 0.75            | 11.62 | 0   | 72  | 0.92  | 3.21 |
|       | 2     | 25100      | 53.32 | 0.74            | 11.21 | 0   | 72  | 0.92  | 3.09 |
|       | Total | 62827      | 53.94 | 0.75            | 11.47 | 0   | 72  | .     | .    |
| 4     | A     | 11201      | 40.18 | 0.57            | 14.98 | 0   | 71  | 0.95  | 3.51 |
|       | B     | 10962      | 39.58 | 0.57            | 14.24 | 0   | 69  | 0.94  | 3.48 |
|       | C     | 10881      | 40.77 | 0.57            | 14.11 | 0   | 71  | 0.94  | 3.55 |
|       | D     | 10778      | 40.60 | 0.57            | 13.94 | 0   | 70  | 0.94  | 3.45 |
|       | E     | 10649      | 40.61 | 0.59            | 13.92 | 0   | 69  | 0.94  | 3.44 |
|       | F     | 10542      | 41.83 | 0.59            | 13.90 | 0   | 71  | 0.94  | 3.52 |
|       | Total | 65013      | 40.58 | 0.58            | 14.21 | 0   | 71  | .     | .    |
| 5     | 1     | 39687      | 40.04 | 0.55            | 15.75 | 0   | 73  | 0.94  | 3.84 |
|       | 2     | 26381      | 40.35 | 0.55            | 15.19 | 0   | 73  | 0.94  | 3.80 |
|       | Total | 66068      | 40.17 | 0.55            | 15.53 | 0   | 73  | .     | .    |
| 6     | A     | 11592      | 32.73 | 0.47            | 14.60 | 0   | 69  | 0.94  | 3.62 |
|       | B     | 11464      | 33.20 | 0.48            | 14.37 | 0   | 68  | 0.94  | 3.59 |
|       | C     | 11393      | 33.00 | 0.47            | 14.88 | 0   | 70  | 0.94  | 3.64 |
|       | D     | 11351      | 32.61 | 0.51            | 12.59 | 0   | 64  | 0.92  | 3.51 |
|       | E     | 11244      | 33.48 | 0.50            | 13.88 | 0   | 67  | 0.94  | 3.46 |
|       | F     | 11185      | 33.87 | 0.51            | 14.28 | 0   | 67  | 0.94  | 3.55 |
|       | Total | 68229      | 33.15 | 0.49            | 14.13 | 0   | 70  | .     | .    |
| 7     | A     | 11751      | 30.30 | 0.42            | 16.06 | 0   | 71  | 0.95  | 3.50 |
|       | B     | 11667      | 31.91 | 0.46            | 15.60 | 0   | 69  | 0.95  | 3.51 |
|       | C     | 11603      | 34.58 | 0.48            | 17.61 | 0   | 71  | 0.96  | 3.63 |
|       | D     | 11522      | 28.92 | 0.44            | 14.29 | 0   | 65  | 0.95  | 3.33 |
|       | E     | 11452      | 31.29 | 0.47            | 14.92 | 0   | 66  | 0.95  | 3.34 |
|       | F     | 11332      | 28.85 | 0.45            | 14.37 | 0   | 64  | 0.95  | 3.33 |
|       | Total | 69327      | 30.98 | 0.46            | 15.65 | 0   | 71  | .     | .    |
| 8     | 1     | 41034      | 31.14 | 0.44            | 15.88 | 0   | 71  | 0.95  | 3.70 |
|       | 2     | 27365      | 31.40 | 0.44            | 16.11 | 0   | 71  | 0.95  | 3.69 |
|       | Total | 68399      | 31.24 | 0.44            | 15.97 | 0   | 71  | .     | .    |
| 10    | 1     | 41819      | 36.68 | 0.60            | 13.26 | 0   | 61  | 0.94  | 3.36 |
|       | 2     | 20913      | 37.65 | 0.62            | 13.19 | 0   | 61  | 0.94  | 3.27 |
|       | Total | 62732      | 37.01 | 0.61            | 13.25 | 0   | 61  | .     | .    |

Table 29  
CRT Scale Score Descriptive Statistics

| Grade | Form  | N<br>Count | Mean   | SD    | MIN | MAX |
|-------|-------|------------|--------|-------|-----|-----|
| 3     | 1     | 37727      | 403.67 | 46.90 | 200 | 630 |
|       | 2     | 25100      | 404.04 | 46.13 | 200 | 630 |
|       | Total | 62827      | 403.82 | 46.60 | 200 | 630 |
| 4     | A     | 11201      | 392.00 | 46.91 | 240 | 650 |
|       | B     | 10962      | 393.93 | 46.41 | 240 | 650 |
|       | C     | 10881      | 395.69 | 44.81 | 240 | 650 |
|       | D     | 10778      | 396.30 | 44.95 | 240 | 579 |
|       | E     | 10649      | 395.12 | 45.14 | 240 | 650 |
|       | F     | 10542      | 394.10 | 45.76 | 240 | 650 |
|       | Total | 65013      | 394.51 | 45.70 | 240 | 650 |
| 5     | 1     | 39687      | 402.10 | 51.98 | 200 | 620 |
|       | 2     | 26381      | 402.51 | 46.03 | 200 | 620 |
|       | Total | 66068      | 402.26 | 49.69 | 200 | 620 |
| 6     | A     | 11592      | 388.19 | 52.18 | 240 | 650 |
|       | B     | 11464      | 389.35 | 51.16 | 240 | 537 |
|       | C     | 11393      | 390.82 | 50.28 | 240 | 650 |
|       | D     | 11351      | 392.33 | 51.12 | 240 | 650 |
|       | E     | 11244      | 392.19 | 49.59 | 240 | 650 |
|       | F     | 11185      | 392.12 | 49.09 | 240 | 650 |
|       | Total | 68229      | 390.82 | 50.61 | 240 | 650 |
| 7     | A     | 11751      | 388.58 | 54.58 | 240 | 650 |
|       | B     | 11667      | 391.35 | 51.43 | 240 | 650 |
|       | C     | 11603      | 391.37 | 50.68 | 240 | 535 |
|       | D     | 11522      | 391.63 | 50.93 | 240 | 650 |
|       | E     | 11452      | 392.87 | 50.21 | 240 | 650 |
|       | F     | 11332      | 391.03 | 51.49 | 240 | 650 |
|       | Total | 69327      | 391.13 | 51.60 | 240 | 650 |
| 8     | 1     | 41034      | 397.43 | 52.63 | 200 | 620 |
|       | 2     | 27365      | 397.45 | 53.01 | 200 | 620 |
|       | Total | 68399      | 397.44 | 52.78 | 200 | 620 |
| 10    | 1     | 41819      | 389.24 | 55.53 | 200 | 600 |
|       | 2     | 20913      | 390.28 | 55.14 | 200 | 600 |
|       | Total | 62732      | 389.59 | 55.40 | 200 | 600 |

Table 30  
CRT Scale Score Descriptive Statistics by Ethnicity

| Grade | Test Form | White  |       |     |     | African American |       |     |     | Hispanic |       |     |     |
|-------|-----------|--------|-------|-----|-----|------------------|-------|-----|-----|----------|-------|-----|-----|
|       |           | Mean   | SD    | MIN | MAX | Mean             | SD    | MIN | MAX | Mean     | SD    | MIN | MAX |
| 3     | 1         | 417.36 | 44.30 | 200 | 630 | 384.70           | 42.51 | 200 | 630 | 390.78   | 43.83 | 200 | 630 |
|       | 2         | 417.46 | 43.64 | 200 | 630 | 385.69           | 42.05 | 200 | 567 | 389.65   | 44.13 | 200 | 567 |
|       | Total     | 417.40 | 44.03 | 200 | 630 | 385.09           | 42.33 | 200 | 630 | 390.33   | 43.94 | 200 | 630 |
| 4     | A         | 407.85 | 42.85 | 240 | 650 | 370.85           | 42.64 | 240 | 530 | 380.21   | 44.46 | 240 | 510 |
|       | B         | 409.61 | 41.65 | 240 | 650 | 373.21           | 42.25 | 240 | 650 | 377.75   | 47.25 | 240 | 488 |
|       | C         | 411.54 | 40.30 | 240 | 650 | 374.41           | 40.48 | 240 | 501 | 382.32   | 43.65 | 240 | 529 |
|       | D         | 411.56 | 39.55 | 240 | 579 | 375.68           | 41.69 | 240 | 505 | 381.95   | 44.14 | 240 | 519 |
|       | E         | 409.89 | 40.02 | 240 | 650 | 375.35           | 42.69 | 240 | 516 | 381.06   | 44.25 | 240 | 493 |
|       | F         | 410.27 | 40.55 | 240 | 650 | 373.44           | 41.54 | 240 | 491 | 376.82   | 47.96 | 240 | 503 |
|       | Total     | 410.11 | 40.87 | 240 | 650 | 373.81           | 41.92 | 240 | 650 | 379.95   | 45.38 | 240 | 529 |
| 5     | 1         | 417.77 | 46.52 | 200 | 620 | 381.40           | 49.67 | 200 | 620 | 385.79   | 53.02 | 200 | 620 |
|       | 2         | 416.92 | 41.56 | 200 | 620 | 382.76           | 43.08 | 200 | 516 | 389.58   | 44.27 | 200 | 517 |
|       | Total     | 417.43 | 44.60 | 200 | 620 | 381.94           | 47.16 | 200 | 620 | 387.34   | 49.66 | 200 | 620 |
| 6     | A         | 403.47 | 47.49 | 240 | 650 | 366.94           | 50.36 | 240 | 502 | 378.61   | 48.48 | 240 | 479 |
|       | B         | 406.16 | 44.90 | 240 | 537 | 366.88           | 48.57 | 240 | 518 | 373.43   | 53.11 | 240 | 487 |
|       | C         | 406.86 | 44.43 | 240 | 650 | 369.21           | 48.39 | 240 | 514 | 376.00   | 48.36 | 240 | 496 |
|       | D         | 408.04 | 46.06 | 240 | 650 | 370.68           | 49.67 | 240 | 529 | 382.77   | 45.79 | 240 | 524 |
|       | E         | 407.46 | 44.65 | 240 | 650 | 370.23           | 46.85 | 240 | 488 | 380.35   | 47.90 | 240 | 511 |
|       | F         | 407.41 | 45.10 | 240 | 650 | 371.08           | 45.28 | 240 | 497 | 379.09   | 47.62 | 240 | 477 |
|       | Total     | 406.56 | 45.47 | 240 | 650 | 369.15           | 48.27 | 240 | 529 | 378.33   | 48.70 | 240 | 524 |

Table 30 (cont.)  
 CRT Scale Score Descriptive Statistics by Ethnicity

| Grade | Test Form | White  |       |     |     | African American |       |     |     | Hispanic |       |     |     |
|-------|-----------|--------|-------|-----|-----|------------------|-------|-----|-----|----------|-------|-----|-----|
|       |           | Mean   | SD    | MIN | MAX | Mean             | SD    | MIN | MAX | Mean     | SD    | MIN | MAX |
| 7     | A         | 406.87 | 48.02 | 240 | 650 | 363.30           | 52.99 | 240 | 529 | 378.60   | 47.05 | 240 | 517 |
|       | B         | 409.54 | 44.49 | 240 | 650 | 366.37           | 48.41 | 240 | 523 | 374.25   | 46.97 | 240 | 529 |
|       | C         | 410.66 | 43.30 | 240 | 535 | 365.42           | 46.79 | 240 | 535 | 373.05   | 49.81 | 240 | 495 |
|       | D         | 408.73 | 45.27 | 240 | 650 | 368.59           | 46.92 | 240 | 501 | 374.52   | 51.36 | 240 | 488 |
|       | E         | 410.15 | 43.71 | 240 | 559 | 368.13           | 47.00 | 240 | 532 | 380.95   | 49.35 | 240 | 489 |
|       | F         | 409.28 | 43.75 | 240 | 559 | 365.22           | 49.33 | 240 | 516 | 377.48   | 47.79 | 240 | 487 |
|       | Total     | 409.20 | 44.81 | 240 | 650 | 366.16           | 48.67 | 240 | 535 | 376.40   | 48.76 | 240 | 529 |
| 8     | 1         | 412.60 | 46.49 | 200 | 620 | 374.27           | 51.32 | 200 | 620 | 380.83   | 52.07 | 200 | 515 |
|       | 2         | 413.31 | 46.58 | 200 | 620 | 373.49           | 51.89 | 200 | 537 | 381.80   | 51.87 | 200 | 507 |
|       | Total     | 412.88 | 46.53 | 200 | 620 | 373.96           | 51.55 | 200 | 620 | 381.22   | 51.99 | 200 | 515 |
| 10    | 1         | 404.69 | 49.72 | 200 | 600 | 366.48           | 53.71 | 200 | 600 | 365.20   | 60.56 | 200 | 540 |
|       | 2         | 406.21 | 48.36 | 200 | 600 | 366.86           | 53.92 | 200 | 514 | 366.04   | 60.60 | 200 | 533 |
|       | Total     | 405.19 | 49.28 | 200 | 600 | 366.61           | 53.78 | 200 | 600 | 365.49   | 60.57 | 200 | 540 |

Table 31  
CRT Scale Score Descriptive Statistics by Gender

| Grade | Test Form | Male   |       |     |     | Female |       |     |     |
|-------|-----------|--------|-------|-----|-----|--------|-------|-----|-----|
|       |           | Mean   | SD    | MIN | MAX | Mean   | SD    | MIN | MAX |
| 3     | 1         | 402.02 | 47.81 | 200 | 630 | 405.48 | 45.77 | 200 | 630 |
|       | 2         | 402.20 | 46.62 | 200 | 630 | 405.94 | 45.55 | 200 | 630 |
|       | Total     | 402.09 | 47.34 | 200 | 630 | 405.67 | 45.68 | 200 | 630 |
| 4     | A         | 390.45 | 48.05 | 240 | 650 | 393.80 | 45.47 | 240 | 650 |
|       | B         | 392.89 | 48.71 | 240 | 650 | 395.09 | 43.70 | 240 | 650 |
|       | C         | 394.67 | 47.00 | 240 | 650 | 396.76 | 42.35 | 240 | 563 |
|       | D         | 395.04 | 46.67 | 240 | 549 | 397.63 | 43.03 | 240 | 579 |
|       | E         | 393.33 | 46.62 | 240 | 556 | 396.99 | 43.45 | 240 | 650 |
|       | F         | 393.58 | 47.10 | 240 | 650 | 394.78 | 44.13 | 240 | 650 |
|       | Total     | 393.29 | 47.40 | 240 | 650 | 395.85 | 43.71 | 240 | 650 |
| 5     | 1         | 400.91 | 54.57 | 200 | 620 | 403.43 | 48.95 | 200 | 620 |
|       | 2         | 402.19 | 48.29 | 200 | 620 | 402.90 | 43.47 | 200 | 620 |
|       | Total     | 401.42 | 52.15 | 200 | 620 | 403.22 | 46.84 | 200 | 620 |
| 6     | A         | 383.65 | 55.34 | 240 | 650 | 393.30 | 47.85 | 240 | 650 |
|       | B         | 387.47 | 54.53 | 240 | 523 | 391.35 | 47.27 | 240 | 537 |
|       | C         | 388.47 | 53.04 | 240 | 650 | 393.41 | 46.92 | 240 | 650 |
|       | D         | 390.28 | 54.42 | 240 | 650 | 394.53 | 47.29 | 240 | 587 |
|       | E         | 390.09 | 52.54 | 240 | 650 | 394.57 | 45.91 | 240 | 543 |
|       | F         | 389.85 | 52.34 | 240 | 650 | 394.58 | 45.16 | 240 | 650 |
|       | Total     | 388.26 | 53.77 | 240 | 650 | 393.61 | 46.77 | 240 | 650 |
| 7     | A         | 383.96 | 58.18 | 240 | 650 | 393.68 | 49.82 | 240 | 564 |
|       | B         | 388.71 | 55.08 | 240 | 611 | 394.26 | 46.96 | 240 | 650 |
|       | C         | 388.37 | 54.09 | 240 | 535 | 394.48 | 46.67 | 240 | 535 |
|       | D         | 388.85 | 54.52 | 240 | 650 | 394.69 | 46.50 | 240 | 650 |
|       | E         | 390.55 | 54.13 | 240 | 650 | 395.33 | 45.56 | 240 | 559 |
|       | F         | 388.11 | 55.34 | 240 | 650 | 394.03 | 47.07 | 240 | 650 |
|       | Total     | 388.07 | 55.29 | 240 | 650 | 394.41 | 47.12 | 240 | 650 |
| 8     | 1         | 393.59 | 56.44 | 200 | 620 | 401.54 | 47.83 | 200 | 620 |
|       | 2         | 394.13 | 56.23 | 200 | 575 | 401.00 | 49.01 | 200 | 620 |
|       | Total     | 393.81 | 56.36 | 200 | 620 | 401.32 | 48.31 | 200 | 620 |
| 10    | A         | 381.36 | 58.44 | 200 | 600 | 397.45 | 50.76 | 200 | 600 |
|       | C         | 382.79 | 57.75 | 200 | 600 | 398.17 | 50.77 | 200 | 600 |
|       | Total     | 381.84 | 58.21 | 200 | 600 | 397.69 | 50.76 | 200 | 600 |



### **The Relationship between NRT and CRT**

Each of the 2004 MSA tests included both NRT and CRT items. Even though the specific content standards for the NRT and CRT assessments are somewhat different, the two tests are designed to measure similar knowledge, skills, and abilities. To examine how much these two tests measure the same performance, the correlation between scale scores of the NRT and scale scores of the CRT were produced and are presented in Table 32. The correlation was relatively high and similar across alternate forms within grade. The correlations ranged from 0.80 to 0.85 in Mathematics, and from 0.89 to .90 in Reading. Note that for Reading all NRT items contributed to the CRT score, while for Mathematics only some of the NRT items contributed to the CRT score. That is, more items were overlapping in Reading than in Mathematics.

Table 32  
Correlation between NRT and CRT

| CRT Form | Content/Grade |      |      |      |      |      |      |
|----------|---------------|------|------|------|------|------|------|
|          | MA3           | MA4  | MA5  | MA6  | MA7  | MA8  | RD10 |
| Total    | 0.81          | 0.84 | 0.84 | 0.82 | 0.82 | 0.81 | 0.89 |
| 1 / A    | 0.81          | 0.84 | 0.83 | 0.82 | 0.81 | 0.81 | 0.90 |
| 2 / B    | 0.80          | 0.84 | 0.85 | 0.82 | 0.82 | 0.80 | 0.89 |
| C        | .             | 0.84 | .    | 0.82 | 0.82 | .    | .    |
| D        | .             | 0.84 | .    | 0.81 | 0.82 | .    | .    |
| E        | .             | 0.83 | .    | 0.82 | 0.82 | .    | .    |
| F        | .             | 0.84 | .    | 0.81 | 0.82 | .    | .    |

## **The Score Distributions and Correlations of Content Standards**

In the 2004 testing, scores based on the total test were reported to students, schools, and LEAs. The scale scores based on content standards were reported only to MSDE. These content-standard scale scores were estimated using a maximum-likelihood IRT pattern scoring procedure with item parameters estimated from performance on the total test form. Tables 33 and 34 show the raw score and scale score results for each content standard.

Tables 35 and 36 show the raw score and scale score Pearson product-moment correlations among the content standards at each grade level. At every grade level, the raw score correlations are higher than the scale score correlations. However, this is consistent with the differences among the various score distributions. Because a perfect raw score on any of the content standards is assigned the highest obtainable scale score on the total test, regardless of the difficulty or number of items included in the content standard, there tend to be very large gaps between the HOSS and the penultimate scale score. In addition, the scale score distributions differ substantially from one content standard to another. Given these distributions, a nonparametric correlation procedure such as the Spearman rho seems more appropriate than the Pearson product-moment correlation.

When correlations were recomputed using Spearman rho, the raw score correlations were almost the same as the Pearson product-moment correlations, but the scale score intercorrelations increased substantially. Indeed, when the Spearman rho scale score correlations are compared with either the Pearson or Spearman rho raw score correlations, the differences are negligible. In fact, there is very little difference between the raw-score and scale-score Spearman rho correlations (or between the Spearman rho correlations of scale scores and the Pearson product-moment correlations of raw scores).

Table 33  
Distribution of Raw Scores on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean  | SD   | Min | Max |
|-------|------|----------|-------|-------------------------|-------|------|-----|-----|
| 3     | 1    | 1        | 37727 | 13                      | 10.91 | 2.17 | 0   | 13  |
|       |      | 2&3      | 37727 | 15                      | 11.97 | 2.55 | 0   | 15  |
|       |      | 4&5      | 37727 | 14                      | 10.47 | 2.40 | 0   | 14  |
|       |      | 6        | 37727 | 16                      | 13.27 | 2.88 | 0   | 16  |
|       |      | 7        | 37727 | 14                      | 7.74  | 3.49 | 0   | 14  |
|       | 2    | 1        | 25100 | 13                      | 11.11 | 2.10 | 0   | 13  |
|       |      | 2&3      | 25100 | 15                      | 12.26 | 2.30 | 0   | 15  |
|       |      | 4&5      | 25100 | 14                      | 10.12 | 2.73 | 0   | 14  |
|       |      | 6        | 25100 | 16                      | 13.09 | 2.82 | 0   | 16  |
|       |      | 7        | 25100 | 14                      | 6.74  | 3.16 | 0   | 14  |
| 4     | A    | 1        | 11201 | 14                      | 8.69  | 3.12 | 0   | 14  |
|       |      | 2&3      | 11201 | 14                      | 8.41  | 3.36 | 0   | 14  |
|       |      | 4&5      | 11201 | 15                      | 7.55  | 3.78 | 0   | 15  |
|       |      | 6        | 11201 | 14                      | 9.57  | 2.99 | 0   | 14  |
|       |      | 7        | 11201 | 14                      | 5.97  | 3.57 | 0   | 14  |
|       | B    | 1        | 10962 | 14                      | 9.22  | 3.16 | 0   | 14  |
|       |      | 2&3      | 10962 | 14                      | 7.96  | 3.21 | 0   | 14  |
|       |      | 4&5      | 10962 | 15                      | 7.69  | 3.69 | 0   | 15  |
|       |      | 6        | 10962 | 14                      | 9.91  | 2.97 | 0   | 14  |
|       |      | 7        | 10962 | 12                      | 4.80  | 3.03 | 0   | 12  |
|       | C    | 1        | 10881 | 14                      | 9.69  | 2.92 | 0   | 14  |
|       |      | 2&3      | 10881 | 14                      | 8.23  | 3.11 | 0   | 14  |
|       |      | 4&5      | 10881 | 15                      | 7.68  | 3.81 | 0   | 15  |
|       |      | 6        | 10881 | 14                      | 9.73  | 2.91 | 0   | 14  |
|       |      | 7        | 10881 | 14                      | 5.44  | 3.41 | 0   | 14  |
|       | D    | 1        | 10778 | 14                      | 8.71  | 2.98 | 0   | 14  |
|       |      | 2&3      | 10778 | 14                      | 8.64  | 3.14 | 0   | 14  |
|       |      | 4&5      | 10778 | 15                      | 8.10  | 4.01 | 0   | 15  |
|       |      | 6        | 10778 | 14                      | 10.08 | 2.83 | 0   | 14  |
|       |      | 7        | 10778 | 14                      | 5.06  | 2.92 | 0   | 14  |
|       | E    | 1        | 10649 | 14                      | 9.87  | 2.95 | 0   | 14  |
|       |      | 2&3      | 10649 | 14                      | 7.45  | 3.00 | 0   | 14  |
|       |      | 4&5      | 10649 | 15                      | 8.64  | 3.91 | 0   | 15  |
|       |      | 6        | 10649 | 14                      | 9.78  | 3.02 | 0   | 14  |
| 7     |      | 10649    | 12    | 4.87                    | 2.99  | 0    | 12  |     |
| F     | 1    | 10542    | 14    | 9.42                    | 2.85  | 0    | 14  |     |
|       | 2&3  | 10542    | 14    | 8.42                    | 3.07  | 0    | 14  |     |
|       | 4&5  | 10542    | 15    | 8.45                    | 3.85  | 0    | 15  |     |
|       | 6    | 10542    | 14    | 9.62                    | 2.91  | 0    | 14  |     |
|       | 7    | 10542    | 14    | 5.91                    | 3.21  | 0    | 14  |     |

Table 33 (cont.)  
Distribution of Raw Scores on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean | SD   | Min | Max |
|-------|------|----------|-------|-------------------------|------|------|-----|-----|
| 5     | 1    | 1        | 39687 | 15                      | 9.65 | 3.60 | 0   | 15  |
|       |      | 2&3      | 39687 | 13                      | 6.16 | 2.70 | 0   | 13  |
|       |      | 4&5      | 39687 | 13                      | 8.10 | 3.11 | 0   | 13  |
|       |      | 6        | 39687 | 15                      | 9.02 | 3.59 | 0   | 15  |
|       |      | 7        | 39687 | 17                      | 7.12 | 4.65 | 0   | 17  |
|       | 2    | 1        | 26381 | 15                      | 9.15 | 3.28 | 0   | 15  |
|       |      | 2&3      | 26381 | 13                      | 7.08 | 2.68 | 0   | 13  |
|       |      | 4&5      | 26381 | 13                      | 8.01 | 2.96 | 0   | 13  |
|       |      | 6        | 26381 | 15                      | 8.05 | 3.69 | 0   | 15  |
|       |      | 7        | 26381 | 17                      | 8.06 | 4.49 | 0   | 17  |
| 6     | A    | 1        | 11592 | 14                      | 6.91 | 3.30 | 0   | 14  |
|       |      | 2&3      | 11592 | 14                      | 6.61 | 3.04 | 0   | 14  |
|       |      | 4&5      | 11592 | 12                      | 6.19 | 2.78 | 0   | 12  |
|       |      | 6        | 11592 | 14                      | 7.05 | 3.49 | 0   | 14  |
|       |      | 7        | 11592 | 15                      | 5.95 | 3.86 | 0   | 15  |
|       | B    | 1        | 11464 | 14                      | 7.42 | 3.40 | 0   | 14  |
|       |      | 2&3      | 11464 | 14                      | 6.67 | 3.05 | 0   | 14  |
|       |      | 4&5      | 11464 | 12                      | 6.62 | 2.71 | 0   | 12  |
|       |      | 6        | 11464 | 14                      | 7.19 | 3.48 | 0   | 14  |
|       |      | 7        | 11464 | 15                      | 5.30 | 3.59 | 0   | 15  |
|       | C    | 1        | 11393 | 14                      | 6.91 | 3.44 | 0   | 14  |
|       |      | 2&3      | 11393 | 14                      | 6.77 | 3.23 | 0   | 14  |
|       |      | 4&5      | 11393 | 13                      | 7.14 | 3.00 | 0   | 13  |
|       |      | 6        | 11393 | 14                      | 6.39 | 3.28 | 0   | 14  |
|       |      | 7        | 11393 | 15                      | 5.80 | 3.76 | 0   | 15  |
|       | D    | 1        | 11351 | 14                      | 7.90 | 3.23 | 0   | 14  |
|       |      | 2&3      | 11351 | 14                      | 7.05 | 3.10 | 0   | 14  |
|       |      | 4&5      | 11351 | 13                      | 6.47 | 2.80 | 0   | 13  |
|       |      | 6        | 11351 | 14                      | 7.34 | 3.27 | 0   | 14  |
|       |      | 7        | 11351 | 9                       | 3.85 | 2.16 | 0   | 9   |
|       | E    | 1        | 11244 | 14                      | 8.33 | 3.37 | 0   | 14  |
|       |      | 2&3      | 11244 | 13                      | 6.00 | 2.91 | 0   | 13  |
|       |      | 4&5      | 11244 | 13                      | 7.90 | 2.86 | 0   | 13  |
|       |      | 6        | 11244 | 14                      | 7.01 | 3.45 | 0   | 14  |
| 7     |      | 11244    | 13    | 4.24                    | 3.11 | 0    | 13  |     |
| F     | 1    | 11185    | 14    | 7.35                    | 3.40 | 0    | 14  |     |
|       | 2&3  | 11185    | 14    | 7.15                    | 3.16 | 0    | 14  |     |
|       | 4&5  | 11185    | 13    | 7.42                    | 3.00 | 0    | 13  |     |
|       | 6    | 11185    | 14    | 6.71                    | 3.31 | 0    | 14  |     |
|       | 7    | 11185    | 12    | 5.24                    | 3.24 | 0    | 12  |     |

Table 33 (cont.)  
Distribution of Raw Scores on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean | SD   | Min | Max |
|-------|------|----------|-------|-------------------------|------|------|-----|-----|
| 7     | A    | 1        | 11751 | 14                      | 5.94 | 3.66 | 0   | 14  |
|       |      | 2&3      | 11751 | 13                      | 4.56 | 3.06 | 0   | 12  |
|       |      | 4&5      | 11751 | 14                      | 6.76 | 3.72 | 0   | 14  |
|       |      | 6        | 11751 | 14                      | 7.15 | 3.48 | 0   | 14  |
|       |      | 7        | 11751 | 17                      | 5.89 | 3.79 | 0   | 17  |
|       | B    | 1        | 11667 | 14                      | 6.49 | 3.64 | 0   | 14  |
|       |      | 2&3      | 11667 | 13                      | 4.80 | 3.17 | 0   | 13  |
|       |      | 4&5      | 11667 | 14                      | 7.70 | 3.66 | 0   | 14  |
|       |      | 6        | 11667 | 14                      | 6.99 | 3.49 | 0   | 14  |
|       |      | 7        | 11667 | 14                      | 5.92 | 3.42 | 0   | 14  |
|       | C    | 1        | 11603 | 14                      | 6.61 | 3.76 | 0   | 14  |
|       |      | 2&3      | 11603 | 13                      | 5.67 | 3.58 | 0   | 13  |
|       |      | 4&5      | 11603 | 14                      | 7.26 | 3.85 | 0   | 14  |
|       |      | 6        | 11603 | 14                      | 7.87 | 3.61 | 0   | 14  |
|       |      | 7        | 11603 | 17                      | 7.17 | 4.44 | 0   | 17  |
|       | D    | 1        | 11522 | 14                      | 6.94 | 3.54 | 0   | 14  |
|       |      | 2&3      | 11522 | 13                      | 4.58 | 3.14 | 0   | 13  |
|       |      | 4&5      | 11522 | 14                      | 6.49 | 3.48 | 0   | 14  |
|       |      | 6        | 11522 | 14                      | 7.23 | 3.65 | 0   | 14  |
|       |      | 7        | 11522 | 10                      | 3.68 | 2.24 | 0   | 10  |
| E     | 1    | 11452    | 14    | 7.01                    | 3.55 | 0    | 14  |     |
|       | 2&3  | 11452    | 13    | 4.76                    | 3.25 | 0    | 13  |     |
|       | 4&5  | 11452    | 14    | 7.54                    | 3.76 | 0    | 14  |     |
|       | 6    | 11452    | 14    | 7.51                    | 3.64 | 0    | 14  |     |
|       | 7    | 11452    | 11    | 4.47                    | 2.41 | 0    | 11  |     |
| F     | 1    | 11332    | 14    | 6.91                    | 3.63 | 0    | 14  |     |
|       | 2&3  | 11332    | 13    | 4.61                    | 3.00 | 0    | 13  |     |
|       | 4&5  | 11332    | 14    | 6.61                    | 3.80 | 0    | 14  |     |
|       | 6    | 11332    | 14    | 7.61                    | 3.62 | 0    | 14  |     |
|       | 7    | 11332    | 9     | 3.12                    | 2.09 | 0    | 9   |     |
| 8     | 1    | 1        | 41034 | 14                      | 6.64 | 3.60 | 0   | 14  |
|       |      | 2&3      | 41034 | 13                      | 5.99 | 3.22 | 0   | 13  |
|       |      | 4&5      | 41034 | 14                      | 6.17 | 3.15 | 0   | 14  |
|       |      | 6        | 41034 | 11                      | 5.23 | 2.51 | 0   | 11  |
|       |      | 7        | 41034 | 18                      | 7.06 | 5.11 | 0   | 18  |
|       | 2    | 1        | 27365 | 14                      | 6.43 | 3.88 | 0   | 14  |
|       |      | 2&3      | 27365 | 13                      | 5.80 | 3.18 | 0   | 13  |
|       |      | 4&5      | 27365 | 14                      | 6.06 | 3.09 | 0   | 14  |
|       |      | 6        | 27365 | 12                      | 5.78 | 3.04 | 0   | 12  |
|       |      | 7        | 27365 | 18                      | 7.33 | 4.71 | 0   | 18  |

Table 33 (cont.)  
Distribution of Raw Scores on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean  | SD   | Min | Max |
|-------|------|----------|-------|-------------------------|-------|------|-----|-----|
| 10    | 1    | 1        | 41819 | 16                      | 10.62 | 3.79 | 0   | 16  |
|       |      | 2        | 41819 | 22                      | 12.94 | 5.14 | 0   | 22  |
|       |      | 3        | 41819 | 23                      | 13.12 | 5.21 | 0   | 23  |
|       | 2    | 1        | 20913 | 15                      | 10.11 | 3.71 | 0   | 15  |
|       |      | 2        | 20913 | 22                      | 12.40 | 4.96 | 0   | 22  |
|       |      | 3        | 20913 | 24                      | 15.14 | 5.38 | 0   | 24  |

Table 34  
Distribution of Scale Scores on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean   | SD     | Min | Max |
|-------|------|----------|-------|-------------------------|--------|--------|-----|-----|
| 3     | 1    | 1        | 37727 | 630                     | 447.26 | 114.41 | 200 | 630 |
|       |      | 2&3      | 37727 | 630                     | 426.52 | 94.37  | 200 | 630 |
|       |      | 4&5      | 37727 | 630                     | 413.30 | 70.12  | 200 | 630 |
|       |      | 6        | 37727 | 630                     | 442.00 | 108.52 | 200 | 630 |
|       |      | 7        | 37727 | 630                     | 403.63 | 67.27  | 200 | 630 |
|       | 2    | 1        | 25100 | 630                     | 453.78 | 117.54 | 200 | 630 |
|       |      | 2&3      | 25100 | 630                     | 427.37 | 89.49  | 200 | 630 |
|       |      | 4&5      | 25100 | 630                     | 414.12 | 72.75  | 200 | 630 |
|       |      | 6        | 25100 | 630                     | 435.76 | 101.81 | 200 | 630 |
|       |      | 7        | 25100 | 630                     | 401.87 | 63.07  | 200 | 630 |
| 4     | A    | 1        | 11201 | 650                     | 398.69 | 74.24  | 240 | 650 |
|       |      | 2&3      | 11201 | 650                     | 398.78 | 76.67  | 240 | 650 |
|       |      | 4&5      | 11201 | 650                     | 389.58 | 68.14  | 240 | 650 |
|       |      | 6        | 11201 | 650                     | 406.24 | 85.96  | 240 | 650 |
|       |      | 7        | 11201 | 650                     | 390.77 | 61.52  | 240 | 650 |
|       | B    | 1        | 10962 | 650                     | 405.00 | 79.31  | 240 | 650 |
|       |      | 2&3      | 10962 | 650                     | 395.70 | 68.83  | 240 | 650 |
|       |      | 4&5      | 10962 | 650                     | 392.82 | 66.35  | 240 | 650 |
|       |      | 6        | 10962 | 650                     | 410.73 | 87.85  | 240 | 650 |
|       |      | 7        | 10962 | 650                     | 391.14 | 62.72  | 240 | 650 |
|       | C    | 1        | 10881 | 650                     | 408.08 | 79.20  | 240 | 650 |
|       |      | 2&3      | 10881 | 650                     | 398.78 | 69.46  | 240 | 650 |
|       |      | 4&5      | 10881 | 650                     | 393.34 | 70.15  | 240 | 650 |
|       |      | 6        | 10881 | 650                     | 409.18 | 83.94  | 240 | 650 |
|       |      | 7        | 10881 | 650                     | 392.79 | 60.06  | 240 | 650 |
|       | D    | 1        | 10778 | 650                     | 401.96 | 65.86  | 240 | 650 |
|       |      | 2&3      | 10778 | 650                     | 401.15 | 71.00  | 240 | 650 |
|       |      | 4&5      | 10778 | 650                     | 395.95 | 75.72  | 240 | 650 |
|       |      | 6        | 10778 | 650                     | 413.79 | 88.08  | 240 | 650 |
|       |      | 7        | 10778 | 650                     | 393.54 | 53.98  | 240 | 650 |
|       | E    | 1        | 10649 | 650                     | 411.13 | 86.09  | 240 | 650 |
|       |      | 2&3      | 10649 | 650                     | 393.19 | 60.91  | 240 | 650 |
|       |      | 4&5      | 10649 | 650                     | 400.98 | 74.62  | 240 | 650 |
|       |      | 6        | 10649 | 650                     | 412.62 | 88.19  | 240 | 650 |
|       |      | 7        | 10649 | 650                     | 390.82 | 60.68  | 240 | 650 |
|       | F    | 1        | 10542 | 650                     | 404.96 | 75.82  | 240 | 650 |
|       |      | 2&3      | 10542 | 650                     | 397.12 | 71.15  | 240 | 650 |
|       |      | 4&5      | 10542 | 650                     | 397.20 | 73.52  | 240 | 650 |
|       |      | 6        | 10542 | 650                     | 406.67 | 80.05  | 240 | 650 |
|       |      | 7        | 10542 | 650                     | 391.37 | 56.50  | 240 | 650 |

Table 34 (cont.)  
Distribution of Scale Scores on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean   | SD    | Min | Max |
|-------|------|----------|-------|-------------------------|--------|-------|-----|-----|
| 5     | 1    | 1        | 39687 | 620                     | 410.95 | 78.61 | 200 | 620 |
|       |      | 2&3      | 39687 | 620                     | 395.68 | 76.13 | 200 | 620 |
|       |      | 4&5      | 39687 | 620                     | 403.82 | 82.19 | 200 | 620 |
|       |      | 6        | 39687 | 620                     | 406.95 | 78.00 | 200 | 620 |
|       |      | 7        | 39687 | 620                     | 395.51 | 72.54 | 200 | 620 |
|       | 2    | 1        | 26381 | 620                     | 405.47 | 64.48 | 200 | 620 |
|       |      | 2&3      | 26381 | 620                     | 401.04 | 67.50 | 200 | 620 |
|       |      | 4&5      | 26381 | 620                     | 404.25 | 70.91 | 200 | 620 |
|       |      | 6        | 26381 | 620                     | 400.90 | 72.80 | 200 | 620 |
|       |      | 7        | 26381 | 620                     | 399.08 | 63.26 | 200 | 620 |
| 6     | A    | 1        | 11592 | 650                     | 387.13 | 69.53 | 240 | 650 |
|       |      | 2&3      | 11592 | 650                     | 386.65 | 68.16 | 240 | 650 |
|       |      | 4&5      | 11592 | 650                     | 386.79 | 73.06 | 240 | 650 |
|       |      | 6        | 11592 | 650                     | 384.77 | 78.46 | 240 | 650 |
|       |      | 7        | 11592 | 650                     | 384.39 | 63.80 | 240 | 650 |
|       | B    | 1        | 11464 | 650                     | 393.85 | 66.92 | 240 | 650 |
|       |      | 2&3      | 11464 | 650                     | 384.12 | 72.06 | 240 | 650 |
|       |      | 4&5      | 11464 | 650                     | 388.90 | 74.11 | 240 | 650 |
|       |      | 6        | 11464 | 650                     | 387.37 | 78.78 | 240 | 650 |
|       |      | 7        | 11464 | 650                     | 383.74 | 61.70 | 240 | 650 |
|       | C    | 1        | 11393 | 650                     | 390.67 | 70.97 | 240 | 650 |
|       |      | 2&3      | 11393 | 650                     | 389.32 | 72.67 | 240 | 650 |
|       |      | 4&5      | 11393 | 650                     | 393.20 | 70.38 | 240 | 650 |
|       |      | 6        | 11393 | 650                     | 384.00 | 75.91 | 240 | 650 |
|       |      | 7        | 11393 | 650                     | 386.15 | 60.16 | 240 | 650 |
|       | D    | 1        | 11351 | 650                     | 396.58 | 68.30 | 240 | 650 |
|       |      | 2&3      | 11351 | 650                     | 386.41 | 77.18 | 240 | 650 |
|       |      | 4&5      | 11351 | 650                     | 391.67 | 67.74 | 240 | 650 |
|       |      | 6        | 11351 | 650                     | 388.76 | 76.57 | 240 | 650 |
|       |      | 7        | 11351 | 650                     | 388.94 | 67.06 | 240 | 650 |
|       | E    | 1        | 11244 | 650                     | 399.38 | 74.80 | 240 | 650 |
|       |      | 2&3      | 11244 | 650                     | 389.50 | 71.05 | 240 | 650 |
|       |      | 4&5      | 11244 | 650                     | 396.39 | 71.10 | 240 | 650 |
|       |      | 6        | 11244 | 650                     | 388.91 | 76.14 | 240 | 650 |
| 7     |      | 11244    | 650   | 384.91                  | 65.16  | 240   | 650 |     |
| F     | 1    | 11185    | 650   | 393.57                  | 73.80  | 240   | 650 |     |
|       | 2&3  | 11185    | 650   | 393.41                  | 67.58  | 240   | 650 |     |
|       | 4&5  | 11185    | 650   | 394.93                  | 71.94  | 240   | 650 |     |
|       | 6    | 11185    | 650   | 385.64                  | 75.22  | 240   | 650 |     |
|       | 7    | 11185    | 650   | 389.63                  | 67.25  | 240   | 650 |     |



Table 34 (cont.)  
Distribution of Scale Scores on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean   | SD     | Min | Max |
|-------|------|----------|-------|-------------------------|--------|--------|-----|-----|
| 7     | A    | 1        | 11751 | 650                     | 380.28 | 83.77  | 240 | 650 |
|       |      | 2&3      | 11751 | 650                     | 377.16 | 82.80  | 240 | 650 |
|       |      | 4&5      | 11751 | 650                     | 390.20 | 70.39  | 240 | 650 |
|       |      | 6        | 11751 | 650                     | 393.08 | 74.25  | 240 | 650 |
|       |      | 7        | 11751 | 650                     | 383.29 | 61.79  | 240 | 650 |
|       | B    | 1        | 11667 | 650                     | 388.22 | 75.72  | 240 | 650 |
|       |      | 2&3      | 11667 | 650                     | 387.11 | 69.93  | 240 | 650 |
|       |      | 4&5      | 11667 | 650                     | 395.06 | 72.54  | 240 | 650 |
|       |      | 6        | 11667 | 650                     | 392.60 | 74.42  | 240 | 650 |
|       |      | 7        | 11667 | 650                     | 388.83 | 62.59  | 240 | 650 |
|       | C    | 1        | 11603 | 650                     | 385.88 | 84.52  | 240 | 650 |
|       |      | 2&3      | 11603 | 650                     | 385.55 | 80.81  | 240 | 650 |
|       |      | 4&5      | 11603 | 650                     | 394.73 | 76.13  | 240 | 650 |
|       |      | 6        | 11603 | 650                     | 397.97 | 81.22  | 240 | 650 |
|       |      | 7        | 11603 | 650                     | 388.22 | 59.72  | 240 | 650 |
|       | D    | 1        | 11522 | 650                     | 385.04 | 83.65  | 240 | 650 |
|       |      | 2&3      | 11522 | 650                     | 380.11 | 77.88  | 240 | 650 |
|       |      | 4&5      | 11522 | 650                     | 389.89 | 69.62  | 240 | 650 |
|       |      | 6        | 11522 | 650                     | 396.10 | 79.07  | 240 | 650 |
|       |      | 7        | 11522 | 650                     | 385.65 | 66.36  | 240 | 650 |
|       | E    | 1        | 11452 | 650                     | 391.79 | 76.62  | 240 | 650 |
|       |      | 2&3      | 11452 | 650                     | 377.56 | 82.01  | 240 | 650 |
|       |      | 4&5      | 11452 | 650                     | 397.63 | 76.02  | 240 | 650 |
|       |      | 6        | 11452 | 650                     | 397.97 | 76.68  | 240 | 650 |
|       |      | 7        | 11452 | 650                     | 388.71 | 61.38  | 240 | 650 |
|       | F    | 1        | 11332 | 650                     | 387.99 | 81.47  | 240 | 650 |
|       |      | 2&3      | 11332 | 650                     | 378.81 | 78.37  | 240 | 650 |
|       |      | 4&5      | 11332 | 650                     | 392.25 | 72.25  | 240 | 650 |
|       |      | 6        | 11332 | 650                     | 395.96 | 76.45  | 240 | 650 |
|       |      | 7        | 11332 | 650                     | 384.48 | 68.69  | 240 | 650 |
| 8     | 1    | 1        | 41034 | 620                     | 394.20 | 75.22  | 200 | 620 |
|       |      | 2&3      | 41034 | 620                     | 397.57 | 70.26  | 200 | 620 |
|       |      | 4&5      | 41034 | 620                     | 394.91 | 65.77  | 200 | 620 |
|       |      | 6        | 41034 | 620                     | 382.23 | 95.01  | 200 | 620 |
|       |      | 7        | 41034 | 620                     | 387.71 | 75.24  | 200 | 620 |
|       | 2    | 1        | 27365 | 620                     | 383.06 | 94.37  | 200 | 620 |
|       |      | 2&3      | 27365 | 620                     | 395.83 | 71.61  | 200 | 620 |
|       |      | 4&5      | 27365 | 620                     | 395.18 | 65.54  | 200 | 620 |
|       |      | 6        | 27365 | 620                     | 380.70 | 100.58 | 200 | 620 |
|       |      | 7        | 27365 | 620                     | 388.19 | 70.08  | 200 | 620 |

Table 34 (cont.)  
Distribution of Scale Score on Content Standards

| Grade | Form | Standard | N     | Maximum Possible Points | Mean   | SD    | Min | Max |
|-------|------|----------|-------|-------------------------|--------|-------|-----|-----|
| 10    | 1    | 1        | 41819 | 600                     | 396.98 | 74.66 | 200 | 600 |
|       |      | 2        | 41819 | 600                     | 387.83 | 65.33 | 200 | 600 |
|       |      | 3        | 41819 | 600                     | 388.40 | 64.30 | 200 | 600 |
|       | 2    | 1        | 20913 | 600                     | 402.02 | 81.91 | 200 | 600 |
|       |      | 2        | 20913 | 600                     | 386.62 | 67.48 | 200 | 600 |
|       |      | 3        | 20913 | 600                     | 391.45 | 62.75 | 200 | 600 |

Table 35.  
Raw Score Correlations (Pearson Product-Moment) between Content Standards

| Grade | Standard | Mean  | SD   | 1    | 2&3  | 4&5  | 6    | 7    |
|-------|----------|-------|------|------|------|------|------|------|
| 3     | 1        | 10.98 | 2.15 | 1.00 | 0.60 | 0.64 | 0.66 | 0.60 |
|       | 2&3      | 12.08 | 2.46 |      | 1.00 | 0.63 | 0.64 | 0.62 |
|       | 4&5      | 10.32 | 2.55 |      |      | 1.00 | 0.68 | 0.63 |
|       | 6        | 13.19 | 2.86 |      |      |      | 1.00 | 0.65 |
|       | 7        | 7.34  | 3.40 |      |      |      |      | 1.00 |
| 4     | 1        | 9.26  | 3.03 | 1.00 | 0.69 | 0.72 | 0.71 | 0.69 |
|       | 2&3      | 8.19  | 3.17 |      | 1.00 | 0.71 | 0.69 | 0.73 |
|       | 4&5      | 8.01  | 3.87 |      |      | 1.00 | 0.70 | 0.74 |
|       | 6        | 9.78  | 2.95 |      |      |      | 1.00 | 0.68 |
|       | 7        | 5.34  | 3.23 |      |      |      |      | 1.00 |
| 5     | 1        | 9.45  | 3.49 | 1.00 | 0.64 | 0.74 | 0.78 | 0.77 |
|       | 2&3      | 6.52  | 2.73 |      | 1.00 | 0.65 | 0.65 | 0.71 |
|       | 4&5      | 8.06  | 3.05 |      |      | 1.00 | 0.74 | 0.76 |
|       | 6        | 8.63  | 3.66 |      |      |      | 1.00 | 0.75 |
|       | 7        | 7.49  | 4.61 |      |      |      |      | 1.00 |
| 6     | 1        | 7.47  | 3.40 | 1.00 | 0.69 | 0.72 | 0.75 | 0.70 |
|       | 2&3      | 6.71  | 3.11 |      | 1.00 | 0.63 | 0.70 | 0.71 |
|       | 4&5      | 6.95  | 2.92 |      |      | 1.00 | 0.68 | 0.65 |
|       | 6        | 6.95  | 3.40 |      |      |      | 1.00 | 0.71 |
|       | 7        | 5.07  | 3.43 |      |      |      |      | 1.00 |
| 7     | 1        | 7.47  | 3.40 | 1.00 | 0.73 | 0.77 | 0.79 | 0.64 |
|       | 2&3      | 6.71  | 3.11 |      | 1.00 | 0.72 | 0.75 | 0.70 |
|       | 4&5      | 6.95  | 2.92 |      |      | 1.00 | 0.77 | 0.73 |
|       | 6        | 6.95  | 3.40 |      |      |      | 1.00 | 0.65 |
|       | 7        | 5.07  | 3.43 |      |      |      |      | 1.00 |
| 8     | 1        | 6.54  | 3.72 | 1.00 | 0.75 | 0.75 | 0.72 | 0.84 |
|       | 2&3      | 5.90  | 3.21 |      | 1.00 | 0.72 | 0.69 | 0.79 |
|       | 4&5      | 6.12  | 3.13 |      |      | 1.00 | 0.68 | 0.79 |
|       | 6        | 5.44  | 2.75 |      |      |      | 1.00 | 0.72 |
|       | 7        | 7.15  | 4.96 |      |      |      |      | 1.00 |
| 10    | 1        | 10.44 | 3.78 | 1.00 | 0.80 | 0.79 |      |      |
|       | 2        | 12.74 | 5.10 |      | 1.00 | 0.81 |      |      |
|       | 3        | 13.77 | 5.37 |      |      | 1.00 |      |      |

Table 36a  
Raw Score Correlations (Spearman Rho) between Content Standards

| Grade | Standard | Mean  | SD   | 1    | 2&3  | 4&5  | 6    | 7    |
|-------|----------|-------|------|------|------|------|------|------|
| 3     | 1        | 10.98 | 2.15 | 1.00 | 0.58 | 0.63 | 0.65 | 0.58 |
|       | 2&3      | 12.08 | 2.46 |      | 1.00 | 0.60 | 0.61 | 0.59 |
|       | 4&5      | 10.32 | 2.55 |      |      | 1.00 | 0.68 | 0.64 |
|       | 6        | 13.19 | 2.86 |      |      |      | 1.00 | 0.65 |
|       | 7        | 7.34  | 3.40 |      |      |      |      | 1.00 |
| 4     | 1        | 9.26  | 3.03 | 1.00 | 0.69 | 0.73 | 0.71 | 0.70 |
|       | 2&3      | 8.19  | 3.17 |      | 1.00 | 0.71 | 0.69 | 0.73 |
|       | 4&5      | 8.01  | 3.87 |      |      | 1.00 | 0.71 | 0.74 |
|       | 6        | 9.78  | 2.95 |      |      |      | 1.00 | 0.69 |
|       | 7        | 5.34  | 3.23 |      |      |      |      | 1.00 |
| 5     | 1        | 9.45  | 3.49 | 1.00 | 0.65 | 0.74 | 0.79 | 0.78 |
|       | 2&3      | 6.52  | 2.73 |      | 1.00 | 0.66 | 0.65 | 0.71 |
|       | 4&5      | 8.06  | 3.05 |      |      | 1.00 | 0.74 | 0.77 |
|       | 6        | 8.63  | 3.66 |      |      |      | 1.00 | 0.75 |
|       | 7        | 7.49  | 4.61 |      |      |      |      | 1.00 |
| 6     | 1        | 7.47  | 3.40 | 1.00 | 0.68 | 0.71 | 0.75 | 0.71 |
|       | 2&3      | 6.71  | 3.11 |      | 1.00 | 0.62 | 0.68 | 0.71 |
|       | 4&5      | 6.95  | 2.92 |      |      | 1.00 | 0.67 | 0.66 |
|       | 6        | 6.95  | 3.40 |      |      |      | 1.00 | 0.71 |
|       | 7        | 5.07  | 3.43 |      |      |      |      | 1.00 |
| 7     | 1        | 7.47  | 3.40 | 1.00 | 0.72 | 0.77 | 0.78 | 0.65 |
|       | 2&3      | 6.71  | 3.11 |      | 1.00 | 0.72 | 0.73 | 0.69 |
|       | 4&5      | 6.95  | 2.92 |      |      | 1.00 | 0.76 | 0.76 |
|       | 6        | 6.95  | 3.40 |      |      |      | 1.00 | 0.65 |
|       | 7        | 5.07  | 3.43 |      |      |      |      | 1.00 |
| 8     | 1        | 6.54  | 3.72 | 1.00 | 0.74 | 0.74 | 0.71 | 0.84 |
|       | 2&3      | 5.90  | 3.21 |      | 1.00 | 0.71 | 0.67 | 0.77 |
|       | 4&5      | 6.12  | 3.13 |      |      | 1.00 | 0.67 | 0.79 |
|       | 6        | 5.44  | 2.75 |      |      |      | 1.00 | 0.71 |
|       | 7        | 7.15  | 4.96 |      |      |      |      | 1.00 |
| 10    | 1        | 10.44 | 3.78 | 1.00 | 0.78 | 0.76 |      |      |
|       | 2        | 12.74 | 5.10 |      | 1.00 | 0.79 |      |      |
|       | 3        | 13.77 | 5.37 |      |      | 1.00 |      |      |

Table 37  
Scale Score Correlations (Pearson Product-Moment) between Content Standards

| Grade | Standard | Mean   | SD     | 1    | 2&3  | 4&5  | 6    | 7    |
|-------|----------|--------|--------|------|------|------|------|------|
| 3     | 1        | 449.77 | 115.73 | 1.00 | 0.48 | 0.53 | 0.51 | 0.51 |
|       | 2&3      | 426.77 | 92.47  |      | 1.00 | 0.51 | 0.48 | 0.52 |
|       | 4&5      | 413.55 | 71.21  |      |      | 1.00 | 0.54 | 0.57 |
|       | 6        | 439.41 | 105.94 |      |      |      | 1.00 | 0.54 |
|       | 7        | 402.84 | 65.69  |      |      |      |      | 1.00 |
| 4     | 1        | 404.92 | 77.08  | 1.00 | 0.59 | 0.58 | 0.57 | 0.61 |
|       | 2&3      | 397.47 | 69.92  |      | 1.00 | 0.60 | 0.56 | 0.65 |
|       | 4&5      | 394.91 | 71.54  |      |      | 1.00 | 0.56 | 0.65 |
|       | 6        | 409.86 | 85.79  |      |      |      | 1.00 | 0.60 |
|       | 7        | 391.74 | 59.36  |      |      |      |      | 1.00 |
| 5     | 1        | 408.68 | 73.41  | 1.00 | 0.58 | 0.64 | 0.66 | 0.68 |
|       | 2&3      | 397.73 | 72.92  |      | 1.00 | 0.59 | 0.58 | 0.62 |
|       | 4&5      | 403.90 | 77.94  |      |      | 1.00 | 0.64 | 0.68 |
|       | 6        | 404.44 | 76.10  |      |      |      | 1.00 | 0.66 |
|       | 7        | 396.84 | 69.10  |      |      |      |      | 1.00 |
| 6     | 1        | 393.50 | 70.86  | 1.00 | 0.61 | 0.65 | 0.63 | 0.68 |
|       | 2&3      | 388.21 | 71.58  |      | 1.00 | 0.60 | 0.58 | 0.65 |
|       | 4&5      | 391.94 | 71.50  |      |      | 1.00 | 0.61 | 0.67 |
|       | 6        | 386.57 | 76.89  |      |      |      | 1.00 | 0.64 |
|       | 7        | 386.28 | 64.26  |      |      |      |      | 1.00 |
| 7     | 1        | 386.51 | 81.11  | 1.00 | 0.63 | 0.66 | 0.65 | 0.66 |
|       | 2&3      | 381.07 | 78.84  |      | 1.00 | 0.63 | 0.62 | 0.66 |
|       | 4&5      | 393.29 | 72.91  |      |      | 1.00 | 0.65 | 0.71 |
|       | 6        | 395.60 | 77.07  |      |      |      | 1.00 | 0.64 |
|       | 7        | 386.53 | 63.51  |      |      |      |      | 1.00 |
| 8     | 1        | 389.39 | 83.82  | 1.00 | 0.64 | 0.66 | 0.56 | 0.71 |
|       | 2&3      | 396.58 | 71.01  |      | 1.00 | 0.65 | 0.55 | 0.66 |
|       | 4&5      | 394.70 | 65.95  |      |      | 1.00 | 0.57 | 0.72 |
|       | 6        | 381.27 | 97.45  |      |      |      | 1.00 | 0.56 |
|       | 7        | 387.53 | 73.52  |      |      |      |      | 1.00 |
| 10    | 1        | 398.39 | 77.36  | 1.00 | 0.70 | 0.72 |      |      |
|       | 2        | 387.15 | 66.29  |      | 1.00 | 0.80 |      |      |
|       | 3        | 389.15 | 64.04  |      |      | 1.00 |      |      |

Table 38a  
Scale Score Correlations (Spearman Rho) between Content Standards

| Grade | Standard | Mean   | SD     | 1    | 2&3  | 4&5  | 6    | 7    |
|-------|----------|--------|--------|------|------|------|------|------|
| 3     | 1        | 449.77 | 115.73 | 1.00 | 0.58 | 0.65 | 0.66 | 0.60 |
|       | 2&3      | 426.77 | 92.47  |      | 1.00 | 0.63 | 0.63 | 0.59 |
|       | 4&5      | 413.55 | 71.21  |      |      | 1.00 | 0.70 | 0.65 |
|       | 6        | 439.41 | 105.94 |      |      |      | 1.00 | 0.66 |
|       | 7        | 402.84 | 65.69  |      |      |      |      | 1.00 |
| 4     | 1        | 404.92 | 77.08  | 1.00 | 0.73 | 0.74 | 0.74 | 0.74 |
|       | 2&3      | 397.47 | 69.92  |      | 1.00 | 0.74 | 0.71 | 0.75 |
|       | 4&5      | 394.91 | 71.54  |      |      | 1.00 | 0.73 | 0.77 |
|       | 6        | 409.86 | 85.79  |      |      |      | 1.00 | 0.73 |
|       | 7        | 391.74 | 59.36  |      |      |      |      | 1.00 |
| 5     | 1        | 408.68 | 73.41  | 1.00 | 0.71 | 0.76 | 0.80 | 0.82 |
|       | 2&3      | 397.73 | 72.92  |      | 1.00 | 0.71 | 0.73 | 0.73 |
|       | 4&5      | 403.90 | 77.94  |      |      | 1.00 | 0.76 | 0.79 |
|       | 6        | 404.44 | 76.10  |      |      |      | 1.00 | 0.80 |
|       | 7        | 396.84 | 69.10  |      |      |      |      | 1.00 |
| 6     | 1        | 393.50 | 70.86  | 1.00 | 0.73 | 0.75 | 0.78 | 0.79 |
|       | 2&3      | 388.21 | 71.58  |      | 1.00 | 0.67 | 0.71 | 0.74 |
|       | 4&5      | 391.94 | 71.50  |      |      | 1.00 | 0.73 | 0.74 |
|       | 6        | 386.57 | 76.89  |      |      |      | 1.00 | 0.76 |
|       | 7        | 386.28 | 64.26  |      |      |      |      | 1.00 |
| 7     | 1        | 386.51 | 81.11  | 1.00 | 0.76 | 0.80 | 0.80 | 0.77 |
|       | 2&3      | 381.07 | 78.84  |      | 1.00 | 0.76 | 0.76 | 0.74 |
|       | 4&5      | 393.29 | 72.91  |      |      | 1.00 | 0.79 | 0.81 |
|       | 6        | 395.60 | 77.07  |      |      |      | 1.00 | 0.74 |
|       | 7        | 386.53 | 63.51  |      |      |      |      | 1.00 |
| 8     | 1        | 389.39 | 83.82  | 1.00 | 0.77 | 0.77 | 0.74 | 0.87 |
|       | 2&3      | 396.58 | 71.01  |      | 1.00 | 0.74 | 0.69 | 0.80 |
|       | 4&5      | 394.70 | 65.95  |      |      | 1.00 | 0.70 | 0.82 |
|       | 6        | 381.27 | 97.45  |      |      |      | 1.00 | 0.73 |
|       | 7        | 387.53 | 73.52  |      |      |      |      | 1.00 |
| 10    | 1        | 398.39 | 77.36  | 1.00 | 0.80 | 0.80 |      |      |
|       | 2        | 387.15 | 66.29  |      | 1.00 | 0.84 |      |      |
|       | 3        | 389.15 | 64.04  |      |      | 1.00 |      |      |

### **Factor analysis of Scores on Items and Content Standards**

Exploratory factor analysis was used to examine validity and the structure of 2004 MSA. For all grades, principal factor analysis was applied to extract factor(s) for each test form. Squared multiple correlations (SMC) were used as prior communality estimates (Harman, 1976). The factor analysis was applied for two types of score levels, item level and aggregate score (i.e., content standard) level. For the item level analysis, the unit of observation was the raw score on each item. For the aggregate score level analysis, the unit of observation was the sum of the raw item scores for all items within each content standard. Because it is difficult to assume that item level scores on multiple-choice (MC) items, construct response (CR) items, and student produced (gridded) response items are continuous variables, polychoric correlations were generated using a SAS macro function. For the aggregate analysis of content standards, Pearson product moment correlations were used.

As in the other analyses of operational items, a separate analysis was conducted for each operational form (i.e., for Form 1 and Form 2 in grades 3, 5, 8, and 10, and for Forms A through F in grades 4, 6, and 7). Tables H1, H2, H3 and Figure H1 show factor analysis results for Grade 3 Mathematics Form 1. Eigenvalues of the reduced correlation matrix for item level can be found in Table H1. The columns represent the factor number, eigenvalues, difference between two adjacent eigenvalues, proportion of each eigenvalue, and the cumulative proportion, respectively. Only the first 10 eigenvalues are used for ease of interpretation. According to the conventional factor criterion (eigenvalue larger than 1.0), 4 factors can be considered to be significant. However, as can be seen in the proportion column, the first factor explains about 73% of the total eigenvalues and the second explains about 5% only. Also the scree plot in Figure H1 clearly shows a steep slope between the first and second eigenvalues. It is clear that one dominant trait (factor) exists for MSA Grade 3 Mathematics Form 1.

Table H3 shows the same pattern at the objective level. Like eigenvalues for item level, the first factor explained about 67% ( $0.67 \approx 3.37/5$ ) of the total variance. The small negative values for the remaining factors were produced due to the Heywood effect (Harman, 1976). This implies that the first factor slightly overestimated its eigenvalues. The lower plot in Figure H1 shows the scree plot of eigenvalues for the objective level. A steep slope between the first and second eigenvalues was found again in the plot. Factor loadings for item level and objective level can be found in Tables H2 and H3. As expected, most items and objectives have large loading values in the first factor.

The interpretation is the same for the other test forms, and similar results were found for all test forms.

### **Percent At or Above a Cut (PAC)**

As a baseline year for grades 4, 6, and 7, there was a standard setting conducted for all grades. The Bookmark method was applied for this purpose. Item parameters based on the item response theory model were used for the standard setting. The performance levels obtained from the standard setting were applied to produce the percent of students performing at or above the “proficient” level which will be reported to the federal government according to the “No Child Left Behind (NCLB)” act. This proficiency is often called “percent at or above cut” (PAC). A complete description of the standard setting can be found in a separate technical report, entitled “Maryland Standard Setting Technical Report,” submitted to the Maryland Department of Education, August, 2004. For grades 3, 5, 8, 10, the performance cuts for 2003 and 2004 are the same.

Table 37 shows the scale score ranges for each performance level based on 2003 and 2004 standard setting. MSA performance consists of three levels, “Basic”, “Proficient”, and “Advanced.” Note that the Maryland scale was not constructed based on vertical scaling so that there is no relationship between scales of different grades. That is, performance cuts between different grades can not be compared. Table 38 presents impact data based on all tested students by form. The last column “Proficient + Advanced” represents PAC that will be reported for the NCLB act. The PAC ranged from 46.28 to 72.87 across all grades and forms. Grade 8 shows the lowest PAC among all grades. Tables 39 and 40 show the PAC classified by ethnicity and gender group. Tables 41-47 present the PAC by local education agencies (LEA) for each grade. Figures 2-5 present the PAC between 2003 and 2004 for grades 3, 5, 8, & 10.

Table 39  
Scale Score Ranges for Each Performance Level  
Based on 2003 and 2004 Standard Setting

| Grade | Basic   | Proficient | Advanced |
|-------|---------|------------|----------|
| 3     | 200-378 | 379-440    | 441-630  |
| 4     | 240-373 | 374-432    | 433-650  |
| 5     | 200-391 | 392-452    | 453-620  |
| 6     | 240-395 | 396-446    | 447-650  |
| 7     | 240-395 | 396-450    | 451-650  |
| 8     | 200-406 | 407-443    | 444-620  |
| 10    | 200-373 | 374-414    | 415-600  |

The cut scores for grades 3, 5, 8, 10 were set in 2003



Table 40  
Percentages of Students at Each Performance Level

| Grade | Form  | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|-------|------------|----------|-------------------------|
| 3     | 1     | 27.62 | 52.52      | 19.85    | 72.38                   |
|       | 2     | 27.13 | 52.62      | 20.25    | 72.87                   |
|       | Total | 27.43 | 52.56      | 20.01    | 72.57                   |
| 4     | A     | 34.01 | 46.57      | 19.43    | 65.99                   |
|       | B     | 30.53 | 50.01      | 19.46    | 69.47                   |
|       | C     | 29.42 | 50.30      | 20.28    | 70.58                   |
|       | D     | 28.11 | 50.76      | 21.13    | 71.89                   |
|       | E     | 29.07 | 51.01      | 19.92    | 70.93                   |
|       | F     | 30.43 | 49.46      | 20.11    | 69.57                   |
|       | Total | 30.29 | 49.66      | 20.05    | 69.71                   |
| 5     | 1     | 36.34 | 50.20      | 13.47    | 63.66                   |
|       | 2     | 37.09 | 51.29      | 11.61    | 62.91                   |
|       | Total | 36.64 | 50.63      | 12.73    | 63.36                   |
| 6     | A     | 51.34 | 37.92      | 10.74    | 48.66                   |
|       | B     | 49.68 | 39.46      | 10.86    | 50.32                   |
|       | C     | 48.95 | 40.52      | 10.53    | 51.05                   |
|       | D     | 47.41 | 40.42      | 12.17    | 52.59                   |
|       | E     | 48.75 | 39.59      | 11.67    | 51.25                   |
|       | F     | 49.67 | 38.63      | 11.69    | 50.33                   |
|       | Total | 49.31 | 39.42      | 11.27    | 50.69                   |
| 7     | A     | 50.80 | 38.56      | 10.64    | 49.20                   |
|       | B     | 49.75 | 40.21      | 10.05    | 50.25                   |
|       | C     | 49.56 | 40.44      | 10.01    | 50.44                   |
|       | D     | 49.64 | 40.09      | 10.27    | 50.36                   |
|       | E     | 48.76 | 40.81      | 10.43    | 51.24                   |
|       | F     | 49.59 | 40.58      | 9.82     | 50.41                   |
|       | Total | 49.69 | 40.11      | 10.20    | 50.31                   |
| 8     | 1     | 54.47 | 28.55      | 16.97    | 45.53                   |
|       | 2     | 52.58 | 30.20      | 17.22    | 47.42                   |
|       | Total | 53.72 | 29.21      | 17.07    | 46.28                   |
| 10    | 1     | 31.07 | 35.33      | 33.60    | 68.93                   |
|       | 2     | 30.78 | 35.29      | 33.93    | 69.22                   |
|       | Total | 30.97 | 35.32      | 33.71    | 69.03                   |

Table 41  
Percentages of Students at Each Performance Level by Ethnicity

| Grade | Ethnicity        | Basic | Proficient | Advanced | Proficient +Advanced |
|-------|------------------|-------|------------|----------|----------------------|
| 3     | White            | 16.48 | 55.39      | 28.13    | 83.52                |
|       | African American | 42.10 | 49.57      | 8.32     | 57.90                |
|       | Hispanic         | 36.77 | 52.25      | 10.98    | 63.23                |
|       | Others           | 13.27 | 47.93      | 38.79    | 86.73                |
| 4     | White            | 16.67 | 53.85      | 29.48    | 83.33                |
|       | African American | 47.88 | 45.55      | 6.57     | 52.12                |
|       | Hispanic         | 40.95 | 47.69      | 11.36    | 59.05                |
|       | Others           | 13.43 | 43.85      | 42.73    | 86.57                |
| 5     | White            | 23.49 | 57.32      | 19.18    | 76.51                |
|       | African American | 53.83 | 42.98      | 3.19     | 46.17                |
|       | Hispanic         | 48.15 | 46.09      | 5.76     | 51.85                |
|       | Others           | 17.66 | 50.18      | 32.16    | 82.34                |
| 6     | White            | 34.66 | 48.11      | 17.22    | 65.34                |
|       | African American | 69.23 | 28.48      | 2.29     | 30.77                |
|       | Hispanic         | 60.13 | 35.05      | 4.83     | 39.87                |
|       | Others           | 24.07 | 44.90      | 31.03    | 75.93                |
| 7     | White            | 33.02 | 51.14      | 15.84    | 66.98                |
|       | African American | 72.32 | 26.12      | 1.55     | 27.68                |
|       | Hispanic         | 62.96 | 33.48      | 3.56     | 37.04                |
|       | Others           | 25.41 | 45.89      | 28.70    | 74.59                |
| 8     | White            | 39.63 | 35.22      | 25.15    | 60.37                |
|       | African American | 75.07 | 20.96      | 3.97     | 24.93                |
|       | Hispanic         | 68.25 | 24.26      | 7.48     | 31.75                |
|       | Others           | 26.77 | 32.89      | 40.33    | 73.23                |
| 10    | White            | 19.29 | 34.37      | 46.34    | 80.71                |
|       | African American | 48.04 | 38.02      | 13.94    | 51.96                |
|       | Hispanic         | 48.76 | 32.40      | 18.85    | 51.24                |
|       | Others           | 21.52 | 30.77      | 47.70    | 78.48                |

Table 42  
Percentages of Students at Each Performance Level by Gender

| Grade | Gender | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|--------|-------|------------|----------|-------------------------|
| 3     | Male   | 28.59 | 52.05      | 19.37    | 71.41                   |
|       | Female | 26.20 | 53.11      | 20.69    | 73.80                   |
| 4     | Male   | 31.46 | 48.28      | 20.26    | 68.54                   |
|       | Female | 29.02 | 51.15      | 19.82    | 70.98                   |
| 5     | Male   | 37.63 | 48.88      | 13.49    | 62.37                   |
|       | Female | 35.56 | 52.50      | 11.94    | 64.44                   |
| 6     | Male   | 50.85 | 37.29      | 11.85    | 49.15                   |
|       | Female | 47.63 | 41.70      | 10.66    | 52.37                   |
| 7     | Male   | 51.44 | 37.77      | 10.79    | 48.56                   |
|       | Female | 47.83 | 42.57      | 9.59     | 52.17                   |
| 8     | Male   | 56.21 | 26.49      | 17.30    | 43.79                   |
|       | Female | 51.09 | 32.06      | 16.85    | 48.91                   |
| 10    | Male   | 36.65 | 33.27      | 30.08    | 63.35                   |
|       | Female | 25.12 | 37.44      | 37.44    | 74.88                   |

Table 43  
Percentages of Students at Grade 3 Performance Levels by LEA

| LEA # | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|------------|----------|-------------------------|
| 1     | 37.80 | 50.00      | 12.20    | 62.20                   |
| 2     | 18.58 | 54.29      | 27.13    | 81.42                   |
| 3     | 26.68 | 53.79      | 19.53    | 73.32                   |
| 4     | 14.92 | 54.35      | 30.73    | 85.08                   |
| 5     | 21.67 | 60.56      | 17.78    | 78.33                   |
| 6     | 14.67 | 58.11      | 27.21    | 85.33                   |
| 7     | 26.42 | 58.61      | 14.97    | 73.58                   |
| 8     | 27.40 | 52.91      | 19.69    | 72.60                   |
| 9     | 40.41 | 49.32      | 10.27    | 59.59                   |
| 10    | 25.21 | 57.35      | 17.43    | 74.79                   |
| 11    | 28.81 | 59.04      | 12.15    | 71.19                   |
| 12    | 18.89 | 59.07      | 22.04    | 81.11                   |
| 13    | 13.32 | 53.51      | 33.16    | 86.68                   |
| 14    | 19.38 | 53.75      | 26.88    | 80.63                   |
| 15    | 19.81 | 49.75      | 30.44    | 80.19                   |
| 16    | 42.89 | 48.35      | 8.76     | 57.11                   |
| 17    | 18.50 | 63.93      | 17.57    | 81.50                   |
| 18    | 23.66 | 53.56      | 22.78    | 76.34                   |
| 19    | 39.38 | 48.70      | 11.92    | 60.62                   |
| 20    | 28.71 | 56.78      | 14.51    | 71.29                   |
| 21    | 22.28 | 56.70      | 21.02    | 77.72                   |
| 22    | 24.35 | 55.49      | 20.16    | 75.65                   |
| 23    | 15.84 | 50.12      | 34.04    | 84.16                   |
| 30    | 44.87 | 48.69      | 6.44     | 55.13                   |
| 31    | 35.80 | 55.25      | 8.95     | 64.20                   |
| 55    | 30.19 | 54.72      | 15.09    | 69.81                   |

Table 44  
Percentages of Students at Grade 4 Performance Levels by LEA

| LEA # | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|------------|----------|-------------------------|
| 1     | 33.68 | 49.19      | 17.13    | 66.32                   |
| 2     | 20.84 | 54.64      | 24.52    | 79.16                   |
| 3     | 27.99 | 53.46      | 18.55    | 72.01                   |
| 4     | 18.13 | 54.00      | 27.87    | 81.87                   |
| 5     | 26.45 | 56.68      | 16.88    | 73.55                   |
| 6     | 18.48 | 55.07      | 26.45    | 81.52                   |
| 7     | 24.38 | 59.85      | 15.76    | 75.62                   |
| 8     | 28.78 | 54.88      | 16.33    | 71.22                   |
| 9     | 37.54 | 52.25      | 10.21    | 62.46                   |
| 10    | 24.27 | 56.91      | 18.82    | 75.73                   |
| 11    | 26.24 | 57.73      | 16.02    | 73.76                   |
| 12    | 20.87 | 58.84      | 20.29    | 79.13                   |
| 13    | 15.64 | 49.78      | 34.58    | 84.36                   |
| 14    | 19.44 | 48.33      | 32.22    | 80.56                   |
| 15    | 19.35 | 43.73      | 36.92    | 80.65                   |
| 16    | 50.00 | 43.11      | 6.89     | 50.00                   |
| 17    | 17.45 | 53.64      | 28.91    | 82.55                   |
| 18    | 23.84 | 54.35      | 21.81    | 76.16                   |
| 19    | 38.08 | 50.63      | 11.30    | 61.92                   |
| 20    | 27.36 | 56.08      | 16.55    | 72.64                   |
| 21    | 21.78 | 57.06      | 21.17    | 78.22                   |
| 22    | 25.62 | 52.05      | 22.33    | 74.38                   |
| 23    | 18.67 | 50.62      | 30.71    | 81.33                   |
| 30    | 51.89 | 43.37      | 4.74     | 48.11                   |
| 31    | 53.89 | 42.36      | 3.75     | 46.11                   |
| 55    | 30.61 | 40.82      | 28.57    | 69.39                   |

Table 45  
Percentages of Students at Grade 5 Performance Levels by LEA

| LEA # | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|------------|----------|-------------------------|
| 1     | 40.63 | 52.39      | 6.98     | 59.37                   |
| 2     | 24.01 | 59.03      | 16.96    | 75.99                   |
| 3     | 38.30 | 50.28      | 11.42    | 61.70                   |
| 4     | 26.90 | 57.85      | 15.25    | 73.10                   |
| 5     | 35.20 | 56.27      | 8.53     | 64.80                   |
| 6     | 26.48 | 59.86      | 13.66    | 73.52                   |
| 7     | 31.04 | 60.93      | 8.03     | 68.96                   |
| 8     | 34.25 | 52.33      | 13.42    | 65.75                   |
| 9     | 48.30 | 46.13      | 5.57     | 51.70                   |
| 10    | 30.46 | 54.50      | 15.04    | 69.54                   |
| 11    | 35.25 | 57.79      | 6.95     | 64.75                   |
| 12    | 25.40 | 62.16      | 12.43    | 74.60                   |
| 13    | 17.11 | 53.64      | 29.25    | 82.89                   |
| 14    | 50.00 | 44.68      | 5.32     | 50.00                   |
| 15    | 25.99 | 50.41      | 23.60    | 74.01                   |
| 16    | 56.10 | 40.56      | 3.34     | 43.90                   |
| 17    | 21.79 | 66.48      | 11.72    | 78.21                   |
| 18    | 32.89 | 54.15      | 12.96    | 67.11                   |
| 19    | 45.37 | 49.34      | 5.29     | 54.63                   |
| 20    | 24.70 | 60.24      | 15.06    | 75.30                   |
| 21    | 37.41 | 52.56      | 10.03    | 62.59                   |
| 22    | 42.44 | 48.57      | 8.99     | 57.56                   |
| 23    | 24.69 | 59.67      | 15.64    | 75.31                   |
| 30    | 55.76 | 41.63      | 2.61     | 44.24                   |
| 31    | 38.11 | 56.68      | 5.21     | 61.89                   |
| 55    | 38.64 | 54.55      | 6.82     | 61.36                   |

Table 46  
Percentages of Students at Grade 6 Performance Levels by LEA

| LEA # | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|------------|----------|-------------------------|
| 1     | 62.43 | 32.01      | 5.56     | 37.57                   |
| 2     | 41.92 | 43.70      | 14.38    | 58.08                   |
| 3     | 49.11 | 39.91      | 10.98    | 50.89                   |
| 4     | 39.55 | 47.32      | 13.13    | 60.45                   |
| 5     | 51.21 | 44.69      | 4.11     | 48.79                   |
| 6     | 37.96 | 48.61      | 13.43    | 62.04                   |
| 7     | 43.29 | 45.49      | 11.22    | 56.71                   |
| 8     | 45.44 | 43.97      | 10.59    | 54.56                   |
| 9     | 69.25 | 28.88      | 1.87     | 30.75                   |
| 10    | 38.58 | 47.08      | 14.35    | 61.42                   |
| 11    | 50.41 | 43.25      | 6.34     | 49.59                   |
| 12    | 41.99 | 47.06      | 10.95    | 58.01                   |
| 13    | 27.87 | 48.78      | 23.35    | 72.13                   |
| 14    | 56.85 | 35.03      | 8.12     | 43.15                   |
| 15    | 36.97 | 42.64      | 20.39    | 63.03                   |
| 16    | 63.45 | 33.06      | 3.48     | 36.55                   |
| 17    | 38.64 | 50.17      | 11.19    | 61.36                   |
| 18    | 46.85 | 40.73      | 12.42    | 53.15                   |
| 19    | 50.79 | 43.31      | 5.91     | 49.21                   |
| 20    | 49.72 | 42.94      | 7.34     | 50.28                   |
| 21    | 32.73 | 49.97      | 17.30    | 67.27                   |
| 22    | 57.60 | 36.17      | 6.23     | 42.40                   |
| 23    | 33.27 | 51.32      | 15.41    | 66.73                   |
| 30    | 79.25 | 19.59      | 1.16     | 20.75                   |
| 31    | 50.87 | 41.52      | 7.61     | 49.13                   |
| 55    | 51.22 | 46.34      | 2.44     | 48.78                   |

Table 47  
Percentages of Students at Grade 7 Performance Levels by LEA

| LEA # | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|------------|----------|-------------------------|
| 1     | 61.39 | 35.52      | 3.09     | 38.61                   |
| 2     | 41.48 | 45.54      | 12.98    | 58.52                   |
| 3     | 47.52 | 40.74      | 11.74    | 52.48                   |
| 4     | 41.83 | 48.81      | 9.36     | 58.17                   |
| 5     | 56.29 | 41.94      | 1.77     | 43.71                   |
| 6     | 35.06 | 52.40      | 12.54    | 64.94                   |
| 7     | 37.11 | 52.38      | 10.51    | 62.89                   |
| 8     | 51.23 | 41.17      | 7.60     | 48.77                   |
| 9     | 65.80 | 33.68      | 0.52     | 34.20                   |
| 10    | 35.40 | 51.57      | 13.03    | 64.60                   |
| 11    | 45.52 | 47.46      | 7.02     | 54.48                   |
| 12    | 41.58 | 47.32      | 11.10    | 58.42                   |
| 13    | 28.55 | 51.34      | 20.11    | 71.45                   |
| 14    | 44.06 | 49.50      | 6.44     | 55.94                   |
| 15    | 35.42 | 45.35      | 19.23    | 64.58                   |
| 16    | 68.69 | 29.06      | 2.25     | 31.31                   |
| 17    | 37.58 | 49.68      | 12.74    | 62.42                   |
| 18    | 51.14 | 42.18      | 6.68     | 48.86                   |
| 19    | 58.44 | 37.23      | 4.33     | 41.56                   |
| 20    | 56.88 | 38.18      | 4.94     | 43.12                   |
| 21    | 32.01 | 52.22      | 15.77    | 67.99                   |
| 22    | 56.39 | 36.35      | 7.25     | 43.61                   |
| 23    | 35.54 | 52.17      | 12.29    | 64.46                   |
| 30    | 81.11 | 18.34      | 0.56     | 18.89                   |
| 55    | 41.38 | 55.17      | 3.45     | 58.62                   |



Table 48  
Percentages of Students at Grade 8 Performance Levels by LEA

| LEA # | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|------------|----------|-------------------------|
| 1     | 65.70 | 24.76      | 9.54     | 34.30                   |
| 2     | 43.54 | 35.98      | 20.48    | 56.46                   |
| 3     | 51.80 | 29.47      | 18.74    | 48.20                   |
| 4     | 52.36 | 29.19      | 18.45    | 47.64                   |
| 5     | 69.64 | 24.63      | 5.73     | 30.36                   |
| 6     | 41.37 | 37.67      | 20.96    | 58.63                   |
| 7     | 47.64 | 35.30      | 17.06    | 52.36                   |
| 8     | 56.80 | 28.21      | 15.00    | 43.20                   |
| 9     | 75.86 | 20.04      | 4.09     | 24.14                   |
| 10    | 41.40 | 33.32      | 25.28    | 58.60                   |
| 11    | 51.00 | 29.35      | 19.65    | 49.00                   |
| 12    | 49.06 | 34.32      | 16.62    | 50.94                   |
| 13    | 37.64 | 33.00      | 29.36    | 62.36                   |
| 14    | 61.95 | 26.55      | 11.50    | 38.05                   |
| 15    | 40.47 | 31.98      | 27.55    | 59.53                   |
| 16    | 72.54 | 22.35      | 5.11     | 27.46                   |
| 17    | 47.79 | 39.12      | 13.10    | 52.21                   |
| 18    | 59.62 | 29.53      | 10.85    | 40.38                   |
| 19    | 60.38 | 25.47      | 14.15    | 39.62                   |
| 20    | 55.19 | 29.97      | 14.84    | 44.81                   |
| 21    | 38.81 | 34.27      | 26.92    | 61.19                   |
| 22    | 62.38 | 26.79      | 10.83    | 37.62                   |
| 23    | 42.43 | 32.57      | 25.00    | 57.57                   |
| 30    | 80.13 | 16.77      | 3.10     | 19.87                   |
| 55    | 54.05 | 40.54      | 5.41     | 45.95                   |

Table 49  
Percentages of Students at Grade 10 Performance Levels by LEA

| LEA # | Basic | Proficient | Advanced | Proficient<br>+Advanced |
|-------|-------|------------|----------|-------------------------|
| 1     | 29.77 | 39.19      | 31.04    | 70.23                   |
| 2     | 31.15 | 35.23      | 33.63    | 68.85                   |
| 3     | 30.36 | 37.14      | 32.50    | 69.64                   |
| 4     | 21.98 | 37.54      | 40.48    | 78.02                   |
| 5     | 39.42 | 35.77      | 24.82    | 60.58                   |
| 6     | 17.27 | 37.83      | 44.90    | 82.73                   |
| 7     | 31.68 | 38.39      | 29.93    | 68.32                   |
| 8     | 23.64 | 41.80      | 34.56    | 76.36                   |
| 9     | 41.73 | 34.91      | 23.36    | 58.27                   |
| 10    | 21.32 | 35.95      | 42.74    | 78.68                   |
| 11    | 25.94 | 39.69      | 34.38    | 74.06                   |
| 12    | 18.66 | 40.32      | 41.02    | 81.34                   |
| 13    | 16.56 | 31.23      | 52.22    | 83.44                   |
| 14    | 38.74 | 33.33      | 27.93    | 61.26                   |
| 15    | 25.13 | 29.07      | 45.80    | 74.87                   |
| 16    | 45.78 | 37.20      | 17.02    | 54.22                   |
| 17    | 25.21 | 37.05      | 37.74    | 74.79                   |
| 18    | 24.41 | 39.86      | 35.73    | 75.59                   |
| 19    | 49.16 | 30.73      | 20.11    | 50.84                   |
| 20    | 27.35 | 37.89      | 34.76    | 72.65                   |
| 21    | 25.97 | 38.63      | 35.40    | 74.03                   |
| 22    | 26.43 | 37.40      | 36.17    | 73.57                   |
| 23    | 27.92 | 35.58      | 36.50    | 72.08                   |
| 30    | 55.50 | 33.74      | 10.76    | 44.50                   |
| 55    | 90.91 | 9.09       | .        | 9.09                    |

Figure 2  
Percent at or Above Proficiency Cut Score (PAC) by LEA for Mathematics Grade 3

### Math Grade 3

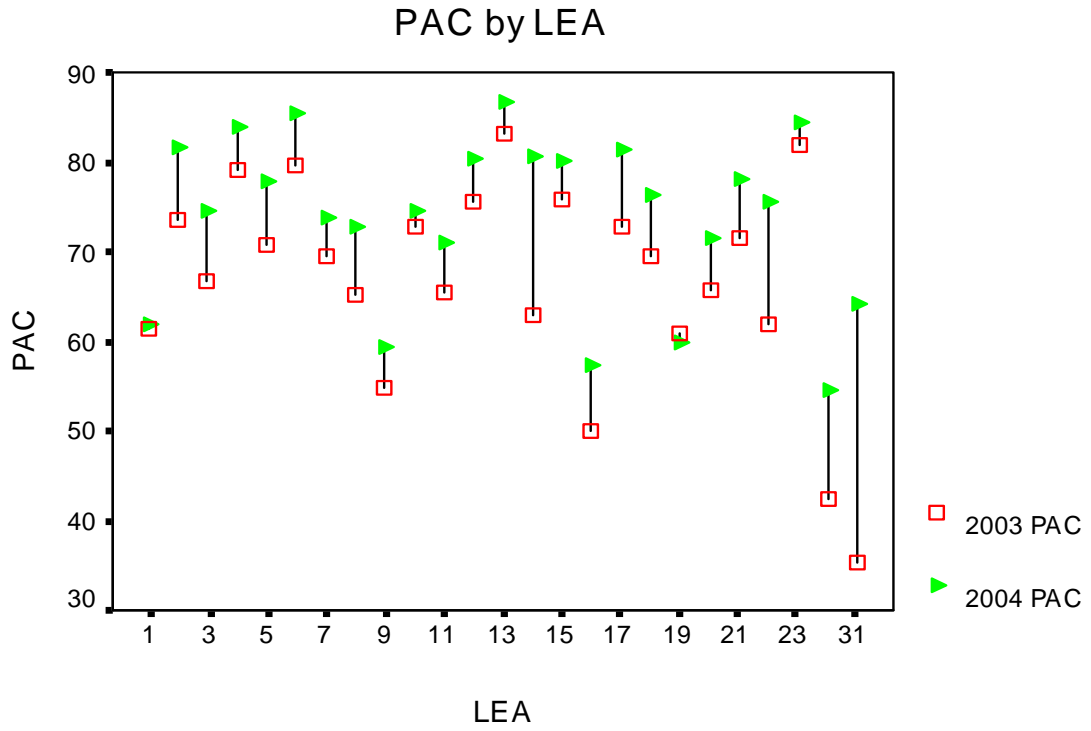


Figure 3  
Percent at or Above Proficiency Cut Score (PAC) by LEA for Mathematics Grade 5

## Math Grade 5

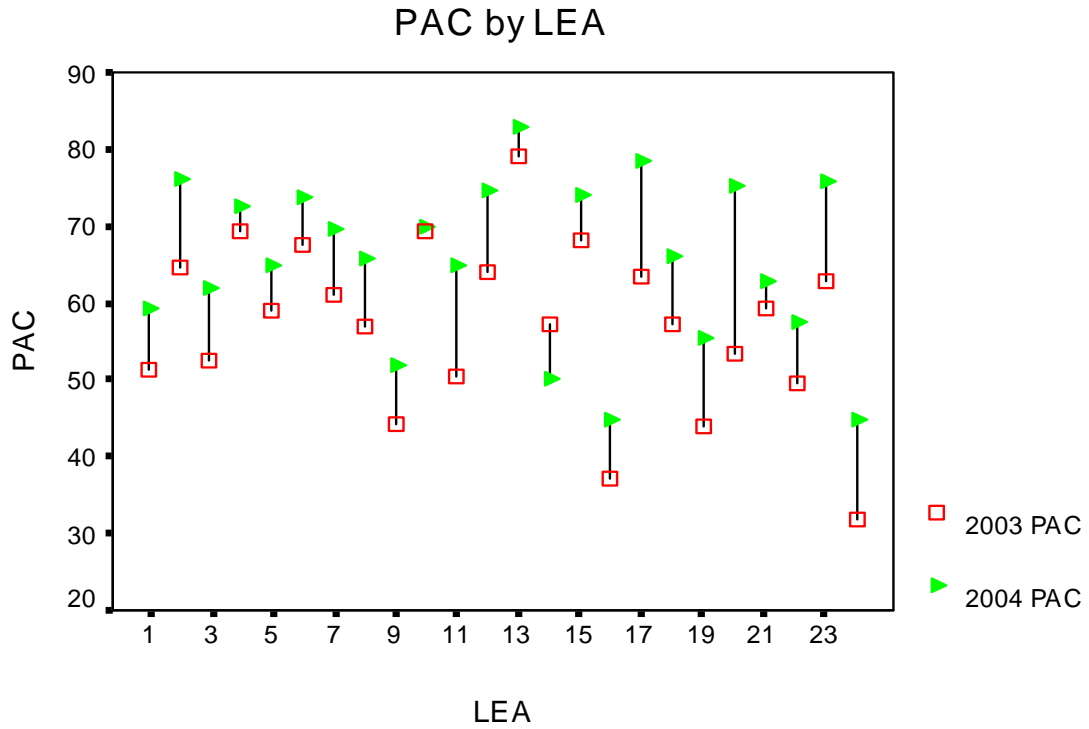


Figure 4  
Percent at or Above Proficiency Cut Score (PAC) by LEA for Mathematics Grade 8

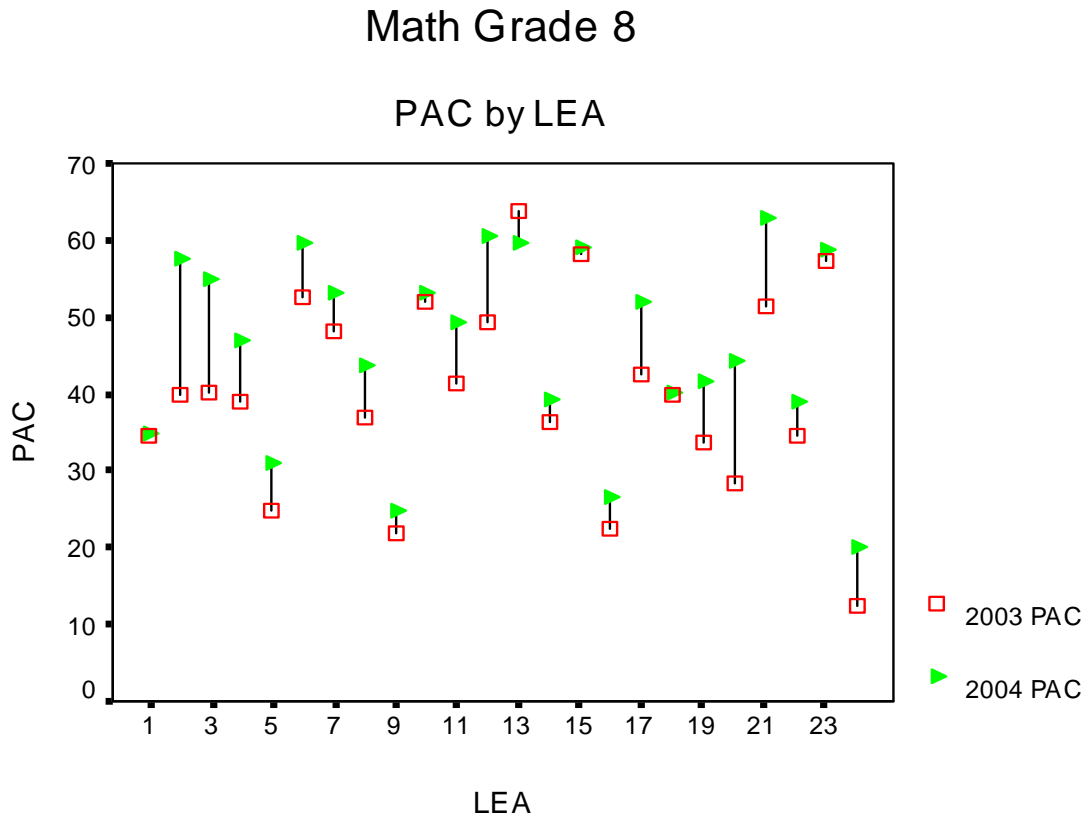
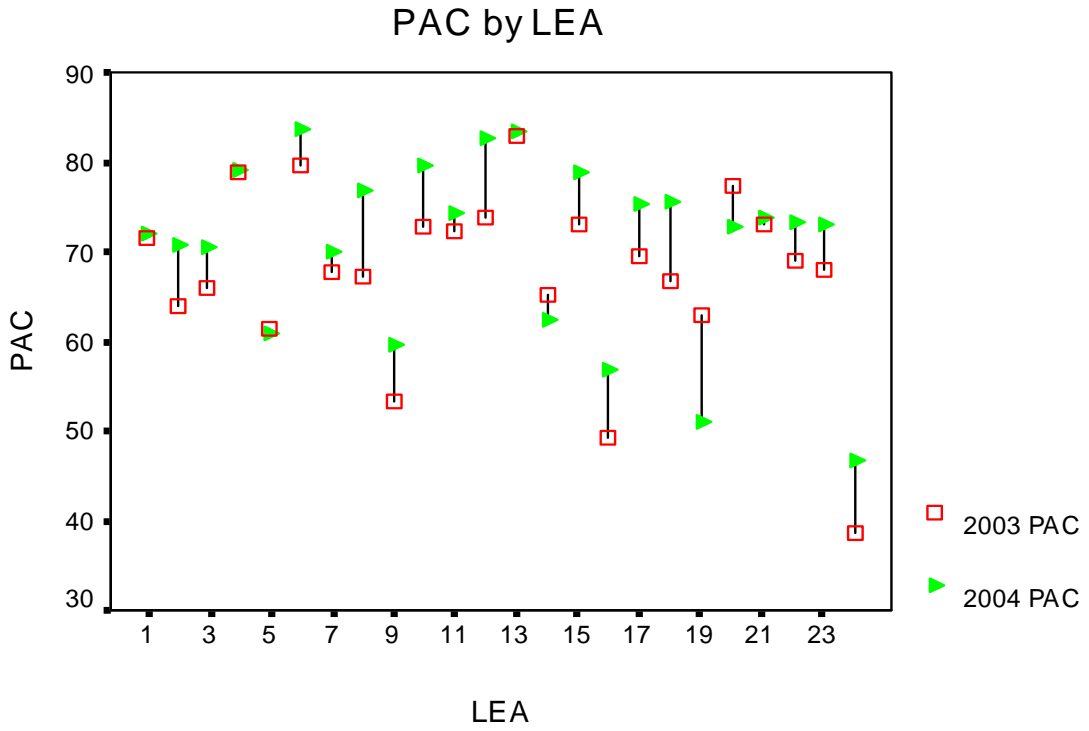


Figure 5  
Percent at or Above Proficiency Cut Score (PAC) by LEA for Reading Grade 10

### Reading Grade 10



## References

- Bock, R. D., & Aitkin, M. (1981). Marginal maximum likelihood estimation of item parameters: An application of an EM algorithm. *Psychometrika*, *46*, 443–459.
- Burket, G. R. (1991). PARDUX [Computer program]. Unpublished.
- Harry, H. Harman, (1976). Modern Factor analysis (3<sup>rd</sup> edition). The University of Chicago Press: Chicago.
- Kolen, M.J., & Brennan, R.L. (1995). *Test equating: Methods and practices*. New York: Springer-Verlag.
- Muraki, E. (1990). Fitting a polytomous item response model to Likert-type data. *Applied Psychological Measurement*, *14*, 59–71.
- Muraki, E. (1992). A generalized partial credit model: Application of an EM algorithm. *Applied Psychological Measurement*, *16*, 159–176.
- Thissen, D. (1982). Marginal maximum-likelihood estimation for the one-parameter logistic model. *Psychometrika*, *47*, 175–186.
- Yen, W. M. (1984). Effects of local item dependence on the fit and equating performance of the three-parameter logistic model. *Applied Psychological Measurement*, *2*, 125–145.
- Yen, W. M. (1991a). *How to evaluate FIT for Maryland*. Unpublished manuscript.
- Yen, W. M. (1991b). *Specifications for CAT/5 Benchmark Scaling: Setting LOSS/HOSS values*. Unpublished manuscript.
- Zwick, R., Donoghue, J.R., & Grima, A. (1993). Assessment of differential item functioning for performance tasks. *Journal of Educational Measurement*, *30*, 233–251.

**Appendix A**  
**Summary Item Statistics**



## Tables List

|  |      |
|--|------|
| Table A1 Summary Item Statistics - Mathematics Grade 3, Form 1 (Form A, C, E Operational Items)<br>N=34,865..... | A-3  |
| Table A2 Summary Item Statistics - Mathematics Grade 3, Form 2 (Form B, D Operational Items)<br>N=23,196.....    | A-5  |
| Table A3 Summary Item Statistics - Mathematics Grade 5, Form 1 (Form A, C, E Operational Items)<br>N=39,009..... | A-7  |
| Table A4 Summary Item Statistics - Mathematics Grade 5, Form 2 (Form B, D Operational Items)<br>N=23,965.....    | A-9  |
| Table A5 Summary Item Statistics - Mathematics Grade 8, Form 1 (Form A, C, E Operational Items)<br>N=31,583..... | A-11 |
| Table A6 Summary Item Statistics - Mathematics Grade 8, Form 2 (Form B, D Operational Items)<br>N=21,110.....    | A-13 |
| Table A7 Summary Item Statistics - Reading Grade 10, Form 1 (Form A, C Operational Items) N=37,802<br>.....      | A-15 |
| Table A8 Summary Item Statistics - Reading Grade 10, Form 2 (Form B Operational Items) N=20,966                  | A-17 |
| Table A9 Summary Item Statistics – Mathematics Grade 3, Field Test Items N=12,492.....                           | A-19 |
| Table A10 Summary Item Statistics – Mathematics Grade 5, Field Test Items N=13,012.....                          | A-22 |
| Table A11 Summary Item Statistics – Mathematics Grade 8, Field Test Items N=13,048.....                          | A-25 |
| Table A12 Summary Item Statistics – Reading Grade 10, Field Test Items N=21,138.....                             | A-28 |
| Table A13 Summary Item Statistics – Mathematics Grade 4, Form A N=10,999.....                                    | A-29 |
| Table A14 Summary Item Statistics – Mathematics Grade 4, Form B N=10,768.....                                    | A-32 |
| Table A15 Summary Item Statistics – Mathematics Grade 4, Form C N=10,666.....                                    | A-35 |
| Table A16 Summary Item Statistics – Mathematics Grade 4, Form D N=10,401.....                                    | A-38 |
| Table A17 Summary Item Statistics – Mathematics Grade 4, Form E N=10,205.....                                    | A-41 |
| Table A18 Summary Item Statistics – Mathematics Grade 4, Form F N=10,347.....                                    | A-44 |
| Table A19 Summary Item Statistics – Mathematics Grade 6, Form A N=11,589.....                                    | A-47 |
| Table A20 Summary Item Statistics – Mathematics Grade 6, Form B N=11,462.....                                    | A-50 |
| Table A21 Summary Item Statistics – Mathematics Grade 6, Form C N=11,391.....                                    | A-53 |
| Table A22 Summary Item Statistics – Mathematics Grade 6, Form D N=11,349.....                                    | A-56 |
| Table A23 Summary Item Statistics – Mathematics Grade 6, Form E N=11,242.....                                    | A-59 |
| Table A24 Summary Item Statistics – Mathematics Grade 6, Form F N=11,182.....                                    | A-62 |
| Table A25 Summary Item Statistics – Mathematics Grade 7, Form A N=11,748.....                                    | A-65 |
| Table A26 Summary Item Statistics – Mathematics Grade 7, Form B N=11,665.....                                    | A-68 |
| Table A27 Summary Item Statistics – Mathematics Grade 7, Form C N=11,601.....                                    | A-71 |
| Table A28 Summary Item Statistics – Mathematics Grade 7, Form D N=11,519.....                                    | A-74 |
| Table A29 Summary Item Statistics – Mathematics Grade 7, Form E N=11,450.....                                    | A-77 |
| Table A30 Summary Item Statistics – Mathematics Grade 7, Form F N=11,327.....                                    | A-80 |

**Table A1**  
**Summary Item Statistics - Mathematics Grade 3, Form 1 (Form A, C, E Operational Items)**  
**N=34,865**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT       | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------|-------------|--------|--------|--------|-------------|--------|
| 1    | C   | SR        | 0.85  | 0.28        | 0.28   | -0.24  | -0.14  | -0.09       | -0.13  |
| 2    | C   | SR        | 0.91  | 0.29        | -0.16  | 0.29   | -0.16  | -0.15       | -0.14  |
| 4    | C   | SR        | 0.88  | 0.34        | -0.17  | -0.26  | 0.34   | -0.18       | -0.11  |
| 10   | C   | SR        | 0.88  | 0.40        | -0.18  | -0.27  | 0.40   | -0.27       | .      |
| 12   | C   | SR        | 0.89  | 0.38        | 0.38   | -0.22  | -0.20  | -0.24       | .      |
| 13   | C   | SR        | 0.86  | 0.45        | -0.24  | -0.31  | -0.26  | 0.45        | .      |
| 14   | C   | SR        | 0.86  | 0.30        | -0.16  | -0.15  | 0.30   | -0.24       | .      |
| 16   | C   | SR        | 0.94  | 0.28        | 0.28   | -0.18  | -0.16  | -0.13       | .      |
| 17   | C   | SR        | 0.89  | 0.33        | -0.14  | -0.10  | -0.31  | 0.33        | .      |
| 18   | C   | SR        | 0.97  | 0.22        | -0.14  | -0.10  | -0.11  | 0.22        | .      |
| 24   | C   | SR        | 0.97  | 0.33        | -0.24  | -0.15  | 0.33   | -0.15       | .      |
| 31A  | U   | CR        | 0.86  | 0.48        | .      | .      | .      | .           | .      |
| 31B  | U   | CR        | 0.45  | 0.47        | .      | .      | .      | .           | .      |
| 32   | C   | SR        | 0.96  | 0.38        | -0.25  | -0.20  | 0.38   | -0.18       | .      |
| 33   | C   | SR        | 0.59  | 0.32        | -0.25  | -0.23  | 0.32   | -0.15       | .      |
| 34   | C   | SR        | 0.74  | 0.40        | -0.24  | 0.40   | -0.27  | -0.24       | .      |
| 35   | C   | SR        | 0.84  | 0.26        | -0.17  | -0.12  | -0.21  | 0.26        | .      |
| 36   | C   | SR        | 0.62  | 0.41        | 0.41   | -0.23  | -0.23  | -0.24       | .      |
| 37A  | U   | CR        | 0.82  | 0.39        | .      | .      | .      | .           | .      |
| 37B  | U   | CR        | 0.59  | 0.51        | .      | .      | .      | .           | .      |
| 38   | C   | SR        | 0.96  | 0.31        | -0.21  | -0.13  | 0.31   | -0.14       | .      |
| 39   | C   | SR        | 0.92  | 0.42        | -0.27  | 0.42   | -0.24  | -0.19       | .      |
| 40   | C   | SR        | 0.75  | 0.55        | -0.20  | -0.43  | 0.55   | -0.29       | .      |
| 41   | C   | SR        | 0.83  | 0.39        | -0.17  | -0.36  | -0.15  | 0.39        | .      |
| 42   | C   | SR        | 0.90  | 0.49        | -0.28  | -0.28  | 0.49   | -0.27       | .      |
| 43   | C   | SR        | 0.74  | 0.43        | -0.29  | -0.19  | 0.43   | -0.27       | .      |
| 44A  | U   | CR        | 0.62  | 0.48        | .      | .      | .      | .           | .      |
| 44B  | U   | CR        | 0.57  | 0.57        | .      | .      | .      | .           | .      |
| 45   | C   | SR        | 0.91  | 0.36        | 0.36   | -0.21  | -0.14  | -0.22       | .      |
| 46   | C   | SR        | 0.89  | 0.49        | -0.33  | -0.27  | -0.22  | 0.49        | .      |
| 47   | C   | SR        | 0.83  | 0.46        | -0.26  | -0.35  | -0.14  | 0.46        | .      |
| 48   | C   | SR        | 0.76  | 0.51        | -0.30  | -0.33  | 0.51   | -0.20       | .      |
| 49   | C   | SR        | 0.43  | <b>0.14</b> | -0.01  | -0.17  | -0.10  | <b>0.14</b> | .      |
| 50   | C   | SR        | 0.93  | 0.34        | 0.34   | -0.17  | -0.17  | -0.24       | .      |
| 51   | C   | SR        | 0.73  | 0.40        | -0.32  | 0.40   | -0.23  | -0.20       | .      |
| 52   | C   | SR        | 0.90  | 0.37        | -0.27  | -0.22  | -0.16  | 0.37        | .      |
| 53   | C   | SR        | 0.86  | 0.38        | -0.28  | -0.17  | -0.21  | 0.38        | .      |

**Table A1 (Cont.)**  
**Summary Item Statistics - Mathematics Grade 3, Form 1 (Form A, C, E Operational Items)**  
**N=34,865**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|--------|--------|--------|
| 54   | U   | SR        | 0.85        | 0.34  | -0.21  | 0.34   | -0.24  | -0.16  | .      |
| 55   | C   | SR        | 0.74        | 0.31  | 0.31   | -0.17  | -0.15  | -0.25  | .      |
| 56A  | U   | CR        | 0.83        | 0.48  | .      | .      | .      | .      | .      |
| 56B  | U   | CR        | 0.63        | 0.54  | .      | .      | .      | .      | .      |
| 57   | C   | SR        | 0.92        | 0.36  | -0.18  | -0.27  | 0.36   | -0.16  | .      |
| 58   | U   | SR        | 0.60        | 0.42  | 0.42   | -0.24  | -0.21  | -0.27  | .      |
| 59   | C   | SR        | 0.92        | 0.40  | -0.18  | 0.40   | -0.23  | -0.27  | .      |
| 60   | U   | SR        | 0.92        | 0.47  | 0.47   | -0.26  | -0.29  | -0.23  | .      |
| 61A  | U   | CR        | 0.81        | 0.45  | .      | .      | .      | .      | .      |
| 61B  | U   | CR        | 0.65        | 0.50  | .      | .      | .      | .      | .      |
| 62   | C   | SR        | 0.58        | 0.44  | -0.33  | 0.44   | -0.18  | -0.22  | .      |
| 63   | U   | SR        | 0.80        | 0.39  | -0.24  | 0.39   | -0.24  | -0.27  | .      |
| 64   | C   | SR        | 0.84        | 0.45  | 0.45   | -0.25  | -0.28  | -0.27  | .      |
| 65   | U   | SR        | 0.49        | 0.46  | -0.15  | -0.14  | 0.46   | -0.42  | .      |
| 66   | C   | SR        | 0.66        | 0.46  | -0.29  | 0.46   | -0.27  | -0.20  | .      |
| 67   | U   | SR        | 0.79        | 0.46  | -0.31  | -0.28  | -0.23  | 0.46   | .      |
| 68   | U   | SR        | 0.97        | 0.26  | -0.14  | -0.15  | 0.26   | -0.13  | .      |
| 69A  | U   | CR        | 0.88        | 0.44  | .      | .      | .      | .      | .      |
| 69B  | U   | CR        | 0.39        | 0.52  | .      | .      | .      | .      | .      |
| 70   | U   | SR        | 0.43        | 0.39  | -0.36  | -0.10  | -0.13  | 0.39   | .      |
| 71   | C   | SR        | 0.79        | 0.42  | -0.13  | -0.32  | 0.42   | -0.24  | .      |
| 72   | U   | SR        | 0.81        | 0.41  | -0.24  | -0.18  | 0.41   | -0.27  | .      |
| 73   | U   | SR        | 0.94        | 0.32  | -0.21  | 0.32   | -0.16  | -0.16  | .      |
| 74A  | U   | CR        | 0.72        | 0.31  | .      | .      | .      | .      | .      |
| 74B  | U   | CR        | 0.57        | 0.40  | .      | .      | .      | .      | .      |
| 75   | C   | SR        | <b>0.28</b> | 0.24  | -0.13  | 0.24   | -0.17  | -0.12  | .      |
| 76   | C   | SR        | 0.76        | 0.49  | -0.24  | -0.36  | 0.49   | -0.22  | .      |
| 77   | C   | SR        | 0.91        | 0.46  | -0.25  | -0.25  | 0.46   | -0.30  | .      |

**Table A2**  
**Summary Item Statistics - Mathematics Grade 3, Form 2 (Form B, D Operational Items)**  
**N=23,196**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 1    | C   | SR        | 0.85  | 0.29  | 0.29   | -0.23  | -0.14  | -0.10  | -0.14  |
| 2    | C   | SR        | 0.91  | 0.29  | -0.16  | 0.29   | -0.15  | -0.14  | -0.14  |
| 4    | C   | SR        | 0.88  | 0.33  | -0.15  | -0.25  | 0.33   | -0.18  | -0.11  |
| 10   | C   | SR        | 0.89  | 0.39  | -0.17  | -0.26  | 0.39   | -0.26  | .      |
| 12   | C   | SR        | 0.89  | 0.38  | 0.38   | -0.23  | -0.19  | -0.24  | .      |
| 13   | C   | SR        | 0.86  | 0.44  | -0.23  | -0.32  | -0.23  | 0.44   | .      |
| 14   | C   | SR        | 0.86  | 0.31  | -0.15  | -0.17  | 0.31   | -0.23  | .      |
| 16   | C   | SR        | 0.95  | 0.29  | 0.29   | -0.19  | -0.14  | -0.13  | .      |
| 17   | C   | SR        | 0.90  | 0.31  | -0.10  | -0.09  | -0.29  | 0.31   | .      |
| 18   | C   | SR        | 0.97  | 0.23  | -0.14  | -0.11  | -0.10  | 0.23   | .      |
| 24   | C   | SR        | 0.97  | 0.34  | -0.22  | -0.16  | 0.34   | -0.16  | .      |
| 31A  | U   | CR        | 0.76  | 0.46  | .      | .      | .      | .      | .      |
| 31B  | U   | CR        | 0.46  | 0.51  | .      | .      | .      | .      | .      |
| 32   | C   | SR        | 0.96  | 0.38  | -0.22  | -0.21  | 0.38   | -0.18  | .      |
| 33   | C   | SR        | 0.59  | 0.31  | -0.24  | -0.23  | 0.31   | -0.16  | .      |
| 34   | C   | SR        | 0.75  | 0.39  | -0.23  | 0.39   | -0.27  | -0.24  | .      |
| 35   | C   | SR        | 0.84  | 0.23  | -0.15  | -0.08  | -0.19  | 0.23   | .      |
| 36   | C   | SR        | 0.63  | 0.42  | 0.42   | -0.23  | -0.22  | -0.25  | .      |
| 37A  | U   | CR        | 0.94  | 0.35  | .      | .      | .      | .      | .      |
| 37B  | U   | CR        | 0.56  | 0.48  | .      | .      | .      | .      | .      |
| 38   | C   | SR        | 0.96  | 0.30  | -0.19  | -0.14  | 0.30   | -0.13  | .      |
| 39   | C   | SR        | 0.92  | 0.42  | -0.24  | 0.42   | -0.25  | -0.19  | .      |
| 40   | C   | SR        | 0.75  | 0.55  | -0.20  | -0.44  | 0.55   | -0.28  | .      |
| 41   | C   | SR        | 0.83  | 0.40  | -0.16  | -0.37  | -0.15  | 0.40   | .      |
| 42   | C   | SR        | 0.90  | 0.50  | -0.27  | -0.27  | 0.50   | -0.29  | .      |
| 43   | C   | SR        | 0.74  | 0.42  | -0.27  | -0.20  | 0.42   | -0.26  | .      |
| 44A  | U   | CR        | 0.63  | 0.34  | .      | .      | .      | .      | .      |
| 44B  | U   | CR        | 0.60  | 0.57  | .      | .      | .      | .      | .      |
| 45   | C   | SR        | 0.91  | 0.36  | 0.36   | -0.19  | -0.14  | -0.22  | .      |
| 46   | C   | SR        | 0.89  | 0.50  | -0.32  | -0.27  | -0.23  | 0.50   | .      |
| 47   | C   | SR        | 0.83  | 0.46  | -0.24  | -0.35  | -0.13  | 0.46   | .      |
| 48   | C   | SR        | 0.75  | 0.50  | -0.28  | -0.33  | 0.50   | -0.20  | .      |
| 49   | C   | SR        | 0.43  | 0.17  | -0.01  | -0.19  | -0.11  | 0.17   | .      |
| 50   | C   | SR        | 0.93  | 0.37  | 0.37   | -0.19  | -0.18  | -0.25  | .      |
| 51   | C   | SR        | 0.74  | 0.41  | -0.33  | 0.41   | -0.25  | -0.19  | .      |
| 52   | C   | SR        | 0.91  | 0.37  | -0.25  | -0.23  | -0.16  | 0.37   | .      |
| 53   | C   | SR        | 0.87  | 0.37  | -0.27  | -0.17  | -0.20  | 0.37   | .      |

**Table A2 (cont.)**  
**Summary Item Statistics - Mathematics Grade 3, Form 2 (Form B, D Operational Items)**  
**N=23,196**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|--------|--------|--------|
| 54   | U   | SR        | 0.86        | 0.38  | -0.33  | 0.38   | -0.17  | -0.13  | .      |
| 55   | C   | SR        | 0.73        | 0.30  | 0.30   | -0.16  | -0.13  | -0.24  | .      |
| 56A  | U   | CR        | 0.71        | 0.43  | .      | .      | .      | .      | .      |
| 56B  | U   | CR        | 0.54        | 0.59  | .      | .      | .      | .      | .      |
| 57   | C   | SR        | 0.93        | 0.36  | -0.18  | -0.27  | 0.36   | -0.14  | .      |
| 58   | U   | SR        | 0.85        | 0.39  | -0.28  | 0.39   | -0.29  | -0.15  | .      |
| 59   | C   | SR        | 0.93        | 0.38  | -0.16  | 0.38   | -0.22  | -0.26  | .      |
| 60   | U   | SR        | 0.95        | 0.37  | -0.26  | -0.17  | -0.16  | 0.37   | .      |
| 61A  | U   | CR        | 0.88        | 0.40  | .      | .      | .      | .      | .      |
| 61B  | U   | CR        | 0.39        | 0.42  | .      | .      | .      | .      | .      |
| 62   | C   | SR        | 0.59        | 0.44  | -0.33  | 0.44   | -0.19  | -0.22  | .      |
| 63   | U   | SR        | 0.72        | 0.38  | -0.18  | -0.29  | 0.38   | -0.23  | .      |
| 64   | C   | SR        | 0.85        | 0.43  | 0.43   | -0.26  | -0.26  | -0.25  | .      |
| 65   | U   | SR        | 0.67        | 0.28  | 0.28   | -0.24  | -0.17  | -0.23  | .      |
| 66   | C   | SR        | 0.65        | 0.46  | -0.29  | 0.46   | -0.27  | -0.20  | .      |
| 67   | U   | SR        | 0.83        | 0.48  | -0.26  | 0.48   | -0.26  | -0.31  | .      |
| 68   | U   | SR        | 0.66        | 0.50  | 0.50   | -0.32  | -0.37  | -0.11  | .      |
| 69A  | U   | CR        | 0.89        | 0.47  | .      | .      | .      | .      | .      |
| 69B  | U   | CR        | 0.42        | 0.50  | .      | .      | .      | .      | .      |
| 70   | U   | SR        | 0.54        | 0.48  | -0.32  | -0.23  | -0.14  | 0.48   | .      |
| 71   | C   | SR        | 0.81        | 0.43  | -0.15  | -0.31  | 0.43   | -0.24  | .      |
| 72   | U   | SR        | 0.90        | 0.43  | -0.23  | -0.23  | -0.25  | 0.43   | .      |
| 73   | U   | SR        | 0.84        | 0.44  | -0.20  | -0.26  | 0.44   | -0.24  | .      |
| 74A  | U   | CR        | 0.42        | 0.24  | .      | .      | .      | .      | .      |
| 74B  | U   | CR        | 0.41        | 0.43  | .      | .      | .      | .      | .      |
| 75   | C   | SR        | <b>0.29</b> | 0.24  | -0.11  | 0.24   | -0.19  | -0.14  | .      |
| 76   | C   | SR        | 0.75        | 0.48  | -0.23  | -0.35  | 0.48   | -0.21  | .      |
| 77   | C   | SR        | 0.91        | 0.45  | -0.25  | -0.26  | 0.45   | -0.28  | .      |

**Table A3**  
**Summary Item Statistics - Mathematics Grade 5, Form 1 (Form A, C, E Operational Items)**  
**N=39.009**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT       | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------|-------------|--------|--------|--------|-------------|--------|
| 2    | C   | SR        | 0.71  | 0.48        | 0.48   | -0.24  | -0.21  | -0.26       | -0.21  |
| 4    | C   | SR        | 0.65  | 0.48        | -0.18  | 0.48   | -0.23  | -0.24       | -0.23  |
| 6    | C   | SR        | 0.79  | 0.39        | -0.30  | -0.11  | -0.16  | 0.39        | -0.16  |
| 8    | C   | SR        | 0.60  | 0.44        | -0.20  | 0.44   | -0.26  | -0.19       | .      |
| 12   | C   | SR        | 0.72  | 0.47        | -0.19  | 0.47   | -0.35  | -0.23       | .      |
| 13   | C   | SR        | 0.80  | 0.26        | -0.13  | -0.20  | -0.15  | 0.26        | .      |
| 17   | C   | SR        | 0.66  | <b>0.13</b> | -0.07  | -0.07  | -0.13  | <b>0.13</b> | .      |
| 23   | C   | SR        | 0.66  | 0.53        | -0.29  | 0.53   | -0.34  | -0.22       | .      |
| 26   | C   | SR        | 0.50  | 0.49        | -0.25  | 0.49   | -0.15  | -0.36       | .      |
| 27   | C   | SR        | 0.62  | 0.55        | -0.26  | -0.22  | -0.37  | 0.55        | .      |
| 28   | C   | SR        | 0.64  | 0.38        | -0.24  | 0.38   | -0.23  | -0.14       | .      |
| 31   | C   | SR        | 0.59  | 0.49        | -0.33  | 0.49   | -0.21  | -0.21       | .      |
| 32   | C   | SR        | 0.78  | 0.44        | -0.27  | -0.25  | 0.44   | -0.21       | .      |
| 33A  | U   | CR        | 0.66  | 0.53        | .      | .      | .      | .           | .      |
| 33B  | U   | CR        | 0.52  | 0.51        | .      | .      | .      | .           | .      |
| 34   | C   | SR        | 0.89  | 0.35        | -0.20  | 0.35   | -0.24  | -0.17       | .      |
| 35   | C   | SR        | 0.59  | 0.47        | -0.26  | -0.25  | 0.47   | -0.25       | .      |
| 36   | C   | SR        | 0.61  | 0.26        | 0.26   | -0.22  | -0.08  | -0.19       | .      |
| 37   | C   | SR        | 0.47  | 0.27        | -0.12  | -0.21  | -0.15  | 0.27        | .      |
| 38   | C   | SR        | 0.49  | 0.44        | -0.14  | 0.44   | -0.31  | -0.26       | .      |
| 40A  | U   | CR        | 0.49  | 0.63        | .      | .      | .      | .           | .      |
| 40B  | U   | CR        | 0.43  | 0.72        | .      | .      | .      | .           | .      |
| 41   | C   | SR        | 0.52  | 0.35        | -0.30  | 0.35   | -0.11  | -0.10       | .      |
| 42   | C   | SR        | 0.66  | 0.51        | -0.22  | -0.25  | 0.51   | -0.33       | .      |
| 43   | C   | SR        | 0.81  | 0.35        | -0.18  | 0.35   | -0.22  | -0.21       | .      |
| 44   | C   | SR        | 0.64  | 0.51        | -0.24  | 0.51   | -0.22  | -0.34       | .      |
| 45A  | U   | CR        | 0.30  | 0.47        | .      | .      | .      | .           | .      |
| 45B  | U   | CR        | 0.38  | 0.51        | .      | .      | .      | .           | .      |
| 46   | U   | SR        | 0.65  | 0.37        | -0.27  | 0.37   | -0.21  | -0.16       | .      |
| 47   | C   | SR        | 0.61  | 0.38        | 0.38   | -0.24  | -0.22  | -0.18       | .      |
| 48   | C   | SR        | 0.56  | 0.50        | -0.43  | -0.20  | -0.17  | 0.50        | .      |
| 49   | C   | SR        | 0.45  | 0.35        | -0.25  | -0.02  | 0.35   | -0.32       | .      |
| 50   | C   | SR        | 0.49  | 0.43        | -0.27  | 0.43   | -0.14  | -0.24       | .      |
| 51   | C   | SR        | 0.76  | 0.41        | -0.19  | -0.35  | -0.15  | 0.41        | .      |
| 52   | C   | SR        | 0.70  | 0.42        | -0.24  | -0.22  | 0.42   | -0.26       | .      |
| 53A  | U   | CR        | 0.69  | 0.62        | .      | .      | .      | .           | .      |
| 53B  | U   | CR        | 0.55  | 0.59        | .      | .      | .      | .           | .      |

**Table A3 (cont.)**  
**Summary Item Statistics - Mathematics Grade 5, Form 1 (Form A, C, E Operational Items)**  
**N=39.009**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|--------|--------|--------|
| 54A  | U   | CR        | 0.41        | 0.29  | .      | .      | .      | .      | .      |
| 54B  | U   | CR        | 0.36        | 0.57  | .      | .      | .      | .      | .      |
| 55   | C   | SR        | 0.64        | 0.49  | -0.21  | -0.30  | -0.26  | 0.49   | .      |
| 56   | C   | SR        | 0.34        | 0.39  | -0.26  | 0.39   | -0.09  | -0.14  | .      |
| 57   | C   | SR        | 0.53        | 0.34  | -0.19  | -0.11  | 0.34   | -0.26  | .      |
| 58   | C   | SR        | 0.36        | 0.34  | -0.29  | -0.12  | 0.34   | -0.08  | .      |
| 59   | C   | SR        | <b>0.24</b> | 0.18  | -0.06  | 0.18   | -0.12  | -0.11  | .      |
| 60   | C   | SR        | 0.53        | 0.44  | -0.30  | 0.44   | -0.14  | -0.25  | .      |
| 61   | U   | SR        | 0.44        | 0.40  | -0.25  | -0.15  | 0.40   | -0.19  | .      |
| 62   | U   | SR        | 0.79        | 0.43  | -0.23  | -0.22  | 0.43   | -0.29  | .      |
| 63   | U   | SR        | 0.59        | 0.48  | -0.36  | -0.21  | 0.48   | -0.15  | .      |
| 64   | U   | SR        | 0.82        | 0.41  | -0.23  | -0.22  | -0.26  | 0.41   | .      |
| 65   | U   | SR        | 0.72        | 0.40  | -0.33  | -0.17  | 0.40   | -0.15  | .      |
| 66   | U   | SR        | <b>0.22</b> | 0.42  | -0.25  | -0.10  | -0.16  | 0.42   | .      |
| 67   | C   | SR        | 0.70        | 0.21  | -0.05  | -0.18  | 0.21   | -0.16  | .      |
| 68   | U   | SR        | 0.56        | 0.27  | -0.21  | -0.15  | -0.18  | 0.27   | .      |
| 69   | U   | SR        | 0.53        | 0.51  | -0.20  | -0.24  | 0.51   | -0.34  | .      |
| 70   | U   | SR        | 0.50        | 0.43  | -0.15  | -0.25  | -0.25  | 0.43   | .      |
| 71A  | U   | CR        | 0.89        | 0.16  | .      | .      | .      | .      | .      |
| 71B  | U   | CR        | 0.38        | 0.43  | .      | .      | .      | .      | .      |
| 72A  | U   | CR        | 0.33        | 0.57  | .      | .      | .      | .      | .      |
| 72B  | U   | CR        | 0.32        | 0.62  | .      | .      | .      | .      | .      |
| 73   | C   | SR        | 0.36        | 0.37  | -0.13  | 0.37   | -0.22  | -0.20  | .      |
| 74   | C   | SR        | 0.48        | 0.33  | -0.11  | -0.24  | -0.17  | 0.33   | .      |
| 75   | C   | SR        | 0.78        | 0.51  | 0.51   | -0.33  | -0.26  | -0.25  | .      |
| 76A  | U   | CR        | 0.39        | 0.61  | .      | .      | .      | .      | .      |
| 76B  | U   | CR        | 0.41        | 0.66  | .      | .      | .      | .      | .      |

**Table A4**  
**Summary Item Statistics - Mathematics Grade 5, Form 2 (Form B, D Operational Items)**  
**N=23,965**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|--------|--------|--------|-------------|--------|
| 2    | C   | SR        | 0.72        | 0.47        | 0.47   | -0.24  | -0.21  | -0.26       | -0.21  |
| 4    | C   | SR        | 0.66        | 0.47        | -0.17  | 0.47   | -0.24  | -0.24       | -0.25  |
| 6    | C   | SR        | 0.81        | 0.38        | -0.29  | -0.10  | -0.15  | 0.38        | -0.16  |
| 8    | C   | SR        | 0.60        | 0.45        | -0.21  | 0.45   | -0.27  | -0.18       | .      |
| 12   | C   | SR        | 0.74        | 0.46        | -0.19  | 0.46   | -0.36  | -0.22       | .      |
| 13   | C   | SR        | 0.81        | 0.25        | -0.13  | -0.20  | -0.13  | 0.25        | .      |
| 17   | C   | SR        | 0.67        | <b>0.13</b> | -0.06  | -0.07  | -0.13  | <b>0.13</b> | .      |
| 23   | C   | SR        | 0.68        | 0.51        | -0.29  | 0.51   | -0.34  | -0.22       | .      |
| 26   | C   | SR        | 0.52        | 0.49        | -0.26  | 0.49   | -0.16  | -0.36       | .      |
| 27   | C   | SR        | 0.64        | 0.54        | -0.26  | -0.22  | -0.37  | 0.54        | .      |
| 28   | C   | SR        | 0.65        | 0.37        | -0.25  | 0.37   | -0.24  | -0.14       | .      |
| 31   | C   | SR        | 0.60        | 0.49        | -0.34  | 0.49   | -0.21  | -0.21       | .      |
| 32   | C   | SR        | 0.79        | 0.43        | -0.27  | -0.26  | 0.43   | -0.20       | .      |
| 33A  | U   | CR        | 0.45        | 0.46        | .      | .      | .      | .           | .      |
| 33B  | U   | CR        | 0.56        | 0.55        | .      | .      | .      | .           | .      |
| 34   | C   | SR        | 0.90        | 0.33        | -0.20  | 0.33   | -0.22  | -0.17       | .      |
| 35   | C   | SR        | 0.60        | 0.47        | -0.26  | -0.27  | 0.47   | -0.24       | .      |
| 36   | C   | SR        | 0.61        | 0.25        | 0.25   | -0.22  | -0.08  | -0.19       | .      |
| 37   | C   | SR        | 0.47        | 0.28        | -0.13  | -0.21  | -0.16  | 0.28        | .      |
| 38   | C   | SR        | 0.50        | 0.44        | -0.16  | 0.44   | -0.31  | -0.25       | .      |
| 40A  | U   | CR        | 0.75        | 0.53        | .      | .      | .      | .           | .      |
| 40B  | U   | CR        | 0.62        | 0.65        | .      | .      | .      | .           | .      |
| 41   | C   | SR        | 0.53        | 0.34        | -0.29  | 0.34   | -0.11  | -0.09       | .      |
| 42   | C   | SR        | 0.65        | 0.45        | -0.19  | -0.24  | 0.45   | -0.29       | .      |
| 43   | C   | SR        | 0.81        | 0.36        | -0.19  | 0.36   | -0.22  | -0.20       | .      |
| 44   | C   | SR        | 0.63        | 0.51        | -0.25  | 0.51   | -0.22  | -0.32       | .      |
| 45A  | U   | CR        | 0.29        | 0.52        | .      | .      | .      | .           | .      |
| 45B  | U   | CR        | 0.32        | 0.65        | .      | .      | .      | .           | .      |
| 46   | C   | SR        | <b>0.29</b> | 0.18        | -0.09  | 0.18   | -0.13  | -0.09       | .      |
| 47   | C   | SR        | 0.59        | 0.39        | 0.39   | -0.26  | -0.22  | -0.17       | .      |
| 48   | C   | SR        | 0.56        | 0.50        | -0.44  | -0.20  | -0.15  | 0.50        | .      |
| 49   | C   | SR        | 0.45        | 0.33        | -0.24  | -0.01  | 0.33   | -0.33       | .      |
| 50   | C   | SR        | 0.50        | 0.43        | -0.30  | 0.43   | -0.14  | -0.23       | .      |
| 51   | C   | SR        | 0.76        | 0.41        | -0.17  | -0.36  | -0.15  | 0.41        | .      |
| 52   | C   | SR        | 0.69        | 0.39        | -0.22  | -0.22  | 0.39   | -0.25       | .      |
| 53A  | U   | CR        | 0.36        | 0.59        | .      | .      | .      | .           | .      |
| 53B  | U   | CR        | 0.47        | 0.66        | .      | .      | .      | .           | .      |



**Table A4 (cont.)**  
**Summary Item Statistics - Mathematics Grade 5, Form 2 (Form B, D Operational Items)**  
**N=23,965**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|--------|--------|--------|
| 54A  | U   | CR        | <b>0.13</b> | 0.37  | .      | .      | .      | .      | .      |
| 54B  | U   | CR        | 0.27        | 0.44  | .      | .      | .      | .      | .      |
| 55   | C   | SR        | 0.61        | 0.47  | -0.21  | -0.30  | -0.24  | 0.47   | .      |
| 56   | C   | SR        | 0.32        | 0.35  | -0.27  | 0.35   | -0.07  | -0.11  | .      |
| 57   | C   | SR        | 0.51        | 0.32  | -0.18  | -0.11  | 0.32   | -0.24  | .      |
| 58   | C   | SR        | 0.34        | 0.32  | -0.30  | -0.10  | 0.32   | -0.08  | .      |
| 59   | U   | SR        | 0.37        | 0.17  | -0.15  | -0.15  | -0.08  | 0.17   | .      |
| 60   | U   | SR        | 0.33        | 0.27  | 0.27   | -0.22  | -0.18  | -0.10  | .      |
| 61   | U   | SR        | 0.61        | 0.43  | -0.25  | -0.26  | -0.23  | 0.43   | .      |
| 62   | U   | SR        | 0.45        | 0.39  | -0.10  | 0.39   | -0.14  | -0.33  | .      |
| 63   | U   | SR        | 0.61        | 0.48  | -0.27  | -0.28  | -0.23  | 0.48   | .      |
| 64   | U   | SR        | 0.48        | 0.60  | -0.28  | 0.60   | -0.22  | -0.39  | .      |
| 65   | C   | SR        | 0.51        | 0.39  | -0.25  | 0.39   | -0.15  | -0.23  | .      |
| 66A  | U   | CR        | 0.92        | 0.30  | .      | .      | .      | .      | .      |
| 66B  | U   | CR        | 0.42        | 0.44  | .      | .      | .      | .      | .      |
| 67   | U   | SR        | 0.87        | 0.36  | -0.17  | -0.21  | 0.36   | -0.25  | .      |
| 68   | C   | SR        | 0.69        | 0.20  | -0.06  | -0.18  | 0.20   | -0.14  | .      |
| 69   | U   | SR        | 0.37        | 0.47  | 0.47   | -0.39  | -0.13  | -0.10  | .      |
| 70   | U   | SR        | 0.69        | 0.36  | -0.24  | -0.12  | -0.23  | 0.36   | .      |
| 71   | U   | SR        | 0.66        | 0.43  | 0.43   | -0.22  | -0.24  | -0.24  | .      |
| 72A  | U   | CR        | 0.48        | 0.55  | .      | .      | .      | .      | .      |
| 72B  | U   | CR        | 0.41        | 0.65  | .      | .      | .      | .      | .      |
| 73   | C   | SR        | 0.37        | 0.37  | -0.14  | 0.37   | -0.22  | -0.19  | .      |
| 74   | C   | SR        | 0.46        | 0.29  | -0.12  | -0.22  | -0.15  | 0.29   | .      |
| 75   | C   | SR        | 0.76        | 0.47  | 0.47   | -0.32  | -0.25  | -0.21  | .      |
| 76A  | U   | CR        | 0.77        | 0.54  | .      | .      | .      | .      | .      |
| 76B  | U   | CR        | 0.72        | 0.58  | .      | .      | .      | .      | .      |

**Table A5**  
**Summary Item Statistics - Mathematics Grade 8, Form 1 (Form A, C, E Operational Items)**  
**N=31,583**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|-------------|--------|--------|
| 6    | C   | SR        | 0.60        | 0.43  | -0.11  | -0.24  | 0.43        | -0.27  | .      |
| 7    | C   | SR        | 0.65        | 0.42  | -0.22  | -0.16  | 0.42        | -0.26  | .      |
| 13   | C   | SR        | 0.89        | 0.27  | -0.13  | -0.16  | -0.13       | 0.27   | .      |
| 16   | C   | SR        | 0.87        | 0.40  | -0.24  | -0.23  | 0.40        | -0.15  | .      |
| 20   | C   | SR        | 0.37        | 0.38  | -0.23  | -0.08  | 0.38        | -0.21  | .      |
| 26   | C   | SR        | 0.41        | 0.27  | -0.11  | 0.27   | -0.17       | -0.06  | .      |
| 27   | C   | SR        | 0.52        | 0.49  | -0.20  | -0.29  | 0.49        | -0.20  | .      |
| 29   | C   | SR        | 0.53        | 0.34  | 0.34   | -0.13  | -0.19       | -0.16  | .      |
| 32   | C   | SR        | 0.71        | 0.39  | -0.21  | 0.39   | -0.22       | -0.19  | .      |
| 33   | C   | SR        | <b>0.23</b> | 0.35  | -0.16  | -0.24  | <b>0.03</b> | 0.35   | .      |
| 34   | C   | SR        | 0.35        | 0.38  | -0.21  | -0.24  | 0.38        | -0.06  | .      |
| 35   | C   | SR        | 0.44        | 0.37  | 0.37   | -0.11  | -0.23       | -0.17  | .      |
| 36   | C   | SR        | 0.54        | 0.40  | -0.27  | -0.20  | 0.40        | -0.09  | .      |
| 37A  | C   | CR        | 0.54        | 0.65  | .      | .      | .           | .      | .      |
| 37B  | C   | CR        | 0.45        | 0.68  | .      | .      | .           | .      | .      |
| 38   | C   | SR        | 0.51        | 0.39  | -0.15  | -0.23  | 0.39        | -0.18  | .      |
| 39   | C   | SR        | 0.59        | 0.39  | 0.39   | -0.19  | -0.07       | -0.30  | .      |
| 40   | C   | SR        | 0.60        | 0.44  | -0.16  | -0.24  | -0.25       | 0.44   | .      |
| 41   | C   | SR        | <b>0.22</b> | 0.21  | -0.06  | 0.21   | -0.11       | -0.08  | .      |
| 42A  | C   | CR        | 0.42        | 0.60  | .      | .      | .           | .      | .      |
| 42B  | C   | CR        | 0.31        | 0.63  | .      | .      | .           | .      | .      |
| 43   | U   | SPR       | 0.77        | 0.49  | .      | .      | .           | .      | .      |
| 44   | U   | SPR       | 0.36        | 0.45  | .      | .      | .           | .      | .      |
| 45   | U   | SPR       | 0.46        | 0.47  | .      | .      | .           | .      | .      |
| 46   | C   | SPR       | 0.41        | 0.59  | .      | .      | .           | .      | .      |
| 47A  | U   | CR        | 0.41        | 0.39  | .      | .      | .           | .      | .      |
| 47B  | U   | CR        | 0.35        | 0.56  | .      | .      | .           | .      | .      |
| 48   | C   | SR        | 0.46        | 0.38  | -0.22  | -0.16  | 0.38        | -0.17  | .      |
| 49   | C   | SR        | 0.33        | 0.34  | -0.27  | -0.23  | -0.01       | 0.34   | .      |
| 50   | C   | SR        | 0.44        | 0.32  | -0.22  | 0.32   | -0.10       | -0.12  | .      |
| 51   | C   | SR        | 0.48        | 0.39  | -0.20  | 0.39   | -0.14       | -0.24  | .      |
| 52   | C   | SR        | 0.46        | 0.42  | 0.42   | -0.20  | -0.30       | -0.09  | .      |
| 53   | C   | SR        | 0.57        | 0.37  | -0.16  | 0.37   | -0.23       | -0.17  | .      |
| 54A  | U   | CR        | 0.54        | 0.61  | .      | .      | .           | .      | .      |
| 54B  | U   | CR        | 0.31        | 0.72  | .      | .      | .           | .      | .      |
| 55   | U   | SPR       | <b>0.20</b> | 0.41  | .      | .      | .           | .      | .      |
| 56   | U   | SPR       | <b>0.15</b> | 0.36  | .      | .      | .           | .      | .      |

**Table A5 (cont.)**  
**Summary Item Statistics - Mathematics Grade 8, Form 1 (Form A, C, E Operational Items)**  
**N=31,583**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 57   | C   | SPR       | 0.49        | 0.61        | .           | .           | .      | .           | .      |
| 58   | U   | SPR       | 0.48        | 0.51        | .           | .           | .      | .           | .      |
| 59   | C   | SR        | <b>0.24</b> | 0.39        | <b>0.01</b> | -0.32       | -0.12  | 0.39        | .      |
| 60   | U   | SR        | <b>0.28</b> | 0.22        | -0.14       | 0.22        | -0.14  | <b>0.00</b> | .      |
| 61   | U   | SR        | 0.68        | 0.39        | -0.22       | 0.39        | -0.23  | -0.13       | .      |
| 62   | U   | SR        | <b>0.24</b> | <b>0.10</b> | -0.14       | <b>0.10</b> | -0.15  | <b>0.16</b> | .      |
| 63   | U   | SR        | 0.41        | 0.36        | -0.21       | 0.36        | -0.11  | -0.19       | .      |
| 64A  | C   | CR        | 0.42        | 0.66        | .           | .           | .      | .           | .      |
| 64B  | C   | CR        | 0.57        | 0.68        | .           | .           | .      | .           | .      |
| 65A  | U   | CR        | 0.33        | 0.67        | .           | .           | .      | .           | .      |
| 65B  | U   | CR        | 0.41        | 0.71        | .           | .           | .      | .           | .      |
| 66   | U   | SR        | 0.53        | 0.37        | 0.37        | -0.18       | -0.18  | -0.14       | .      |
| 67   | U   | SR        | 0.36        | 0.46        | -0.06       | -0.16       | -0.29  | 0.46        | .      |
| 68   | U   | SR        | 0.38        | 0.35        | -0.13       | -0.17       | 0.35   | -0.12       | .      |
| 69   | U   | SR        | 0.60        | 0.18        | -0.16       | <b>0.07</b> | 0.18   | -0.15       | .      |
| 70   | U   | SR        | 0.67        | 0.38        | -0.21       | -0.17       | 0.38   | -0.16       | .      |
| 71A  | C   | CR        | <b>0.18</b> | 0.60        | .           | .           | .      | .           | .      |
| 71B  | C   | CR        | 0.27        | 0.71        | .           | .           | .      | .           | .      |
| 72   | C   | SPR       | 0.41        | 0.58        | .           | .           | .      | .           | .      |
| 73   | C   | SPR       | 0.57        | 0.52        | .           | .           | .      | .           | .      |
| 74   | U   | SPR       | <b>0.06</b> | 0.25        | .           | .           | .      | .           | .      |
| 75   | U   | SPR       | 0.27        | 0.59        | .           | .           | .      | .           | .      |
| 76A  | U   | CR        | 0.28        | 0.61        | .           | .           | .      | .           | .      |
| 76B  | U   | CR        | 0.46        | 0.68        | .           | .           | .      | .           | .      |

**Table A6**  
**Summary Item Statistics - Mathematics Grade 8, Form 2 (Form B, D Operational Items)**  
**N=21,110**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|-------------|--------|--------|
| 6    | C   | SR        | 0.60        | 0.44  | -0.12  | -0.25  | 0.44        | -0.27  | .      |
| 7    | C   | SR        | 0.65        | 0.42  | -0.22  | -0.16  | 0.42        | -0.26  | .      |
| 13   | C   | SR        | 0.89        | 0.28  | -0.14  | -0.17  | -0.14       | 0.28   | .      |
| 16   | C   | SR        | 0.87        | 0.40  | -0.24  | -0.23  | 0.40        | -0.15  | .      |
| 20   | C   | SR        | 0.37        | 0.38  | -0.24  | -0.08  | 0.38        | -0.21  | .      |
| 26   | C   | SR        | 0.42        | 0.28  | -0.13  | 0.28   | -0.17       | -0.05  | .      |
| 27   | C   | SR        | 0.53        | 0.49  | -0.19  | -0.30  | 0.49        | -0.21  | .      |
| 29   | C   | SR        | 0.53        | 0.33  | 0.33   | -0.13  | -0.19       | -0.15  | .      |
| 32   | C   | SR        | 0.72        | 0.40  | -0.22  | 0.40   | -0.21       | -0.20  | .      |
| 33   | C   | SR        | <b>0.24</b> | 0.35  | -0.17  | -0.24  | <b>0.03</b> | 0.35   | .      |
| 34   | C   | SR        | 0.36        | 0.38  | -0.21  | -0.26  | 0.38        | -0.06  | .      |
| 35   | C   | SR        | 0.44        | 0.37  | 0.37   | -0.12  | -0.23       | -0.16  | .      |
| 36   | C   | SR        | 0.54        | 0.40  | -0.27  | -0.19  | 0.40        | -0.11  | .      |
| 37A  | C   | CR        | 0.54        | 0.67  | .      | .      | .           | .      | .      |
| 37B  | C   | CR        | 0.44        | 0.70  | .      | .      | .           | .      | .      |
| 38   | C   | SR        | 0.51        | 0.39  | -0.15  | -0.22  | 0.39        | -0.18  | .      |
| 39   | C   | SR        | 0.58        | 0.39  | 0.39   | -0.20  | -0.08       | -0.29  | .      |
| 40   | C   | SR        | 0.60        | 0.45  | -0.17  | -0.24  | -0.25       | 0.45   | .      |
| 41   | C   | SR        | <b>0.22</b> | 0.22  | -0.07  | 0.22   | -0.09       | -0.10  | .      |
| 42A  | C   | CR        | 0.42        | 0.60  | .      | .      | .           | .      | .      |
| 42B  | C   | CR        | 0.34        | 0.64  | .      | .      | .           | .      | .      |
| 43   | U   | SPR       | <b>0.15</b> | 0.51  | .      | .      | .           | .      | .      |
| 44   | U   | SPR       | 0.32        | 0.50  | .      | .      | .           | .      | .      |
| 45   | U   | SPR       | 0.39        | 0.52  | .      | .      | .           | .      | .      |
| 46   | C   | SPR       | 0.42        | 0.54  | .      | .      | .           | .      | .      |
| 47   | U   | SPR       | 0.26        | 0.61  | .      | .      | .           | .      | .      |
| 48A  | U   | CR        | 0.25        | 0.55  | .      | .      | .           | .      | .      |
| 48B  | U   | CR        | <b>0.20</b> | 0.56  | .      | .      | .           | .      | .      |
| 49   | C   | SR        | 0.46        | 0.38  | -0.22  | -0.16  | 0.38        | -0.17  | .      |
| 50   | C   | SR        | 0.33        | 0.34  | -0.27  | -0.22  | -0.02       | 0.34   | .      |
| 51   | C   | SR        | 0.44        | 0.33  | -0.21  | 0.33   | -0.12       | -0.13  | .      |
| 52   | C   | SR        | 0.48        | 0.39  | -0.19  | 0.39   | -0.14       | -0.24  | .      |
| 53   | C   | SR        | 0.45        | 0.43  | 0.43   | -0.19  | -0.31       | -0.08  | .      |
| 54   | C   | SR        | 0.58        | 0.39  | -0.17  | 0.39   | -0.24       | -0.17  | .      |
| 55A  | U   | CR        | 0.42        | 0.36  | .      | .      | .           | .      | .      |
| 55B  | U   | CR        | 0.26        | 0.58  | .      | .      | .           | .      | .      |
| 56   | U   | SPR       | 0.60        | 0.61  | .      | .      | .           | .      | .      |

**Table A6 (cont.)**  
**Summary Item Statistics - Mathematics Grade 8, Form 2 (Form B, D Operational Items)**  
**N=21,110**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|-------------|--------|--------|--------|--------|
| 57   | C   | SPR       | 0.50        | 0.63  | .           | .      | .      | .      | .      |
| 58A  | U   | CR        | 0.49        | 0.50  | .           | .      | .      | .      | .      |
| 58B  | U   | CR        | 0.61        | 0.60  | .           | .      | .      | .      | .      |
| 59   | C   | SR        | <b>0.25</b> | 0.39  | <b>0.00</b> | -0.31  | -0.11  | 0.39   | .      |
| 60   | U   | SR        | 0.42        | 0.39  | 0.39        | -0.16  | -0.25  | -0.09  | .      |
| 61   | U   | SR        | 0.41        | 0.54  | -0.22       | -0.23  | -0.23  | 0.54   | .      |
| 62   | U   | SR        | 0.51        | 0.38  | 0.38        | -0.13  | -0.20  | -0.21  | .      |
| 63   | U   | SR        | 0.41        | 0.38  | -0.05       | -0.16  | 0.38   | -0.25  | .      |
| 64   | U   | SR        | 0.33        | 0.22  | -0.12       | 0.22   | -0.13  | -0.03  | .      |
| 65A  | C   | CR        | 0.41        | 0.67  | .           | .      | .      | .      | .      |
| 65B  | C   | CR        | 0.52        | 0.69  | .           | .      | .      | .      | .      |
| 66   | U   | SR        | 0.35        | 0.25  | <b>0.02</b> | -0.14  | -0.20  | 0.25   | .      |
| 67   | U   | SR        | 0.46        | 0.34  | -0.11       | -0.16  | 0.34   | -0.15  | .      |
| 68   | U   | SR        | 0.43        | 0.36  | -0.22       | -0.08  | 0.36   | -0.15  | .      |
| 69   | U   | SR        | 0.51        | 0.44  | -0.13       | -0.20  | 0.44   | -0.24  | .      |
| 70A  | C   | CR        | <b>0.19</b> | 0.60  | .           | .      | .      | .      | .      |
| 70B  | C   | CR        | 0.27        | 0.70  | .           | .      | .      | .      | .      |
| 71   | U   | SPR       | 0.44        | 0.51  | .           | .      | .      | .      | .      |
| 72   | C   | SPR       | 0.43        | 0.61  | .           | .      | .      | .      | .      |
| 73   | C   | SPR       | 0.59        | 0.54  | .           | .      | .      | .      | .      |
| 74   | U   | SPR       | 0.35        | 0.59  | .           | .      | .      | .      | .      |
| 75   | U   | SPR       | <b>0.20</b> | 0.56  | .           | .      | .      | .      | .      |
| 76A  | U   | CR        | 0.60        | 0.55  | .           | .      | .      | .      | .      |
| 76B  | U   | CR        | 0.64        | 0.58  | .           | .      | .      | .      | .      |

**Table A7**  
**Summary Item Statistics - Reading Grade 10, Form 1 (Form A, C Operational Items)**  
**N=37,802**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|-------------|-------------|--------|--------|--------|
| 1    | C   | SR        | 0.72  | 0.37  | -0.15       | -0.21       | 0.37   | -0.23  | .      |
| 2    | C   | SR        | 0.56  | 0.38  | 0.38        | -0.24       | -0.17  | -0.12  | .      |
| 3    | C   | SR        | 0.79  | 0.40  | 0.40        | -0.23       | -0.20  | -0.22  | .      |
| 4    | C   | SR        | 0.87  | 0.45  | -0.23       | -0.21       | -0.22  | 0.45   | .      |
| 5    | C   | SR        | 0.43  | 0.37  | 0.37        | -0.29       | -0.10  | -0.10  | .      |
| 6    | C   | SR        | 0.76  | 0.40  | -0.16       | -0.20       | -0.23  | 0.40   | .      |
| 13   | C   | SR        | 0.79  | 0.49  | -0.25       | 0.49        | -0.25  | -0.22  | .      |
| 14   | C   | SR        | 0.66  | 0.51  | -0.23       | -0.21       | -0.30  | 0.51   | .      |
| 15   | C   | SR        | 0.52  | 0.35  | 0.35        | -0.19       | -0.16  | -0.12  | .      |
| 16   | C   | SR        | 0.42  | 0.21  | <b>0.03</b> | -0.20       | 0.21   | -0.11  | .      |
| 17   | C   | SR        | 0.56  | 0.58  | -0.20       | -0.33       | -0.26  | 0.58   | .      |
| 22   | C   | SR        | 0.54  | 0.27  | -0.27       | <b>0.02</b> | 0.27   | -0.21  | .      |
| 23   | C   | SR        | 0.72  | 0.58  | -0.29       | -0.22       | -0.29  | 0.58   | .      |
| 24   | C   | SR        | 0.57  | 0.44  | -0.27       | -0.09       | -0.23  | 0.44   | .      |
| 25   | C   | SR        | 0.55  | 0.50  | -0.21       | -0.19       | -0.23  | 0.50   | .      |
| 26   | C   | SR        | 0.73  | 0.58  | -0.25       | -0.29       | 0.58   | -0.24  | .      |
| 27   | C   | SR        | 0.53  | 0.45  | -0.25       | 0.45        | -0.12  | -0.21  | .      |
| 32   | C   | SR        | 0.54  | 0.25  | -0.11       | 0.25        | -0.13  | -0.14  | .      |
| 33   | C   | SR        | 0.53  | 0.33  | 0.33        | -0.13       | -0.19  | -0.15  | .      |
| 34   | C   | SR        | 0.54  | 0.37  | -0.24       | -0.16       | 0.37   | -0.18  | .      |
| 35   | C   | SR        | 0.73  | 0.56  | -0.30       | -0.26       | -0.26  | 0.56   | .      |
| 36   | C   | SR        | 0.70  | 0.43  | -0.19       | -0.24       | 0.43   | -0.21  | .      |
| 37   | C   | SR        | 0.62  | 0.38  | -0.18       | -0.20       | -0.16  | 0.38   | .      |
| 38   | C   | SR        | 0.65  | 0.41  | 0.41        | -0.22       | -0.17  | -0.23  | .      |
| 43   | C   | SR        | 0.79  | 0.56  | -0.27       | 0.56        | -0.30  | -0.25  | .      |
| 44   | C   | SR        | 0.75  | 0.47  | 0.47        | -0.26       | -0.26  | -0.19  | .      |
| 45   | C   | SR        | 0.80  | 0.54  | 0.54        | -0.28       | -0.27  | -0.24  | .      |
| 46   | C   | SR        | 0.42  | 0.33  | -0.20       | -0.19       | -0.06  | 0.33   | .      |
| 47   | C   | SR        | 0.73  | 0.50  | 0.50        | -0.31       | -0.23  | -0.24  | .      |
| 48   | C   | SR        | 0.62  | 0.53  | -0.23       | -0.25       | -0.27  | 0.53   | .      |
| 51   | C   | SR        | 0.71  | 0.48  | 0.48        | -0.29       | -0.22  | -0.21  | .      |
| 52   | C   | SR        | 0.59  | 0.40  | -0.21       | -0.22       | 0.40   | -0.15  | .      |
| 53   | C   | SR        | 0.43  | 0.28  | -0.06       | 0.28        | -0.14  | -0.16  | .      |
| 54   | C   | SR        | 0.58  | 0.34  | 0.34        | -0.16       | -0.23  | -0.08  | .      |
| 61   | U   | SR        | 0.52  | 0.40  | -0.13       | -0.25       | 0.40   | -0.20  | .      |
| 62   | U   | SR        | 0.73  | 0.42  | -0.23       | -0.15       | 0.42   | -0.21  | .      |
| 63   | U   | CR        | 0.54  | 0.63  | .           | .           | .      | .      | .      |

**Table A7 (cont.)**  
**Summary Item Statistics - Reading Grade 10, Form 1 (Form A, C Operational Items)**  
**N=37,802**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 64   | U   | SR        | 0.57  | 0.27  | -0.11  | -0.25  | 0.27   | -0.03  | .      |
| 65   | U   | SR        | 0.59  | 0.54  | -0.25  | -0.27  | -0.26  | 0.54   | .      |
| 66   | U   | SR        | 0.73  | 0.54  | -0.29  | 0.54   | -0.28  | -0.20  | .      |
| 67   | U   | SR        | 0.58  | 0.29  | -0.14  | -0.08  | 0.29   | -0.22  | .      |
| 68   | U   | SR        | 0.47  | 0.34  | 0.34   | -0.09  | -0.19  | -0.14  | .      |
| 69   | U   | CR        | 0.40  | 0.64  | .      | .      | .      | .      | .      |
| 70   | U   | SR        | 0.66  | 0.35  | -0.09  | -0.21  | -0.23  | 0.35   | .      |
| 71   | U   | SR        | 0.68  | 0.41  | 0.41   | -0.15  | -0.25  | -0.20  | .      |
| 72   | U   | SR        | 0.78  | 0.48  | -0.22  | -0.25  | -0.23  | 0.48   | .      |
| 73   | U   | SR        | 0.84  | 0.55  | -0.28  | -0.27  | -0.26  | 0.55   | .      |
| 74   | U   | SR        | 0.66  | 0.48  | -0.19  | 0.48   | -0.28  | -0.23  | .      |
| 75   | U   | CR        | 0.54  | 0.65  | .      | .      | .      | .      | .      |
| 76   | U   | SR        | 0.64  | 0.35  | -0.14  | 0.35   | -0.22  | -0.16  | .      |
| 77   | U   | SR        | 0.56  | 0.45  | -0.25  | -0.22  | 0.45   | -0.20  | .      |
| 78   | U   | SR        | 0.67  | 0.45  | -0.28  | -0.13  | -0.21  | 0.45   | .      |
| 79   | U   | CR        | 0.54  | 0.64  | .      | .      | .      | .      | .      |

**Table A8**  
**Summary Item Statistics - Reading Grade 10, Form 2 (Form B Operational Items)**  
**N=20,966**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|-------------|-------------|--------|--------|--------|
| 1    | C   | SR        | 0.71  | 0.40  | -0.13       | -0.23       | 0.40   | -0.21  | .      |
| 2    | C   | SR        | 0.56  | 0.40  | 0.40        | -0.23       | -0.18  | -0.10  | .      |
| 3    | C   | SR        | 0.77  | 0.42  | 0.42        | -0.20       | -0.19  | -0.22  | .      |
| 4    | C   | SR        | 0.86  | 0.50  | -0.22       | -0.22       | -0.21  | 0.50   | .      |
| 5    | C   | SR        | 0.43  | 0.38  | 0.38        | -0.26       | -0.08  | -0.09  | .      |
| 6    | C   | SR        | 0.75  | 0.44  | -0.17       | -0.19       | -0.22  | 0.44   | .      |
| 13   | C   | SR        | 0.78  | 0.52  | -0.25       | 0.52        | -0.24  | -0.21  | .      |
| 14   | C   | SR        | 0.66  | 0.53  | -0.22       | -0.20       | -0.28  | 0.53   | .      |
| 15   | C   | SR        | 0.52  | 0.37  | 0.37        | -0.19       | -0.14  | -0.11  | .      |
| 16   | C   | SR        | 0.42  | 0.23  | <b>0.03</b> | -0.19       | 0.23   | -0.10  | .      |
| 17   | C   | SR        | 0.56  | 0.59  | -0.18       | -0.32       | -0.24  | 0.59   | .      |
| 22   | C   | SR        | 0.54  | 0.28  | -0.26       | <b>0.03</b> | 0.28   | -0.19  | .      |
| 23   | C   | SR        | 0.70  | 0.60  | -0.28       | -0.22       | -0.26  | 0.60   | .      |
| 24   | C   | SR        | 0.56  | 0.45  | -0.25       | -0.07       | -0.22  | 0.45   | .      |
| 25   | C   | SR        | 0.55  | 0.51  | -0.20       | -0.17       | -0.21  | 0.51   | .      |
| 26   | C   | SR        | 0.72  | 0.59  | -0.25       | -0.27       | 0.59   | -0.22  | .      |
| 27   | C   | SR        | 0.53  | 0.46  | -0.23       | 0.46        | -0.11  | -0.21  | .      |
| 32   | C   | SR        | 0.53  | 0.28  | -0.11       | 0.28        | -0.11  | -0.11  | .      |
| 33   | C   | SR        | 0.53  | 0.34  | 0.34        | -0.12       | -0.17  | -0.12  | .      |
| 34   | C   | SR        | 0.54  | 0.39  | -0.22       | -0.13       | 0.39   | -0.18  | .      |
| 35   | C   | SR        | 0.73  | 0.58  | -0.28       | -0.24       | -0.26  | 0.58   | .      |
| 36   | C   | SR        | 0.70  | 0.45  | -0.17       | -0.23       | 0.45   | -0.19  | .      |
| 37   | C   | SR        | 0.61  | 0.40  | -0.17       | -0.18       | -0.15  | 0.40   | .      |
| 38   | C   | SR        | 0.64  | 0.41  | 0.41        | -0.20       | -0.15  | -0.21  | .      |
| 43   | C   | SR        | 0.78  | 0.58  | -0.26       | 0.58        | -0.27  | -0.25  | .      |
| 44   | C   | SR        | 0.75  | 0.49  | 0.49        | -0.24       | -0.24  | -0.16  | .      |
| 45   | C   | SR        | 0.79  | 0.57  | 0.57        | -0.27       | -0.26  | -0.22  | .      |
| 46   | C   | SR        | 0.42  | 0.34  | -0.18       | -0.16       | -0.05  | 0.34   | .      |
| 47   | C   | SR        | 0.72  | 0.52  | 0.52        | -0.28       | -0.21  | -0.22  | .      |
| 48   | C   | SR        | 0.62  | 0.55  | -0.22       | -0.23       | -0.25  | 0.55   | .      |
| 51   | C   | SR        | 0.71  | 0.50  | 0.50        | -0.26       | -0.20  | -0.19  | .      |
| 52   | C   | SR        | 0.58  | 0.42  | -0.20       | -0.22       | 0.42   | -0.13  | .      |
| 53   | C   | SR        | 0.42  | 0.30  | -0.03       | 0.30        | -0.13  | -0.15  | .      |
| 54   | C   | SR        | 0.57  | 0.35  | 0.35        | -0.14       | -0.21  | -0.07  | .      |
| 61   | U   | SR        | 0.66  | 0.44  | -0.18       | -0.21       | 0.44   | -0.15  | .      |
| 62   | U   | SR        | 0.51  | 0.46  | -0.23       | -0.18       | 0.46   | -0.13  | .      |
| 63   | U   | CR        | 0.60  | 0.68  | .           | .           | .      | .      | .      |



**Table A8 (cont.)**  
**Summary Item Statistics - Reading Grade 10, Form 2 (Form B Operational Items)**  
**N=20,966**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 64   | U   | SR        | 0.87  | 0.52  | 0.52   | -0.23  | -0.21  | -0.17  | .      |
| 65   | U   | SR        | 0.66  | 0.37  | -0.16  | -0.11  | 0.37   | -0.16  | .      |
| 66   | U   | SR        | 0.78  | 0.53  | -0.20  | -0.24  | -0.23  | 0.53   | .      |
| 67   | U   | SR        | 0.72  | 0.55  | -0.21  | -0.25  | -0.24  | 0.55   | .      |
| 68   | U   | SR        | 0.65  | 0.42  | 0.42   | -0.19  | -0.13  | -0.21  | .      |
| 69   | U   | CR        | 0.56  | 0.69  | .      | .      | .      | .      | .      |
| 70   | U   | SR        | 0.32  | 0.28  | -0.02  | -0.21  | -0.12  | 0.28   | .      |
| 71   | U   | SR        | 0.71  | 0.48  | -0.15  | -0.24  | -0.23  | 0.48   | .      |
| 72   | U   | SR        | 0.80  | 0.54  | -0.21  | -0.25  | -0.23  | 0.54   | .      |
| 73   | U   | SR        | 0.76  | 0.56  | -0.30  | -0.23  | 0.56   | -0.20  | .      |
| 74   | U   | SR        | 0.64  | 0.54  | 0.54   | -0.30  | -0.19  | -0.20  | .      |
| 75   | U   | SR        | 0.34  | 0.33  | -0.08  | 0.33   | -0.12  | -0.19  | .      |
| 76   | U   | SR        | 0.47  | 0.37  | -0.08  | 0.37   | -0.18  | -0.18  | .      |
| 77   | U   | SR        | 0.78  | 0.54  | -0.24  | -0.27  | 0.54   | -0.18  | .      |
| 78   | U   | CR        | 0.56  | 0.61  | .      | .      | .      | .      | .      |
| 79   | U   | CR        | 0.50  | 0.65  | .      | .      | .      | .      | .      |

**Table A9**  
**Summary Item Statistics – Mathematics Grade 3, Field Test Items**  
**N=12,492**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4      | P_BIS5 |
|------|------|-----|-----------|-------------|-------------|--------|--------|-------------|-------------|--------|
| A    | 78   | U   | SR        | 0.82        | 0.45        | -0.32  | -0.23  | -0.20       | 0.45        | .      |
| A    | 79   | U   | SR        | 0.80        | 0.45        | -0.25  | 0.45   | -0.23       | -0.27       | .      |
| A    | 80   | U   | SR        | 0.64        | 0.32        | 0.32   | -0.18  | -0.15       | -0.18       | .      |
| A    | 81   | U   | SR        | 0.68        | 0.57        | -0.21  | 0.57   | -0.30       | -0.37       | .      |
| A    | 82   | U   | SR        | 0.59        | 0.54        | -0.24  | -0.25  | 0.54        | -0.34       | .      |
| A    | 83   | U   | SR        | 0.89        | 0.44        | -0.29  | 0.44   | -0.22       | -0.24       | .      |
| A    | 84A  | U   | CR        | 0.70        | 0.48        | .      | .      | .           | .           | .      |
| A    | 84B  | U   | CR        | 0.42        | 0.52        | .      | .      | .           | .           | .      |
| A    | 85   | U   | SR        | 0.58        | 0.43        | -0.31  | -0.30  | -0.16       | 0.43        | .      |
| A    | 86   | U   | SR        | 0.85        | 0.49        | -0.25  | -0.35  | -0.18       | 0.49        | .      |
| A    | 87   | U   | SR        | 0.90        | 0.43        | -0.27  | -0.22  | 0.43        | -0.21       | .      |
| A    | 88   | U   | SR        | 0.75        | 0.38        | 0.38   | -0.19  | -0.21       | -0.25       | .      |
| A    | 89   | U   | SR        | 0.86        | 0.51        | -0.34  | -0.27  | -0.24       | 0.51        | .      |
| A    | 90   | U   | SR        | 0.72        | 0.43        | -0.27  | -0.27  | 0.43        | -0.14       | .      |
| A    | 91   | U   | SR        | 0.43        | 0.35        | -0.26  | -0.24  | 0.35        | -0.12       | .      |
| A    | 92A  | U   | CR        | 0.74        | 0.48        | .      | .      | .           | .           | .      |
| A    | 92B  | U   | CR        | 0.48        | 0.57        | .      | .      | .           | .           | .      |
| B    | 78   | U   | SR        | 0.63        | 0.40        | -0.19  | -0.29  | -0.16       | 0.40        | .      |
| B    | 79   | U   | SR        | 0.52        | 0.40        | -0.28  | -0.15  | -0.29       | 0.40        | .      |
| B    | 80   | U   | SR        | 0.55        | 0.39        | 0.39   | -0.27  | -0.21       | -0.11       | .      |
| B    | 81   | U   | SR        | 0.77        | 0.53        | -0.16  | -0.45  | 0.53        | -0.20       | .      |
| B    | 82   | U   | SR        | 0.56        | 0.44        | -0.26  | -0.22  | -0.20       | 0.44        | .      |
| B    | 83   | U   | SR        | 0.83        | 0.55        | -0.31  | 0.55   | -0.35       | -0.22       | .      |
| B    | 84   | U   | SR        | 0.63        | 0.39        | -0.31  | -0.11  | -0.18       | 0.39        | .      |
| B    | 85   | U   | SR        | 0.93        | 0.20        | -0.12  | -0.10  | 0.20        | -0.10       | .      |
| B    | 86   | U   | SR        | 0.78        | 0.39        | 0.39   | -0.20  | -0.17       | -0.27       | .      |
| B    | 87   | U   | SR        | 0.67        | 0.44        | -0.22  | -0.23  | -0.24       | 0.44        | .      |
| B    | 88A  | U   | CR        | 0.52        | 0.55        | .      | .      | .           | .           | .      |
| B    | 88B  | U   | CR        | 0.42        | 0.53        | .      | .      | .           | .           | .      |
| B    | 89   | U   | SR        | 0.52        | 0.44        | -0.13  | -0.12  | 0.44        | -0.36       | .      |
| B    | 90   | U   | SR        | 0.59        | 0.46        | -0.23  | 0.46   | -0.20       | -0.27       | .      |
| B    | 91   | U   | SR        | 0.66        | 0.50        | -0.22  | -0.20  | -0.36       | 0.50        | .      |
| B    | 92A  | U   | CR        | 0.45        | 0.50        | .      | .      | .           | .           | .      |
| B    | 92B  | U   | CR        | 0.36        | 0.55        | .      | .      | .           | .           | .      |
| C    | 78A  | U   | CR        | 0.67        | 0.41        | .      | .      | .           | .           | .      |
| C    | 78B  | U   | CR        | 0.45        | 0.37        | .      | .      | .           | .           | .      |
| C    | 79   | U   | SR        | <b>0.21</b> | <b>0.14</b> | -0.21  | -0.05  | <b>0.14</b> | <b>0.13</b> | .      |

**Table A9 (cont.)**  
**Summary Item Statistics – Mathematics Grade 3, Field Test Items**  
**N=12,492**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------------|-------------|--------|-------------|--------|--------|--------|
| C    | 80   | U   | SR        | 0.44        | 0.49        | -0.13  | 0.49        | -0.26  | -0.29  | .      |
| C    | 81   | U   | SR        | 0.79        | 0.33        | -0.18  | 0.33        | -0.20  | -0.19  | .      |
| C    | 82A  | U   | CR        | 0.69        | 0.51        | .      | .           | .      | .      | .      |
| C    | 82B  | U   | CR        | 0.62        | 0.57        | .      | .           | .      | .      | .      |
| C    | 83   | U   | SR        | 0.52        | 0.31        | -0.27  | -0.10       | -0.11  | 0.31   | .      |
| C    | 84   | U   | SR        | 0.46        | 0.40        | 0.40   | -0.15       | -0.24  | -0.21  | .      |
| C    | 85A  | U   | CR        | 0.46        | 0.52        | .      | .           | .      | .      | .      |
| C    | 85B  | U   | CR        | 0.48        | 0.52        | .      | .           | .      | .      | .      |
| D    | 78A  | U   | CR        | 0.47        | <b>0.15</b> | .      | .           | .      | .      | .      |
| D    | 78B  | U   | CR        | 0.28        | 0.40        | .      | .           | .      | .      | .      |
| D    | 79   | U   | SR        | 0.85        | 0.45        | -0.31  | -0.23       | -0.18  | 0.45   | .      |
| D    | 80   | U   | SR        | 0.79        | 0.28        | 0.28   | -0.18       | -0.16  | -0.15  | .      |
| D    | 81   | U   | SR        | 0.33        | 0.17        | -0.18  | <b>0.01</b> | 0.17   | -0.13  | .      |
| D    | 82A  | U   | CR        | 0.56        | 0.44        | .      | .           | .      | .      | .      |
| D    | 82B  | U   | CR        | 0.48        | 0.44        | .      | .           | .      | .      | .      |
| D    | 83   | U   | SR        | 0.91        | 0.42        | -0.24  | 0.42        | -0.17  | -0.26  | .      |
| D    | 84   | U   | SR        | 0.60        | 0.49        | -0.16  | -0.36       | 0.49   | -0.29  | .      |
| D    | 85   | U   | SR        | 0.63        | 0.50        | -0.33  | -0.31       | -0.16  | 0.50   | .      |
| D    | 86   | U   | SR        | 0.76        | 0.42        | 0.42   | -0.22       | -0.25  | -0.24  | .      |
| D    | 87   | U   | SR        | 0.91        | 0.48        | -0.29  | -0.27       | -0.23  | 0.48   | .      |
| D    | 88   | U   | SR        | 0.77        | 0.35        | -0.22  | 0.35        | -0.20  | -0.16  | .      |
| D    | 89   | U   | SR        | 0.80        | 0.46        | -0.26  | -0.25       | 0.46   | -0.24  | .      |
| D    | 90   | U   | SR        | 0.82        | 0.51        | -0.24  | -0.20       | 0.51   | -0.38  | .      |
| D    | 91   | U   | SR        | 0.54        | 0.29        | -0.09  | 0.29        | -0.19  | -0.24  | .      |
| D    | 92   | U   | SR        | 0.80        | 0.38        | -0.19  | -0.20       | -0.23  | 0.38   | .      |
| D    | 93   | U   | SR        | 0.67        | 0.50        | -0.29  | -0.27       | 0.50   | -0.22  | .      |
| D    | 94   | U   | SR        | 0.43        | 0.39        | 0.39   | -0.09       | -0.13  | -0.37  | .      |
| E    | 78A  | U   | CR        | 0.37        | 0.48        | .      | .           | .      | .      | .      |
| E    | 78B  | U   | CR        | 0.22        | 0.48        | .      | .           | .      | .      | .      |
| E    | 79   | U   | SR        | 0.70        | 0.36        | -0.31  | 0.36        | -0.20  | -0.16  | .      |
| E    | 80   | U   | SR        | 0.80        | 0.48        | -0.21  | 0.48        | -0.28  | -0.33  | .      |
| E    | 81   | U   | SR        | 0.89        | 0.39        | -0.26  | -0.15       | -0.26  | 0.39   | .      |
| E    | 83   | U   | SR        | <b>0.26</b> | 0.29        | -0.19  | -0.11       | 0.29   | -0.05  | .      |
| E    | 84   | U   | SR        | 0.80        | 0.36        | 0.36   | -0.15       | -0.20  | -0.26  | .      |
| E    | 85   | U   | SR        | 0.62        | 0.52        | -0.33  | -0.21       | 0.52   | -0.27  | .      |
| E    | 86   | U   | SR        | 0.78        | 0.37        | -0.15  | 0.37        | -0.21  | -0.27  | .      |
| E    | 87   | U   | SR        | 0.53        | 0.28        | -0.20  | -0.14       | -0.15  | 0.28   | .      |

**Table A9 (cont.)**  
**Summary Item Statistics – Mathematics Grade 3, Field Test Items**  
**N=12,492**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| E    | 88   | U   | SR        | 0.80  | 0.41  | -0.26  | 0.41   | -0.20  | -0.21  | .      |
| E    | 89   | U   | SR        | 0.66  | 0.49  | -0.31  | 0.49   | -0.22  | -0.27  | .      |
| E    | 90   | U   | SR        | 0.65  | 0.46  | -0.17  | -0.25  | 0.46   | -0.31  | .      |
| E    | 91   | U   | SR        | 0.64  | 0.46  | -0.24  | -0.23  | -0.25  | 0.46   | .      |
| E    | 92   | U   | SR        | 0.88  | 0.29  | -0.13  | -0.14  | -0.22  | 0.29   | .      |
| E    | 93   | U   | SR        | 0.47  | 0.38  | -0.27  | -0.12  | -0.13  | 0.38   | .      |
| E    | 94   | U   | SR        | 0.57  | 0.31  | -0.19  | -0.20  | -0.10  | 0.31   | .      |

**Table A10**  
**Summary Item Statistics – Mathematics Grade 5, Field Test Items**  
**N=13,012**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------|-------|--------|--------|-------------|--------|--------|
| A    | 77   | U   | SR        | 0.55  | 0.55  | -0.12  | -0.45  | 0.55        | -0.17  | .      |
| A    | 78   | U   | SR        | 0.38  | 0.27  | -0.05  | -0.26  | 0.27        | -0.06  | .      |
| A    | 79   | U   | SR        | 0.45  | 0.40  | -0.28  | -0.10  | -0.22       | 0.40   | .      |
| A    | 80   | U   | SR        | 0.86  | 0.44  | 0.44   | -0.24  | -0.24       | -0.25  | .      |
| A    | 81   | U   | SR        | 0.82  | 0.40  | -0.22  | -0.19  | 0.40        | -0.25  | .      |
| A    | 83   | U   | SR        | 0.31  | 0.32  | -0.20  | -0.12  | -0.08       | 0.32   | .      |
| A    | 84   | U   | SR        | 0.64  | 0.48  | -0.25  | -0.28  | -0.22       | 0.48   | .      |
| A    | 85   | U   | SR        | 0.60  | 0.43  | -0.23  | -0.19  | -0.23       | 0.43   | .      |
| A    | 86   | U   | SR        | 0.45  | 0.48  | -0.15  | 0.48   | -0.23       | -0.28  | .      |
| A    | 87   | U   | SR        | 0.54  | 0.39  | -0.15  | -0.28  | 0.39        | -0.12  | .      |
| A    | 88   | U   | SR        | 0.81  | 0.43  | 0.43   | -0.18  | -0.20       | -0.31  | .      |
| A    | 89   | U   | SR        | 0.63  | 0.53  | -0.28  | 0.53   | -0.25       | -0.29  | .      |
| B    | 77   | U   | SR        | 0.32  | 0.21  | 0.21   | -0.17  | <b>0.01</b> | -0.15  | .      |
| B    | 78   | U   | SR        | 0.32  | 0.25  | 0.25   | -0.14  | -0.03       | -0.20  | .      |
| B    | 79   | U   | SR        | 0.45  | 0.39  | -0.18  | -0.22  | 0.39        | -0.18  | .      |
| B    | 80   | U   | SR        | 0.80  | 0.38  | -0.15  | -0.21  | -0.27       | 0.38   | .      |
| B    | 81   | U   | SR        | 0.60  | 0.40  | -0.20  | -0.20  | -0.25       | 0.40   | .      |
| B    | 82   | U   | SR        | 0.86  | 0.44  | -0.20  | -0.23  | -0.30       | 0.44   | .      |
| B    | 83   | U   | SR        | 0.73  | 0.46  | -0.21  | 0.46   | -0.23       | -0.29  | .      |
| B    | 84   | U   | SR        | 0.72  | 0.37  | -0.19  | -0.20  | 0.37        | -0.23  | .      |
| B    | 85   | U   | SR        | 0.51  | 0.40  | -0.14  | 0.40   | -0.23       | -0.21  | .      |
| B    | 86   | U   | SR        | 0.53  | 0.47  | -0.23  | -0.35  | -0.15       | 0.47   | .      |
| B    | 87A  | U   | CR        | 0.35  | 0.45  | .      | .      | .           | .      | .      |
| B    | 87B  | U   | CR        | 0.31  | 0.61  | .      | .      | .           | .      | .      |
| B    | 88   | U   | SR        | 0.82  | 0.48  | -0.27  | -0.27  | -0.26       | 0.48   | .      |
| B    | 89   | U   | SR        | 0.71  | 0.37  | -0.20  | -0.17  | -0.25       | 0.37   | .      |
| B    | 90   | U   | SR        | 0.90  | 0.28  | 0.28   | -0.13  | -0.14       | -0.19  | .      |
| B    | 91A  | U   | CR        | 0.32  | 0.48  | .      | .      | .           | .      | .      |
| B    | 91B  | U   | CR        | 0.21  | 0.50  | .      | .      | .           | .      | .      |
| C    | 77A  | U   | CR        | 0.46  | 0.59  | .      | .      | .           | .      | .      |
| C    | 77B  | U   | CR        | 0.41  | 0.57  | .      | .      | .           | .      | .      |
| C    | 78   | U   | SR        | 0.82  | 0.42  | -0.17  | 0.42   | -0.24       | -0.28  | .      |
| C    | 79   | U   | SR        | 0.60  | 0.28  | -0.17  | 0.28   | -0.17       | -0.14  | .      |
| C    | 80   | U   | SR        | 0.69  | 0.50  | -0.27  | -0.27  | -0.26       | 0.50   | .      |
| C    | 81   | U   | SR        | 0.61  | 0.47  | 0.47   | -0.23  | -0.29       | -0.19  | .      |
| C    | 82   | U   | SR        | 0.65  | 0.53  | -0.34  | -0.24  | 0.53        | -0.24  | .      |
| C    | 83   | U   | SR        | 0.48  | 0.45  | -0.21  | 0.45   | -0.25       | -0.17  | .      |

**Table A10 (cont.)**  
**Summary Item Statistics – Mathematics Grade 5, Field Test Items**  
**N=13,012**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------------|-------|-------------|--------|--------|--------|--------|
| C    | 84   | U   | SR        | 0.37        | 0.32  | -0.25       | -0.13  | 0.32   | -0.07  | .      |
| C    | 85A  | U   | CR        | 0.28        | 0.50  | .           | .      | .      | .      | .      |
| C    | 85B  | U   | CR        | 0.38        | 0.60  | .           | .      | .      | .      | .      |
| C    | 86   | U   | SR        | 0.42        | 0.51  | -0.21       | -0.11  | 0.51   | -0.36  | .      |
| C    | 87   | U   | SR        | 0.93        | 0.30  | -0.19       | -0.16  | -0.12  | 0.30   | .      |
| C    | 88   | U   | SR        | 0.70        | 0.49  | 0.49        | -0.22  | -0.26  | -0.29  | .      |
| C    | 89A  | U   | CR        | <b>0.06</b> | 0.37  | .           | .      | .      | .      | .      |
| C    | 89B  | U   | CR        | <b>0.15</b> | 0.51  | .           | .      | .      | .      | .      |
| D    | 77A  | U   | CR        | 0.59        | 0.54  | .           | .      | .      | .      | .      |
| D    | 77B  | U   | CR        | 0.61        | 0.53  | .           | .      | .      | .      | .      |
| D    | 78   | U   | SR        | 0.42        | 0.31  | 0.31        | -0.15  | -0.18  | -0.13  | .      |
| D    | 79   | U   | SR        | 0.83        | 0.44  | 0.44        | -0.26  | -0.26  | -0.23  | .      |
| D    | 80   | U   | SR        | 0.87        | 0.36  | -0.19       | 0.36   | -0.21  | -0.23  | .      |
| D    | 81   | U   | SR        | 0.67        | 0.48  | -0.30       | -0.28  | 0.48   | -0.20  | .      |
| D    | 82   | U   | SR        | 0.77        | 0.33  | -0.17       | -0.20  | -0.21  | 0.33   | .      |
| D    | 83   | U   | SR        | 0.38        | 0.47  | -0.10       | -0.11  | 0.47   | -0.37  | .      |
| D    | 84   | U   | SR        | 0.58        | 0.43  | -0.23       | -0.17  | -0.24  | 0.43   | .      |
| D    | 85A  | U   | CR        | 0.52        | 0.54  | .           | .      | .      | .      | .      |
| D    | 85B  | U   | CR        | 0.56        | 0.53  | .           | .      | .      | .      | .      |
| D    | 86   | U   | SR        | 0.95        | 0.26  | -0.12       | -0.16  | -0.14  | 0.26   | .      |
| D    | 87   | U   | SR        | 0.73        | 0.44  | -0.31       | -0.21  | 0.44   | -0.18  | .      |
| D    | 88   | U   | SR        | 0.65        | 0.46  | -0.27       | -0.26  | -0.19  | 0.46   | .      |
| D    | 89A  | U   | CR        | 0.25        | 0.57  | .           | .      | .      | .      | .      |
| D    | 89B  | U   | CR        | 0.28        | 0.60  | .           | .      | .      | .      | .      |
| E    | 77A  | U   | CR        | 0.36        | 0.55  | .           | .      | .      | .      | .      |
| E    | 77B  | U   | CR        | 0.26        | 0.54  | .           | .      | .      | .      | .      |
| E    | 78   | U   | SR        | <b>0.28</b> | 0.18  | <b>0.02</b> | -0.17  | 0.18   | -0.14  | .      |
| E    | 79   | U   | SR        | 0.40        | 0.43  | -0.25       | -0.23  | -0.11  | 0.43   | .      |
| E    | 80   | U   | SR        | 0.80        | 0.31  | -0.13       | 0.31   | -0.22  | -0.18  | .      |
| E    | 82   | U   | SR        | 0.56        | 0.44  | -0.13       | -0.34  | 0.44   | -0.18  | .      |
| E    | 83   | U   | SR        | 0.69        | 0.45  | -0.24       | 0.45   | -0.26  | -0.23  | .      |
| E    | 85A  | U   | CR        | 0.36        | 0.55  | .           | .      | .      | .      | .      |
| E    | 85B  | U   | CR        | 0.26        | 0.55  | .           | .      | .      | .      | .      |
| E    | 86   | U   | SR        | 0.84        | 0.34  | 0.34        | -0.16  | -0.17  | -0.23  | .      |
| E    | 87   | U   | SR        | 0.52        | 0.50  | -0.14       | 0.50   | -0.18  | -0.38  | .      |
| E    | 88   | U   | SR        | 0.59        | 0.46  | -0.24       | -0.28  | 0.46   | -0.17  | .      |
| E    | 89A  | U   | CR        | 0.25        | 0.51  | .           | .      | .      | .      | .      |

**Table A10 (cont.)**  
**Summary Item Statistics – Mathematics Grade 5, Field Test Items**  
**N=13,012**

| FORM | ITEM | C/U | ITEM<br>TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|------|-----|--------------|-------|-------|--------|--------|--------|--------|--------|
| E    | 89B  | U   | CR           | 0.45  | 0.52  | .      | .      | .      | .      | .      |

**Table A11**  
**Summary Item Statistics – Mathematics Grade 8, Field Test Items**  
**N=13,048**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------------|-------------|-------------|-------------|--------|--------|--------|
| A    | 77   | U   | SR        | <b>0.28</b> | 0.44        | <b>0.05</b> | -0.10       | -0.36  | 0.44   | .      |
| A    | 78   | U   | SR        | <b>0.28</b> | 0.15        | 0.15        | <b>0.09</b> | -0.12  | -0.27  | .      |
| A    | 79   | U   | SR        | 0.30        | 0.50        | -0.08       | -0.28       | -0.19  | 0.50   | .      |
| A    | 80A  | U   | CR        | 0.51        | 0.49        | .           | .           | .      | .      | .      |
| A    | 80B  | U   | CR        | 0.49        | 0.44        | .           | .           | .      | .      | .      |
| A    | 81   | U   | SR        | 0.61        | 0.40        | -0.31       | 0.40        | -0.19  | -0.04  | .      |
| A    | 82   | U   | SR        | 0.73        | 0.34        | -0.11       | -0.23       | 0.34   | -0.19  | .      |
| A    | 83   | U   | SR        | 0.40        | 0.18        | -0.07       | 0.18        | -0.08  | -0.06  | .      |
| A    | 84A  | U   | CR        | <b>0.15</b> | 0.56        | .           | .           | .      | .      | .      |
| A    | 84B  | U   | CR        | <b>0.15</b> | 0.63        | .           | .           | .      | .      | .      |
| A    | 85   | U   | SPR       | 0.21        | 0.50        | .           | .           | .      | .      | .      |
| A    | 86   | U   | SPR       | 0.36        | 0.58        | .           | .           | .      | .      | .      |
| A    | 87A  | U   | CR        | <b>0.15</b> | 0.57        | .           | .           | .      | .      | .      |
| A    | 87B  | U   | CR        | <b>0.18</b> | 0.62        | .           | .           | .      | .      | .      |
| A    | 88   | U   | SR        | 0.55        | 0.59        | -0.19       | -0.26       | -0.36  | 0.59   | .      |
| A    | 89   | U   | SR        | 0.35        | 0.31        | <b>0.02</b> | -0.12       | 0.31   | -0.22  | .      |
| A    | 90   | U   | SR        | 0.31        | 0.48        | -0.20       | -0.23       | 0.48   | -0.07  | .      |
| B    | 77   | U   | SPR       | 0.43        | 0.57        | .           | .           | .      | .      | .      |
| B    | 78   | U   | SPR       | <b>0.19</b> | 0.42        | .           | .           | .      | .      | .      |
| B    | 79   | U   | SPR       | 0.29        | 0.22        | .           | .           | .      | .      | .      |
| B    | 80A  | U   | CR        | <b>0.17</b> | 0.54        | .           | .           | .      | .      | .      |
| B    | 80B  | U   | CR        | 0.28        | 0.62        | .           | .           | .      | .      | .      |
| B    | 81   | U   | SR        | 0.70        | <b>0.13</b> | <b>0.13</b> | <b>0.02</b> | -0.18  | -0.05  | .      |
| B    | 82   | U   | SR        | 0.46        | 0.53        | -0.24       | -0.16       | -0.28  | 0.53   | .      |
| B    | 83   | U   | SR        | 0.60        | 0.41        | 0.41        | -0.24       | -0.13  | -0.20  | .      |
| B    | 84   | U   | SR        | 0.72        | 0.49        | -0.23       | -0.21       | 0.49   | -0.27  | .      |
| B    | 85   | U   | SR        | 0.50        | 0.43        | -0.14       | 0.43        | -0.18  | -0.24  | .      |
| B    | 86   | U   | SR        | 0.58        | 0.34        | -0.04       | 0.34        | -0.20  | -0.24  | .      |
| B    | 87   | U   | SR        | 0.90        | 0.37        | -0.20       | -0.20       | 0.37   | -0.12  | .      |
| B    | 88   | U   | SR        | 0.36        | 0.40        | -0.05       | 0.40        | -0.22  | -0.20  | .      |
| B    | 89   | U   | SPR       | 0.30        | 0.40        | .           | .           | .      | .      | .      |
| B    | 90   | U   | SPR       | 0.29        | 0.44        | .           | .           | .      | .      | .      |
| B    | 91A  | U   | CR        | <b>0.19</b> | 0.58        | .           | .           | .      | .      | .      |
| B    | 91B  | U   | CR        | 0.36        | 0.62        | .           | .           | .      | .      | .      |
| C    | 77   | U   | SR        | 0.38        | 0.40        | -0.30       | -0.15       | -0.01  | 0.40   | .      |
| C    | 78   | U   | SR        | 0.32        | 0.38        | -0.06       | -0.21       | -0.19  | 0.38   | .      |
| C    | 79   | U   | SPR       | 0.29        | 0.61        | .           | .           | .      | .      | .      |



**Table A11 (cont.)**  
**Summary Item Statistics – Mathematics Grade 8, Field Test Items**  
**N=13,048**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------------|-------------|-------------|--------|-------------|--------|--------|
| C    | 80   | U   | SPR       | <b>0.15</b> | 0.53        | .           | .      | .           | .      | .      |
| C    | 81A  | U   | CR        | 0.30        | 0.60        | .           | .      | .           | .      | .      |
| C    | 81B  | U   | CR        | 0.44        | 0.55        | .           | .      | .           | .      | .      |
| C    | 82A  | U   | CR        | <b>0.17</b> | 0.56        | .           | .      | .           | .      | .      |
| C    | 82B  | U   | CR        | <b>0.17</b> | 0.63        | .           | .      | .           | .      | .      |
| C    | 83   | U   | SR        | 0.56        | 0.52        | -0.27       | 0.52   | -0.22       | -0.22  | .      |
| C    | 84   | U   | SR        | 0.66        | 0.37        | 0.37        | -0.13  | -0.23       | -0.19  | .      |
| C    | 85A  | U   | CR        | 0.54        | 0.36        | .           | .      | .           | .      | .      |
| C    | 85B  | U   | CR        | 0.48        | 0.46        | .           | .      | .           | .      | .      |
| D    | 77   | U   | SPR       | 0.27        | 0.56        | .           | .      | .           | .      | .      |
| D    | 78   | U   | SPR       | 0.23        | 0.60        | .           | .      | .           | .      | .      |
| D    | 79   | U   | SPR       | <b>0.17</b> | 0.45        | .           | .      | .           | .      | .      |
| D    | 80   | U   | SPR       | 0.47        | 0.52        | .           | .      | .           | .      | .      |
| D    | 81A  | U   | CR        | 0.29        | 0.62        | .           | .      | .           | .      | .      |
| D    | 81B  | U   | CR        | 0.40        | 0.60        | .           | .      | .           | .      | .      |
| D    | 82   | U   | SR        | 0.59        | 0.36        | -0.24       | -0.12  | -0.12       | 0.36   | .      |
| D    | 83   | U   | SR        | 0.51        | 0.23        | 0.23        | -0.05  | -0.22       | -0.17  | .      |
| D    | 84   | U   | SR        | 0.46        | 0.40        | -0.26       | -0.16  | 0.40        | -0.10  | .      |
| D    | 85A  | U   | CR        | <b>0.06</b> | 0.34        | .           | .      | .           | .      | .      |
| D    | 85B  | U   | CR        | <b>0.18</b> | 0.57        | .           | .      | .           | .      | .      |
| D    | 86   | U   | SR        | 0.37        | 0.25        | -0.16       | -0.06  | 0.25        | -0.05  | .      |
| D    | 87   | U   | SR        | 0.49        | 0.42        | -0.22       | -0.26  | 0.42        | -0.04  | .      |
| D    | 88A  | U   | CR        | 0.41        | 0.54        | .           | .      | .           | .      | .      |
| D    | 88B  | U   | CR        | 0.41        | 0.59        | .           | .      | .           | .      | .      |
| E    | 77   | U   | SR        | 0.34        | 0.43        | -0.20       | -0.14  | -0.16       | 0.43   | .      |
| E    | 78   | U   | SR        | 0.47        | 0.46        | -0.27       | -0.23  | -0.08       | 0.46   | .      |
| E    | 79   | U   | SR        | 0.46        | 0.36        | -0.10       | 0.36   | -0.17       | -0.23  | .      |
| E    | 80   | U   | SR        | 0.60        | 0.53        | -0.14       | -0.44  | 0.53        | -0.09  | .      |
| E    | 81A  | U   | CR        | 0.38        | 0.54        | .           | .      | .           | .      | .      |
| E    | 81B  | U   | CR        | 0.46        | 0.53        | .           | .      | .           | .      | .      |
| E    | 82   | U   | SPR       | 0.24        | 0.59        | .           | .      | .           | .      | .      |
| E    | 83   | U   | SPR       | 0.39        | 0.50        | .           | .      | .           | .      | .      |
| E    | 84   | U   | SPR       | 0.39        | 0.51        | .           | .      | .           | .      | .      |
| E    | 85   | U   | SPR       | 0.30        | 0.53        | .           | .      | .           | .      | .      |
| E    | 87   | U   | SR        | 0.53        | 0.45        | 0.45        | -0.22  | -0.17       | -0.24  | .      |
| E    | 88   | U   | SR        | 0.70        | 0.49        | -0.28       | -0.26  | 0.49        | -0.17  | .      |
| E    | 89   | U   | SR        | <b>0.29</b> | <b>0.14</b> | <b>0.06</b> | -0.12  | <b>0.14</b> | -0.11  | .      |

**Table A11 (cont.)**  
**Summary Item Statistics – Mathematics Grade 8, Field Test Items**  
**N=13,048**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------------|-------|--------|-------------|--------|--------|--------|
| E    | 90   | U   | SR        | <b>0.27</b> | 0.21  | -0.38  | <b>0.11</b> | 0.21   | -0.03  | .      |
| E    | 91   | U   | SR        | 0.53        | 0.52  | -0.26  | -0.27       | -0.18  | 0.52   | .      |
| E    | 92   | U   | SR        | 0.75        | 0.51  | -0.23  | 0.51        | -0.27  | -0.25  | .      |
| E    | 93   | U   | SR        | 0.57        | 0.41  | 0.41   | -0.07       | -0.25  | -0.26  | .      |
| E    | 94   | U   | SPR       | 0.37        | 0.64  | .      | .           | .      | .      | .      |

**Table A12**  
**Summary Item Statistics – Reading Grade 10, Field Test Items**  
**N=21,138**

| FORM | ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3      | P_BIS4 | P_BIS5 |
|------|------|-----|-----------|-------------|-------------|-------------|-------------|-------------|--------|--------|
| A    | 80   | U   | SR        | 0.76        | 0.45        | 0.45        | -0.18       | -0.23       | -0.12  | .      |
| A    | 81   | U   | SR        | 0.76        | 0.57        | -0.28       | -0.24       | 0.57        | -0.18  | .      |
| A    | 82   | U   | SR        | 0.71        | 0.53        | -0.21       | -0.26       | 0.53        | -0.19  | .      |
| A    | 83   | U   | SR        | 0.69        | 0.53        | -0.28       | 0.53        | -0.15       | -0.24  | .      |
| A    | 84   | U   | CR        | 0.37        | 0.62        | .           | .           | .           | .      | .      |
| A    | 85   | U   | SR        | 0.80        | 0.53        | -0.25       | -0.22       | 0.53        | -0.15  | .      |
| A    | 86   | U   | SR        | 0.61        | 0.39        | -0.10       | -0.20       | 0.39        | -0.19  | .      |
| A    | 87   | U   | SR        | 0.36        | 0.19        | 0.19        | <b>0.16</b> | -0.18       | -0.16  | .      |
| A    | 88   | U   | SR        | 0.36        | 0.29        | 0.29        | -0.24       | -0.15       | 0.05   | .      |
| A    | 89   | U   | SR        | 0.44        | 0.33        | -0.06       | -0.04       | -0.18       | 0.33   | .      |
| A    | 90   | U   | SR        | 0.58        | 0.48        | -0.22       | 0.48        | -0.17       | -0.15  | .      |
| A    | 91   | U   | CR        | 0.37        | 0.61        | .           | .           | .           | .      | .      |
| B    | 80   | U   | SR        | 0.77        | 0.53        | -0.14       | -0.26       | -0.25       | 0.53   | .      |
| B    | 81   | U   | SR        | 0.47        | 0.42        | -0.14       | -0.15       | -0.12       | 0.42   | .      |
| B    | 82   | U   | SR        | 0.71        | 0.46        | -0.25       | -0.23       | 0.46        | -0.07  | .      |
| B    | 83   | U   | SR        | 0.72        | 0.50        | -0.15       | 0.50        | -0.20       | -0.23  | .      |
| B    | 84   | U   | SR        | 0.74        | 0.55        | -0.21       | -0.25       | 0.55        | -0.22  | .      |
| B    | 85   | U   | SR        | 0.85        | 0.59        | -0.25       | 0.59        | -0.24       | -0.23  | .      |
| B    | 86   | U   | SR        | 0.68        | 0.56        | 0.56        | -0.22       | -0.19       | -0.26  | .      |
| B    | 87   | U   | CR        | 0.36        | 0.62        | .           | .           | .           | .      | .      |
| B    | 88   | U   | SR        | 0.71        | 0.38        | 0.38        | -0.06       | -0.23       | -0.19  | .      |
| B    | 89   | U   | SR        | 0.76        | 0.49        | -0.18       | -0.19       | 0.49        | -0.20  | .      |
| B    | 90   | U   | CR        | 0.35        | 0.61        | .           | .           | .           | .      | .      |
| C    | 80   | U   | SR        | <b>0.28</b> | <b>0.04</b> | <b>0.17</b> | <b>0.04</b> | <b>0.01</b> | -0.21  | .      |
| C    | 81   | U   | SR        | 0.50        | 0.44        | -0.17       | -0.11       | 0.44        | -0.22  | .      |
| C    | 82   | U   | SR        | 0.39        | 0.39        | -0.05       | 0.39        | -0.20       | -0.13  | .      |
| C    | 83   | U   | SR        | 0.59        | 0.53        | -0.20       | -0.22       | 0.53        | -0.22  | .      |
| C    | 84   | U   | SR        | 0.77        | 0.50        | -0.21       | -0.26       | -0.15       | 0.50   | .      |
| C    | 85   | U   | CR        | 0.37        | 0.61        | .           | .           | .           | .      | .      |
| C    | 86   | U   | SR        | 0.47        | 0.38        | 0.38        | -0.07       | -0.06       | -0.25  | .      |
| C    | 87   | U   | SR        | <b>0.25</b> | 0.29        | -0.04       | 0.29        | -0.15       | -0.02  | .      |
| C    | 88   | U   | SR        | 0.50        | 0.27        | -0.09       | <b>0.01</b> | 0.27        | -0.20  | .      |
| C    | 89   | U   | SR        | 0.48        | 0.33        | -0.10       | -0.06       | -0.17       | 0.33   | .      |
| C    | 90   | U   | SR        | 0.54        | 0.38        | -0.03       | -0.24       | 0.38        | -0.16  | .      |
| C    | 91   | U   | CR        | 0.29        | 0.59        | .           | .           | .           | .      | .      |

**Table A13**  
**Summary Item Statistics – Mathematics Grade 4, Form A**  
**N=10,999**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|-------------|--------|--------|--------|
| 1    | C   | SR        | 0.78  | 0.33  | -0.20  | -0.16       | 0.33   | -0.16  | -0.14  |
| 2    | C   | SR        | 0.62  | 0.37  | 0.37   | -0.32       | -0.10  | -0.11  | -0.12  |
| 3    | C   | SR        | 0.77  | 0.40  | -0.21  | -0.20       | -0.13  | 0.40   | -0.21  |
| 4    | C   | SR        | 0.56  | 0.40  | -0.26  | -0.15       | -0.10  | 0.40   | -0.19  |
| 10   | C   | SR        | 0.51  | 0.36  | -0.17  | -0.14       | -0.26  | 0.36   | .      |
| 17   | C   | SR        | 0.88  | 0.43  | -0.32  | 0.43        | -0.19  | -0.18  | .      |
| 18   | C   | SR        | 0.52  | 0.39  | 0.39   | -0.24       | -0.15  | -0.25  | .      |
| 20   | C   | SR        | 0.72  | 0.42  | -0.23  | 0.42        | -0.21  | -0.25  | .      |
| 27   | C   | SR        | 0.56  | 0.40  | -0.19  | -0.20       | 0.40   | -0.26  | .      |
| 31   | C   | SR        | 0.47  | 0.45  | -0.20  | 0.45        | -0.11  | -0.30  | .      |
| 33A  | U   | CR        | 0.89  | 0.33  | .      | .           | .      | .      | .      |
| 33B  | U   | CR        | 0.35  | 0.50  | .      | .           | .      | .      | .      |
| 34   | C   | SR        | 0.88  | 0.33  | -0.20  | -0.19       | -0.17  | 0.33   | .      |
| 35   | C   | SR        | 0.74  | 0.44  | -0.19  | 0.44        | -0.25  | -0.26  | .      |
| 36   | C   | SR        | 0.63  | 0.32  | -0.09  | 0.32        | -0.14  | -0.27  | .      |
| 37   | C   | SR        | 0.86  | 0.41  | -0.27  | -0.20       | -0.19  | 0.41   | .      |
| 38   | C   | SR        | 0.87  | 0.31  | -0.15  | 0.31        | -0.21  | -0.15  | .      |
| 39   | C   | SR        | 0.83  | 0.42  | -0.22  | -0.29       | -0.18  | 0.42   | .      |
| 40A  | U   | CR        | 0.72  | 0.38  | .      | .           | .      | .      | .      |
| 40B  | U   | CR        | 0.38  | 0.62  | .      | .           | .      | .      | .      |
| 41   | C   | SR        | 0.38  | 0.42  | -0.24  | -0.12       | 0.42   | -0.23  | .      |
| 42   | C   | SR        | 0.52  | 0.49  | -0.37  | -0.25       | -0.13  | 0.49   | .      |
| 43   | C   | SR        | 0.39  | 0.36  | -0.18  | <b>0.01</b> | 0.36   | -0.29  | .      |
| 44   | C   | SR        | 0.40  | 0.33  | -0.07  | -0.12       | 0.33   | -0.23  | .      |
| 45   | C   | SR        | 0.56  | 0.54  | -0.27  | -0.24       | -0.27  | 0.54   | .      |
| 46   | C   | SR        | 0.55  | 0.48  | -0.23  | -0.18       | -0.29  | 0.48   | .      |
| 47A  | U   | CR        | 0.36  | 0.59  | .      | .           | .      | .      | .      |
| 47B  | U   | CR        | 0.37  | 0.64  | .      | .           | .      | .      | .      |
| 48   | C   | SR        | 0.82  | 0.39  | 0.39   | -0.20       | -0.20  | -0.21  | .      |
| 49   | C   | SR        | 0.34  | 0.35  | -0.07  | -0.25       | -0.06  | 0.35   | .      |
| 50   | C   | SR        | 0.69  | 0.40  | -0.20  | -0.23       | 0.40   | -0.19  | .      |
| 51   | C   | SR        | 0.84  | 0.37  | -0.20  | -0.17       | 0.37   | -0.19  | .      |
| 52   | C   | SR        | 0.56  | 0.45  | -0.18  | -0.21       | -0.23  | 0.45   | .      |
| 53   | C   | SR        | 0.78  | 0.41  | -0.24  | -0.20       | -0.25  | 0.41   | .      |
| 54   | C   | SR        | 0.49  | 0.42  | -0.28  | 0.42        | -0.09  | -0.22  | .      |
| 55   | C   | SR        | 0.79  | 0.40  | 0.40   | -0.29       | -0.20  | -0.16  | .      |
| 56   | C   | SR        | 0.78  | 0.16  | 0.16   | -0.10       | -0.11  | -0.17  | .      |

**Table A13 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form A**  
**N=10,999**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3      | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
| 57   | C   | SR        | 0.82        | 0.25        | 0.25        | -0.15       | -0.15       | -0.17       | .      |
| 58   | C   | SR        | 0.68        | 0.49        | -0.28       | -0.25       | -0.26       | 0.49        | .      |
| 59   | C   | SR        | <b>0.11</b> | 0.19        | -0.26       | -0.02       | <b>0.08</b> | 0.19        | .      |
| 60A  | U   | CR        | 0.38        | 0.60        | .           | .           | .           | .           | .      |
| 60B  | U   | CR        | 0.53        | 0.60        | .           | .           | .           | .           | .      |
| 61   | C   | SR        | 0.47        | 0.33        | -0.15       | -0.26       | 0.33        | -0.07       | .      |
| 62   | C   | SR        | 0.77        | 0.40        | -0.12       | 0.40        | -0.31       | -0.20       | .      |
| 63   | C   | SR        | 0.46        | 0.45        | -0.26       | -0.17       | 0.45        | -0.23       | .      |
| 64   | C   | SR        | 0.52        | 0.31        | -0.21       | 0.31        | -0.13       | -0.12       | .      |
| 65   | C   | SR        | 0.53        | 0.48        | -0.13       | -0.28       | -0.27       | 0.48        | .      |
| 66   | C   | SR        | 0.64        | 0.51        | -0.17       | 0.51        | -0.25       | -0.33       | .      |
| 67   | C   | SR        | 0.55        | 0.56        | -0.20       | -0.36       | -0.24       | 0.56        | .      |
| 68A  | U   | CR        | 0.26        | 0.53        | .           | .           | .           | .           | .      |
| 68B  | U   | CR        | 0.49        | 0.69        | .           | .           | .           | .           | .      |
| 69   | U   | SR        | 0.47        | 0.49        | -0.37       | -0.15       | 0.49        | -0.13       | .      |
| 70   | U   | SR        | 0.57        | 0.43        | -0.16       | 0.43        | -0.31       | -0.21       | .      |
| 71   | U   | SR        | 0.63        | 0.48        | -0.23       | -0.33       | 0.48        | -0.20       | .      |
| 72   | U   | SR        | 0.52        | 0.51        | -0.35       | -0.23       | -0.21       | 0.51        | .      |
| 73   | U   | SR        | 0.40        | 0.40        | -0.40       | <b>0.04</b> | -0.17       | 0.40        | .      |
| 74A  | U   | CR        | 0.47        | 0.66        | .           | .           | .           | .           | .      |
| 74B  | U   | CR        | 0.54        | 0.69        | .           | .           | .           | .           | .      |
| 75A  | U   | CR        | <b>0.12</b> | 0.40        | .           | .           | .           | .           | .      |
| 75B  | U   | CR        | 0.29        | 0.52        | .           | .           | .           | .           | .      |
| 76   | U   | SR        | 0.83        | 0.41        | 0.41        | -0.21       | -0.21       | -0.25       | .      |
| 77   | U   | SR        | 0.66        | 0.48        | -0.24       | -0.23       | 0.48        | -0.28       | .      |
| 78   | U   | SR        | <b>0.28</b> | <b>0.13</b> | <b>0.14</b> | -0.27       | -0.16       | <b>0.13</b> | .      |
| 79   | U   | SR        | 0.42        | 0.38        | -0.07       | -0.22       | -0.23       | 0.38        | .      |
| 80   | U   | SR        | 0.80        | 0.41        | 0.41        | -0.30       | -0.17       | -0.19       | .      |
| 81   | U   | SR        | 0.48        | 0.45        | -0.39       | -0.24       | -0.08       | 0.45        | .      |
| 82   | U   | SR        | <b>0.16</b> | 0.29        | -0.13       | -0.01       | 0.29        | -0.18       | .      |
| 83   | U   | SR        | 0.51        | 0.44        | -0.14       | -0.24       | -0.28       | 0.44        | .      |
| 84   | U   | SR        | 0.69        | 0.39        | -0.20       | -0.23       | -0.21       | 0.39        | .      |
| 85   | U   | SR        | 0.77        | 0.48        | -0.30       | -0.23       | 0.48        | -0.25       | .      |
| 86   | U   | SR        | <b>0.20</b> | 0.17        | -0.40       | -0.24       | <b>0.27</b> | 0.17        | .      |
| 87   | U   | SR        | 0.61        | 0.45        | -0.32       | -0.18       | -0.18       | 0.45        | .      |
| 88   | U   | SR        | 0.66        | 0.53        | 0.53        | -0.26       | -0.32       | -0.23       | .      |
| 89   | U   | SR        | 0.85        | 0.35        | 0.35        | -0.19       | -0.21       | -0.16       | .      |

**Table A13 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form A**  
**N=10,999**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|-------------|--------|--------|--------|
| 90   | U   | SR        | 0.53        | 0.27  | -0.12  | -0.13       | -0.15  | 0.27   | .      |
| 91   | U   | SR        | 0.61        | 0.41  | 0.41   | -0.24       | -0.20  | -0.21  | .      |
| 92   | U   | SR        | 0.54        | 0.53  | -0.27  | -0.27       | -0.23  | 0.53   | .      |
| 93   | U   | SR        | 0.37        | 0.45  | -0.23  | -0.18       | -0.18  | 0.45   | .      |
| 94   | U   | SR        | 0.69        | 0.46  | -0.27  | -0.22       | -0.24  | 0.46   | .      |
| 95   | U   | SR        | 0.77        | 0.41  | -0.29  | 0.41        | -0.22  | -0.15  | .      |
| 96   | U   | SR        | 0.63        | 0.44  | -0.14  | -0.23       | 0.44   | -0.30  | .      |
| 97   | U   | SR        | 0.60        | 0.53  | -0.27  | -0.28       | 0.53   | -0.26  | .      |
| 98   | U   | SR        | 0.58        | 0.38  | -0.20  | 0.38        | -0.20  | -0.18  | .      |
| 99   | U   | SR        | 0.60        | 0.53  | -0.26  | -0.24       | 0.53   | -0.30  | .      |
| 100  | U   | SR        | 0.66        | 0.47  | 0.47   | -0.20       | -0.27  | -0.26  | .      |
| 101  | U   | SR        | 0.56        | 0.40  | -0.26  | -0.16       | 0.40   | -0.23  | .      |
| 102  | U   | SR        | 0.93        | 0.34  | -0.19  | -0.17       | -0.19  | 0.34   | .      |
| 103  | U   | SR        | 0.77        | 0.50  | -0.20  | -0.33       | 0.50   | -0.28  | .      |
| 104  | U   | SR        | 0.54        | 0.54  | -0.22  | -0.20       | 0.54   | -0.35  | .      |
| 105  | U   | SR        | 0.46        | 0.45  | 0.45   | -0.13       | -0.26  | -0.23  | .      |
| 106  | U   | SR        | <b>0.18</b> | 0.29  | 0.29   | -0.19       | -0.10  | -0.11  | .      |
| 107  | U   | SR        | 0.53        | 0.55  | -0.32  | -0.24       | 0.55   | -0.24  | .      |
| 108  | U   | SR        | 0.32        | 0.36  | -0.35  | <b>0.02</b> | 0.36   | -0.14  | .      |
| 109  | U   | SR        | 0.71        | 0.49  | 0.49   | -0.20       | -0.30  | -0.27  | .      |

**Table A14**  
**Summary Item Statistics – Mathematics Grade 4, Form B**  
**N=10,768**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|-------------|--------|--------|--------|
| 1    | C   | SR        | 0.78        | 0.33  | -0.18  | -0.15       | 0.33   | -0.19  | -0.15  |
| 2    | C   | SR        | 0.62        | 0.35  | 0.35   | -0.32       | -0.08  | -0.09  | -0.11  |
| 3    | C   | SR        | 0.77        | 0.40  | -0.19  | -0.22       | -0.14  | 0.40   | -0.22  |
| 4    | C   | SR        | 0.58        | 0.38  | -0.27  | -0.15       | -0.09  | 0.38   | -0.17  |
| 10   | C   | SR        | 0.52        | 0.37  | -0.17  | -0.13       | -0.27  | 0.37   | .      |
| 17   | C   | SR        | 0.89        | 0.41  | -0.31  | 0.41        | -0.18  | -0.18  | .      |
| 18   | C   | SR        | 0.52        | 0.40  | 0.40   | -0.27       | -0.14  | -0.24  | .      |
| 20   | C   | SR        | 0.72        | 0.42  | -0.21  | 0.42        | -0.23  | -0.25  | .      |
| 27   | C   | SR        | 0.58        | 0.40  | -0.17  | -0.22       | 0.40   | -0.26  | .      |
| 31   | C   | SR        | 0.46        | 0.45  | -0.18  | 0.45        | -0.11  | -0.31  | .      |
| 33A  | U   | CR        | 0.69        | 0.41  | .      | .           | .      | .      | .      |
| 33B  | U   | CR        | 0.53        | 0.49  | .      | .           | .      | .      | .      |
| 34   | C   | SR        | 0.90        | 0.33  | -0.20  | -0.19       | -0.16  | 0.33   | .      |
| 35   | C   | SR        | 0.76        | 0.44  | -0.20  | 0.44        | -0.25  | -0.27  | .      |
| 36   | C   | SR        | 0.64        | 0.31  | -0.09  | 0.31        | -0.13  | -0.26  | .      |
| 37   | C   | SR        | 0.88        | 0.41  | -0.27  | -0.21       | -0.20  | 0.41   | .      |
| 38   | C   | SR        | 0.88        | 0.27  | -0.14  | 0.27        | -0.19  | -0.12  | .      |
| 39   | C   | SR        | 0.84        | 0.41  | -0.19  | -0.30       | -0.20  | 0.41   | .      |
| 40A  | U   | CR        | 0.28        | 0.44  | .      | .           | .      | .      | .      |
| 40B  | U   | CR        | 0.35        | 0.58  | .      | .           | .      | .      | .      |
| 41   | C   | SR        | 0.39        | 0.40  | -0.23  | -0.12       | 0.40   | -0.23  | .      |
| 42   | C   | SR        | 0.53        | 0.46  | -0.35  | -0.26       | -0.14  | 0.46   | .      |
| 43   | C   | SR        | 0.40        | 0.34  | -0.17  | <b>0.00</b> | 0.34   | -0.28  | .      |
| 44   | C   | SR        | 0.41        | 0.34  | -0.08  | -0.12       | 0.34   | -0.24  | .      |
| 45   | C   | SR        | 0.57        | 0.54  | -0.27  | -0.26       | -0.26  | 0.54   | .      |
| 46   | C   | SR        | 0.55        | 0.47  | -0.23  | -0.17       | -0.30  | 0.47   | .      |
| 47A  | U   | CR        | <b>0.16</b> | 0.45  | .      | .           | .      | .      | .      |
| 47B  | U   | CR        | 0.24        | 0.61  | .      | .           | .      | .      | .      |
| 48   | C   | SR        | 0.84        | 0.37  | 0.37   | -0.19       | -0.20  | -0.20  | .      |
| 49   | C   | SR        | 0.34        | 0.37  | -0.06  | -0.27       | -0.08  | 0.37   | .      |
| 50   | C   | SR        | 0.69        | 0.40  | -0.18  | -0.24       | 0.40   | -0.20  | .      |
| 51   | C   | SR        | 0.87        | 0.35  | -0.19  | -0.18       | 0.35   | -0.18  | .      |
| 52   | C   | SR        | 0.55        | 0.40  | -0.16  | -0.19       | -0.22  | 0.40   | .      |
| 53   | C   | SR        | 0.80        | 0.43  | -0.24  | -0.20       | -0.27  | 0.43   | .      |
| 54   | C   | SR        | 0.50        | 0.41  | -0.28  | 0.41        | -0.10  | -0.21  | .      |
| 55   | C   | SR        | 0.82        | 0.38  | 0.38   | -0.28       | -0.20  | -0.15  | .      |
| 56   | C   | SR        | 0.79        | 0.16  | 0.16   | -0.10       | -0.12  | -0.15  | .      |

**Table A14 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form B**  
**N=10,768**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2      | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|-------------|-------------|--------|--------|
| 57   | C   | SR        | 0.83        | 0.23  | 0.23   | -0.16       | -0.13       | -0.15  | .      |
| 58   | C   | SR        | 0.70        | 0.50  | -0.29  | -0.24       | -0.27       | 0.50   | .      |
| 59   | C   | SR        | <b>0.11</b> | 0.23  | -0.29  | -0.03       | <b>0.08</b> | 0.23   | .      |
| 60A  | U   | CR        | 0.83        | 0.45  | .      | .           | .           | .      | .      |
| 60B  | U   | CR        | 0.52        | 0.55  | .      | .           | .           | .      | .      |
| 61   | C   | SR        | 0.48        | 0.30  | -0.15  | -0.25       | 0.30        | -0.06  | .      |
| 62   | C   | SR        | 0.78        | 0.39  | -0.11  | 0.39        | -0.32       | -0.18  | .      |
| 63   | C   | SR        | 0.45        | 0.43  | -0.26  | -0.17       | 0.43        | -0.20  | .      |
| 64   | C   | SR        | 0.53        | 0.30  | -0.22  | 0.30        | -0.13       | -0.09  | .      |
| 65   | C   | SR        | 0.58        | 0.50  | -0.15  | -0.30       | -0.27       | 0.50   | .      |
| 66   | C   | SR        | 0.66        | 0.49  | -0.19  | 0.49        | -0.22       | -0.31  | .      |
| 67   | C   | SR        | 0.55        | 0.57  | -0.20  | -0.36       | -0.25       | 0.57   | .      |
| 68A  | U   | CR        | 0.39        | 0.63  | .      | .           | .           | .      | .      |
| 68B  | U   | CR        | 0.36        | 0.64  | .      | .           | .           | .      | .      |
| 69   | U   | SR        | <b>0.19</b> | 0.27  | -0.29  | -0.10       | <b>0.11</b> | 0.27   | .      |
| 70   | U   | SR        | 0.60        | 0.54  | -0.24  | -0.38       | 0.54        | -0.19  | .      |
| 71   | U   | SR        | 0.52        | 0.38  | 0.38   | -0.24       | -0.18       | -0.22  | .      |
| 72   | U   | SR        | 0.64        | 0.52  | -0.28  | -0.27       | 0.52        | -0.29  | .      |
| 73   | U   | SR        | 0.56        | 0.35  | -0.26  | -0.15       | -0.15       | 0.35   | .      |
| 74A  | U   | CR        | 0.43        | 0.57  | .      | .           | .           | .      | .      |
| 74B  | U   | CR        | 0.52        | 0.63  | .      | .           | .           | .      | .      |
| 75A  | U   | CR        | 0.29        | 0.47  | .      | .           | .           | .      | .      |
| 75B  | U   | CR        | 0.36        | 0.53  | .      | .           | .           | .      | .      |
| 76   | U   | SR        | 0.85        | 0.27  | -0.16  | 0.27        | -0.15       | -0.13  | .      |
| 77   | U   | SR        | <b>0.17</b> | 0.25  | -0.30  | <b>0.11</b> | -0.14       | 0.25   | .      |
| 78   | U   | SR        | 0.74        | 0.51  | -0.19  | 0.51        | -0.24       | -0.37  | .      |
| 79   | U   | SR        | 0.56        | 0.46  | 0.46   | -0.16       | -0.30       | -0.23  | .      |
| 80   | U   | SR        | 0.94        | 0.20  | -0.12  | 0.20        | -0.12       | -0.07  | .      |
| 81   | U   | SR        | 0.70        | 0.26  | 0.26   | -0.20       | -0.13       | -0.19  | .      |
| 82   | U   | SR        | 0.63        | 0.49  | -0.37  | -0.23       | 0.49        | -0.14  | .      |
| 83   | U   | SR        | 0.43        | 0.39  | -0.11  | -0.17       | 0.39        | -0.27  | .      |
| 84   | U   | SR        | 0.86        | 0.27  | -0.11  | 0.27        | -0.14       | -0.19  | .      |
| 85   | U   | SR        | 0.67        | 0.46  | -0.25  | -0.23       | 0.46        | -0.27  | .      |
| 86   | U   | SR        | 0.51        | 0.44  | -0.25  | -0.25       | -0.19       | 0.44   | .      |
| 87   | U   | SR        | 0.70        | 0.38  | -0.21  | -0.23       | -0.19       | 0.38   | .      |
| 88   | U   | SR        | <b>0.22</b> | 0.28  | -0.14  | -0.02       | 0.28        | -0.21  | .      |
| 89   | U   | SR        | 0.82        | 0.42  | -0.26  | -0.22       | 0.42        | -0.20  | .      |



**Table A14 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form B**  
**N=10,768**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|--------|--------|-------------|-------------|--------|
| 90   | U   | SR        | 0.66        | 0.51        | -0.30  | -0.27  | 0.51        | -0.22       | .      |
| 91   | U   | SR        | 0.58        | 0.52        | -0.17  | 0.52   | -0.21       | -0.36       | .      |
| 92   | U   | SR        | 0.39        | 0.34        | -0.05  | -0.24  | 0.34        | -0.16       | .      |
| 93   | U   | SR        | 0.43        | 0.38        | -0.24  | -0.06  | -0.22       | 0.38        | .      |
| 94   | U   | SR        | 0.53        | 0.48        | 0.48   | -0.21  | -0.26       | -0.23       | .      |
| 95   | U   | SR        | 0.78        | 0.48        | -0.33  | -0.23  | -0.20       | 0.48        | .      |
| 96   | U   | SR        | 0.76        | 0.44        | -0.26  | 0.44   | -0.26       | -0.20       | .      |
| 97   | U   | SR        | 0.67        | 0.55        | -0.25  | -0.30  | -0.31       | 0.55        | .      |
| 98   | U   | SR        | 0.48        | 0.55        | -0.24  | -0.34  | 0.55        | -0.20       | .      |
| 99   | U   | SR        | 0.49        | 0.34        | -0.17  | 0.34   | -0.18       | -0.17       | .      |
| 100  | U   | SR        | 0.66        | 0.45        | -0.21  | 0.45   | -0.29       | -0.19       | .      |
| 101  | U   | SR        | 0.83        | 0.41        | -0.25  | -0.24  | -0.19       | 0.41        | .      |
| 102  | U   | SR        | 0.48        | 0.29        | -0.19  | -0.18  | 0.29        | -0.08       | .      |
| 103  | U   | SR        | 0.39        | 0.19        | 0.19   | -0.08  | -0.06       | -0.13       | .      |
| 104  | U   | SR        | 0.74        | 0.53        | -0.30  | -0.30  | 0.53        | -0.24       | .      |
| 105  | U   | SR        | 0.54        | 0.34        | -0.28  | -0.10  | -0.19       | 0.34        | .      |
| 106  | U   | SR        | 0.46        | 0.40        | -0.17  | -0.23  | 0.40        | -0.22       | .      |
| 107  | U   | SR        | 0.80        | 0.50        | 0.50   | -0.26  | -0.28       | -0.26       | .      |
| 108  | U   | SR        | 0.40        | 0.30        | -0.13  | 0.30   | -0.12       | -0.17       | .      |
| 109  | U   | SR        | <b>0.30</b> | <b>0.04</b> | -0.12  | -0.06  | <b>0.08</b> | <b>0.04</b> | .      |

**Table A15**  
**Summary Item Statistics – Mathematics Grade 4, Form C**  
**N=10,666**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|-------------|--------|--------|--------|
| 1    | C   | SR        | 0.79  | 0.32  | -0.19  | -0.17       | 0.32   | -0.16  | -0.15  |
| 2    | C   | SR        | 0.62  | 0.35  | 0.35   | -0.30       | -0.09  | -0.10  | -0.12  |
| 3    | C   | SR        | 0.79  | 0.40  | -0.18  | -0.22       | -0.15  | 0.40   | -0.22  |
| 4    | C   | SR        | 0.58  | 0.37  | -0.27  | -0.13       | -0.09  | 0.37   | -0.17  |
| 10   | C   | SR        | 0.52  | 0.36  | -0.16  | -0.13       | -0.27  | 0.36   | .      |
| 17   | C   | SR        | 0.90  | 0.42  | -0.32  | 0.42        | -0.16  | -0.19  | .      |
| 18   | C   | SR        | 0.53  | 0.39  | 0.39   | -0.24       | -0.16  | -0.25  | .      |
| 20   | C   | SR        | 0.74  | 0.42  | -0.24  | 0.42        | -0.22  | -0.25  | .      |
| 27   | C   | SR        | 0.57  | 0.39  | -0.20  | -0.21       | 0.39   | -0.24  | .      |
| 31   | C   | SR        | 0.48  | 0.44  | -0.18  | 0.44        | -0.11  | -0.32  | .      |
| 33A  | U   | CR        | 0.82  | 0.29  | .      | .           | .      | .      | .      |
| 33B  | U   | CR        | 0.36  | 0.47  | .      | .           | .      | .      | .      |
| 34   | C   | SR        | 0.89  | 0.31  | -0.19  | -0.16       | -0.17  | 0.31   | .      |
| 35   | C   | SR        | 0.76  | 0.43  | -0.19  | 0.43        | -0.25  | -0.26  | .      |
| 36   | C   | SR        | 0.64  | 0.29  | -0.11  | 0.29        | -0.11  | -0.25  | .      |
| 37   | C   | SR        | 0.88  | 0.40  | -0.26  | -0.21       | -0.19  | 0.40   | .      |
| 38   | C   | SR        | 0.89  | 0.27  | -0.13  | 0.27        | -0.18  | -0.16  | .      |
| 39   | C   | SR        | 0.85  | 0.41  | -0.20  | -0.29       | -0.20  | 0.41   | .      |
| 40A  | U   | CR        | 0.67  | 0.43  | .      | .           | .      | .      | .      |
| 40B  | U   | CR        | 0.38  | 0.58  | .      | .           | .      | .      | .      |
| 41   | C   | SR        | 0.39  | 0.39  | -0.22  | -0.13       | 0.39   | -0.21  | .      |
| 42   | C   | SR        | 0.55  | 0.45  | -0.35  | -0.25       | -0.14  | 0.45   | .      |
| 43   | C   | SR        | 0.40  | 0.32  | -0.16  | <b>0.01</b> | 0.32   | -0.28  | .      |
| 44   | C   | SR        | 0.42  | 0.31  | -0.09  | -0.11       | 0.31   | -0.21  | .      |
| 45   | C   | SR        | 0.58  | 0.55  | -0.28  | -0.25       | -0.27  | 0.55   | .      |
| 46   | C   | SR        | 0.55  | 0.49  | -0.24  | -0.19       | -0.29  | 0.49   | .      |
| 47A  | U   | CR        | 0.47  | 0.46  | .      | .           | .      | .      | .      |
| 47B  | U   | CR        | 0.28  | 0.60  | .      | .           | .      | .      | .      |
| 48   | C   | SR        | 0.83  | 0.39  | 0.39   | -0.19       | -0.21  | -0.20  | .      |
| 49   | C   | SR        | 0.34  | 0.36  | -0.09  | -0.24       | -0.07  | 0.36   | .      |
| 50   | C   | SR        | 0.71  | 0.37  | -0.18  | -0.22       | 0.37   | -0.19  | .      |
| 51   | C   | SR        | 0.85  | 0.35  | -0.18  | -0.18       | 0.35   | -0.17  | .      |
| 52   | C   | SR        | 0.61  | 0.44  | -0.18  | -0.21       | -0.25  | 0.44   | .      |
| 53   | C   | SR        | 0.80  | 0.42  | -0.23  | -0.21       | -0.25  | 0.42   | .      |
| 54   | C   | SR        | 0.51  | 0.42  | -0.28  | 0.42        | -0.11  | -0.21  | .      |
| 55   | C   | SR        | 0.81  | 0.38  | 0.38   | -0.29       | -0.19  | -0.14  | .      |
| 56   | C   | SR        | 0.79  | 0.15  | 0.15   | -0.10       | -0.12  | -0.14  | .      |

**Table A15 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form C**  
**N=10,666**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|-------------|--------|--------|
| 57   | C   | SR        | 0.84        | 0.23  | 0.23   | -0.15  | -0.13       | -0.16  | .      |
| 58   | C   | SR        | 0.71        | 0.49  | -0.29  | -0.25  | -0.25       | 0.49   | .      |
| 59   | C   | SR        | <b>0.11</b> | 0.21  | -0.27  | -0.04  | <b>0.10</b> | 0.21   | .      |
| 60A  | U   | CR        | 0.45        | 0.53  | .      | .      | .           | .      | .      |
| 60B  | U   | CR        | 0.36        | 0.62  | .      | .      | .           | .      | .      |
| 61   | C   | SR        | 0.48        | 0.32  | -0.17  | -0.24  | 0.32        | -0.08  | .      |
| 62   | C   | SR        | 0.79        | 0.39  | -0.11  | 0.39   | -0.32       | -0.18  | .      |
| 63   | C   | SR        | 0.48        | 0.45  | -0.25  | -0.19  | 0.45        | -0.23  | .      |
| 64   | C   | SR        | 0.53        | 0.31  | -0.22  | 0.31   | -0.14       | -0.09  | .      |
| 65   | C   | SR        | 0.56        | 0.48  | -0.15  | -0.28  | -0.25       | 0.48   | .      |
| 66   | C   | SR        | 0.67        | 0.48  | -0.18  | 0.48   | -0.24       | -0.31  | .      |
| 67   | C   | SR        | 0.55        | 0.55  | -0.20  | -0.36  | -0.23       | 0.55   | .      |
| 68A  | U   | CR        | 0.57        | 0.51  | .      | .      | .           | .      | .      |
| 68B  | U   | CR        | 0.49        | 0.60  | .      | .      | .           | .      | .      |
| 69   | U   | SR        | 0.67        | 0.38  | -0.37  | -0.19  | 0.38        | -0.03  | .      |
| 70   | U   | SR        | 0.70        | 0.52  | -0.36  | -0.27  | -0.18       | 0.52   | .      |
| 71   | U   | SR        | 0.59        | 0.41  | -0.19  | 0.41   | -0.23       | -0.25  | .      |
| 72   | U   | SR        | 0.49        | 0.43  | -0.16  | -0.30  | 0.43        | -0.17  | .      |
| 73   | U   | SR        | 0.45        | 0.40  | -0.22  | -0.20  | -0.19       | 0.40   | .      |
| 74A  | U   | CR        | 0.39        | 0.51  | .      | .      | .           | .      | .      |
| 74B  | U   | CR        | 0.39        | 0.50  | .      | .      | .           | .      | .      |
| 75A  | U   | CR        | 0.32        | 0.51  | .      | .      | .           | .      | .      |
| 75B  | U   | CR        | 0.46        | 0.55  | .      | .      | .           | .      | .      |
| 76   | U   | SR        | 0.90        | 0.28  | -0.16  | 0.28   | -0.16       | -0.10  | .      |
| 77   | U   | SR        | 0.73        | 0.53  | -0.37  | -0.23  | 0.53        | -0.21  | .      |
| 78   | U   | SR        | 0.53        | 0.38  | -0.21  | 0.38   | -0.13       | -0.23  | .      |
| 79   | U   | SR        | 0.92        | 0.32  | -0.16  | 0.32   | -0.15       | -0.16  | .      |
| 80   | U   | SR        | 0.91        | 0.35  | -0.19  | -0.19  | -0.21       | 0.35   | .      |
| 81   | U   | SR        | 0.85        | 0.37  | -0.26  | 0.37   | -0.17       | -0.17  | .      |
| 82   | U   | SR        | 0.74        | 0.44  | -0.24  | -0.17  | 0.44        | -0.31  | .      |
| 83   | U   | SR        | 0.86        | 0.28  | -0.14  | -0.17  | -0.14       | 0.28   | .      |
| 84   | U   | SR        | 0.63        | 0.49  | -0.30  | 0.49   | -0.22       | -0.24  | .      |
| 85   | U   | SR        | 0.82        | 0.45  | -0.21  | -0.23  | -0.28       | 0.45   | .      |
| 86   | U   | SR        | 0.67        | 0.42  | 0.42   | -0.21  | -0.28       | -0.17  | .      |
| 87   | U   | SR        | 0.32        | 0.25  | -0.17  | -0.19  | -0.11       | 0.25   | .      |
| 88   | U   | SR        | 0.58        | 0.39  | -0.27  | -0.17  | -0.20       | 0.39   | .      |
| 89   | U   | SR        | 0.41        | 0.39  | -0.20  | 0.39   | -0.16       | -0.20  | .      |

**Table A15 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form C**  
**N=10,666**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 90   | U   | SR        | 0.78  | 0.51  | -0.19  | -0.29  | 0.51   | -0.32  | .      |
| 91   | U   | SR        | 0.54  | 0.34  | -0.14  | 0.34   | -0.20  | -0.17  | .      |
| 92   | U   | SR        | 0.68  | 0.24  | 0.24   | -0.19  | -0.11  | -0.19  | .      |
| 93   | U   | SR        | 0.57  | 0.49  | -0.17  | 0.49   | -0.29  | -0.27  | .      |
| 94   | U   | SR        | 0.41  | 0.47  | -0.17  | 0.47   | -0.18  | -0.25  | .      |
| 95   | U   | SR        | 0.43  | 0.43  | -0.24  | -0.26  | -0.11  | 0.43   | .      |
| 96   | U   | SR        | 0.89  | 0.34  | -0.16  | -0.21  | -0.18  | 0.34   | .      |
| 97   | U   | SR        | 0.59  | 0.32  | -0.20  | -0.13  | 0.32   | -0.17  | .      |
| 98   | U   | SR        | 0.40  | 0.39  | -0.14  | -0.17  | 0.39   | -0.24  | .      |
| 99   | U   | SR        | 0.79  | 0.44  | -0.23  | -0.28  | 0.44   | -0.20  | .      |
| 100  | U   | SR        | 0.72  | 0.43  | -0.27  | 0.43   | -0.20  | -0.24  | .      |
| 101  | U   | SR        | 0.73  | 0.56  | -0.34  | -0.27  | 0.56   | -0.28  | .      |
| 102  | U   | SR        | 0.75  | 0.46  | -0.17  | -0.19  | -0.34  | 0.46   | .      |
| 103  | U   | SR        | 0.63  | 0.36  | -0.27  | 0.36   | -0.15  | -0.21  | .      |
| 104  | U   | SR        | 0.59  | 0.38  | -0.26  | 0.38   | -0.13  | -0.21  | .      |
| 105  | U   | SR        | 0.69  | 0.39  | -0.16  | -0.22  | 0.39   | -0.23  | .      |
| 106  | U   | SR        | 0.85  | 0.37  | 0.37   | -0.20  | -0.20  | -0.19  | .      |
| 107  | U   | SR        | 0.43  | 0.32  | -0.06  | 0.32   | -0.11  | -0.26  | .      |
| 108  | U   | SR        | 0.54  | 0.43  | -0.20  | -0.21  | 0.43   | -0.24  | .      |
| 109  | U   | SR        | 0.64  | 0.32  | 0.32   | -0.15  | -0.16  | -0.19  | .      |

**Table A16**  
**Summary Item Statistics – Mathematics Grade 4, Form D**  
**N=10,401**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 1    | C   | SR        | 0.79  | 0.33  | -0.18  | -0.16  | 0.33   | -0.18  | -0.16  |
| 2    | C   | SR        | 0.64  | 0.36  | 0.36   | -0.32  | -0.08  | -0.11  | -0.11  |
| 3    | C   | SR        | 0.79  | 0.40  | -0.19  | -0.22  | -0.15  | 0.40   | -0.21  |
| 4    | C   | SR        | 0.59  | 0.37  | -0.26  | -0.15  | -0.07  | 0.37   | -0.19  |
| 10   | C   | SR        | 0.53  | 0.37  | -0.17  | -0.12  | -0.26  | 0.37   | .      |
| 17   | C   | SR        | 0.90  | 0.41  | -0.32  | 0.41   | -0.18  | -0.18  | .      |
| 18   | C   | SR        | 0.53  | 0.39  | 0.39   | -0.27  | -0.13  | -0.24  | .      |
| 20   | C   | SR        | 0.74  | 0.42  | -0.23  | 0.42   | -0.22  | -0.25  | .      |
| 27   | C   | SR        | 0.58  | 0.40  | -0.21  | -0.22  | 0.40   | -0.24  | .      |
| 31   | C   | SR        | 0.48  | 0.43  | -0.17  | 0.43   | -0.12  | -0.31  | .      |
| 33A  | U   | CR        | 0.92  | 0.25  | .      | .      | .      | .      | .      |
| 33B  | U   | CR        | 0.30  | 0.47  | .      | .      | .      | .      | .      |
| 34   | C   | SR        | 0.90  | 0.29  | -0.19  | -0.17  | -0.15  | 0.29   | .      |
| 35   | C   | SR        | 0.77  | 0.43  | -0.20  | 0.43   | -0.24  | -0.26  | .      |
| 36   | C   | SR        | 0.65  | 0.29  | -0.10  | 0.29   | -0.11  | -0.25  | .      |
| 37   | C   | SR        | 0.89  | 0.40  | -0.27  | -0.21  | -0.18  | 0.40   | .      |
| 38   | C   | SR        | 0.90  | 0.27  | -0.14  | 0.27   | -0.18  | -0.14  | .      |
| 39   | C   | SR        | 0.85  | 0.41  | -0.18  | -0.28  | -0.21  | 0.41   | .      |
| 40A  | U   | CR        | 0.37  | 0.44  | .      | .      | .      | .      | .      |
| 40B  | U   | CR        | 0.28  | 0.53  | .      | .      | .      | .      | .      |
| 41   | C   | SR        | 0.40  | 0.39  | -0.22  | -0.13  | 0.39   | -0.23  | .      |
| 42   | C   | SR        | 0.55  | 0.46  | -0.36  | -0.26  | -0.14  | 0.46   | .      |
| 43   | C   | SR        | 0.40  | 0.35  | -0.16  | 0.00   | 0.35   | -0.30  | .      |
| 44   | C   | SR        | 0.42  | 0.32  | -0.09  | -0.11  | 0.32   | -0.23  | .      |
| 45   | C   | SR        | 0.58  | 0.54  | -0.27  | -0.27  | -0.26  | 0.54   | .      |
| 46   | C   | SR        | 0.56  | 0.48  | -0.24  | -0.19  | -0.30  | 0.48   | .      |
| 47A  | U   | CR        | 0.34  | 0.51  | .      | .      | .      | .      | .      |
| 47B  | U   | CR        | 0.24  | 0.57  | .      | .      | .      | .      | .      |
| 48   | C   | SR        | 0.83  | 0.38  | 0.38   | -0.20  | -0.22  | -0.19  | .      |
| 49   | C   | SR        | 0.35  | 0.37  | -0.08  | -0.26  | -0.08  | 0.37   | .      |
| 50   | C   | SR        | 0.71  | 0.39  | -0.17  | -0.24  | 0.39   | -0.21  | .      |
| 51   | C   | SR        | 0.87  | 0.34  | -0.19  | -0.18  | 0.34   | -0.15  | .      |
| 52   | C   | SR        | 0.57  | 0.41  | -0.17  | -0.20  | -0.21  | 0.41   | .      |
| 53   | C   | SR        | 0.81  | 0.42  | -0.24  | -0.21  | -0.26  | 0.42   | .      |
| 54   | C   | SR        | 0.51  | 0.43  | -0.30  | 0.43   | -0.09  | -0.22  | .      |
| 55   | C   | SR        | 0.85  | 0.38  | 0.38   | -0.28  | -0.20  | -0.16  | .      |
| 56   | C   | SR        | 0.78  | 0.16  | 0.16   | -0.12  | -0.12  | -0.15  | .      |

**Table A16 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form D**  
**N=10,401**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|-------------|--------|--------|
| 57   | C   | SR        | 0.84        | 0.21  | 0.21   | -0.14  | -0.13       | -0.14  | .      |
| 58   | C   | SR        | 0.71        | 0.49  | -0.30  | -0.25  | -0.25       | 0.49   | .      |
| 59   | C   | SR        | <b>0.11</b> | 0.22  | -0.27  | -0.04  | <b>0.07</b> | 0.22   | .      |
| 60A  | U   | CR        | 0.60        | 0.46  | .      | .      | .           | .      | .      |
| 60B  | U   | CR        | 0.49        | 0.37  | .      | .      | .           | .      | .      |
| 61   | C   | SR        | 0.48        | 0.31  | -0.16  | -0.26  | 0.31        | -0.07  | .      |
| 62   | C   | SR        | 0.80        | 0.37  | -0.11  | 0.37   | -0.30       | -0.20  | .      |
| 63   | C   | SR        | 0.47        | 0.44  | -0.26  | -0.19  | 0.44        | -0.20  | .      |
| 64   | C   | SR        | 0.53        | 0.29  | -0.23  | 0.29   | -0.12       | -0.10  | .      |
| 65   | C   | SR        | 0.60        | 0.51  | -0.13  | -0.31  | -0.30       | 0.51   | .      |
| 66   | C   | SR        | 0.68        | 0.48  | -0.19  | 0.48   | -0.22       | -0.33  | .      |
| 67   | C   | SR        | 0.56        | 0.56  | -0.21  | -0.37  | -0.24       | 0.56   | .      |
| 68A  | U   | CR        | 0.52        | 0.47  | .      | .      | .           | .      | .      |
| 68B  | U   | CR        | 0.35        | 0.58  | .      | .      | .           | .      | .      |
| 69   | U   | SR        | 0.77        | 0.39  | 0.39   | -0.23  | -0.18       | -0.26  | .      |
| 70   | U   | SR        | 0.63        | 0.53  | -0.25  | 0.53   | -0.20       | -0.36  | .      |
| 71   | U   | SR        | 0.72        | 0.58  | -0.36  | -0.29  | 0.58        | -0.28  | .      |
| 72   | U   | SR        | 0.64        | 0.60  | -0.39  | -0.23  | -0.30       | 0.60   | .      |
| 73   | U   | SR        | 0.39        | 0.28  | 0.28   | -0.12  | 0.00        | -0.31  | .      |
| 74A  | U   | CR        | 0.66        | 0.55  | .      | .      | .           | .      | .      |
| 74B  | U   | CR        | 0.51        | 0.63  | .      | .      | .           | .      | .      |
| 75A  | U   | CR        | 0.54        | 0.59  | .      | .      | .           | .      | .      |
| 75B  | U   | CR        | 0.36        | 0.60  | .      | .      | .           | .      | .      |
| 76   | U   | SR        | 0.87        | 0.35  | -0.14  | 0.35   | -0.19       | -0.23  | .      |
| 77   | U   | SR        | 0.81        | 0.41  | 0.41   | -0.26  | -0.21       | -0.18  | .      |
| 78   | U   | SR        | 0.61        | 0.53  | -0.30  | -0.28  | 0.53        | -0.22  | .      |
| 79   | U   | SR        | 0.90        | 0.31  | -0.16  | 0.31   | -0.17       | -0.14  | .      |
| 80   | U   | SR        | <b>0.23</b> | 0.17  | -0.24  | 0.17   | <b>0.03</b> | -0.20  | .      |
| 81   | U   | SR        | 0.62        | 0.39  | -0.25  | -0.23  | -0.20       | 0.39   | .      |
| 82   | U   | SR        | 0.93        | 0.34  | -0.21  | -0.17  | -0.18       | 0.34   | .      |
| 83   | U   | SR        | 0.61        | 0.48  | 0.48   | -0.24  | -0.21       | -0.32  | .      |
| 84   | U   | SR        | 0.57        | 0.53  | -0.28  | -0.23  | 0.53        | -0.29  | .      |
| 85   | U   | SR        | 0.71        | 0.54  | -0.25  | 0.54   | -0.25       | -0.37  | .      |
| 86   | U   | SR        | 0.65        | 0.28  | 0.28   | -0.25  | -0.10       | -0.21  | .      |
| 87   | U   | SR        | 0.71        | 0.53  | -0.38  | -0.25  | -0.20       | 0.53   | .      |
| 88   | U   | SR        | 0.47        | 0.47  | -0.18  | -0.24  | -0.24       | 0.47   | .      |
| 89   | U   | SR        | 0.49        | 0.31  | -0.07  | 0.31   | -0.17       | -0.26  | .      |

**Table A16 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form D**  
**N=10,401**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 90   | U   | SR        | 0.38  | 0.15  | -0.08  | -0.09  | -0.07  | 0.15   | .      |
| 91   | U   | SR        | 0.42  | 0.40  | -0.15  | -0.11  | 0.40   | -0.26  | .      |
| 92   | U   | SR        | 0.53  | 0.38  | -0.13  | -0.23  | 0.38   | -0.23  | .      |
| 93   | U   | SR        | 0.73  | 0.42  | -0.25  | -0.21  | -0.21  | 0.42   | .      |
| 94   | U   | SR        | 0.43  | 0.42  | -0.17  | -0.24  | -0.16  | 0.42   | .      |
| 95   | U   | SR        | 0.39  | 0.34  | -0.16  | 0.34   | -0.24  | -0.15  | .      |
| 96   | U   | SR        | 0.60  | 0.52  | -0.35  | -0.25  | -0.19  | 0.52   | .      |
| 97   | U   | SR        | 0.93  | 0.27  | -0.15  | 0.27   | -0.15  | -0.13  | .      |
| 98   | U   | SR        | 0.81  | 0.39  | -0.24  | -0.19  | 0.39   | -0.24  | .      |
| 99   | U   | SR        | 0.69  | 0.60  | -0.42  | -0.33  | -0.18  | 0.60   | .      |
| 100  | U   | SR        | 0.59  | 0.39  | -0.22  | -0.16  | 0.39   | -0.25  | .      |
| 101  | U   | SR        | 0.45  | 0.44  | -0.20  | -0.23  | -0.20  | 0.44   | .      |
| 102  | U   | SR        | 0.70  | 0.48  | -0.23  | 0.48   | -0.21  | -0.35  | .      |
| 103  | U   | SR        | 0.63  | 0.53  | -0.34  | -0.26  | -0.25  | 0.53   | .      |
| 104  | U   | SR        | 0.69  | 0.53  | -0.38  | -0.25  | 0.53   | -0.23  | .      |
| 105  | U   | SR        | 0.65  | 0.27  | -0.19  | 0.27   | -0.15  | -0.23  | .      |
| 106  | U   | SR        | 0.75  | 0.31  | -0.11  | 0.31   | -0.22  | -0.18  | .      |
| 107  | U   | SR        | 0.65  | 0.47  | -0.25  | -0.23  | 0.47   | -0.29  | .      |
| 108  | U   | SR        | 0.66  | 0.37  | -0.25  | 0.37   | -0.18  | -0.18  | .      |
| 109  | U   | SR        | 0.43  | 0.50  | -0.18  | 0.50   | -0.26  | -0.26  | .      |

**Table A17**  
**Summary Item Statistics – Mathematics Grade 4, Form E**  
**N=10,205**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|-------------|--------|--------|--------|
| 1    | C   | SR        | 0.79  | 0.34  | -0.16  | -0.15       | 0.34   | -0.20  | -0.18  |
| 2    | C   | SR        | 0.62  | 0.35  | 0.35   | -0.31       | -0.08  | -0.11  | -0.11  |
| 3    | C   | SR        | 0.78  | 0.40  | -0.20  | -0.21       | -0.15  | 0.40   | -0.22  |
| 4    | C   | SR        | 0.58  | 0.38  | -0.27  | -0.14       | -0.09  | 0.38   | -0.18  |
| 10   | C   | SR        | 0.52  | 0.36  | -0.16  | -0.14       | -0.25  | 0.36   | .      |
| 17   | C   | SR        | 0.89  | 0.41  | -0.31  | 0.41        | -0.19  | -0.18  | .      |
| 18   | C   | SR        | 0.53  | 0.39  | 0.39   | -0.27       | -0.14  | -0.23  | .      |
| 20   | C   | SR        | 0.74  | 0.41  | -0.23  | 0.41        | -0.21  | -0.24  | .      |
| 27   | C   | SR        | 0.58  | 0.39  | -0.18  | -0.22       | 0.39   | -0.23  | .      |
| 31   | C   | SR        | 0.47  | 0.44  | -0.17  | 0.44        | -0.11  | -0.32  | .      |
| 33A  | U   | CR        | 0.69  | 0.56  | .      | .           | .      | .      | .      |
| 33B  | U   | CR        | 0.51  | 0.56  | .      | .           | .      | .      | .      |
| 34   | C   | SR        | 0.90  | 0.30  | -0.18  | -0.18       | -0.15  | 0.30   | .      |
| 35   | C   | SR        | 0.76  | 0.43  | -0.21  | 0.43        | -0.25  | -0.25  | .      |
| 36   | C   | SR        | 0.65  | 0.30  | -0.09  | 0.30        | -0.15  | -0.24  | .      |
| 37   | C   | SR        | 0.89  | 0.40  | -0.27  | -0.21       | -0.19  | 0.40   | .      |
| 38   | C   | SR        | 0.89  | 0.28  | -0.15  | 0.28        | -0.19  | -0.15  | .      |
| 39   | C   | SR        | 0.86  | 0.39  | -0.19  | -0.27       | -0.18  | 0.39   | .      |
| 40A  | U   | CR        | 0.39  | 0.39  | .      | .           | .      | .      | .      |
| 40B  | U   | CR        | 0.30  | 0.52  | .      | .           | .      | .      | .      |
| 41   | C   | SR        | 0.40  | 0.40  | -0.24  | -0.12       | 0.40   | -0.23  | .      |
| 42   | C   | SR        | 0.55  | 0.46  | -0.36  | -0.25       | -0.15  | 0.46   | .      |
| 43   | C   | SR        | 0.41  | 0.35  | -0.17  | <b>0.00</b> | 0.35   | -0.30  | .      |
| 44   | C   | SR        | 0.42  | 0.34  | -0.09  | -0.13       | 0.34   | -0.23  | .      |
| 45   | C   | SR        | 0.58  | 0.54  | -0.27  | -0.26       | -0.27  | 0.54   | .      |
| 46   | C   | SR        | 0.56  | 0.49  | -0.24  | -0.19       | -0.31  | 0.49   | .      |
| 47A  | U   | CR        | 0.38  | 0.51  | .      | .           | .      | .      | .      |
| 47B  | U   | CR        | 0.24  | 0.58  | .      | .           | .      | .      | .      |
| 48   | C   | SR        | 0.84  | 0.39  | 0.39   | -0.18       | -0.22  | -0.20  | .      |
| 49   | C   | SR        | 0.35  | 0.37  | -0.08  | -0.26       | -0.08  | 0.37   | .      |
| 50   | C   | SR        | 0.64  | 0.35  | -0.14  | -0.24       | 0.35   | -0.19  | .      |
| 51   | C   | SR        | 0.87  | 0.36  | -0.18  | -0.20       | 0.36   | -0.17  | .      |
| 52   | C   | SR        | 0.57  | 0.42  | -0.16  | -0.21       | -0.23  | 0.42   | .      |
| 53   | C   | SR        | 0.80  | 0.42  | -0.23  | -0.20       | -0.27  | 0.42   | .      |
| 54   | C   | SR        | 0.51  | 0.42  | -0.29  | 0.42        | -0.10  | -0.20  | .      |
| 55   | C   | SR        | 0.83  | 0.38  | 0.38   | -0.29       | -0.21  | -0.14  | .      |
| 56   | C   | SR        | 0.79  | 0.15  | 0.15   | -0.11       | -0.12  | -0.12  | .      |



**Table A17 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form E**  
**N=10,205**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2      | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|-------------|-------------|--------|--------|
| 57   | C   | SR        | 0.84        | 0.21  | 0.21   | -0.14       | -0.12       | -0.15  | .      |
| 58   | C   | SR        | 0.71        | 0.48  | -0.28  | -0.25       | -0.25       | 0.48   | .      |
| 59   | C   | SR        | <b>0.11</b> | 0.22  | -0.25  | -0.05       | <b>0.07</b> | 0.22   | .      |
| 61   | C   | SR        | 0.48        | 0.31  | -0.17  | -0.23       | 0.31        | -0.08  | .      |
| 62   | C   | SR        | 0.79        | 0.38  | -0.10  | 0.38        | -0.30       | -0.21  | .      |
| 63   | C   | SR        | 0.49        | 0.44  | -0.26  | -0.21       | 0.44        | -0.19  | .      |
| 64   | C   | SR        | 0.54        | 0.30  | -0.24  | 0.30        | -0.11       | -0.08  | .      |
| 65   | C   | SR        | 0.60        | 0.50  | -0.14  | -0.31       | -0.28       | 0.50   | .      |
| 66   | C   | SR        | 0.68        | 0.49  | -0.18  | 0.49        | -0.24       | -0.33  | .      |
| 67   | C   | SR        | 0.56        | 0.55  | -0.21  | -0.38       | -0.22       | 0.55   | .      |
| 68A  | U   | CR        | 0.82        | 0.44  | .      | .           | .           | .      | .      |
| 68B  | U   | CR        | 0.64        | 0.56  | .      | .           | .           | .      | .      |
| 69   | U   | SR        | <b>0.21</b> | 0.33  | -0.23  | -0.15       | 0.33        | -0.11  | .      |
| 70   | U   | SR        | 0.69        | 0.51  | -0.23  | 0.51        | -0.29       | -0.30  | .      |
| 71   | U   | SR        | 0.72        | 0.56  | 0.56   | -0.23       | -0.34       | -0.34  | .      |
| 72   | U   | SR        | 0.48        | 0.44  | -0.06  | 0.44        | -0.35       | -0.22  | .      |
| 73   | U   | SR        | 0.78        | 0.49  | -0.37  | -0.23       | 0.49        | -0.18  | .      |
| 74A  | U   | CR        | 0.21        | 0.49  | .      | .           | .           | .      | .      |
| 74B  | U   | CR        | 0.27        | 0.60  | .      | .           | .           | .      | .      |
| 75A  | U   | CR        | 0.52        | 0.64  | .      | .           | .           | .      | .      |
| 75B  | U   | CR        | 0.47        | 0.64  | .      | .           | .           | .      | .      |
| 76   | U   | SR        | 0.56        | 0.53  | -0.39  | -0.23       | -0.18       | 0.53   | .      |
| 77   | U   | SR        | 0.65        | 0.32  | 0.32   | -0.25       | -0.09       | -0.21  | .      |
| 78   | U   | SR        | 0.88        | 0.33  | -0.16  | -0.19       | -0.18       | 0.33   | .      |
| 79   | U   | SR        | 0.75        | 0.47  | -0.27  | -0.28       | 0.47        | -0.21  | .      |
| 80   | U   | SR        | 0.60        | 0.41  | -0.40  | -0.23       | 0.41        | -0.06  | .      |
| 81   | U   | SR        | 0.55        | 0.42  | -0.14  | 0.42        | -0.24       | -0.27  | .      |
| 82   | U   | SR        | 0.88        | 0.23  | -0.14  | -0.15       | -0.13       | 0.23   | .      |
| 83   | U   | SR        | 0.51        | 0.41  | -0.18  | -0.21       | 0.41        | -0.22  | .      |
| 84   | U   | SR        | 0.44        | 0.39  | -0.08  | -0.15       | -0.32       | 0.39   | .      |
| 85   | U   | SR        | 0.86        | 0.35  | -0.21  | -0.16       | 0.35        | -0.22  | .      |
| 86   | U   | SR        | <b>0.20</b> | 0.22  | -0.36  | <b>0.17</b> | -0.11       | 0.22   | .      |
| 87   | U   | SR        | 0.88        | 0.32  | -0.17  | 0.32        | -0.20       | -0.17  | .      |
| 88   | U   | SR        | 0.83        | 0.44  | 0.44   | -0.21       | -0.24       | -0.28  | .      |
| 89   | U   | SR        | 0.56        | 0.49  | -0.17  | -0.32       | -0.23       | 0.49   | .      |
| 90   | U   | SR        | 0.69        | 0.52  | -0.25  | -0.22       | 0.52        | -0.34  | .      |
| 91   | U   | SR        | <b>0.20</b> | 0.24  | 0.24   | <b>0.09</b> | -0.16       | -0.24  | .      |

**Table A17 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form E**  
**N=10,205**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 92   | U   | SR        | 0.37  | 0.37  | -0.04  | -0.31  | -0.10  | 0.37   | .      |
| 93   | U   | SR        | 0.63  | 0.41  | -0.23  | -0.28  | 0.41   | -0.14  | .      |
| 94   | U   | SR        | 0.66  | 0.42  | -0.18  | -0.29  | -0.20  | 0.42   | .      |
| 95   | U   | SR        | 0.49  | 0.40  | -0.13  | 0.40   | -0.19  | -0.27  | .      |
| 96   | U   | SR        | 0.58  | 0.49  | -0.26  | 0.49   | -0.27  | -0.21  | .      |
| 97   | U   | SR        | 0.82  | 0.47  | -0.33  | 0.47   | -0.22  | -0.22  | .      |
| 98   | U   | SR        | 0.73  | 0.30  | -0.18  | -0.21  | 0.30   | -0.17  | .      |
| 99   | U   | SR        | 0.92  | 0.32  | -0.15  | -0.20  | -0.15  | 0.32   | .      |
| 100  | U   | SR        | 0.57  | 0.32  | 0.32   | -0.14  | -0.13  | -0.22  | .      |
| 101  | U   | SR        | 0.55  | 0.40  | -0.18  | -0.18  | -0.31  | 0.40   | .      |
| 102  | U   | SR        | 0.66  | 0.59  | -0.31  | -0.32  | -0.32  | 0.59   | .      |
| 103  | U   | SR        | 0.84  | 0.33  | -0.18  | -0.19  | 0.33   | -0.19  | .      |
| 104  | U   | SR        | 0.67  | 0.28  | -0.18  | 0.28   | -0.15  | -0.23  | .      |
| 105  | U   | SR        | 0.53  | 0.51  | -0.26  | -0.30  | 0.51   | -0.17  | .      |
| 106  | U   | SR        | 0.69  | 0.25  | -0.11  | -0.17  | 0.25   | -0.17  | .      |
| 107  | U   | SR        | 0.43  | 0.34  | 0.34   | -0.15  | -0.19  | -0.14  | .      |
| 108  | U   | SR        | 0.54  | 0.48  | -0.21  | -0.17  | 0.48   | -0.33  | .      |
| 109  | U   | SR        | 0.54  | 0.56  | 0.56   | -0.21  | -0.24  | -0.36  | .      |

**Table A18**  
**Summary Item Statistics – Mathematics Grade 4, Form F**  
**N=10,347**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 1    | C   | SR        | 0.78  | 0.35  | -0.19  | -0.15  | 0.35   | -0.18  | -0.17  |
| 2    | C   | SR        | 0.63  | 0.37  | 0.37   | -0.34  | -0.09  | -0.11  | -0.10  |
| 3    | C   | SR        | 0.78  | 0.38  | -0.17  | -0.19  | -0.14  | 0.38   | -0.22  |
| 4    | C   | SR        | 0.58  | 0.39  | -0.27  | -0.15  | -0.09  | 0.39   | -0.19  |
| 10   | C   | SR        | 0.53  | 0.36  | -0.17  | -0.11  | -0.26  | 0.36   | .      |
| 17   | C   | SR        | 0.89  | 0.41  | -0.31  | 0.41   | -0.17  | -0.19  | .      |
| 18   | C   | SR        | 0.54  | 0.38  | 0.38   | -0.25  | -0.14  | -0.23  | .      |
| 20   | C   | SR        | 0.75  | 0.41  | -0.22  | 0.41   | -0.22  | -0.25  | .      |
| 27   | C   | SR        | 0.58  | 0.38  | -0.18  | -0.20  | 0.38   | -0.24  | .      |
| 31   | C   | SR        | 0.49  | 0.44  | -0.19  | 0.44   | -0.11  | -0.31  | .      |
| 33A  | U   | CR        | 0.82  | 0.30  | .      | .      | .      | .      | .      |
| 33B  | U   | CR        | 0.39  | 0.54  | .      | .      | .      | .      | .      |
| 34   | C   | SR        | 0.90  | 0.32  | -0.20  | -0.19  | -0.15  | 0.32   | .      |
| 35   | C   | SR        | 0.76  | 0.42  | -0.20  | 0.42   | -0.23  | -0.25  | .      |
| 36   | C   | SR        | 0.65  | 0.30  | -0.11  | 0.30   | -0.12  | -0.24  | .      |
| 37   | C   | SR        | 0.88  | 0.39  | -0.26  | -0.20  | -0.19  | 0.39   | .      |
| 38   | C   | SR        | 0.90  | 0.29  | -0.14  | 0.29   | -0.20  | -0.14  | .      |
| 39   | C   | SR        | 0.85  | 0.39  | -0.18  | -0.27  | -0.19  | 0.39   | .      |
| 40A  | U   | CR        | 0.70  | 0.30  | .      | .      | .      | .      | .      |
| 40B  | U   | CR        | 0.35  | 0.53  | .      | .      | .      | .      | .      |
| 41   | C   | SR        | 0.40  | 0.40  | -0.25  | -0.13  | 0.40   | -0.20  | .      |
| 42   | C   | SR        | 0.55  | 0.47  | -0.35  | -0.26  | -0.14  | 0.47   | .      |
| 43   | C   | SR        | 0.41  | 0.36  | -0.18  | -0.01  | 0.36   | -0.29  | .      |
| 44   | C   | SR        | 0.42  | 0.35  | -0.10  | -0.12  | 0.35   | -0.24  | .      |
| 45   | C   | SR        | 0.58  | 0.54  | -0.27  | -0.25  | -0.26  | 0.54   | .      |
| 46   | C   | SR        | 0.55  | 0.48  | -0.23  | -0.17  | -0.31  | 0.48   | .      |
| 47A  | U   | CR        | 0.44  | 0.57  | .      | .      | .      | .      | .      |
| 47B  | U   | CR        | 0.37  | 0.60  | .      | .      | .      | .      | .      |
| 48   | C   | SR        | 0.83  | 0.38  | 0.38   | -0.18  | -0.21  | -0.20  | .      |
| 49   | C   | SR        | 0.34  | 0.37  | -0.06  | -0.28  | -0.06  | 0.37   | .      |
| 50   | C   | SR        | 0.71  | 0.38  | -0.18  | -0.22  | 0.38   | -0.19  | .      |
| 51   | C   | SR        | 0.86  | 0.37  | -0.18  | -0.20  | 0.37   | -0.17  | .      |
| 52   | C   | SR        | 0.55  | 0.41  | -0.16  | -0.20  | -0.23  | 0.41   | .      |
| 53   | C   | SR        | 0.80  | 0.41  | -0.23  | -0.20  | -0.26  | 0.41   | .      |
| 54   | C   | SR        | 0.50  | 0.41  | -0.29  | 0.41   | -0.09  | -0.21  | .      |
| 55   | C   | SR        | 0.81  | 0.39  | 0.39   | -0.30  | -0.17  | -0.16  | .      |
| 56   | C   | SR        | 0.79  | 0.16  | 0.16   | -0.11  | -0.11  | -0.14  | .      |

**Table A18 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form F**  
**N=10,347**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1      | P_BIS2      | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|-------------|-------------|-------------|--------|--------|
| 57   | C   | SR        | 0.84        | 0.23  | 0.23        | -0.16       | -0.14       | -0.13  | .      |
| 58   | C   | SR        | 0.72        | 0.48  | -0.28       | -0.26       | -0.25       | 0.48   | .      |
| 59   | C   | SR        | <b>0.11</b> | 0.20  | -0.27       | -0.03       | <b>0.07</b> | 0.20   | .      |
| 60A  | U   | CR        | 0.30        | 0.53  | .           | .           | .           | .      | .      |
| 60B  | U   | CR        | 0.64        | 0.58  | .           | .           | .           | .      | .      |
| 61   | C   | SR        | 0.47        | 0.34  | -0.17       | -0.26       | 0.34        | -0.08  | .      |
| 62   | C   | SR        | 0.78        | 0.39  | -0.13       | 0.39        | -0.31       | -0.18  | .      |
| 63   | C   | SR        | 0.46        | 0.44  | -0.24       | -0.19       | 0.44        | -0.20  | .      |
| 64   | C   | SR        | 0.50        | 0.29  | -0.20       | 0.29        | -0.14       | -0.08  | .      |
| 65   | C   | SR        | 0.55        | 0.49  | -0.15       | -0.27       | -0.27       | 0.49   | .      |
| 66   | C   | SR        | 0.67        | 0.49  | -0.19       | 0.49        | -0.24       | -0.30  | .      |
| 67   | C   | SR        | 0.55        | 0.54  | -0.19       | -0.36       | -0.22       | 0.54   | .      |
| 68A  | U   | CR        | <b>0.17</b> | 0.27  | .           | .           | .           | .      | .      |
| 68B  | U   | CR        | 0.41        | 0.49  | .           | .           | .           | .      | .      |
| 69   | U   | SR        | 0.81        | 0.34  | -0.24       | 0.34        | -0.19       | -0.13  | .      |
| 70   | U   | SR        | 0.68        | 0.53  | -0.26       | -0.27       | -0.31       | 0.53   | .      |
| 71   | U   | SR        | 0.59        | 0.49  | -0.27       | -0.17       | 0.49        | -0.33  | .      |
| 72   | U   | SR        | 0.72        | 0.49  | 0.49        | -0.20       | -0.32       | -0.29  | .      |
| 73   | U   | SR        | 0.46        | 0.29  | -0.12       | -0.18       | -0.20       | 0.29   | .      |
| 74A  | U   | CR        | <b>0.10</b> | 0.36  | .           | .           | .           | .      | .      |
| 74B  | U   | CR        | 0.37        | 0.53  | .           | .           | .           | .      | .      |
| 75A  | U   | CR        | 0.56        | 0.51  | .           | .           | .           | .      | .      |
| 75B  | U   | CR        | 0.41        | 0.57  | .           | .           | .           | .      | .      |
| 76   | U   | SR        | 0.59        | 0.36  | 0.36        | -0.15       | -0.21       | -0.23  | .      |
| 77   | U   | SR        | 0.54        | 0.46  | -0.18       | 0.46        | -0.23       | -0.25  | .      |
| 78   | U   | SR        | <b>0.29</b> | 0.24  | <b>0.05</b> | -0.22       | 0.24        | -0.25  | .      |
| 79   | U   | SR        | 0.86        | 0.33  | -0.17       | 0.33        | -0.18       | -0.17  | .      |
| 80   | U   | SR        | 0.59        | 0.50  | -0.41       | -0.22       | -0.15       | 0.50   | .      |
| 81   | U   | SR        | 0.94        | 0.22  | -0.13       | -0.12       | 0.22        | -0.10  | .      |
| 82   | U   | SR        | 0.54        | 0.22  | -0.15       | -0.20       | -0.17       | 0.22   | .      |
| 83   | U   | SR        | 0.57        | 0.25  | -0.14       | -0.12       | -0.14       | 0.25   | .      |
| 84   | U   | SR        | 0.73        | 0.37  | -0.22       | -0.20       | 0.37        | -0.19  | .      |
| 85   | U   | SR        | 0.34        | 0.34  | 0.34        | <b>0.02</b> | -0.36       | -0.18  | .      |
| 86   | U   | SR        | 0.74        | 0.46  | -0.20       | 0.46        | -0.26       | -0.27  | .      |
| 87   | U   | SR        | 0.41        | 0.30  | -0.22       | -0.16       | 0.30        | -0.05  | .      |
| 88   | U   | SR        | 0.39        | 0.43  | -0.10       | 0.43        | -0.17       | -0.29  | .      |
| 89   | U   | SR        | 0.45        | 0.43  | -0.21       | 0.43        | -0.23       | -0.19  | .      |

**Table A18 (cont.)**  
**Summary Item Statistics – Mathematics Grade 4, Form F**  
**N=10,347**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|-------------|--------|--------|--------|--------|
| 90   | U   | SR        | 0.35  | 0.19  | -0.02       | -0.15  | 0.19   | -0.08  | .      |
| 91   | U   | SR        | 0.66  | 0.55  | -0.28       | -0.25  | -0.30  | 0.55   | .      |
| 92   | U   | SR        | 0.62  | 0.40  | -0.13       | -0.28  | -0.18  | 0.40   | .      |
| 93   | U   | SR        | 0.46  | 0.41  | -0.19       | 0.41   | -0.16  | -0.23  | .      |
| 94   | U   | SR        | 0.30  | 0.21  | -0.12       | -0.17  | -0.01  | 0.21   | .      |
| 95   | U   | SR        | 0.42  | 0.45  | -0.21       | 0.45   | -0.13  | -0.28  | .      |
| 96   | U   | SR        | 0.75  | 0.43  | -0.30       | 0.43   | -0.18  | -0.21  | .      |
| 97   | U   | SR        | 0.65  | 0.53  | 0.53        | -0.41  | -0.24  | -0.15  | .      |
| 98   | U   | SR        | 0.52  | 0.30  | 0.30        | -0.14  | -0.12  | -0.19  | .      |
| 99   | U   | SR        | 0.47  | 0.45  | -0.14       | -0.28  | -0.20  | 0.45   | .      |
| 100  | U   | SR        | 0.60  | 0.39  | -0.32       | -0.17  | 0.39   | -0.15  | .      |
| 101  | U   | SR        | 0.82  | 0.41  | -0.26       | -0.19  | 0.41   | -0.22  | .      |
| 102  | U   | SR        | 0.75  | 0.40  | -0.16       | 0.40   | -0.21  | -0.27  | .      |
| 103  | U   | SR        | 0.45  | 0.19  | <b>0.11</b> | -0.37  | 0.19   | -0.21  | .      |
| 104  | U   | SR        | 0.42  | 0.48  | -0.21       | -0.27  | 0.48   | -0.17  | .      |
| 105  | U   | SR        | 0.90  | 0.40  | -0.23       | 0.40   | -0.21  | -0.19  | .      |
| 106  | U   | SR        | 0.42  | 0.42  | -0.17       | 0.42   | -0.23  | -0.19  | .      |
| 107  | U   | SR        | 0.33  | 0.40  | -0.30       | -0.04  | -0.20  | 0.40   | .      |
| 108  | U   | SR        | 0.44  | 0.32  | -0.15       | 0.32   | -0.18  | -0.12  | .      |
| 109  | U   | SR        | 0.42  | 0.43  | -0.22       | -0.14  | 0.43   | -0.21  | .      |

**Table A19**  
**Summary Item Statistics – Mathematics Grade 6, Form A**  
**N=11,589**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|--------|--------|-------------|--------|
| 6    | C   | SR        | 0.67        | 0.47        | 0.47        | -0.23  | -0.14  | -0.24       | -0.17  |
| 13   | C   | SR        | 0.72        | 0.46        | -0.26       | -0.25  | 0.46   | -0.19       | .      |
| 17   | C   | SR        | 0.67        | 0.41        | -0.25       | -0.24  | 0.41   | -0.12       | .      |
| 18   | C   | SR        | 0.73        | 0.47        | -0.15       | -0.17  | 0.47   | -0.36       | .      |
| 20   | C   | SR        | 0.65        | 0.53        | -0.32       | -0.20  | -0.28  | 0.53        | .      |
| 32   | C   | SR        | 0.44        | 0.49        | -0.24       | -0.31  | 0.49   | -0.08       | .      |
| 33   | C   | SR        | 0.37        | 0.28        | -0.13       | -0.15  | -0.07  | 0.28        | .      |
| 34   | C   | SR        | <b>0.24</b> | 0.33        | -0.17       | -0.22  | 0.33   | -0.02       | .      |
| 35   | C   | SR        | 0.53        | 0.39        | -0.17       | 0.39   | -0.21  | -0.18       | .      |
| 36   | C   | SR        | 0.53        | 0.46        | -0.27       | -0.25  | 0.46   | -0.12       | .      |
| 37   | C   | SR        | 0.37        | 0.29        | -0.19       | 0.29   | -0.09  | -0.10       | .      |
| 38   | C   | SR        | 0.62        | 0.41        | -0.14       | 0.41   | -0.29  | -0.18       | .      |
| 39   | C   | SR        | 0.59        | 0.24        | -0.10       | 0.24   | -0.15  | -0.11       | .      |
| 40A  | U   | CR        | 0.46        | 0.53        | .           | .      | .      | .           | .      |
| 40B  | U   | CR        | 0.28        | 0.66        | .           | .      | .      | .           | .      |
| 41   | C   | SR        | 0.57        | 0.44        | -0.22       | 0.44   | -0.18  | -0.22       | .      |
| 43   | C   | SR        | 0.55        | 0.54        | -0.40       | -0.22  | 0.54   | -0.09       | .      |
| 44   | C   | SR        | <b>0.23</b> | 0.44        | -0.35       | 0.44   | -0.23  | <b>0.08</b> | .      |
| 45   | C   | SR        | 0.43        | 0.29        | 0.29        | -0.09  | -0.18  | -0.18       | .      |
| 46   | C   | SR        | <b>0.24</b> | 0.29        | -0.20       | 0.00   | -0.12  | 0.29        | .      |
| 47   | C   | SR        | <b>0.28</b> | 0.31        | -0.17       | -0.08  | -0.13  | 0.31        | .      |
| 48   | C   | SR        | 0.31        | 0.28        | -0.18       | -0.06  | -0.07  | 0.28        | .      |
| 49A  | U   | CR        | <b>0.14</b> | 0.51        | .           | .      | .      | .           | .      |
| 49B  | U   | CR        | 0.24        | 0.61        | .           | .      | .      | .           | .      |
| 50   | C   | SR        | 0.53        | 0.30        | -0.17       | -0.20  | 0.30   | -0.06       | .      |
| 51   | C   | SR        | 0.50        | 0.44        | -0.24       | -0.17  | 0.44   | -0.18       | .      |
| 52   | C   | SR        | 0.62        | 0.44        | -0.20       | -0.20  | -0.24  | 0.44        | .      |
| 53   | C   | SR        | 0.59        | 0.49        | -0.22       | -0.28  | 0.49   | -0.20       | .      |
| 54   | C   | SR        | 0.32        | 0.24        | -0.13       | -0.01  | 0.24   | -0.18       | .      |
| 55   | C   | SR        | 0.34        | 0.32        | 0.32        | -0.23  | -0.13  | -0.01       | .      |
| 56   | C   | SR        | 0.35        | 0.35        | -0.12       | 0.35   | -0.15  | -0.15       | .      |
| 57   | C   | SR        | 0.47        | 0.35        | 0.35        | -0.20  | -0.22  | -0.08       | .      |
| 58A  | U   | CR        | 0.23        | 0.41        | .           | .      | .      | .           | .      |
| 58B  | U   | CR        | 0.48        | 0.54        | .           | .      | .      | .           | .      |
| 59   | C   | SR        | 0.72        | <b>0.07</b> | <b>0.07</b> | -0.11  | -0.05  | <b>0.07</b> | .      |
| 60   | C   | SR        | 0.44        | 0.43        | -0.19       | -0.16  | 0.43   | -0.22       | .      |
| 61   | C   | SR        | 0.56        | 0.45        | -0.12       | 0.45   | -0.23  | -0.28       | .      |

**Table A19 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form A**  
**N=11,589**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3      | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
| 62   | C   | SR        | 0.55        | 0.37        | -0.18       | 0.37        | -0.21       | -0.14       | .      |
| 63   | C   | SR        | 0.75        | 0.38        | -0.31       | -0.12       | 0.38        | -0.13       | .      |
| 64A  | U   | CR        | 0.38        | 0.55        | .           | .           | .           | .           | .      |
| 64B  | U   | CR        | 0.47        | 0.61        | .           | .           | .           | .           | .      |
| 65   | C   | SR        | 0.70        | 0.28        | -0.12       | 0.28        | -0.17       | -0.17       | .      |
| 66   | C   | SR        | 0.81        | 0.45        | 0.45        | -0.26       | -0.23       | -0.18       | .      |
| 67   | C   | SR        | 0.50        | 0.45        | 0.45        | -0.10       | -0.29       | -0.26       | .      |
| 68   | C   | SR        | 0.42        | 0.56        | -0.23       | -0.18       | -0.28       | 0.56        | .      |
| 69A  | U   | CR        | 0.53        | 0.55        | .           | .           | .           | .           | .      |
| 69B  | U   | CR        | 0.59        | 0.61        | .           | .           | .           | .           | .      |
| 70   | U   | SR        | 0.65        | 0.45        | -0.13       | -0.27       | -0.28       | 0.45        | .      |
| 71   | U   | SR        | 0.50        | 0.47        | -0.25       | -0.25       | 0.47        | -0.16       | .      |
| 72   | U   | SR        | <b>0.28</b> | <b>0.03</b> | -0.10       | <b>0.03</b> | <b>0.06</b> | -0.04       | .      |
| 73   | U   | SR        | 0.54        | 0.45        | -0.13       | -0.14       | 0.45        | -0.33       | .      |
| 74   | U   | SR        | 0.64        | 0.42        | -0.20       | -0.23       | -0.22       | 0.42        | .      |
| 75A  | U   | CR        | 0.50        | 0.55        | .           | .           | .           | .           | .      |
| 75B  | U   | CR        | 0.46        | 0.64        | .           | .           | .           | .           | .      |
| 76   | U   | SR        | 0.55        | 0.52        | -0.23       | -0.21       | -0.30       | 0.52        | .      |
| 77   | U   | SR        | <b>0.25</b> | 0.19        | -0.15       | -0.14       | 0.19        | <b>0.09</b> | .      |
| 78   | U   | SR        | 0.66        | 0.48        | -0.23       | -0.25       | 0.48        | -0.23       | .      |
| 79   | U   | SR        | 0.42        | 0.26        | <b>0.02</b> | 0.26        | -0.22       | -0.14       | .      |
| 80   | U   | SR        | 0.43        | 0.37        | -0.13       | -0.17       | -0.19       | 0.37        | .      |
| 81A  | U   | CR        | 0.31        | 0.52        | .           | .           | .           | .           | .      |
| 81B  | U   | CR        | 0.32        | 0.67        | .           | .           | .           | .           | .      |
| 82   | U   | SR        | 0.51        | 0.37        | 0.37        | -0.16       | -0.20       | -0.15       | .      |
| 83   | U   | SR        | 0.34        | 0.44        | -0.22       | -0.21       | -0.09       | 0.44        | .      |
| 84   | U   | SR        | 0.48        | 0.30        | -0.18       | 0.30        | -0.11       | -0.14       | .      |
| 85   | U   | SR        | 0.66        | 0.46        | -0.10       | 0.46        | -0.28       | -0.28       | .      |
| 86   | U   | SR        | 0.36        | 0.27        | -0.06       | 0.27        | -0.15       | -0.12       | .      |
| 87   | U   | SR        | 0.32        | 0.33        | -0.15       | -0.14       | 0.33        | -0.10       | .      |
| 88   | U   | SR        | 0.82        | 0.36        | 0.36        | -0.16       | -0.19       | -0.17       | .      |
| 89   | U   | SR        | 0.42        | 0.58        | -0.37       | -0.15       | -0.19       | 0.58        | .      |
| 90   | U   | SR        | 0.46        | <b>0.13</b> | -0.16       | -0.16       | <b>0.13</b> | <b>0.12</b> | .      |
| 91   | U   | SR        | 0.43        | 0.56        | -0.40       | -0.16       | -0.10       | 0.56        | .      |
| 92   | U   | SR        | <b>0.27</b> | 0.17        | -0.02       | 0.17        | -0.06       | -0.11       | .      |
| 93   | U   | SR        | <b>0.15</b> | <b>0.13</b> | -0.03       | <b>0.01</b> | <b>0.13</b> | -0.14       | .      |
| 94   | U   | SR        | 0.40        | 0.35        | -0.22       | 0.35        | -0.10       | -0.13       | .      |

**Table A19 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form A**  
**N=11,589**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|--------|--------|
| 95   | U   | SR        | <b>0.25</b> | 0.39        | -0.09       | -0.11       | 0.39   | -0.23  | .      |
| 96   | U   | SR        | 0.72        | 0.45        | -0.22       | -0.23       | -0.21  | 0.45   | .      |
| 97   | U   | SR        | <b>0.22</b> | 0.35        | -0.15       | -0.10       | -0.10  | 0.35   | .      |
| 98   | U   | SR        | 0.77        | 0.43        | 0.43        | -0.29       | -0.18  | -0.16  | .      |
| 99   | U   | SR        | 0.45        | 0.29        | 0.00        | 0.29        | -0.19  | -0.19  | .      |
| 100  | U   | SR        | 0.33        | 0.32        | 0.32        | -0.04       | -0.18  | -0.17  | .      |
| 101  | U   | SR        | <b>0.20</b> | <b>0.13</b> | <b>0.13</b> | <b>0.13</b> | -0.19  | -0.10  | .      |
| 103  | U   | SR        | 0.56        | 0.28        | -0.15       | 0.28        | -0.21  | -0.08  | .      |
| 104  | U   | SR        | 0.53        | 0.40        | -0.20       | -0.15       | 0.40   | -0.21  | .      |
| 105  | U   | SR        | 0.47        | 0.30        | -0.02       | -0.23       | 0.30   | -0.13  | .      |
| 106  | U   | SR        | 0.47        | 0.48        | -0.13       | 0.48        | -0.18  | -0.31  | .      |
| 107  | U   | SR        | 0.68        | 0.41        | -0.22       | 0.41        | -0.19  | -0.19  | .      |
| 108  | U   | SR        | 0.39        | 0.46        | -0.15       | -0.18       | -0.22  | 0.46   | .      |
| 109  | U   | SR        | 0.38        | 0.44        | 0.44        | -0.23       | -0.22  | -0.06  | .      |
| 110  | U   | SR        | 0.69        | 0.44        | -0.23       | 0.44        | -0.23  | -0.21  | .      |
| 111  | U   | SR        | 0.44        | 0.40        | -0.17       | 0.40        | -0.26  | -0.14  | .      |



**Table A20**  
**Summary Item Statistics – Mathematics Grade 6, Form B**  
**N=11,462**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|--------|--------|-------------|--------|
| 6    | C   | SR        | 0.69        | 0.44        | 0.44        | -0.22  | -0.14  | -0.23       | -0.16  |
| 13   | C   | SR        | 0.73        | 0.45        | -0.25       | -0.25  | 0.45   | -0.19       | .      |
| 17   | C   | SR        | 0.69        | 0.40        | -0.26       | -0.24  | 0.40   | -0.11       | .      |
| 18   | C   | SR        | 0.74        | 0.45        | -0.14       | -0.16  | 0.45   | -0.36       | .      |
| 20   | C   | SR        | 0.67        | 0.54        | -0.35       | -0.18  | -0.28  | 0.54        | .      |
| 32   | C   | SR        | 0.45        | 0.50        | -0.24       | -0.34  | 0.50   | -0.06       | .      |
| 33   | C   | SR        | 0.37        | 0.28        | -0.13       | -0.16  | -0.08  | 0.28        | .      |
| 34   | C   | SR        | <b>0.23</b> | 0.32        | -0.18       | -0.21  | 0.32   | -0.01       | .      |
| 35   | C   | SR        | 0.55        | 0.39        | -0.17       | 0.39   | -0.22  | -0.18       | .      |
| 36   | C   | SR        | 0.55        | 0.45        | -0.27       | -0.26  | 0.45   | -0.11       | .      |
| 37   | C   | SR        | 0.37        | 0.29        | -0.21       | 0.29   | -0.10  | -0.07       | .      |
| 38   | C   | SR        | 0.62        | 0.40        | -0.14       | 0.40   | -0.28  | -0.19       | .      |
| 39   | C   | SR        | 0.60        | 0.23        | -0.11       | 0.23   | -0.15  | -0.08       | .      |
| 40A  | U   | CR        | 0.55        | 0.58        | .           | .      | .      | .           | .      |
| 40B  | U   | CR        | 0.41        | 0.67        | .           | .      | .      | .           | .      |
| 41   | C   | SR        | 0.59        | 0.44        | -0.22       | 0.44   | -0.20  | -0.22       | .      |
| 43   | C   | SR        | 0.57        | 0.52        | -0.41       | -0.21  | 0.52   | -0.08       | .      |
| 44   | C   | SR        | <b>0.23</b> | 0.45        | -0.35       | 0.45   | -0.24  | <b>0.06</b> | .      |
| 45   | C   | SR        | 0.44        | 0.30        | 0.30        | -0.10  | -0.18  | -0.19       | .      |
| 46   | C   | SR        | <b>0.24</b> | 0.33        | -0.23       | -0.02  | -0.12  | 0.33        | .      |
| 47   | C   | SR        | <b>0.28</b> | 0.34        | -0.15       | -0.11  | -0.14  | 0.34        | .      |
| 48   | C   | SR        | 0.31        | 0.28        | -0.20       | -0.05  | -0.07  | 0.28        | .      |
| 49A  | U   | CR        | <b>0.08</b> | 0.45        | .           | .      | .      | .           | .      |
| 49B  | U   | CR        | 0.22        | 0.63        | .           | .      | .      | .           | .      |
| 50   | C   | SR        | 0.55        | 0.29        | -0.17       | -0.20  | 0.29   | -0.07       | .      |
| 51   | C   | SR        | 0.51        | 0.45        | -0.23       | -0.20  | 0.45   | -0.19       | .      |
| 52   | C   | SR        | 0.63        | 0.44        | -0.21       | -0.19  | -0.24  | 0.44        | .      |
| 53   | C   | SR        | 0.61        | 0.48        | -0.21       | -0.29  | 0.48   | -0.21       | .      |
| 54   | C   | SR        | 0.31        | 0.24        | -0.13       | -0.04  | 0.24   | -0.17       | .      |
| 55   | C   | SR        | 0.34        | 0.29        | 0.29        | -0.22  | -0.12  | -0.01       | .      |
| 56   | C   | SR        | 0.37        | 0.34        | -0.10       | 0.34   | -0.16  | -0.17       | .      |
| 57   | C   | SR        | 0.42        | 0.35        | 0.35        | -0.20  | -0.20  | -0.10       | .      |
| 58A  | U   | CR        | 0.67        | 0.45        | .           | .      | .      | .           | .      |
| 58B  | U   | CR        | 0.46        | 0.54        | .           | .      | .      | .           | .      |
| 59   | C   | SR        | 0.72        | <b>0.08</b> | <b>0.08</b> | -0.12  | -0.05  | <b>0.06</b> | .      |
| 60   | C   | SR        | 0.44        | 0.45        | -0.20       | -0.17  | 0.45   | -0.24       | .      |
| 61   | C   | SR        | 0.56        | 0.44        | -0.13       | 0.44   | -0.21  | -0.29       | .      |

**Table A20 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form B**  
**N=11,462**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|--------|--------|--------|--------|
| 62   | C   | SR        | 0.56        | 0.40        | -0.21       | 0.40   | -0.21  | -0.16  | .      |
| 63   | C   | SR        | 0.76        | 0.36        | -0.30       | -0.12  | 0.36   | -0.12  | .      |
| 64A  | U   | CR        | 0.32        | 0.38        | .           | .      | .      | .      | .      |
| 64B  | U   | CR        | <b>0.19</b> | 0.52        | .           | .      | .      | .      | .      |
| 65   | C   | SR        | 0.71        | 0.26        | -0.10       | 0.26   | -0.17  | -0.17  | .      |
| 66   | C   | SR        | 0.82        | 0.44        | 0.44        | -0.26  | -0.22  | -0.18  | .      |
| 67   | C   | SR        | 0.48        | 0.43        | 0.43        | -0.09  | -0.29  | -0.26  | .      |
| 68   | C   | SR        | 0.41        | 0.56        | -0.24       | -0.16  | -0.29  | 0.56   | .      |
| 69A  | U   | CR        | 0.30        | 0.59        | .           | .      | .      | .      | .      |
| 69B  | U   | CR        | 0.34        | 0.56        | .           | .      | .      | .      | .      |
| 70   | U   | SR        | 0.62        | 0.40        | -0.22       | -0.13  | 0.40   | -0.27  | .      |
| 71   | U   | SR        | 0.71        | 0.39        | -0.22       | -0.22  | 0.39   | -0.14  | .      |
| 72   | U   | SR        | 0.48        | 0.48        | -0.18       | -0.24  | -0.27  | 0.48   | .      |
| 73   | U   | SR        | 0.32        | 0.37        | 0.37        | -0.25  | -0.16  | -0.02  | .      |
| 74   | U   | SR        | 0.44        | 0.33        | -0.23       | -0.21  | 0.33   | -0.04  | .      |
| 75A  | U   | CR        | 0.69        | 0.57        | .           | .      | .      | .      | .      |
| 75B  | U   | CR        | 0.42        | 0.56        | .           | .      | .      | .      | .      |
| 76   | U   | SR        | 0.74        | 0.49        | -0.23       | -0.23  | -0.28  | 0.49   | .      |
| 77   | U   | SR        | 0.32        | 0.30        | <b>0.02</b> | -0.28  | -0.12  | 0.30   | .      |
| 78   | U   | SR        | 0.54        | 0.46        | -0.26       | 0.46   | -0.20  | -0.19  | .      |
| 79   | U   | SR        | 0.68        | 0.45        | 0.45        | -0.25  | -0.23  | -0.18  | .      |
| 80   | U   | SR        | 0.70        | 0.47        | -0.25       | -0.22  | 0.47   | -0.23  | .      |
| 81A  | U   | CR        | 0.45        | 0.68        | .           | .      | .      | .      | .      |
| 81B  | U   | CR        | 0.41        | 0.69        | .           | .      | .      | .      | .      |
| 82   | U   | SR        | 0.56        | 0.37        | -0.18       | -0.26  | -0.12  | 0.37   | .      |
| 83   | U   | SR        | 0.46        | 0.54        | -0.34       | -0.20  | -0.15  | 0.54   | .      |
| 84   | U   | SR        | 0.45        | 0.30        | 0.30        | -0.10  | -0.22  | -0.14  | .      |
| 85   | U   | SR        | 0.67        | 0.47        | -0.23       | 0.47   | -0.24  | -0.24  | .      |
| 86   | U   | SR        | 0.52        | 0.45        | -0.14       | 0.45   | -0.29  | -0.20  | .      |
| 87   | U   | SR        | 0.30        | <b>0.15</b> | -0.12       | -0.07  | 0.15   | -0.01  | .      |
| 88   | U   | SR        | 0.60        | 0.53        | 0.53        | -0.26  | -0.30  | -0.20  | .      |
| 89   | U   | SR        | 0.43        | 0.30        | -0.05       | 0.30   | -0.20  | -0.14  | .      |
| 90   | U   | SR        | 0.52        | 0.34        | -0.21       | -0.20  | 0.34   | -0.08  | .      |
| 91   | U   | SR        | 0.49        | 0.43        | -0.24       | 0.43   | -0.18  | -0.18  | .      |
| 92   | U   | SR        | 0.43        | 0.39        | 0.39        | -0.24  | -0.07  | -0.17  | .      |
| 93   | U   | SR        | <b>0.25</b> | 0.41        | -0.09       | -0.16  | -0.20  | 0.41   | .      |
| 94   | U   | SR        | <b>0.29</b> | 0.32        | -0.09       | 0.32   | -0.18  | -0.10  | .      |

**Table A20 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form B**  
**N=11,462**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3      | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
| 95   | U   | SR        | <b>0.26</b> | 0.41        | -0.18       | -0.11       | -0.15       | 0.41        | .      |
| 96   | U   | SR        | 0.69        | 0.44        | -0.25       | -0.19       | -0.20       | 0.44        | .      |
| 97   | U   | SR        | 0.44        | 0.41        | -0.11       | -0.25       | 0.41        | -0.14       | .      |
| 98   | U   | SR        | 0.84        | 0.36        | -0.17       | -0.19       | 0.36        | -0.14       | .      |
| 99   | U   | SR        | 0.53        | 0.47        | 0.47        | -0.19       | -0.24       | -0.20       | .      |
| 100  | U   | SR        | 0.50        | 0.53        | -0.23       | -0.23       | -0.24       | 0.53        | .      |
| 101  | U   | SR        | <b>0.16</b> | <b>0.15</b> | -0.13       | -0.15       | <b>0.14</b> | <b>0.15</b> | .      |
| 102  | U   | SR        | 0.45        | 0.38        | -0.19       | 0.38        | -0.11       | -0.21       | .      |
| 103  | U   | SR        | 0.40        | 0.54        | -0.14       | -0.39       | -0.14       | 0.54        | .      |
| 104  | U   | SR        | <b>0.29</b> | <b>0.12</b> | <b>0.06</b> | <b>0.12</b> | -0.18       | -0.06       | .      |
| 105  | U   | SR        | 0.50        | 0.38        | -0.24       | -0.15       | -0.13       | 0.38        | .      |
| 106  | U   | SR        | <b>0.30</b> | 0.26        | -0.08       | -0.14       | 0.26        | -0.08       | .      |
| 107  | U   | SR        | <b>0.23</b> | 0.20        | <b>0.07</b> | -0.20       | -0.20       | 0.20        | .      |
| 108  | U   | SR        | 0.38        | 0.32        | -0.13       | -0.15       | -0.14       | 0.32        | .      |
| 109  | U   | SR        | 0.38        | 0.28        | -0.13       | 0.28        | -0.18       | -0.08       | .      |
| 110  | U   | SR        | 0.37        | 0.29        | 0.29        | -0.07       | -0.19       | -0.18       | .      |
| 111  | U   | SR        | 0.44        | 0.33        | -0.11       | -0.15       | -0.22       | 0.33        | .      |

**Table A21**  
**Summary Item Statistics – Mathematics Grade 6, Form C**  
**N=11,391**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|--------|--------|-------------|--------|
| 6    | C   | SR        | 0.69        | 0.45        | 0.45        | -0.23  | -0.15  | -0.23       | -0.16  |
| 13   | C   | SR        | 0.73        | 0.45        | -0.26       | -0.25  | 0.45   | -0.19       | .      |
| 17   | C   | SR        | 0.70        | 0.41        | -0.26       | -0.25  | 0.41   | -0.12       | .      |
| 18   | C   | SR        | 0.74        | 0.46        | -0.14       | -0.17  | 0.46   | -0.36       | .      |
| 20   | C   | SR        | 0.67        | 0.55        | -0.35       | -0.19  | -0.29  | 0.55        | .      |
| 32   | C   | SR        | 0.45        | 0.50        | -0.24       | -0.33  | 0.50   | -0.05       | .      |
| 33   | C   | SR        | 0.37        | 0.28        | -0.13       | -0.16  | -0.06  | 0.28        | .      |
| 34   | C   | SR        | <b>0.23</b> | 0.32        | -0.18       | -0.22  | 0.32   | <b>0.00</b> | .      |
| 35   | C   | SR        | 0.55        | 0.37        | -0.17       | 0.37   | -0.20  | -0.17       | .      |
| 36   | C   | SR        | 0.55        | 0.46        | -0.28       | -0.26  | 0.46   | -0.11       | .      |
| 37   | C   | SR        | 0.37        | 0.30        | -0.18       | 0.30   | -0.12  | -0.09       | .      |
| 38   | C   | SR        | 0.63        | 0.42        | -0.14       | 0.42   | -0.26  | -0.22       | .      |
| 39   | C   | SR        | 0.61        | 0.24        | -0.10       | 0.24   | -0.15  | -0.10       | .      |
| 40A  | U   | CR        | 0.32        | 0.63        | .           | .      | .      | .           | .      |
| 40B  | U   | CR        | 0.25        | 0.65        | .           | .      | .      | .           | .      |
| 41   | C   | SR        | 0.59        | 0.43        | -0.21       | 0.43   | -0.19  | -0.23       | .      |
| 43   | C   | SR        | 0.58        | 0.53        | -0.41       | -0.20  | 0.53   | -0.08       | .      |
| 44   | C   | SR        | <b>0.23</b> | 0.45        | -0.35       | 0.45   | -0.24  | <b>0.07</b> | .      |
| 45   | C   | SR        | 0.44        | 0.29        | 0.29        | -0.08  | -0.18  | -0.20       | .      |
| 46   | C   | SR        | <b>0.24</b> | 0.31        | -0.21       | -0.02  | -0.12  | 0.31        | .      |
| 47   | C   | SR        | <b>0.28</b> | 0.34        | -0.16       | -0.10  | -0.15  | 0.34        | .      |
| 48   | C   | SR        | 0.33        | 0.28        | -0.19       | -0.06  | -0.07  | 0.28        | .      |
| 49A  | U   | CR        | <b>0.13</b> | 0.51        | .           | .      | .      | .           | .      |
| 49B  | U   | CR        | 0.26        | 0.63        | .           | .      | .      | .           | .      |
| 50   | C   | SR        | 0.55        | 0.29        | -0.15       | -0.18  | 0.29   | -0.08       | .      |
| 51   | C   | SR        | 0.50        | 0.43        | -0.24       | -0.18  | 0.43   | -0.18       | .      |
| 52   | C   | SR        | 0.63        | 0.43        | -0.20       | -0.19  | -0.24  | 0.43        | .      |
| 53   | C   | SR        | 0.60        | 0.49        | -0.22       | -0.29  | 0.49   | -0.20       | .      |
| 54   | C   | SR        | 0.31        | 0.24        | -0.13       | -0.02  | 0.24   | -0.18       | .      |
| 55   | C   | SR        | 0.34        | 0.29        | 0.29        | -0.22  | -0.11  | -0.02       | .      |
| 56   | C   | SR        | 0.39        | 0.35        | -0.10       | 0.35   | -0.16  | -0.19       | .      |
| 57   | C   | SR        | 0.40        | 0.35        | 0.35        | -0.19  | -0.18  | -0.10       | .      |
| 58A  | U   | CR        | 0.36        | 0.45        | .           | .      | .      | .           | .      |
| 58B  | U   | CR        | 0.49        | 0.55        | .           | .      | .      | .           | .      |
| 59   | C   | SR        | 0.73        | <b>0.07</b> | <b>0.07</b> | -0.11  | -0.04  | <b>0.06</b> | .      |
| 60   | C   | SR        | 0.45        | 0.43        | -0.19       | -0.16  | 0.43   | -0.22       | .      |
| 61   | C   | SR        | 0.56        | 0.46        | -0.12       | 0.46   | -0.23  | -0.29       | .      |

**Table A21 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form C**  
**N=11,391**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|--------|-------------|--------|
| 62   | C   | SR        | 0.56        | 0.39  | -0.20  | 0.39   | -0.23  | -0.13       | .      |
| 63   | C   | SR        | 0.77        | 0.36  | -0.31  | -0.12  | 0.36   | -0.12       | .      |
| 64A  | U   | CR        | 0.21        | 0.51  | .      | .      | .      | .           | .      |
| 64B  | U   | CR        | 0.50        | 0.66  | .      | .      | .      | .           | .      |
| 65   | C   | SR        | 0.72        | 0.27  | -0.11  | 0.27   | -0.19  | -0.16       | .      |
| 66   | C   | SR        | 0.84        | 0.44  | 0.44   | -0.26  | -0.22  | -0.19       | .      |
| 67   | C   | SR        | 0.49        | 0.45  | 0.45   | -0.11  | -0.30  | -0.26       | .      |
| 68   | C   | SR        | 0.42        | 0.56  | -0.23  | -0.19  | -0.29  | 0.56        | .      |
| 69A  | U   | CR        | 0.35        | 0.56  | .      | .      | .      | .           | .      |
| 69B  | U   | CR        | 0.45        | 0.64  | .      | .      | .      | .           | .      |
| 70   | U   | SR        | 0.65        | 0.40  | -0.14  | 0.40   | -0.27  | -0.17       | .      |
| 71   | U   | SR        | 0.45        | 0.35  | -0.14  | -0.23  | -0.19  | 0.35        | .      |
| 72   | U   | SR        | 0.69        | 0.42  | -0.19  | 0.42   | -0.30  | -0.16       | .      |
| 73   | U   | SR        | 0.37        | 0.34  | -0.25  | 0.34   | -0.09  | -0.07       | .      |
| 74   | U   | SR        | 0.47        | 0.28  | -0.11  | -0.14  | -0.18  | 0.28        | .      |
| 75A  | U   | CR        | 0.63        | 0.59  | .      | .      | .      | .           | .      |
| 75B  | U   | CR        | 0.49        | 0.60  | .      | .      | .      | .           | .      |
| 76   | U   | SR        | 0.78        | 0.49  | -0.27  | -0.25  | 0.49   | -0.23       | .      |
| 77   | U   | SR        | 0.43        | 0.41  | -0.19  | -0.19  | 0.41   | -0.16       | .      |
| 78   | U   | SR        | 0.55        | 0.32  | -0.09  | 0.32   | -0.25  | -0.20       | .      |
| 79   | U   | SR        | 0.65        | 0.54  | -0.35  | 0.54   | -0.24  | -0.20       | .      |
| 80   | U   | SR        | 0.42        | 0.35  | -0.12  | -0.23  | -0.12  | 0.35        | .      |
| 81A  | U   | CR        | <b>0.07</b> | 0.33  | .      | .      | .      | .           | .      |
| 81B  | U   | CR        | 0.33        | 0.47  | .      | .      | .      | .           | .      |
| 82   | U   | SR        | 0.40        | 0.54  | -0.33  | -0.15  | 0.54   | -0.20       | .      |
| 83   | U   | SR        | 0.77        | 0.37  | -0.23  | 0.37   | -0.18  | -0.16       | .      |
| 84   | U   | SR        | 0.66        | 0.51  | 0.51   | -0.29  | -0.24  | -0.25       | .      |
| 85   | U   | SR        | 0.46        | 0.52  | -0.22  | 0.52   | -0.34  | -0.12       | .      |
| 86   | U   | SR        | 0.52        | 0.50  | -0.27  | -0.21  | -0.22  | 0.50        | .      |
| 87   | U   | SR        | 0.43        | 0.35  | -0.21  | 0.35   | -0.20  | -0.06       | .      |
| 88   | U   | SR        | 0.39        | 0.55  | -0.13  | -0.41  | 0.55   | -0.11       | .      |
| 89   | U   | SR        | 0.51        | 0.37  | -0.28  | -0.18  | 0.37   | -0.06       | .      |
| 90   | U   | SR        | 0.58        | 0.50  | -0.30  | 0.50   | -0.23  | -0.21       | .      |
| 91   | U   | SR        | 0.36        | 0.49  | 0.49   | -0.21  | -0.19  | -0.23       | .      |
| 92   | U   | SR        | <b>0.21</b> | 0.38  | -0.35  | -0.11  | 0.38   | <b>0.09</b> | .      |
| 93   | U   | SR        | 0.56        | 0.54  | -0.26  | -0.30  | -0.18  | 0.54        | .      |
| 94   | U   | SR        | 0.37        | 0.34  | 0.34   | -0.18  | -0.11  | -0.17       | .      |

**Table A21 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form C**  
**N=11,391**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|-------------|--------|--------|
| 95   | U   | SR        | 0.63        | 0.47  | -0.23  | -0.24  | -0.21       | 0.47   | .      |
| 96   | U   | SR        | 0.81        | 0.41  | -0.19  | 0.41   | -0.19       | -0.22  | .      |
| 97   | U   | SR        | 0.76        | 0.48  | -0.24  | -0.21  | -0.26       | 0.48   | .      |
| 98   | U   | SR        | 0.63        | 0.56  | -0.32  | -0.29  | 0.56        | -0.17  | .      |
| 99   | U   | SR        | 0.81        | 0.45  | -0.21  | -0.25  | 0.45        | -0.19  | .      |
| 100  | U   | SR        | 0.74        | 0.50  | 0.50   | -0.27  | -0.22       | -0.24  | .      |
| 101  | U   | SR        | 0.52        | 0.49  | 0.49   | -0.20  | -0.26       | -0.18  | .      |
| 102  | U   | SR        | 0.41        | 0.46  | -0.24  | -0.16  | -0.16       | 0.46   | .      |
| 103  | U   | SR        | 0.43        | 0.47  | -0.19  | 0.47   | -0.02       | -0.35  | .      |
| 104  | U   | SR        | 0.42        | 0.50  | -0.26  | -0.28  | 0.50        | -0.06  | .      |
| 105  | U   | SR        | 0.42        | 0.39  | -0.14  | -0.16  | -0.20       | 0.39   | .      |
| 106  | U   | SR        | <b>0.28</b> | 0.27  | -0.11  | -0.15  | -0.06       | 0.27   | .      |
| 107  | U   | SR        | 0.59        | 0.51  | -0.30  | -0.25  | 0.51        | -0.17  | .      |
| 108  | U   | SR        | 0.37        | 0.24  | -0.16  | 0.24   | -0.11       | -0.02  | .      |
| 109  | U   | SR        | 0.36        | 0.27  | -0.10  | -0.02  | 0.27        | -0.23  | .      |
| 110  | U   | SR        | 0.59        | 0.46  | 0.46   | -0.27  | -0.25       | -0.19  | .      |
| 111  | U   | SR        | <b>0.26</b> | 0.24  | -0.28  | -0.14  | <b>0.09</b> | 0.24   | .      |

**Table A22**  
**Summary Item Statistics – Mathematics Grade 6, Form D**  
**N=11,349**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|--------|--------|--------|-------------|--------|
| 6    | C   | SR        | 0.70        | 0.45        | 0.45   | -0.23  | -0.15  | -0.23       | -0.19  |
| 13   | C   | SR        | 0.74        | 0.44        | -0.26  | -0.25  | 0.44   | -0.19       | .      |
| 17   | C   | SR        | 0.69        | 0.41        | -0.27  | -0.25  | 0.41   | -0.12       | .      |
| 18   | C   | SR        | 0.75        | 0.43        | -0.13  | -0.17  | 0.43   | -0.35       | .      |
| 20   | C   | SR        | 0.68        | 0.52        | -0.33  | -0.19  | -0.27  | 0.52        | .      |
| 32   | C   | SR        | 0.45        | 0.50        | -0.24  | -0.34  | 0.50   | -0.08       | .      |
| 33   | C   | SR        | 0.37        | 0.28        | -0.14  | -0.16  | -0.07  | 0.28        | .      |
| 34   | C   | SR        | <b>0.23</b> | 0.32        | -0.19  | -0.20  | 0.32   | -0.01       | .      |
| 35   | C   | SR        | 0.54        | 0.37        | -0.17  | 0.37   | -0.20  | -0.17       | .      |
| 36   | C   | SR        | 0.55        | 0.47        | -0.28  | -0.26  | 0.47   | -0.13       | .      |
| 37   | C   | SR        | 0.37        | 0.30        | -0.19  | 0.30   | -0.12  | -0.09       | .      |
| 38   | C   | SR        | 0.64        | 0.41        | -0.15  | 0.41   | -0.27  | -0.22       | .      |
| 39   | C   | SR        | 0.60        | 0.23        | -0.11  | 0.23   | -0.15  | -0.11       | .      |
| 40A  | U   | CR        | 0.50        | 0.54        | .      | .      | .      | .           | .      |
| 40B  | U   | CR        | 0.39        | 0.63        | .      | .      | .      | .           | .      |
| 41   | C   | SR        | 0.60        | 0.43        | -0.22  | 0.43   | -0.19  | -0.23       | .      |
| 43   | C   | SR        | 0.58        | 0.51        | -0.40  | -0.20  | 0.51   | -0.09       | .      |
| 44   | C   | SR        | <b>0.23</b> | 0.45        | -0.35  | 0.45   | -0.23  | <b>0.04</b> | .      |
| 45   | C   | SR        | 0.44        | 0.30        | 0.30   | -0.10  | -0.17  | -0.20       | .      |
| 46   | C   | SR        | <b>0.24</b> | 0.32        | -0.23  | -0.03  | -0.12  | 0.32        | .      |
| 47   | C   | SR        | <b>0.28</b> | 0.34        | -0.16  | -0.12  | -0.13  | 0.34        | .      |
| 48   | C   | SR        | 0.32        | 0.28        | -0.21  | -0.04  | -0.07  | 0.28        | .      |
| 50   | C   | SR        | 0.55        | 0.28        | -0.17  | -0.19  | 0.28   | -0.08       | .      |
| 51   | C   | SR        | 0.53        | 0.44        | -0.24  | -0.19  | 0.44   | -0.19       | .      |
| 52   | C   | SR        | 0.65        | 0.44        | -0.21  | -0.20  | -0.24  | 0.44        | .      |
| 53   | C   | SR        | 0.62        | 0.49        | -0.21  | -0.30  | 0.49   | -0.20       | .      |
| 54   | C   | SR        | 0.32        | 0.27        | -0.13  | -0.05  | 0.27   | -0.19       | .      |
| 55   | C   | SR        | 0.35        | 0.28        | 0.28   | -0.23  | -0.10  | -0.03       | .      |
| 56   | C   | SR        | 0.37        | 0.35        | -0.10  | 0.35   | -0.16  | -0.18       | .      |
| 57   | C   | SR        | 0.41        | 0.36        | 0.36   | -0.20  | -0.19  | -0.10       | .      |
| 58A  | U   | CR        | 0.50        | 0.31        | .      | .      | .      | .           | .      |
| 58B  | U   | CR        | 0.46        | 0.43        | .      | .      | .      | .           | .      |
| 59   | C   | SR        | 0.72        | <b>0.08</b> | 0.08   | -0.12  | -0.06  | <b>0.05</b> | .      |
| 60   | C   | SR        | 0.46        | 0.44        | -0.21  | -0.17  | 0.44   | -0.23       | .      |
| 61   | C   | SR        | 0.56        | 0.44        | -0.12  | 0.44   | -0.23  | -0.28       | .      |
| 62   | C   | SR        | 0.56        | 0.39        | -0.20  | 0.39   | -0.22  | -0.15       | .      |
| 63   | C   | SR        | 0.76        | 0.36        | -0.29  | -0.14  | 0.36   | -0.12       | .      |

**Table A22 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form D**  
**N=11,349**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 65   | C   | SR        | 0.73        | 0.23        | -0.10       | 0.23        | -0.17  | -0.14       | .      |
| 66   | C   | SR        | 0.84        | 0.43        | 0.43        | -0.25       | -0.23  | -0.19       | .      |
| 67   | C   | SR        | 0.50        | 0.43        | 0.43        | -0.11       | -0.29  | -0.26       | .      |
| 68   | C   | SR        | 0.42        | 0.56        | -0.23       | -0.19       | -0.29  | 0.56        | .      |
| 70   | U   | SR        | 0.75        | 0.40        | -0.21       | -0.19       | 0.40   | -0.22       | .      |
| 71   | U   | SR        | 0.41        | 0.34        | -0.13       | -0.23       | -0.18  | 0.34        | .      |
| 72   | U   | SR        | 0.56        | 0.49        | 0.49        | -0.30       | -0.24  | -0.19       | .      |
| 73   | U   | SR        | <b>0.29</b> | 0.39        | 0.39        | -0.21       | -0.20  | -0.02       | .      |
| 74   | U   | SR        | 0.41        | 0.32        | -0.15       | -0.09       | -0.19  | 0.32        | .      |
| 75A  | U   | CR        | 0.39        | 0.58        | .           | .           | .      | .           | .      |
| 75B  | U   | CR        | 0.48        | 0.54        | .           | .           | .      | .           | .      |
| 76   | U   | SR        | 0.77        | 0.48        | -0.27       | -0.25       | 0.48   | -0.22       | .      |
| 77   | U   | SR        | 0.79        | 0.45        | -0.27       | 0.45        | -0.21  | -0.21       | .      |
| 78   | U   | SR        | 0.79        | 0.42        | 0.42        | -0.20       | -0.23  | -0.23       | .      |
| 79   | U   | SR        | 0.44        | 0.36        | -0.06       | 0.36        | -0.25  | -0.15       | .      |
| 80   | U   | SR        | 0.67        | 0.51        | -0.24       | -0.23       | 0.51   | -0.28       | .      |
| 81A  | U   | CR        | 0.45        | 0.24        | .           | .           | .      | .           | .      |
| 81B  | U   | CR        | 0.40        | 0.48        | .           | .           | .      | .           | .      |
| 82   | U   | SR        | 0.42        | 0.46        | -0.18       | -0.19       | 0.46   | -0.25       | .      |
| 83   | U   | SR        | 0.52        | 0.45        | 0.45        | -0.18       | -0.15  | -0.31       | .      |
| 84   | U   | SR        | 0.57        | 0.35        | -0.20       | -0.15       | -0.18  | 0.35        | .      |
| 86   | U   | SR        | 0.33        | 0.41        | 0.41        | -0.15       | -0.23  | -0.12       | .      |
| 87   | U   | SR        | 0.60        | 0.47        | -0.29       | 0.47        | -0.18  | -0.23       | .      |
| 88   | U   | SR        | 0.48        | 0.30        | -0.13       | -0.18       | -0.13  | 0.30        | .      |
| 89   | U   | SR        | 0.62        | 0.43        | -0.23       | 0.43        | -0.19  | -0.23       | .      |
| 90   | U   | SR        | 0.66        | 0.47        | -0.22       | -0.29       | 0.47   | -0.20       | .      |
| 91   | U   | SR        | <b>0.19</b> | 0.35        | 0.35        | -0.29       | -0.07  | <b>0.03</b> | .      |
| 92   | U   | SR        | 0.34        | 0.22        | <b>0.09</b> | 0.22        | -0.21  | -0.21       | .      |
| 93   | U   | SR        | 0.55        | <b>0.13</b> | 0.13        | <b>0.04</b> | -0.21  | -0.15       | .      |
| 94   | U   | SR        | 0.31        | 0.44        | -0.17       | -0.16       | -0.17  | 0.44        | .      |
| 95   | U   | SR        | <b>0.28</b> | 0.45        | -0.16       | -0.15       | -0.20  | 0.45        | .      |
| 96   | U   | SR        | 0.80        | 0.41        | -0.25       | 0.41        | -0.21  | -0.17       | .      |
| 97   | U   | SR        | 0.37        | 0.44        | -0.23       | -0.10       | 0.44   | -0.21       | .      |
| 98   | U   | SR        | 0.44        | 0.26        | -0.20       | -0.02       | -0.22  | 0.26        | .      |
| 99   | U   | SR        | 0.30        | 0.25        | -0.04       | -0.08       | -0.17  | 0.25        | .      |
| 100  | U   | SR        | 0.32        | 0.26        | -0.23       | -0.10       | 0.26   | -0.02       | .      |
| 101  | U   | SR        | 0.32        | 0.30        | -0.06       | -0.19       | 0.30   | -0.18       | .      |



**Table A22 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form D**  
**N=11,349**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 102  | U   | SR        | 0.55  | 0.29  | -0.20  | 0.29   | -0.14  | -0.10  | .      |
| 103  | U   | SR        | 0.43  | 0.43  | -0.24  | -0.15  | 0.43   | -0.21  | .      |
| 104  | U   | SR        | 0.44  | 0.45  | -0.33  | -0.17  | 0.45   | -0.11  | .      |
| 105  | U   | SR        | 0.50  | 0.35  | -0.21  | -0.17  | 0.35   | -0.11  | .      |
| 106  | U   | SR        | 0.30  | 0.34  | -0.22  | 0.34   | -0.06  | -0.13  | .      |
| 107  | U   | SR        | 0.56  | 0.52  | -0.28  | -0.21  | 0.52   | -0.25  | .      |
| 108  | U   | SR        | 0.34  | 0.33  | -0.10  | 0.33   | -0.19  | -0.13  | .      |
| 109  | U   | SR        | 0.53  | 0.39  | -0.16  | 0.39   | -0.24  | -0.18  | .      |
| 110  | U   | SR        | 0.67  | 0.44  | 0.44   | -0.25  | -0.20  | -0.23  | .      |
| 111  | U   | SR        | 0.68  | 0.42  | 0.42   | -0.23  | -0.22  | -0.19  | .      |

**Table A23**  
**Summary Item Statistics – Mathematics Grade 6, Form E**  
**N=11,242**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|--------|--------|-------------|--------|
| 6    | C   | SR        | 0.70        | 0.44        | 0.44        | -0.23  | -0.16  | -0.22       | -0.15  |
| 13   | C   | SR        | 0.74        | 0.45        | -0.26       | -0.25  | 0.45   | -0.18       | .      |
| 17   | C   | SR        | 0.70        | 0.40        | -0.27       | -0.23  | 0.40   | -0.11       | .      |
| 18   | C   | SR        | 0.75        | 0.43        | -0.13       | -0.16  | 0.43   | -0.35       | .      |
| 20   | C   | SR        | 0.67        | 0.53        | -0.35       | -0.19  | -0.26  | 0.53        | .      |
| 32   | C   | SR        | 0.45        | 0.50        | -0.24       | -0.34  | 0.50   | -0.06       | .      |
| 33   | C   | SR        | 0.37        | 0.29        | -0.13       | -0.16  | -0.08  | 0.29        | .      |
| 34   | C   | SR        | <b>0.23</b> | 0.32        | -0.18       | -0.21  | 0.32   | -0.01       | .      |
| 35   | C   | SR        | 0.54        | 0.38        | -0.16       | 0.38   | -0.22  | -0.17       | .      |
| 36   | C   | SR        | 0.56        | 0.45        | -0.28       | -0.25  | 0.45   | -0.12       | .      |
| 37   | C   | SR        | 0.39        | 0.30        | -0.20       | 0.30   | -0.11  | -0.08       | .      |
| 38   | C   | SR        | 0.63        | 0.41        | -0.14       | 0.41   | -0.27  | -0.21       | .      |
| 39   | C   | SR        | 0.61        | 0.23        | -0.09       | 0.23   | -0.15  | -0.12       | .      |
| 40A  | U   | CR        | 0.57        | 0.59        | .           | .      | .      | .           | .      |
| 40B  | U   | CR        | 0.39        | 0.68        | .           | .      | .      | .           | .      |
| 41   | C   | SR        | 0.60        | 0.44        | -0.23       | 0.44   | -0.19  | -0.23       | .      |
| 43   | C   | SR        | 0.58        | 0.51        | -0.40       | -0.21  | 0.51   | -0.08       | .      |
| 44   | C   | SR        | <b>0.23</b> | 0.43        | -0.33       | 0.43   | -0.23  | <b>0.04</b> | .      |
| 45   | C   | SR        | 0.45        | 0.30        | 0.30        | -0.11  | -0.17  | -0.19       | .      |
| 46   | C   | SR        | <b>0.24</b> | 0.33        | -0.23       | -0.03  | -0.12  | 0.33        | .      |
| 47   | C   | SR        | <b>0.28</b> | 0.34        | -0.15       | -0.12  | -0.14  | 0.34        | .      |
| 48   | C   | SR        | 0.31        | 0.28        | -0.22       | -0.04  | -0.05  | 0.28        | .      |
| 49A  | U   | CR        | <b>0.10</b> | 0.41        | .           | .      | .      | .           | .      |
| 49B  | U   | CR        | 0.30        | 0.60        | .           | .      | .      | .           | .      |
| 50   | C   | SR        | 0.55        | 0.29        | -0.17       | -0.19  | 0.29   | -0.08       | .      |
| 51   | C   | SR        | 0.52        | 0.44        | -0.24       | -0.19  | 0.44   | -0.19       | .      |
| 52   | C   | SR        | 0.63        | 0.44        | -0.20       | -0.20  | -0.24  | 0.44        | .      |
| 53   | C   | SR        | 0.61        | 0.47        | -0.22       | -0.29  | 0.47   | -0.19       | .      |
| 54   | C   | SR        | 0.31        | 0.26        | -0.13       | -0.05  | 0.26   | -0.18       | .      |
| 55   | C   | SR        | 0.34        | 0.28        | 0.28        | -0.23  | -0.11  | -0.01       | .      |
| 56   | C   | SR        | 0.37        | 0.35        | -0.12       | 0.35   | -0.16  | -0.17       | .      |
| 57   | C   | SR        | 0.42        | 0.37        | 0.37        | -0.21  | -0.20  | -0.12       | .      |
| 58A  | U   | CR        | 0.25        | 0.53        | .           | .      | .      | .           | .      |
| 58B  | U   | CR        | 0.20        | 0.55        | .           | .      | .      | .           | .      |
| 59   | C   | SR        | 0.72        | <b>0.09</b> | <b>0.09</b> | -0.13  | -0.06  | <b>0.05</b> | .      |
| 60   | C   | SR        | 0.45        | 0.46        | -0.21       | -0.18  | 0.46   | -0.23       | .      |
| 61   | C   | SR        | 0.57        | 0.43        | -0.13       | 0.43   | -0.23  | -0.27       | .      |

**Table A23 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form E**  
**N=11,242**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|--------|-------------|--------|-------------|--------|
| 62   | C   | SR        | 0.55        | 0.39        | -0.21  | 0.39        | -0.21  | -0.14       | .      |
| 63   | C   | SR        | 0.77        | 0.35        | -0.29  | -0.13       | 0.35   | -0.12       | .      |
| 64A  | U   | CR        | 0.38        | 0.58        | .      | .           | .      | .           | .      |
| 64B  | U   | CR        | 0.36        | 0.66        | .      | .           | .      | .           | .      |
| 65   | C   | SR        | 0.73        | 0.25        | -0.10  | 0.25        | -0.17  | -0.17       | .      |
| 66   | C   | SR        | 0.84        | 0.43        | 0.43   | -0.25       | -0.24  | -0.18       | .      |
| 67   | C   | SR        | 0.50        | 0.42        | 0.42   | -0.11       | -0.29  | -0.24       | .      |
| 68   | C   | SR        | 0.43        | 0.56        | -0.23  | -0.18       | -0.31  | 0.56        | .      |
| 70   | U   | SR        | 0.76        | 0.46        | -0.21  | -0.25       | -0.27  | 0.46        | .      |
| 71   | U   | SR        | 0.94        | 0.31        | -0.14  | -0.15       | -0.14  | 0.31        | .      |
| 72   | U   | SR        | 0.36        | <b>0.03</b> | -0.15  | <b>0.03</b> | -0.02  | <b>0.06</b> | .      |
| 73   | U   | SR        | 0.57        | 0.51        | -0.24  | -0.26       | -0.25  | 0.51        | .      |
| 74   | U   | SR        | <b>0.26</b> | 0.30        | -0.03  | 0.30        | -0.05  | -0.23       | .      |
| 75A  | U   | CR        | 0.78        | 0.54        | .      | .           | .      | .           | .      |
| 75B  | U   | CR        | 0.44        | 0.56        | .      | .           | .      | .           | .      |
| 76   | U   | SR        | 0.77        | 0.43        | -0.23  | 0.43        | -0.28  | -0.17       | .      |
| 77   | U   | SR        | 0.74        | 0.45        | 0.45   | -0.24       | -0.25  | -0.21       | .      |
| 78   | U   | SR        | 0.53        | 0.40        | -0.14  | 0.40        | -0.22  | -0.24       | .      |
| 79   | U   | SR        | 0.72        | 0.48        | -0.24  | -0.26       | 0.48   | -0.22       | .      |
| 80   | U   | SR        | 0.76        | 0.46        | -0.26  | -0.25       | 0.46   | -0.19       | .      |
| 81A  | U   | CR        | 0.25        | 0.52        | .      | .           | .      | .           | .      |
| 81B  | U   | CR        | 0.24        | 0.63        | .      | .           | .      | .           | .      |
| 82   | U   | SR        | 0.50        | 0.40        | -0.21  | -0.16       | -0.20  | 0.40        | .      |
| 83   | U   | SR        | 0.52        | 0.47        | -0.27  | -0.25       | -0.15  | 0.47        | .      |
| 84   | U   | SR        | 0.43        | 0.42        | 0.42   | -0.22       | -0.17  | -0.15       | .      |
| 85   | U   | SR        | 0.61        | 0.37        | -0.16  | -0.21       | -0.19  | 0.37        | .      |
| 86   | U   | SR        | 0.59        | 0.40        | -0.27  | 0.40        | -0.16  | -0.14       | .      |
| 87   | U   | SR        | 0.41        | 0.32        | -0.08  | -0.13       | -0.19  | 0.32        | .      |
| 88   | U   | SR        | 0.56        | 0.43        | 0.43   | -0.23       | -0.22  | -0.19       | .      |
| 89   | U   | SR        | 0.49        | 0.54        | 0.54   | -0.22       | -0.20  | -0.31       | .      |
| 90   | U   | SR        | 0.63        | 0.36        | -0.22  | 0.36        | -0.16  | -0.15       | .      |
| 91   | U   | SR        | 0.54        | 0.55        | -0.18  | -0.38       | -0.18  | 0.55        | .      |
| 92   | U   | SR        | 0.42        | 0.18        | 0.18   | -0.18       | -0.14  | <b>0.06</b> | .      |
| 93   | U   | SR        | 0.39        | 0.29        | -0.11  | 0.29        | -0.12  | -0.14       | .      |
| 94   | U   | SR        | 0.33        | 0.40        | -0.24  | 0.40        | -0.11  | -0.10       | .      |
| 95   | U   | SR        | 0.74        | 0.40        | -0.20  | 0.40        | -0.19  | -0.19       | .      |
| 96   | U   | SR        | 0.77        | 0.43        | -0.21  | -0.24       | -0.19  | 0.43        | .      |

**Table A23 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form E**  
**N=11,242**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|-------------|--------|--------|
| 97   | U   | SR        | 0.44        | 0.37  | 0.37   | -0.20  | -0.24       | -0.04  | .      |
| 98   | U   | SR        | 0.64        | 0.50  | -0.24  | -0.28  | 0.50        | -0.20  | .      |
| 99   | U   | SR        | 0.70        | 0.47  | -0.28  | -0.21  | 0.47        | -0.19  | .      |
| 100  | U   | SR        | 0.48        | 0.34  | 0.34   | -0.19  | -0.22       | -0.03  | .      |
| 101  | U   | SR        | 0.35        | 0.46  | 0.46   | -0.15  | -0.20       | -0.18  | .      |
| 102  | U   | SR        | 0.59        | 0.45  | -0.21  | 0.45   | -0.23       | -0.21  | .      |
| 103  | U   | SR        | 0.32        | 0.46  | -0.34  | -0.08  | 0.46        | -0.09  | .      |
| 104  | U   | SR        | <b>0.20</b> | 0.30  | -0.14  | -0.05  | -0.16       | 0.30   | .      |
| 105  | U   | SR        | <b>0.27</b> | 0.15  | -0.13  | -0.13  | <b>0.05</b> | 0.15   | .      |
| 106  | U   | SR        | 0.57        | 0.42  | -0.13  | -0.14  | 0.42        | -0.32  | .      |
| 107  | U   | SR        | 0.71        | 0.39  | -0.22  | -0.19  | 0.39        | -0.20  | .      |
| 108  | U   | SR        | 0.43        | 0.43  | 0.43   | -0.19  | -0.15       | -0.25  | .      |
| 109  | U   | SR        | 0.45        | 0.30  | -0.06  | -0.20  | 0.30        | -0.17  | .      |
| 110  | U   | SR        | 0.60        | 0.45  | 0.45   | -0.24  | -0.26       | -0.18  | .      |

**Table A24**  
**Summary Item Statistics – Mathematics Grade 6, Form F**  
**N=11,182**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|--------|--------|-------------|--------|
| 6    | C   | SR        | 0.69        | 0.44        | 0.44        | -0.23  | -0.14  | -0.22       | -0.16  |
| 13   | C   | SR        | 0.73        | 0.46        | -0.27       | -0.24  | 0.46   | -0.21       | .      |
| 17   | C   | SR        | 0.70        | 0.40        | -0.26       | -0.24  | 0.40   | -0.12       | .      |
| 18   | C   | SR        | 0.74        | 0.44        | -0.14       | -0.16  | 0.44   | -0.36       | .      |
| 20   | C   | SR        | 0.67        | 0.52        | -0.33       | -0.18  | -0.27  | 0.52        | .      |
| 32   | C   | SR        | 0.45        | 0.50        | -0.25       | -0.33  | 0.50   | -0.06       | .      |
| 33   | C   | SR        | 0.37        | 0.27        | -0.14       | -0.16  | -0.07  | 0.27        | .      |
| 34   | C   | SR        | <b>0.22</b> | 0.30        | -0.16       | -0.22  | 0.30   | -0.01       | .      |
| 35   | C   | SR        | 0.54        | 0.38        | -0.16       | 0.38   | -0.22  | -0.17       | .      |
| 36   | C   | SR        | 0.54        | 0.45        | -0.26       | -0.25  | 0.45   | -0.12       | .      |
| 37   | C   | SR        | 0.37        | 0.28        | -0.19       | 0.28   | -0.11  | -0.08       | .      |
| 38   | C   | SR        | 0.63        | 0.42        | -0.14       | 0.42   | -0.28  | -0.21       | .      |
| 39   | C   | SR        | 0.60        | 0.22        | -0.10       | 0.22   | -0.13  | -0.10       | .      |
| 41   | C   | SR        | 0.62        | 0.44        | -0.22       | 0.44   | -0.19  | -0.24       | .      |
| 43   | C   | SR        | 0.58        | 0.55        | -0.43       | -0.22  | 0.55   | -0.08       | .      |
| 44   | C   | SR        | <b>0.23</b> | 0.43        | -0.36       | 0.43   | -0.25  | <b>0.09</b> | .      |
| 45   | C   | SR        | 0.44        | 0.30        | 0.30        | -0.10  | -0.18  | -0.18       | .      |
| 46   | C   | SR        | <b>0.24</b> | 0.32        | -0.22       | -0.01  | -0.12  | 0.32        | .      |
| 47   | C   | SR        | <b>0.27</b> | 0.32        | -0.15       | -0.09  | -0.14  | 0.32        | .      |
| 48   | C   | SR        | 0.32        | 0.26        | -0.18       | -0.05  | -0.05  | 0.26        | .      |
| 49A  | U   | CR        | 0.54        | 0.59        | .           | .      | .      | .           | .      |
| 49B  | U   | CR        | 0.51        | 0.58        | .           | .      | .      | .           | .      |
| 50   | C   | SR        | 0.54        | 0.30        | -0.17       | -0.20  | 0.30   | -0.07       | .      |
| 51   | C   | SR        | 0.50        | 0.46        | -0.24       | -0.19  | 0.46   | -0.19       | .      |
| 52   | C   | SR        | 0.63        | 0.46        | -0.20       | -0.21  | -0.24  | 0.46        | .      |
| 53   | C   | SR        | 0.60        | 0.49        | -0.21       | -0.28  | 0.49   | -0.21       | .      |
| 54   | C   | SR        | 0.32        | 0.26        | -0.15       | -0.02  | 0.26   | -0.19       | .      |
| 55   | C   | SR        | 0.34        | 0.29        | 0.29        | -0.23  | -0.11  | <b>0.01</b> | .      |
| 56   | C   | SR        | 0.38        | 0.36        | -0.10       | 0.36   | -0.16  | -0.17       | .      |
| 57   | C   | SR        | 0.42        | 0.38        | 0.38        | -0.21  | -0.20  | -0.10       | .      |
| 58A  | U   | CR        | 0.29        | 0.50        | .           | .      | .      | .           | .      |
| 58B  | U   | CR        | 0.47        | 0.54        | .           | .      | .      | .           | .      |
| 59   | C   | SR        | 0.72        | <b>0.08</b> | <b>0.08</b> | -0.14  | -0.06  | <b>0.06</b> | .      |
| 60   | C   | SR        | 0.45        | 0.44        | -0.20       | -0.15  | 0.44   | -0.23       | .      |
| 61   | C   | SR        | 0.55        | 0.45        | -0.12       | 0.45   | -0.22  | -0.29       | .      |
| 62   | C   | SR        | 0.56        | 0.38        | -0.21       | 0.38   | -0.20  | -0.14       | .      |
| 63   | C   | SR        | 0.77        | 0.36        | -0.31       | -0.13  | 0.36   | -0.10       | .      |

Table A24 (cont.)  
 Summary Item Statistics – Mathematics Grade 6, Form F  
 N=11,182

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 64A  | U   | CR        | 0.43        | 0.58        | .           | .           | .      | .           | .      |
| 64B  | U   | CR        | 0.52        | 0.63        | .           | .           | .      | .           | .      |
| 65   | C   | SR        | 0.73        | 0.26        | -0.11       | 0.26        | -0.17  | -0.16       | .      |
| 66   | C   | SR        | 0.82        | 0.43        | 0.43        | -0.24       | -0.24  | -0.18       | .      |
| 67   | C   | SR        | 0.50        | 0.44        | 0.44        | -0.12       | -0.29  | -0.25       | .      |
| 68   | C   | SR        | 0.42        | 0.58        | -0.25       | -0.18       | -0.30  | 0.58        | .      |
| 69A  | U   | CR        | 0.43        | 0.54        | .           | .           | .      | .           | .      |
| 69B  | U   | CR        | 0.38        | 0.61        | .           | .           | .      | .           | .      |
| 70   | U   | SR        | 0.81        | 0.36        | -0.16       | -0.15       | -0.27  | 0.36        | .      |
| 71   | U   | SR        | 0.75        | 0.41        | -0.21       | 0.41        | -0.21  | -0.23       | .      |
| 72   | U   | SR        | 0.87        | 0.35        | -0.16       | -0.21       | -0.17  | 0.35        | .      |
| 73   | U   | SR        | <b>0.25</b> | 0.20        | <b>0.08</b> | 0.20        | -0.23  | -0.16       | .      |
| 74   | U   | SR        | <b>0.29</b> | 0.33        | -0.26       | -0.04       | 0.33   | -0.08       | .      |
| 75A  | U   | CR        | 0.39        | 0.66        | .           | .           | .      | .           | .      |
| 75B  | U   | CR        | 0.42        | 0.66        | .           | .           | .      | .           | .      |
| 76   | U   | SR        | 0.67        | 0.42        | -0.30       | -0.17       | 0.42   | -0.19       | .      |
| 77   | U   | SR        | 0.72        | 0.47        | -0.25       | -0.25       | 0.47   | -0.22       | .      |
| 78   | U   | SR        | 0.38        | 0.35        | -0.07       | -0.26       | -0.10  | 0.35        | .      |
| 79   | U   | SR        | <b>0.29</b> | 0.46        | -0.07       | -0.21       | -0.24  | 0.46        | .      |
| 80   | U   | SR        | 0.71        | 0.50        | -0.24       | 0.50        | -0.29  | -0.23       | .      |
| 81A  | U   | CR        | <b>0.07</b> | 0.34        | .           | .           | .      | .           | .      |
| 81B  | U   | CR        | 0.32        | 0.46        | .           | .           | .      | .           | .      |
| 83   | U   | SR        | 0.41        | 0.42        | 0.42        | -0.18       | -0.25  | -0.12       | .      |
| 84   | U   | SR        | 0.60        | 0.51        | -0.27       | -0.32       | -0.16  | 0.51        | .      |
| 85   | U   | SR        | 0.49        | 0.43        | -0.19       | 0.43        | -0.20  | -0.21       | .      |
| 86   | U   | SR        | 0.47        | 0.37        | -0.21       | -0.11       | 0.37   | -0.21       | .      |
| 87   | U   | SR        | 0.56        | 0.38        | -0.18       | -0.16       | 0.38   | -0.21       | .      |
| 88   | U   | SR        | 0.64        | 0.46        | -0.23       | -0.27       | -0.20  | 0.46        | .      |
| 89   | U   | SR        | <b>0.27</b> | 0.32        | -0.13       | -0.07       | -0.18  | 0.32        | .      |
| 90   | U   | SR        | <b>0.26</b> | <b>0.08</b> | -0.14       | <b>0.08</b> | -0.01  | <b>0.03</b> | .      |
| 91   | U   | SR        | 0.47        | 0.46        | 0.46        | -0.17       | -0.21  | -0.26       | .      |
| 92   | U   | SR        | 0.38        | 0.28        | -0.17       | 0.28        | -0.02  | -0.23       | .      |
| 93   | U   | SR        | 0.53        | 0.48        | -0.34       | 0.48        | -0.17  | -0.13       | .      |
| 94   | U   | SR        | 0.38        | 0.35        | -0.22       | -0.10       | 0.35   | -0.12       | .      |
| 95   | U   | SR        | <b>0.22</b> | 0.46        | -0.19       | -0.12       | -0.19  | 0.46        | .      |
| 96   | U   | SR        | 0.76        | 0.39        | 0.39        | -0.21       | -0.23  | -0.14       | .      |
| 97   | U   | SR        | 0.69        | 0.48        | -0.21       | 0.48        | -0.24  | -0.26       | .      |

**Table A24 (cont.)**  
**Summary Item Statistics – Mathematics Grade 6, Form F**  
**N=11,182**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|--------|--------|
| 98   | U   | SR        | 0.63  | 0.44  | -0.24  | -0.14  | -0.26  | 0.44   | .      |
| 99   | U   | SR        | 0.74  | 0.48  | -0.22  | -0.28  | -0.22  | 0.48   | .      |
| 100  | U   | SR        | 0.79  | 0.48  | 0.48   | -0.27  | -0.21  | -0.24  | .      |
| 101  | U   | SR        | 0.39  | 0.41  | 0.41   | -0.07  | -0.24  | -0.22  | .      |
| 102  | U   | SR        | 0.55  | 0.49  | 0.49   | -0.26  | -0.20  | -0.23  | .      |
| 103  | U   | SR        | 0.56  | 0.29  | -0.15  | 0.29   | -0.20  | -0.11  | .      |
| 104  | U   | SR        | 0.56  | 0.40  | -0.20  | -0.18  | 0.40   | -0.19  | .      |
| 105  | U   | SR        | 0.47  | 0.31  | -0.04  | -0.23  | 0.31   | -0.15  | .      |
| 106  | U   | SR        | 0.49  | 0.50  | -0.13  | 0.50   | -0.20  | -0.33  | .      |
| 107  | U   | SR        | 0.68  | 0.42  | -0.20  | 0.42   | -0.22  | -0.21  | .      |
| 108  | U   | SR        | 0.48  | 0.47  | -0.18  | -0.22  | -0.24  | 0.47   | .      |
| 109  | U   | SR        | 0.38  | 0.44  | 0.44   | -0.23  | -0.25  | -0.04  | .      |
| 110  | U   | SR        | 0.70  | 0.44  | -0.23  | 0.44   | -0.24  | -0.21  | .      |
| 111  | U   | SR        | 0.46  | 0.41  | -0.18  | 0.41   | -0.25  | -0.17  | .      |

**Table A25**  
**Summary Item Statistics – Mathematics Grade 7, Form A**  
**N=11,748**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 3    | C   | SR        | 0.52        | 0.44        | -0.17       | 0.44        | -0.23  | -0.15       | -0.11  |
| 9    | C   | SR        | 0.69        | 0.40        | -0.15       | -0.16       | 0.40   | -0.21       | .      |
| 13   | C   | SR        | 0.60        | 0.56        | -0.25       | 0.56        | -0.31  | -0.25       | .      |
| 15   | C   | SR        | 0.88        | 0.36        | 0.36        | -0.18       | -0.18  | -0.17       | .      |
| 24   | C   | SR        | 0.58        | 0.58        | 0.58        | -0.23       | -0.36  | -0.21       | .      |
| 32   | C   | SR        | 0.51        | 0.44        | -0.05       | -0.19       | 0.44   | -0.34       | .      |
| 33   | C   | SR        | 0.42        | <b>0.06</b> | <b>0.06</b> | <b>0.04</b> | -0.13  | <b>0.01</b> | .      |
| 34   | C   | SR        | 0.46        | 0.50        | -0.13       | -0.21       | 0.50   | -0.31       | .      |
| 35   | C   | SR        | 0.45        | 0.52        | 0.52        | -0.19       | -0.28  | -0.21       | .      |
| 36   | C   | SR        | <b>0.22</b> | 0.33        | -0.10       | -0.04       | -0.17  | 0.33        | .      |
| 37   | C   | SR        | <b>0.24</b> | 0.43        | -0.45       | <b>0.06</b> | -0.03  | 0.43        | .      |
| 38   | C   | SR        | <b>0.19</b> | 0.39        | 0.39        | -0.04       | -0.14  | -0.25       | .      |
| 39   | C   | SR        | 0.44        | 0.46        | -0.21       | 0.46        | -0.26  | -0.21       | .      |
| 40   | C   | SR        | 0.64        | 0.53        | 0.53        | -0.18       | -0.33  | -0.24       | .      |
| 41   | C   | SR        | 0.49        | 0.47        | 0.47        | -0.18       | -0.25  | -0.21       | .      |
| 42A  | U   | CR        | 0.42        | 0.45        | .           | .           | .      | .           | .      |
| 42B  | U   | CR        | <b>0.15</b> | 0.50        | .           | .           | .      | .           | .      |
| 43A  | U   | CR        | 0.38        | 0.62        | .           | .           | .      | .           | .      |
| 43B  | U   | CR        | 0.48        | 0.66        | .           | .           | .      | .           | .      |
| 44   | C   | SR        | 0.60        | 0.49        | -0.20       | -0.28       | 0.49   | -0.21       | .      |
| 45   | C   | SR        | 0.60        | 0.50        | -0.19       | -0.25       | -0.25  | 0.50        | .      |
| 46   | C   | SR        | 0.59        | 0.45        | -0.15       | 0.45        | -0.28  | -0.17       | .      |
| 47   | C   | SR        | 0.56        | 0.32        | 0.32        | -0.10       | -0.23  | -0.17       | .      |
| 48   | C   | SR        | 0.57        | 0.49        | -0.21       | -0.26       | -0.21  | 0.49        | .      |
| 49   | C   | SR        | 0.36        | 0.34        | -0.09       | -0.13       | -0.17  | 0.34        | .      |
| 50   | C   | SR        | 0.62        | 0.52        | -0.16       | -0.24       | -0.30  | 0.52        | .      |
| 51   | C   | SR        | <b>0.29</b> | 0.27        | -0.09       | -0.15       | 0.27   | 0.00        | .      |
| 52   | C   | SR        | <b>0.25</b> | 0.41        | -0.19       | -0.13       | -0.06  | 0.41        | .      |
| 53A  | U   | CR        | <b>0.20</b> | 0.54        | .           | .           | .      | .           | .      |
| 53B  | U   | CR        | <b>0.14</b> | 0.58        | .           | .           | .      | .           | .      |
| 54   | U   | SPR       | <b>0.16</b> | 0.52        | .           | .           | .      | .           | .      |
| 55   | U   | SPR       | <b>0.10</b> | 0.34        | .           | .           | .      | .           | .      |
| 56   | U   | SPR       | 0.26        | 0.58        | .           | .           | .      | .           | .      |
| 57   | U   | SPR       | 0.43        | 0.51        | .           | .           | .      | .           | .      |
| 58   | C   | SR        | 0.73        | 0.46        | -0.19       | -0.25       | -0.25  | 0.46        | .      |
| 59   | C   | SR        | 0.44        | 0.38        | -0.10       | -0.29       | 0.38   | -0.07       | .      |
| 60   | C   | SR        | 0.72        | 0.39        | -0.15       | 0.39        | -0.21  | -0.22       | .      |



Table A25 (cont.)  
 Summary Item Statistics – Mathematics Grade 7, Form A  
 N=11,748

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|--------|--------|
| 61   | C   | SR        | 0.62        | 0.59        | -0.43       | -0.25       | -0.12  | 0.59   | .      |
| 62   | C   | SR        | 0.54        | 0.61        | -0.25       | -0.16       | -0.41  | 0.61   | .      |
| 63A  | U   | CR        | 0.58        | 0.44        | .           | .           | .      | .      | .      |
| 63B  | U   | CR        | 0.50        | 0.55        | .           | .           | .      | .      | .      |
| 64   | U   | SPR       | 0.43        | 0.59        | .           | .           | .      | .      | .      |
| 65   | U   | SPR       | 0.34        | 0.46        | .           | .           | .      | .      | .      |
| 66   | U   | SPR       | 0.47        | 0.57        | .           | .           | .      | .      | .      |
| 67   | U   | SPR       | 0.32        | 0.49        | .           | .           | .      | .      | .      |
| 68A  | U   | CR        | 0.28        | 0.60        | .           | .           | .      | .      | .      |
| 68B  | U   | CR        | 0.46        | 0.66        | .           | .           | .      | .      | .      |
| 69   | C   | SR        | 0.36        | 0.37        | -0.17       | -0.22       | -0.04  | 0.37   | .      |
| 70   | C   | SR        | 0.44        | 0.62        | 0.62        | -0.40       | -0.18  | -0.15  | .      |
| 71   | C   | SR        | 0.61        | 0.53        | -0.30       | 0.53        | -0.19  | -0.24  | .      |
| 72   | C   | SR        | 0.55        | 0.41        | -0.23       | 0.41        | -0.19  | -0.08  | .      |
| 73   | C   | SR        | 0.56        | 0.52        | 0.52        | -0.20       | -0.25  | -0.23  | .      |
| 74   | C   | SR        | 0.33        | 0.50        | -0.04       | -0.33       | -0.18  | 0.50   | .      |
| 75   | C   | SR        | 0.56        | 0.46        | -0.19       | -0.21       | 0.46   | -0.21  | .      |
| 76A  | U   | CR        | 0.42        | 0.56        | .           | .           | .      | .      | .      |
| 76B  | U   | CR        | 0.44        | 0.65        | .           | .           | .      | .      | .      |
| 77   | U   | SPR       | <b>0.02</b> | <b>0.00</b> | .           | .           | .      | .      | .      |
| 78   | U   | SPR       | 0.25        | 0.57        | .           | .           | .      | .      | .      |
| 79   | U   | SPR       | 0.48        | 0.50        | .           | .           | .      | .      | .      |
| 80   | U   | SPR       | 0.26        | 0.66        | .           | .           | .      | .      | .      |
| 81A  | U   | CR        | <b>0.13</b> | 0.50        | .           | .           | .      | .      | .      |
| 81B  | U   | CR        | 0.30        | 0.72        | .           | .           | .      | .      | .      |
| 82   | U   | SR        | 0.50        | 0.42        | -0.04       | 0.42        | -0.31  | -0.18  | .      |
| 83   | U   | SR        | 0.60        | 0.56        | -0.27       | -0.28       | 0.56   | -0.23  | .      |
| 84   | U   | SR        | 0.74        | 0.42        | -0.22       | 0.42        | -0.20  | -0.19  | .      |
| 85   | U   | SR        | 0.59        | 0.45        | -0.22       | -0.24       | -0.24  | 0.45   | .      |
| 86   | U   | SR        | <b>0.13</b> | 0.28        | -0.07       | <b>0.09</b> | -0.18  | 0.28   | .      |
| 87   | U   | SR        | 0.63        | 0.48        | -0.22       | -0.18       | -0.28  | 0.48   | .      |
| 88   | U   | SR        | 0.42        | 0.39        | -0.12       | 0.39        | -0.23  | -0.11  | .      |
| 89   | U   | SR        | 0.37        | <b>0.13</b> | <b>0.13</b> | <b>0.00</b> | -0.10  | -0.05  | .      |
| 90   | U   | SR        | 0.56        | 0.51        | -0.20       | -0.22       | 0.51   | -0.29  | .      |
| 91   | U   | SR        | 0.54        | 0.46        | -0.24       | 0.46        | -0.19  | -0.19  | .      |
| 92   | U   | SR        | <b>0.15</b> | 0.38        | -0.03       | -0.19       | -0.11  | 0.38   | .      |
| 93   | U   | SR        | 0.62        | 0.56        | -0.31       | -0.23       | -0.23  | 0.56   | .      |

**Table A25 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form A**  
**N=11,748**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3      | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
| 94   | U   | SR        | 0.35        | 0.28        | -0.13       | 0.28        | -0.02       | -0.16       | .      |
| 95   | U   | SR        | 0.47        | 0.54        | -0.29       | 0.54        | -0.21       | -0.18       | .      |
| 96   | U   | SR        | 0.55        | 0.54        | -0.19       | -0.24       | -0.26       | 0.54        | .      |
| 97   | U   | SR        | 0.57        | 0.35        | -0.17       | -0.11       | 0.35        | -0.19       | .      |
| 98   | U   | SR        | 0.47        | 0.48        | -0.24       | 0.48        | -0.20       | -0.15       | .      |
| 99   | U   | SR        | <b>0.30</b> | 0.19        | -0.11       | 0.19        | <b>0.06</b> | -0.12       | .      |
| 100  | U   | SR        | 0.50        | 0.64        | -0.18       | -0.40       | -0.24       | 0.64        | .      |
| 101  | U   | SR        | 0.39        | 0.33        | <b>0.02</b> | 0.33        | -0.29       | -0.14       | .      |
| 102  | U   | SR        | 0.58        | 0.51        | -0.20       | -0.34       | 0.51        | -0.15       | .      |
| 103  | U   | SR        | 0.41        | 0.37        | -0.09       | -0.24       | 0.37        | -0.11       | .      |
| 104  | U   | SR        | 0.54        | 0.53        | 0.53        | -0.29       | -0.22       | -0.20       | .      |
| 105  | U   | SR        | <b>0.11</b> | <b>0.11</b> | <b>0.02</b> | <b>0.11</b> | -0.08       | -0.01       | .      |
| 106  | U   | SR        | 0.52        | 0.36        | -0.12       | 0.36        | -0.18       | -0.21       | .      |
| 107  | U   | SR        | <b>0.13</b> | 0.20        | -0.13       | 0.20        | -0.26       | <b>0.16</b> | .      |
| 108  | U   | SR        | <b>0.26</b> | 0.40        | -0.18       | -0.15       | -0.05       | 0.40        | .      |
| 109  | U   | SR        | 0.75        | 0.42        | -0.22       | -0.22       | 0.42        | -0.16       | .      |
| 110  | U   | SR        | <b>0.30</b> | 0.41        | 0.41        | <b>0.01</b> | -0.26       | -0.18       | .      |
| 111  | U   | SR        | <b>0.30</b> | 0.38        | -0.20       | -0.20       | -0.03       | 0.38        | .      |

**Table A26**  
**Summary Item Statistics – Mathematics Grade 7, Form B**  
**N=11,665**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 3    | C   | SR        | 0.53        | 0.43        | -0.17       | 0.43        | -0.25  | -0.13       | -0.11  |
| 9    | C   | SR        | 0.69        | 0.40        | -0.15       | -0.16       | 0.40   | -0.22       | .      |
| 13   | C   | SR        | 0.60        | 0.57        | -0.26       | 0.57        | -0.31  | -0.26       | .      |
| 15   | C   | SR        | 0.87        | 0.36        | 0.36        | -0.19       | -0.18  | -0.17       | .      |
| 24   | C   | SR        | 0.58        | 0.58        | 0.58        | -0.25       | -0.36  | -0.21       | .      |
| 32   | C   | SR        | 0.53        | 0.44        | -0.05       | -0.19       | 0.44   | -0.34       | .      |
| 33   | C   | SR        | 0.42        | <b>0.05</b> | <b>0.05</b> | <b>0.03</b> | -0.12  | <b>0.01</b> | .      |
| 34   | C   | SR        | 0.47        | 0.50        | -0.14       | -0.20       | 0.50   | -0.32       | .      |
| 35   | C   | SR        | 0.46        | 0.52        | 0.52        | -0.20       | -0.28  | -0.22       | .      |
| 36   | C   | SR        | <b>0.22</b> | 0.32        | -0.09       | -0.05       | -0.16  | 0.32        | .      |
| 37   | C   | SR        | <b>0.24</b> | 0.43        | -0.47       | <b>0.07</b> | -0.03  | 0.43        | .      |
| 38   | C   | SR        | <b>0.19</b> | 0.39        | 0.39        | -0.03       | -0.16  | -0.26       | .      |
| 39   | C   | SR        | 0.45        | 0.46        | -0.22       | 0.46        | -0.26  | -0.21       | .      |
| 40   | C   | SR        | 0.64        | 0.54        | 0.54        | -0.17       | -0.37  | -0.24       | .      |
| 41   | C   | SR        | 0.50        | 0.47        | 0.47        | -0.20       | -0.23  | -0.20       | .      |
| 42A  | U   | CR        | 0.55        | 0.56        | .           | .           | .      | .           | .      |
| 42B  | U   | CR        | 0.64        | 0.62        | .           | .           | .      | .           | .      |
| 43A  | U   | CR        | 0.56        | 0.61        | .           | .           | .      | .           | .      |
| 43B  | U   | CR        | 0.61        | 0.63        | .           | .           | .      | .           | .      |
| 44   | C   | SR        | 0.61        | 0.48        | -0.19       | -0.28       | 0.48   | -0.20       | .      |
| 45   | C   | SR        | 0.61        | 0.48        | -0.19       | -0.26       | -0.25  | 0.48        | .      |
| 46   | C   | SR        | 0.60        | 0.45        | -0.15       | 0.45        | -0.30  | -0.18       | .      |
| 47   | C   | SR        | 0.57        | 0.32        | 0.32        | -0.10       | -0.23  | -0.18       | .      |
| 48   | C   | SR        | 0.58        | 0.47        | -0.22       | -0.26       | -0.21  | 0.47        | .      |
| 49   | C   | SR        | 0.35        | 0.33        | -0.07       | -0.13       | -0.18  | 0.33        | .      |
| 50   | C   | SR        | 0.62        | 0.53        | -0.18       | -0.25       | -0.31  | 0.53        | .      |
| 51   | C   | SR        | <b>0.30</b> | 0.26        | -0.09       | -0.17       | 0.26   | <b>0.01</b> | .      |
| 52   | C   | SR        | <b>0.24</b> | 0.39        | -0.20       | -0.12       | -0.05  | 0.39        | .      |
| 53A  | U   | CR        | 0.23        | 0.45        | .           | .           | .      | .           | .      |
| 53B  | U   | CR        | <b>0.16</b> | 0.54        | .           | .           | .      | .           | .      |
| 54   | U   | SPR       | 0.23        | 0.60        | .           | .           | .      | .           | .      |
| 55   | U   | SPR       | 0.35        | 0.59        | .           | .           | .      | .           | .      |
| 56   | U   | SPR       | 0.33        | 0.53        | .           | .           | .      | .           | .      |
| 57   | U   | SPR       | 0.34        | 0.61        | .           | .           | .      | .           | .      |
| 58   | C   | SR        | 0.74        | 0.46        | -0.20       | -0.24       | -0.27  | 0.46        | .      |
| 59   | C   | SR        | 0.43        | 0.38        | -0.09       | -0.30       | 0.38   | -0.07       | .      |
| 60   | C   | SR        | 0.74        | 0.38        | -0.14       | 0.38        | -0.22  | -0.20       | .      |

**Table A26 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form B**  
**N=11,665**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3      | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|-------------|-------------|--------|
| 61   | C   | SR        | 0.63        | 0.59        | -0.45       | -0.24       | -0.12       | 0.59        | .      |
| 62   | C   | SR        | 0.55        | 0.60        | -0.26       | -0.16       | -0.40       | 0.60        | .      |
| 63A  | U   | CR        | 0.37        | 0.39        | .           | .           | .           | .           | .      |
| 63B  | U   | CR        | 0.46        | 0.57        | .           | .           | .           | .           | .      |
| 64   | U   | SPR       | <b>0.16</b> | 0.53        | .           | .           | .           | .           | .      |
| 65   | U   | SPR       | <b>0.13</b> | 0.44        | .           | .           | .           | .           | .      |
| 66   | U   | SPR       | 0.41        | 0.53        | .           | .           | .           | .           | .      |
| 67   | U   | SPR       | 0.24        | 0.46        | .           | .           | .           | .           | .      |
| 68A  | U   | CR        | 0.38        | 0.64        | .           | .           | .           | .           | .      |
| 68B  | U   | CR        | 0.57        | 0.68        | .           | .           | .           | .           | .      |
| 69   | C   | SR        | 0.34        | 0.36        | -0.11       | -0.22       | -0.07       | 0.36        | .      |
| 70   | C   | SR        | 0.46        | 0.60        | 0.60        | -0.38       | -0.19       | -0.16       | .      |
| 71   | C   | SR        | 0.60        | 0.50        | -0.28       | 0.50        | -0.18       | -0.23       | .      |
| 72   | C   | SR        | 0.54        | 0.36        | -0.21       | 0.36        | -0.17       | -0.08       | .      |
| 73   | C   | SR        | 0.55        | 0.49        | 0.49        | -0.19       | -0.24       | -0.23       | .      |
| 74   | C   | SR        | 0.31        | 0.47        | -0.01       | -0.33       | -0.19       | 0.47        | .      |
| 75   | C   | SR        | 0.55        | 0.43        | -0.18       | -0.21       | 0.43        | -0.18       | .      |
| 76A  | U   | CR        | <b>0.12</b> | 0.30        | .           | .           | .           | .           | .      |
| 76B  | U   | CR        | 0.22        | 0.46        | .           | .           | .           | .           | .      |
| 77   | U   | SPR       | <b>0.11</b> | 0.47        | .           | .           | .           | .           | .      |
| 78   | U   | SPR       | 0.63        | 0.44        | .           | .           | .           | .           | .      |
| 79   | U   | SPR       | 0.66        | 0.45        | .           | .           | .           | .           | .      |
| 80   | U   | SPR       | 0.47        | 0.64        | .           | .           | .           | .           | .      |
| 82   | U   | SR        | 0.59        | 0.58        | -0.45       | 0.58        | -0.18       | -0.13       | .      |
| 83   | U   | SR        | 0.63        | 0.47        | -0.17       | -0.32       | 0.47        | -0.16       | .      |
| 84   | U   | SR        | 0.64        | 0.49        | -0.33       | 0.49        | -0.18       | -0.19       | .      |
| 85   | U   | SR        | 0.71        | 0.53        | -0.28       | 0.53        | -0.29       | -0.21       | .      |
| 86   | U   | SR        | 0.68        | 0.47        | -0.18       | -0.26       | -0.25       | 0.47        | .      |
| 87   | U   | SR        | 0.65        | 0.41        | -0.16       | -0.24       | 0.41        | -0.21       | .      |
| 88   | U   | SR        | 0.34        | 0.20        | <b>0.08</b> | -0.20       | -0.19       | 0.20        | .      |
| 89   | U   | SR        | 0.43        | <b>0.10</b> | -0.16       | <b>0.10</b> | <b>0.08</b> | -0.15       | .      |
| 90   | U   | SR        | 0.78        | 0.48        | -0.25       | 0.48        | -0.26       | -0.20       | .      |
| 91   | U   | SR        | 0.48        | 0.45        | -0.18       | -0.26       | 0.45        | -0.16       | .      |
| 92   | U   | SR        | <b>0.21</b> | 0.34        | -0.26       | -0.14       | 0.34        | <b>0.04</b> | .      |
| 93   | U   | SR        | 0.54        | 0.35        | -0.25       | 0.35        | -0.08       | -0.12       | .      |
| 94   | U   | SR        | 0.60        | 0.52        | -0.24       | -0.34       | -0.15       | 0.52        | .      |
| 95   | U   | SR        | 0.47        | 0.55        | -0.33       | 0.55        | -0.19       | -0.17       | .      |

**Table A26 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form B**  
**N=11,665**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|-------------|--------|
| 96   | U   | SR        | 0.64  | 0.52  | -0.23  | -0.18  | 0.52   | -0.31       | .      |
| 97   | U   | SR        | 0.49  | 0.53  | -0.33  | -0.19  | 0.53   | -0.13       | .      |
| 98   | U   | SR        | 0.32  | 0.48  | 0.48   | -0.13  | -0.36  | <b>0.04</b> | .      |
| 99   | U   | SR        | 0.68  | 0.34  | 0.34   | -0.20  | -0.10  | -0.15       | .      |
| 100  | U   | SR        | 0.64  | 0.59  | 0.59   | -0.29  | -0.39  | -0.13       | .      |
| 101  | U   | SR        | 0.57  | 0.42  | -0.27  | 0.42   | -0.19  | -0.10       | .      |
| 102  | U   | SR        | 0.75  | 0.45  | -0.18  | -0.24  | 0.45   | -0.23       | .      |
| 103  | U   | SR        | 0.77  | 0.34  | -0.16  | -0.18  | -0.15  | 0.34        | .      |
| 104  | U   | SR        | 0.72  | 0.45  | 0.45   | -0.24  | -0.19  | -0.24       | .      |
| 105  | U   | SR        | 0.52  | 0.61  | -0.28  | -0.41  | -0.12  | 0.61        | .      |
| 106  | U   | SR        | 0.70  | 0.44  | -0.18  | 0.44   | -0.26  | -0.19       | .      |
| 107  | U   | SR        | 0.74  | 0.46  | -0.20  | -0.25  | 0.46   | -0.21       | .      |
| 108  | U   | SR        | 0.51  | 0.16  | -0.04  | -0.11  | -0.05  | 0.16        | .      |
| 109  | U   | SR        | 0.33  | 0.41  | -0.09  | 0.41   | -0.32  | <b>0.01</b> | .      |
| 110  | U   | SR        | 0.42  | 0.34  | 0.00   | 0.34   | -0.22  | -0.23       | .      |
| 111  | U   | SR        | 0.46  | 0.43  | 0.43   | -0.19  | -0.15  | -0.28       | .      |

**Table A27**  
**Summary Item Statistics – Mathematics Grade 7, Form C**  
**N=11,601**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 3    | C   | SR        | 0.53        | 0.45        | -0.18       | 0.45        | -0.25  | -0.14       | -0.11  |
| 9    | C   | SR        | 0.69        | 0.40        | -0.13       | -0.17       | 0.40   | -0.21       | .      |
| 13   | C   | SR        | 0.61        | 0.57        | -0.27       | 0.57        | -0.30  | -0.25       | .      |
| 15   | C   | SR        | 0.88        | 0.36        | 0.36        | -0.18       | -0.18  | -0.16       | .      |
| 24   | C   | SR        | 0.59        | 0.59        | 0.59        | -0.24       | -0.37  | -0.21       | .      |
| 32   | C   | SR        | 0.52        | 0.44        | -0.04       | -0.18       | 0.44   | -0.36       | .      |
| 33   | C   | SR        | 0.43        | <b>0.04</b> | <b>0.04</b> | <b>0.06</b> | -0.13  | <b>0.02</b> | .      |
| 34   | C   | SR        | 0.46        | 0.50        | -0.13       | -0.21       | 0.50   | -0.31       | .      |
| 35   | C   | SR        | 0.45        | 0.53        | 0.53        | -0.20       | -0.28  | -0.21       | .      |
| 36   | C   | SR        | <b>0.22</b> | 0.32        | -0.10       | -0.03       | -0.16  | 0.32        | .      |
| 37   | C   | SR        | <b>0.23</b> | 0.43        | -0.45       | <b>0.06</b> | -0.01  | 0.43        | .      |
| 38   | C   | SR        | <b>0.19</b> | 0.37        | 0.37        | -0.01       | -0.15  | -0.27       | .      |
| 39   | C   | SR        | 0.45        | 0.48        | -0.21       | 0.48        | -0.27  | -0.22       | .      |
| 40   | C   | SR        | 0.64        | 0.54        | 0.54        | -0.17       | -0.36  | -0.23       | .      |
| 41   | C   | SR        | 0.50        | 0.48        | 0.48        | -0.20       | -0.23  | -0.21       | .      |
| 42A  | U   | CR        | 0.30        | 0.60        | .           | .           | .      | .           | .      |
| 42B  | U   | CR        | 0.39        | 0.62        | .           | .           | .      | .           | .      |
| 43A  | U   | CR        | 0.36        | 0.65        | .           | .           | .      | .           | .      |
| 43B  | U   | CR        | 0.48        | 0.70        | .           | .           | .      | .           | .      |
| 44   | C   | SR        | 0.61        | 0.50        | -0.20       | -0.30       | 0.50   | -0.19       | .      |
| 45   | C   | SR        | 0.61        | 0.49        | -0.20       | -0.25       | -0.24  | 0.49        | .      |
| 46   | C   | SR        | 0.60        | 0.44        | -0.14       | 0.44        | -0.28  | -0.17       | .      |
| 47   | C   | SR        | 0.56        | 0.30        | 0.30        | -0.08       | -0.22  | -0.16       | .      |
| 48   | C   | SR        | 0.58        | 0.47        | -0.20       | -0.26       | -0.20  | 0.47        | .      |
| 49   | C   | SR        | 0.35        | 0.32        | -0.07       | -0.12       | -0.16  | 0.32        | .      |
| 50   | C   | SR        | 0.62        | 0.53        | -0.16       | -0.23       | -0.31  | 0.53        | .      |
| 51   | C   | SR        | <b>0.28</b> | 0.25        | -0.07       | -0.16       | 0.25   | <b>0.00</b> | .      |
| 52   | C   | SR        | <b>0.24</b> | 0.39        | -0.18       | -0.13       | -0.04  | 0.39        | .      |
| 53A  | U   | CR        | 0.49        | 0.54        | .           | .           | .      | .           | .      |
| 53B  | U   | CR        | 0.34        | 0.66        | .           | .           | .      | .           | .      |
| 54   | U   | SPR       | 0.58        | 0.57        | .           | .           | .      | .           | .      |
| 55   | U   | SPR       | <b>0.09</b> | 0.29        | .           | .           | .      | .           | .      |
| 56   | U   | SPR       | 0.45        | 0.54        | .           | .           | .      | .           | .      |
| 57   | U   | SPR       | 0.35        | 0.62        | .           | .           | .      | .           | .      |
| 58   | C   | SR        | 0.73        | 0.46        | -0.20       | -0.24       | -0.25  | 0.46        | .      |
| 59   | C   | SR        | 0.43        | 0.38        | -0.10       | -0.30       | 0.38   | -0.07       | .      |
| 60   | C   | SR        | 0.74        | 0.38        | -0.13       | 0.38        | -0.21  | -0.20       | .      |

Table A27 (cont.)  
 Summary Item Statistics – Mathematics Grade 7, Form C  
 N=11,601

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|--------|-------------|--------|
| 61   | C   | SR        | 0.64        | 0.60  | -0.44  | -0.25  | -0.14  | 0.60        | .      |
| 62   | C   | SR        | 0.56        | 0.63  | -0.27  | -0.17  | -0.41  | 0.63        | .      |
| 63A  | U   | CR        | 0.60        | 0.45  | .      | .      | .      | .           | .      |
| 63B  | U   | CR        | 0.58        | 0.65  | .      | .      | .      | .           | .      |
| 64   | U   | SPR       | 0.26        | 0.48  | .      | .      | .      | .           | .      |
| 65   | U   | SPR       | 0.41        | 0.50  | .      | .      | .      | .           | .      |
| 66   | U   | SPR       | 0.51        | 0.58  | .      | .      | .      | .           | .      |
| 67   | U   | SPR       | 0.59        | 0.58  | .      | .      | .      | .           | .      |
| 68A  | U   | CR        | 0.42        | 0.70  | .      | .      | .      | .           | .      |
| 68B  | U   | CR        | <b>0.18</b> | 0.54  | .      | .      | .      | .           | .      |
| 69   | C   | SR        | 0.34        | 0.35  | -0.10  | -0.21  | -0.08  | 0.35        | .      |
| 70   | C   | SR        | 0.45        | 0.61  | 0.61   | -0.37  | -0.19  | -0.16       | .      |
| 71   | C   | SR        | 0.61        | 0.51  | -0.28  | 0.51   | -0.19  | -0.22       | .      |
| 72   | C   | SR        | 0.54        | 0.39  | -0.22  | 0.39   | -0.18  | -0.07       | .      |
| 73   | C   | SR        | 0.54        | 0.52  | 0.52   | -0.20  | -0.23  | -0.24       | .      |
| 74   | C   | SR        | 0.32        | 0.47  | -0.03  | -0.32  | -0.17  | 0.47        | .      |
| 75   | C   | SR        | 0.55        | 0.46  | -0.19  | -0.21  | 0.46   | -0.18       | .      |
| 76A  | U   | CR        | 0.26        | 0.61  | .      | .      | .      | .           | .      |
| 76B  | U   | CR        | 0.40        | 0.68  | .      | .      | .      | .           | .      |
| 77   | U   | SPR       | 0.52        | 0.59  | .      | .      | .      | .           | .      |
| 78   | U   | SPR       | 0.61        | 0.55  | .      | .      | .      | .           | .      |
| 79   | U   | SPR       | 0.62        | 0.43  | .      | .      | .      | .           | .      |
| 81A  | U   | CR        | 0.47        | 0.65  | .      | .      | .      | .           | .      |
| 81B  | U   | CR        | 0.51        | 0.76  | .      | .      | .      | .           | .      |
| 82   | U   | SR        | 0.55        | 0.40  | -0.20  | -0.21  | -0.16  | 0.40        | .      |
| 83   | U   | SR        | 0.68        | 0.46  | -0.15  | 0.46   | -0.29  | -0.22       | .      |
| 84   | U   | SR        | 0.60        | 0.48  | -0.25  | 0.48   | -0.21  | -0.21       | .      |
| 85   | U   | SR        | 0.53        | 0.57  | 0.57   | -0.21  | -0.35  | -0.20       | .      |
| 86   | U   | SR        | 0.53        | 0.45  | -0.21  | -0.22  | 0.45   | -0.18       | .      |
| 88   | U   | SR        | 0.32        | 0.46  | -0.24  | -0.10  | -0.16  | 0.46        | .      |
| 89   | U   | SR        | 0.73        | 0.49  | -0.23  | -0.22  | 0.49   | -0.26       | .      |
| 90   | U   | SR        | 0.55        | 0.31  | -0.18  | -0.14  | -0.08  | 0.31        | .      |
| 91   | U   | SR        | 0.74        | 0.52  | 0.52   | -0.24  | -0.23  | -0.29       | .      |
| 92   | U   | SR        | 0.30        | 0.24  | -0.13  | 0.24   | -0.03  | -0.09       | .      |
| 93   | U   | SR        | 0.53        | 0.29  | -0.22  | -0.17  | 0.29   | <b>0.03</b> | .      |
| 94   | U   | SR        | <b>0.21</b> | 0.30  | -0.18  | -0.15  | 0.30   | <b>0.02</b> | .      |
| 95   | U   | SR        | 0.43        | 0.58  | -0.37  | -0.13  | 0.58   | -0.17       | .      |

**Table A27 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form C**  
**N=11,601**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1 | P_BIS2      | P_BIS3      | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|--------|-------------|-------------|-------------|--------|
| 96   | U   | SR        | 0.69        | 0.48        | -0.19  | 0.48        | -0.27       | -0.20       | .      |
| 97   | U   | SR        | 0.65        | 0.39        | -0.17  | -0.18       | -0.18       | 0.39        | .      |
| 98   | U   | SR        | 0.49        | 0.55        | 0.55   | -0.13       | -0.31       | -0.26       | .      |
| 99   | U   | SR        | 0.36        | 0.24        | -0.14  | -0.15       | 0.24        | <b>0.08</b> | .      |
| 100  | U   | SR        | 0.51        | 0.48        | -0.23  | -0.21       | 0.48        | -0.20       | .      |
| 101  | U   | SR        | 0.38        | 0.43        | -0.08  | -0.17       | -0.25       | 0.43        | .      |
| 102  | U   | SR        | <b>0.29</b> | 0.33        | -0.16  | -0.11       | -0.07       | 0.33        | .      |
| 103  | U   | SR        | 0.57        | 0.54        | -0.27  | -0.16       | 0.54        | -0.30       | .      |
| 104  | U   | SR        | 0.76        | 0.38        | -0.18  | -0.20       | -0.16       | 0.38        | .      |
| 105  | U   | SR        | 0.63        | 0.47        | -0.27  | 0.47        | -0.24       | -0.17       | .      |
| 106  | U   | SR        | 0.39        | <b>0.15</b> | -0.16  | <b>0.01</b> | <b>0.15</b> | <b>0.00</b> | .      |
| 107  | U   | SR        | 0.50        | 0.56        | -0.28  | -0.40       | 0.56        | -0.05       | .      |
| 108  | U   | SR        | 0.67        | 0.45        | -0.17  | 0.45        | -0.29       | -0.17       | .      |
| 109  | U   | SR        | 0.30        | 0.50        | -0.07  | 0.50        | -0.03       | -0.39       | .      |
| 110  | U   | SR        | 0.44        | 0.32        | -0.16  | -0.15       | 0.32        | -0.07       | .      |
| 111  | U   | SR        | 0.57        | 0.39        | -0.12  | 0.39        | -0.26       | -0.15       | .      |



**Table A28**  
**Summary Item Statistics – Mathematics Grade 7, Form D**  
**N=11,519**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 3    | C   | SR        | 0.53        | 0.45        | -0.17       | 0.45        | -0.25  | -0.15       | -0.13  |
| 9    | C   | SR        | 0.70        | 0.40        | -0.14       | -0.16       | 0.40   | -0.21       | .      |
| 13   | C   | SR        | 0.61        | 0.55        | -0.27       | 0.55        | -0.30  | -0.23       | .      |
| 15   | C   | SR        | 0.88        | 0.33        | 0.33        | -0.17       | -0.17  | -0.16       | .      |
| 24   | C   | SR        | 0.60        | 0.57        | 0.57        | -0.24       | -0.36  | -0.20       | .      |
| 32   | C   | SR        | 0.52        | 0.43        | -0.05       | -0.18       | 0.43   | -0.33       | .      |
| 33   | C   | SR        | 0.42        | <b>0.06</b> | <b>0.06</b> | <b>0.04</b> | -0.13  | <b>0.00</b> | .      |
| 34   | C   | SR        | 0.47        | 0.51        | -0.14       | -0.22       | 0.51   | -0.31       | .      |
| 35   | C   | SR        | 0.46        | 0.52        | 0.52        | -0.21       | -0.26  | -0.22       | .      |
| 36   | C   | SR        | <b>0.22</b> | 0.32        | -0.11       | -0.05       | -0.15  | 0.32        | .      |
| 37   | C   | SR        | <b>0.24</b> | 0.44        | -0.44       | <b>0.02</b> | -0.01  | 0.44        | .      |
| 38   | C   | SR        | <b>0.19</b> | 0.41        | 0.41        | -0.07       | -0.15  | -0.25       | .      |
| 39   | C   | SR        | 0.45        | 0.48        | -0.20       | 0.48        | -0.26  | -0.23       | .      |
| 40   | C   | SR        | 0.65        | 0.54        | 0.54        | -0.18       | -0.35  | -0.25       | .      |
| 41   | C   | SR        | 0.50        | 0.48        | 0.48        | -0.19       | -0.25  | -0.21       | .      |
| 42A  | U   | CR        | 0.41        | 0.62        | .           | .           | .      | .           | .      |
| 42B  | U   | CR        | 0.49        | 0.64        | .           | .           | .      | .           | .      |
| 43A  | U   | CR        | 0.50        | 0.57        | .           | .           | .      | .           | .      |
| 43B  | U   | CR        | 0.56        | 0.60        | .           | .           | .      | .           | .      |
| 44   | C   | SR        | 0.61        | 0.49        | -0.20       | -0.30       | 0.49   | -0.19       | .      |
| 45   | C   | SR        | 0.60        | 0.48        | -0.20       | -0.24       | -0.24  | 0.48        | .      |
| 46   | C   | SR        | 0.60        | 0.44        | -0.14       | 0.44        | -0.27  | -0.17       | .      |
| 47   | C   | SR        | 0.55        | 0.31        | 0.31        | -0.10       | -0.22  | -0.16       | .      |
| 48   | C   | SR        | 0.58        | 0.46        | -0.21       | -0.25       | -0.20  | 0.46        | .      |
| 49   | C   | SR        | 0.36        | 0.33        | -0.07       | -0.14       | -0.17  | 0.33        | .      |
| 50   | C   | SR        | 0.62        | 0.52        | -0.17       | -0.25       | -0.29  | 0.52        | .      |
| 51   | C   | SR        | <b>0.29</b> | 0.28        | -0.09       | -0.16       | 0.28   | -0.01       | .      |
| 52   | C   | SR        | <b>0.24</b> | 0.41        | -0.19       | -0.14       | -0.05  | 0.41        | .      |
| 53A  | U   | CR        | <b>0.14</b> | 0.36        | .           | .           | .      | .           | .      |
| 53B  | U   | CR        | <b>0.13</b> | 0.42        | .           | .           | .      | .           | .      |
| 54   | U   | SPR       | 0.32        | 0.59        | .           | .           | .      | .           | .      |
| 55   | U   | SPR       | 0.20        | 0.55        | .           | .           | .      | .           | .      |
| 56   | U   | SPR       | <b>0.13</b> | 0.47        | .           | .           | .      | .           | .      |
| 57   | U   | SPR       | <b>0.19</b> | 0.56        | .           | .           | .      | .           | .      |
| 58   | C   | SR        | 0.75        | 0.43        | -0.18       | -0.24       | -0.23  | 0.43        | .      |
| 59   | C   | SR        | 0.44        | 0.36        | -0.10       | -0.29       | 0.36   | -0.06       | .      |
| 60   | C   | SR        | 0.74        | 0.38        | -0.14       | 0.38        | -0.21  | -0.20       | .      |

**Table A28 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form D**  
**N=11,519**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|-------------|--------|--------|
| 61   | C   | SR        | 0.64        | 0.57  | -0.42  | -0.25  | -0.12       | 0.57   | .      |
| 62   | C   | SR        | 0.56        | 0.60  | -0.25  | -0.15  | -0.41       | 0.60   | .      |
| 63A  | U   | CR        | 0.52        | 0.47  | .      | .      | .           | .      | .      |
| 63B  | U   | CR        | 0.55        | 0.63  | .      | .      | .           | .      | .      |
| 64   | U   | SPR       | 0.71        | 0.47  | .      | .      | .           | .      | .      |
| 65   | U   | SPR       | 0.49        | 0.61  | .      | .      | .           | .      | .      |
| 66   | U   | SPR       | <b>0.06</b> | 0.35  | .      | .      | .           | .      | .      |
| 67   | U   | SPR       | 0.53        | 0.52  | .      | .      | .           | .      | .      |
| 68A  | U   | CR        | 0.47        | 0.67  | .      | .      | .           | .      | .      |
| 68B  | U   | CR        | 0.37        | 0.55  | .      | .      | .           | .      | .      |
| 69   | C   | SR        | 0.33        | 0.37  | -0.13  | -0.22  | -0.04       | 0.37   | .      |
| 70   | C   | SR        | 0.44        | 0.60  | 0.60   | -0.37  | -0.18       | -0.15  | .      |
| 71   | C   | SR        | 0.61        | 0.52  | -0.27  | 0.52   | -0.20       | -0.23  | .      |
| 72   | C   | SR        | 0.53        | 0.39  | -0.21  | 0.39   | -0.18       | -0.07  | .      |
| 73   | C   | SR        | 0.55        | 0.50  | 0.50   | -0.20  | -0.23       | -0.22  | .      |
| 74   | C   | SR        | 0.33        | 0.48  | -0.02  | -0.32  | -0.18       | 0.48   | .      |
| 75   | C   | SR        | 0.55        | 0.47  | -0.18  | -0.21  | 0.47        | -0.20  | .      |
| 76A  | U   | CR        | 0.37        | 0.60  | .      | .      | .           | .      | .      |
| 76B  | U   | CR        | 0.33        | 0.54  | .      | .      | .           | .      | .      |
| 77   | U   | SPR       | <b>0.12</b> | 0.45  | .      | .      | .           | .      | .      |
| 78   | U   | SPR       | 0.39        | 0.61  | .      | .      | .           | .      | .      |
| 79   | U   | SPR       | 0.64        | 0.47  | .      | .      | .           | .      | .      |
| 80   | U   | SPR       | 0.25        | 0.55  | .      | .      | .           | .      | .      |
| 81A  | U   | CR        | 0.43        | 0.67  | .      | .      | .           | .      | .      |
| 81B  | U   | CR        | 0.22        | 0.64  | .      | .      | .           | .      | .      |
| 82   | U   | SR        | 0.76        | 0.44  | 0.44   | -0.29  | -0.19       | -0.17  | .      |
| 83   | U   | SR        | 0.57        | 0.52  | -0.37  | 0.52   | -0.16       | -0.20  | .      |
| 84   | U   | SR        | <b>0.28</b> | 0.31  | -0.09  | -0.10  | -0.14       | 0.31   | .      |
| 85   | U   | SR        | 0.34        | 0.25  | -0.14  | -0.16  | 0.00        | 0.25   | .      |
| 86   | U   | SR        | <b>0.29</b> | 0.26  | -0.12  | -0.09  | -0.07       | 0.26   | .      |
| 87   | U   | SR        | 0.55        | 0.44  | -0.25  | 0.44   | -0.21       | -0.14  | .      |
| 88   | U   | SR        | 0.74        | 0.45  | 0.45   | -0.22  | -0.22       | -0.22  | .      |
| 89   | U   | SR        | 0.58        | 0.17  | -0.18  | 0.17   | <b>0.01</b> | -0.13  | .      |
| 90   | U   | SR        | 0.83        | 0.29  | -0.14  | -0.12  | -0.14       | 0.29   | .      |
| 91   | U   | SR        | 0.32        | 0.52  | 0.52   | -0.16  | -0.18       | -0.27  | .      |
| 92   | U   | SR        | <b>0.30</b> | 0.35  | -0.14  | -0.22  | 0.35        | -0.01  | .      |
| 93   | U   | SR        | 0.45        | 0.41  | -0.24  | -0.17  | -0.11       | 0.41   | .      |

**Table A28 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form D**  
**N=11,519**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|--------|--------|-------------|--------|
| 94   | U   | SR        | 0.52        | 0.49  | -0.29  | -0.25  | 0.49   | -0.08       | .      |
| 95   | U   | SR        | 0.45        | 0.49  | -0.23  | 0.49   | -0.20  | -0.18       | .      |
| 96   | U   | SR        | 0.44        | 0.54  | -0.26  | -0.20  | -0.20  | 0.54        | .      |
| 97   | U   | SR        | 0.69        | 0.39  | -0.18  | -0.18  | 0.39   | -0.19       | .      |
| 98   | U   | SR        | <b>0.23</b> | 0.19  | -0.09  | -0.06  | 0.19   | <b>0.01</b> | .      |
| 99   | U   | SR        | 0.57        | 0.38  | -0.14  | -0.19  | 0.38   | -0.19       | .      |
| 100  | U   | SR        | 0.64        | 0.46  | -0.20  | -0.26  | 0.46   | -0.19       | .      |
| 101  | U   | SR        | 0.42        | 0.32  | -0.11  | 0.32   | -0.22  | -0.07       | .      |
| 102  | U   | SR        | 0.63        | 0.44  | -0.15  | 0.44   | -0.24  | -0.24       | .      |
| 103  | U   | SR        | 0.64        | 0.41  | -0.22  | -0.21  | 0.41   | -0.16       | .      |
| 104  | U   | SR        | 0.55        | 0.36  | -0.12  | 0.36   | -0.21  | -0.17       | .      |
| 105  | U   | SR        | 0.52        | 0.39  | -0.15  | 0.39   | -0.25  | -0.11       | .      |
| 106  | U   | SR        | 0.38        | 0.52  | -0.25  | -0.22  | -0.19  | 0.52        | .      |
| 107  | U   | SR        | 0.43        | 0.57  | -0.37  | -0.22  | -0.07  | 0.57        | .      |
| 108  | U   | SR        | 0.38        | 0.47  | -0.27  | 0.47   | -0.08  | -0.23       | .      |
| 109  | U   | SR        | 0.39        | 0.47  | -0.11  | -0.27  | 0.47   | -0.14       | .      |
| 110  | U   | SR        | 0.42        | 0.38  | -0.19  | -0.14  | -0.13  | 0.38        | .      |
| 111  | U   | SR        | 0.44        | 0.44  | 0.44   | -0.20  | -0.19  | -0.16       | .      |

**Table A29**  
**Summary Item Statistics – Mathematics Grade 7, Form E**  
**N=11,450**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 3    | C   | SR        | 0.54        | 0.45        | -0.18       | 0.45        | -0.25  | -0.13       | -0.14  |
| 9    | C   | SR        | 0.69        | 0.40        | -0.14       | -0.16       | 0.40   | -0.21       | .      |
| 13   | C   | SR        | 0.61        | 0.57        | -0.26       | 0.57        | -0.31  | -0.25       | .      |
| 15   | C   | SR        | 0.89        | 0.34        | 0.34        | -0.18       | -0.17  | -0.15       | .      |
| 24   | C   | SR        | 0.59        | 0.58        | 0.58        | -0.24       | -0.37  | -0.21       | .      |
| 32   | C   | SR        | 0.52        | 0.43        | -0.05       | -0.18       | 0.43   | -0.35       | .      |
| 33   | C   | SR        | 0.42        | <b>0.04</b> | <b>0.04</b> | <b>0.05</b> | -0.13  | <b>0.02</b> | .      |
| 34   | C   | SR        | 0.47        | 0.51        | -0.16       | -0.21       | 0.51   | -0.31       | .      |
| 35   | C   | SR        | 0.46        | 0.52        | 0.52        | -0.21       | -0.27  | -0.21       | .      |
| 36   | C   | SR        | <b>0.22</b> | 0.31        | -0.10       | -0.05       | -0.15  | 0.31        | .      |
| 37   | C   | SR        | <b>0.25</b> | 0.43        | -0.45       | <b>0.04</b> | -0.01  | 0.43        | .      |
| 38   | C   | SR        | <b>0.19</b> | 0.40        | 0.40        | -0.06       | -0.13  | -0.26       | .      |
| 39   | C   | SR        | 0.46        | 0.47        | -0.21       | 0.47        | -0.27  | -0.22       | .      |
| 40   | C   | SR        | 0.64        | 0.52        | 0.52        | -0.16       | -0.35  | -0.24       | .      |
| 41   | C   | SR        | 0.51        | 0.49        | 0.49        | -0.20       | -0.25  | -0.22       | .      |
| 42A  | U   | CR        | 0.61        | 0.52        | .           | .           | .      | .           | .      |
| 42B  | U   | CR        | 0.69        | 0.52        | .           | .           | .      | .           | .      |
| 43A  | U   | CR        | 0.64        | 0.57        | .           | .           | .      | .           | .      |
| 43B  | U   | CR        | 0.70        | 0.59        | .           | .           | .      | .           | .      |
| 44   | C   | SR        | 0.63        | 0.48        | -0.20       | -0.30       | 0.48   | -0.19       | .      |
| 45   | C   | SR        | 0.62        | 0.47        | -0.20       | -0.24       | -0.24  | 0.47        | .      |
| 46   | C   | SR        | 0.61        | 0.43        | -0.14       | 0.43        | -0.28  | -0.17       | .      |
| 47   | C   | SR        | 0.57        | 0.31        | 0.31        | -0.10       | -0.22  | -0.17       | .      |
| 48   | C   | SR        | 0.58        | 0.47        | -0.21       | -0.25       | -0.22  | 0.47        | .      |
| 49   | C   | SR        | 0.36        | 0.33        | -0.08       | -0.14       | -0.17  | 0.33        | .      |
| 50   | C   | SR        | 0.63        | 0.52        | -0.16       | -0.25       | -0.31  | 0.52        | .      |
| 51   | C   | SR        | <b>0.29</b> | 0.28        | -0.11       | -0.17       | 0.28   | <b>0.00</b> | .      |
| 52   | C   | SR        | <b>0.24</b> | 0.40        | -0.20       | -0.14       | -0.03  | 0.40        | .      |
| 53A  | U   | CR        | <b>0.16</b> | 0.50        | .           | .           | .      | .           | .      |
| 53B  | U   | CR        | <b>0.08</b> | 0.48        | .           | .           | .      | .           | .      |
| 54   | U   | SPR       | 0.34        | 0.60        | .           | .           | .      | .           | .      |
| 55   | U   | SPR       | 0.22        | 0.54        | .           | .           | .      | .           | .      |
| 56   | U   | SPR       | 0.44        | 0.57        | .           | .           | .      | .           | .      |
| 57   | U   | SPR       | 0.24        | 0.52        | .           | .           | .      | .           | .      |
| 58   | C   | SR        | 0.74        | 0.45        | -0.21       | -0.24       | -0.24  | 0.45        | .      |
| 59   | C   | SR        | 0.44        | 0.38        | -0.11       | -0.31       | 0.38   | -0.06       | .      |
| 60   | C   | SR        | 0.75        | 0.37        | -0.14       | 0.37        | -0.21  | -0.21       | .      |

**Table A29 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form E**  
**N=11,450**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT        | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|--------------|--------|--------|--------|-------------|--------|
| 61   | C   | SR        | 0.64        | 0.58         | -0.43  | -0.25  | -0.12  | 0.58        | .      |
| 62   | C   | SR        | 0.57        | 0.60         | -0.26  | -0.13  | -0.42  | 0.60        | .      |
| 64   | U   | SPR       | 0.43        | 0.40         | .      | .      | .      | .           | .      |
| 65   | U   | SPR       | 0.58        | 0.61         | .      | .      | .      | .           | .      |
| 66   | U   | SPR       | <b>0.00</b> | <b>-0.01</b> | .      | .      | .      | .           | .      |
| 67   | U   | SPR       | 0.55        | 0.59         | .      | .      | .      | .           | .      |
| 68A  | U   | CR        | 0.21        | 0.60         | .      | .      | .      | .           | .      |
| 68B  | U   | CR        | 0.42        | 0.69         | .      | .      | .      | .           | .      |
| 69   | C   | SR        | 0.33        | 0.38         | -0.12  | -0.23  | -0.06  | 0.38        | .      |
| 70   | C   | SR        | 0.48        | 0.60         | 0.60   | -0.38  | -0.19  | -0.15       | .      |
| 71   | C   | SR        | 0.61        | 0.52         | -0.29  | 0.52   | -0.19  | -0.23       | .      |
| 72   | C   | SR        | 0.53        | 0.38         | -0.22  | 0.38   | -0.18  | -0.07       | .      |
| 73   | C   | SR        | 0.55        | 0.52         | 0.52   | -0.23  | -0.25  | -0.21       | .      |
| 74   | C   | SR        | 0.32        | 0.48         | -0.02  | -0.33  | -0.18  | 0.48        | .      |
| 75   | C   | SR        | 0.56        | 0.46         | -0.19  | -0.20  | 0.46   | -0.21       | .      |
| 76A  | U   | CR        | 0.21        | 0.54         | .      | .      | .      | .           | .      |
| 76B  | U   | CR        | 0.31        | 0.52         | .      | .      | .      | .           | .      |
| 77   | U   | SPR       | <b>0.18</b> | 0.37         | .      | .      | .      | .           | .      |
| 78   | U   | SPR       | 0.27        | 0.61         | .      | .      | .      | .           | .      |
| 79   | U   | SPR       | 0.60        | 0.45         | .      | .      | .      | .           | .      |
| 80   | U   | SPR       | 0.41        | 0.61         | .      | .      | .      | .           | .      |
| 82   | U   | SR        | 0.70        | 0.44         | -0.24  | 0.44   | -0.24  | -0.16       | .      |
| 83   | U   | SR        | 0.42        | 0.52         | 0.52   | -0.19  | -0.25  | -0.21       | .      |
| 84   | U   | SR        | 0.53        | 0.55         | -0.28  | -0.23  | -0.24  | 0.55        | .      |
| 85   | U   | SR        | 0.64        | 0.43         | -0.17  | 0.43   | -0.27  | -0.18       | .      |
| 86   | U   | SR        | 0.66        | 0.50         | -0.25  | -0.27  | 0.50   | -0.20       | .      |
| 87   | U   | SR        | 0.76        | 0.44         | -0.23  | 0.44   | -0.24  | -0.18       | .      |
| 88   | U   | SR        | 0.40        | 0.34         | -0.10  | -0.22  | 0.34   | -0.14       | .      |
| 89   | U   | SR        | 0.63        | 0.44         | -0.16  | 0.44   | -0.27  | -0.20       | .      |
| 90   | U   | SR        | 0.49        | 0.40         | -0.21  | -0.18  | 0.40   | -0.15       | .      |
| 91   | U   | SR        | 0.62        | 0.46         | -0.20  | 0.46   | -0.24  | -0.23       | .      |
| 92   | U   | SR        | 0.46        | 0.26         | 0.26   | -0.09  | -0.13  | -0.12       | .      |
| 93   | U   | SR        | 0.67        | 0.43         | -0.23  | 0.43   | -0.19  | -0.20       | .      |
| 94   | U   | SR        | <b>0.21</b> | 0.26         | -0.20  | -0.13  | 0.26   | <b>0.04</b> | .      |
| 95   | U   | SR        | 0.47        | 0.56         | -0.33  | -0.19  | 0.56   | -0.17       | .      |
| 96   | U   | SR        | 0.44        | 0.46         | -0.10  | 0.46   | -0.25  | -0.21       | .      |
| 97   | U   | SR        | 0.57        | 0.53         | -0.19  | -0.31  | -0.21  | 0.53        | .      |

**Table A29 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form E**  
**N=11,450**

| ITEM | C/U | ITEM TYPE | P_VAL | R_ITT | P_BIS1 | P_BIS2 | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------|-------|--------|--------|--------|-------------|--------|
| 98   | U   | SR        | 0.33  | 0.32  | -0.10  | -0.08  | 0.32   | -0.15       | .      |
| 99   | U   | SR        | 0.43  | 0.52  | 0.52   | -0.13  | -0.26  | -0.25       | .      |
| 100  | U   | SR        | 0.52  | 0.31  | -0.05  | 0.31   | -0.24  | -0.17       | .      |
| 101  | U   | SR        | 0.48  | 0.26  | 0.26   | -0.05  | -0.20  | -0.08       | .      |
| 102  | U   | SR        | 0.52  | 0.53  | -0.24  | 0.53   | -0.25  | -0.25       | .      |
| 103  | U   | SR        | 0.56  | 0.45  | -0.23  | 0.45   | -0.25  | -0.16       | .      |
| 104  | U   | SR        | 0.67  | 0.40  | -0.18  | -0.21  | 0.40   | -0.17       | .      |
| 105  | U   | SR        | 0.50  | 0.59  | -0.25  | -0.28  | -0.27  | 0.59        | .      |
| 106  | U   | SR        | 0.40  | 0.39  | -0.19  | -0.20  | 0.39   | -0.10       | .      |
| 107  | U   | SR        | 0.66  | 0.35  | -0.15  | -0.17  | 0.35   | -0.18       | .      |
| 108  | U   | SR        | 0.33  | 0.39  | -0.07  | 0.39   | -0.10  | -0.26       | .      |
| 110  | U   | SR        | 0.54  | 0.42  | 0.42   | -0.35  | -0.22  | <b>0.01</b> | .      |
| 111  | U   | SR        | 0.39  | 0.42  | -0.28  | -0.12  | 0.42   | -0.16       | .      |

**Table A30**  
**Summary Item Statistics – Mathematics Grade 7, Form F**  
**N=11,327**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT       | P_BIS1      | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------------|-------------|-------------|--------|-------------|--------|
| 3    | C   | SR        | 0.53        | 0.44        | -0.17       | 0.44        | -0.26  | -0.15       | -0.10  |
| 9    | C   | SR        | 0.69        | 0.38        | -0.12       | -0.13       | 0.38   | -0.23       | .      |
| 13   | C   | SR        | 0.61        | 0.55        | -0.26       | 0.55        | -0.31  | -0.24       | .      |
| 15   | C   | SR        | 0.88        | 0.33        | 0.33        | -0.18       | -0.17  | -0.15       | .      |
| 24   | C   | SR        | 0.60        | 0.58        | 0.58        | -0.24       | -0.38  | -0.20       | .      |
| 32   | C   | SR        | 0.52        | 0.44        | -0.05       | -0.18       | 0.44   | -0.35       | .      |
| 33   | C   | SR        | 0.41        | <b>0.08</b> | <b>0.08</b> | <b>0.03</b> | -0.14  | -0.01       | .      |
| 34   | C   | SR        | 0.46        | 0.51        | -0.15       | -0.21       | 0.51   | -0.32       | .      |
| 35   | C   | SR        | 0.46        | 0.53        | 0.53        | -0.22       | -0.27  | -0.22       | .      |
| 36   | C   | SR        | <b>0.22</b> | 0.33        | -0.09       | -0.04       | -0.18  | 0.33        | .      |
| 37   | C   | SR        | <b>0.24</b> | 0.44        | -0.45       | <b>0.04</b> | -0.03  | 0.44        | .      |
| 38   | C   | SR        | <b>0.19</b> | 0.42        | 0.42        | -0.07       | -0.15  | -0.26       | .      |
| 39   | C   | SR        | 0.44        | 0.48        | -0.20       | 0.48        | -0.27  | -0.24       | .      |
| 40   | C   | SR        | 0.65        | 0.53        | 0.53        | -0.16       | -0.35  | -0.25       | .      |
| 41   | C   | SR        | 0.50        | 0.47        | 0.47        | -0.18       | -0.24  | -0.22       | .      |
| 42A  | U   | CR        | 0.59        | 0.55        | .           | .           | .      | .           | .      |
| 42B  | U   | CR        | 0.53        | 0.60        | .           | .           | .      | .           | .      |
| 43A  | U   | CR        | 0.33        | 0.62        | .           | .           | .      | .           | .      |
| 43B  | U   | CR        | 0.32        | 0.63        | .           | .           | .      | .           | .      |
| 44   | C   | SR        | 0.61        | 0.48        | -0.20       | -0.30       | 0.48   | -0.19       | .      |
| 45   | C   | SR        | 0.60        | 0.47        | -0.18       | -0.26       | -0.24  | 0.47        | .      |
| 46   | C   | SR        | 0.59        | 0.43        | -0.13       | 0.43        | -0.29  | -0.16       | .      |
| 47   | C   | SR        | 0.56        | 0.30        | 0.30        | -0.10       | -0.22  | -0.16       | .      |
| 48   | C   | SR        | 0.58        | 0.45        | -0.20       | -0.25       | -0.21  | 0.45        | .      |
| 49   | C   | SR        | 0.35        | 0.32        | -0.08       | -0.13       | -0.16  | 0.32        | .      |
| 50   | C   | SR        | 0.62        | 0.51        | -0.15       | -0.24       | -0.31  | 0.51        | .      |
| 51   | C   | SR        | <b>0.29</b> | 0.27        | -0.12       | -0.15       | 0.27   | <b>0.02</b> | .      |
| 52   | C   | SR        | <b>0.24</b> | 0.40        | -0.19       | -0.14       | -0.05  | 0.40        | .      |
| 53A  | U   | CR        | <b>0.14</b> | 0.39        | .           | .           | .      | .           | .      |
| 53B  | U   | CR        | <b>0.14</b> | 0.45        | .           | .           | .      | .           | .      |
| 54   | U   | SPR       | 0.69        | 0.46        | .           | .           | .      | .           | .      |
| 55   | U   | SPR       | 0.22        | 0.50        | .           | .           | .      | .           | .      |
| 56   | U   | SPR       | 0.47        | 0.53        | .           | .           | .      | .           | .      |
| 57   | U   | SPR       | <b>0.12</b> | 0.43        | .           | .           | .      | .           | .      |
| 58   | C   | SR        | 0.74        | 0.44        | -0.20       | -0.25       | -0.23  | 0.44        | .      |
| 59   | C   | SR        | 0.44        | 0.40        | -0.10       | -0.31       | 0.40   | -0.09       | .      |
| 60   | C   | SR        | 0.74        | 0.35        | -0.13       | 0.35        | -0.18  | -0.21       | .      |

**Table A30 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form F**  
**N=11,327**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2      | P_BIS3      | P_BIS4 | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|-------------|-------------|--------|--------|
| 61   | C   | SR        | 0.64        | 0.59  | -0.45  | -0.24       | -0.12       | 0.59   | .      |
| 62   | C   | SR        | 0.56        | 0.61  | -0.26  | -0.14       | -0.43       | 0.61   | .      |
| 64   | U   | SPR       | 0.27        | 0.60  | .      | .           | .           | .      | .      |
| 65   | U   | SPR       | 0.46        | 0.57  | .      | .           | .           | .      | .      |
| 66   | U   | SPR       | 0.39        | 0.63  | .      | .           | .           | .      | .      |
| 67   | U   | SPR       | 0.62        | 0.55  | .      | .           | .           | .      | .      |
| 69   | C   | SR        | 0.34        | 0.37  | -0.12  | -0.20       | -0.08       | 0.37   | .      |
| 70   | C   | SR        | 0.42        | 0.62  | 0.62   | -0.39       | -0.18       | -0.15  | .      |
| 71   | C   | SR        | 0.59        | 0.50  | -0.28  | 0.50        | -0.17       | -0.22  | .      |
| 72   | C   | SR        | 0.55        | 0.41  | -0.24  | 0.41        | -0.19       | -0.08  | .      |
| 73   | C   | SR        | 0.52        | 0.51  | 0.51   | -0.20       | -0.23       | -0.23  | .      |
| 74   | C   | SR        | 0.31        | 0.49  | -0.05  | -0.32       | -0.15       | 0.49   | .      |
| 75   | C   | SR        | 0.53        | 0.45  | -0.17  | -0.20       | 0.45        | -0.20  | .      |
| 76A  | U   | CR        | <b>0.10</b> | 0.29  | .      | .           | .           | .      | .      |
| 76B  | U   | CR        | 0.50        | 0.49  | .      | .           | .           | .      | .      |
| 77   | U   | SPR       | 0.52        | 0.59  | .      | .           | .           | .      | .      |
| 78   | U   | SPR       | 0.27        | 0.54  | .      | .           | .           | .      | .      |
| 79   | U   | SPR       | 0.34        | 0.56  | .      | .           | .           | .      | .      |
| 80   | U   | SPR       | <b>0.00</b> | .     | .      | .           | .           | .      | .      |
| 82   | U   | SR        | 0.50        | 0.42  | -0.06  | 0.42        | -0.30       | -0.19  | .      |
| 83   | U   | SR        | 0.61        | 0.55  | -0.27  | -0.29       | 0.55        | -0.22  | .      |
| 84   | U   | SR        | 0.76        | 0.41  | -0.22  | 0.41        | -0.20       | -0.19  | .      |
| 85   | U   | SR        | 0.60        | 0.41  | -0.20  | -0.22       | -0.23       | 0.41   | .      |
| 86   | U   | SR        | <b>0.13</b> | 0.27  | -0.07  | <b>0.09</b> | -0.18       | 0.27   | .      |
| 87   | U   | SR        | 0.60        | 0.45  | -0.20  | -0.16       | -0.29       | 0.45   | .      |
| 88   | U   | SR        | 0.42        | 0.37  | -0.13  | 0.37        | -0.23       | -0.09  | .      |
| 89   | U   | SR        | 0.36        | 0.17  | 0.17   | -0.02       | -0.12       | -0.07  | .      |
| 90   | U   | SR        | 0.57        | 0.51  | -0.22  | -0.20       | 0.51        | -0.28  | .      |
| 91   | U   | SR        | 0.54        | 0.44  | -0.23  | 0.44        | -0.20       | -0.18  | .      |
| 92   | U   | SR        | <b>0.13</b> | 0.34  | -0.01  | -0.17       | -0.13       | 0.34   | .      |
| 93   | U   | SR        | 0.63        | 0.54  | -0.30  | -0.23       | -0.24       | 0.54   | .      |
| 94   | U   | SR        | 0.35        | 0.27  | -0.16  | 0.27        | -0.01       | -0.15  | .      |
| 95   | U   | SR        | 0.45        | 0.51  | -0.29  | 0.51        | -0.18       | -0.17  | .      |
| 96   | U   | SR        | 0.56        | 0.51  | -0.19  | -0.24       | -0.25       | 0.51   | .      |
| 97   | U   | SR        | 0.49        | 0.31  | -0.16  | -0.09       | 0.31        | -0.16  | .      |
| 98   | U   | SR        | 0.46        | 0.49  | -0.24  | 0.49        | -0.20       | -0.16  | .      |
| 99   | U   | SR        | <b>0.29</b> | 0.17  | -0.10  | 0.17        | <b>0.05</b> | -0.12  | .      |



**Table A30 (cont.)**  
**Summary Item Statistics – Mathematics Grade 7, Form F**  
**N=11,327**

| ITEM | C/U | ITEM TYPE | P_VAL       | R_ITT | P_BIS1 | P_BIS2      | P_BIS3 | P_BIS4      | P_BIS5 |
|------|-----|-----------|-------------|-------|--------|-------------|--------|-------------|--------|
| 100  | U   | SR        | 0.50        | 0.64  | -0.20  | -0.40       | -0.23  | 0.64        | .      |
| 101  | U   | SR        | 0.38        | 0.32  | -0.01  | 0.32        | -0.28  | -0.12       | .      |
| 102  | U   | SR        | 0.61        | 0.49  | -0.19  | -0.34       | 0.49   | -0.15       | .      |
| 103  | U   | SR        | 0.39        | 0.33  | -0.06  | -0.22       | 0.33   | -0.11       | .      |
| 104  | U   | SR        | 0.55        | 0.52  | 0.52   | -0.29       | -0.21  | -0.22       | .      |
| 105  | U   | SR        | <b>0.12</b> | 0.18  | -0.03  | 0.18        | -0.07  | -0.02       | .      |
| 106  | U   | SR        | 0.56        | 0.37  | -0.16  | 0.37        | -0.20  | -0.19       | .      |
| 107  | U   | SR        | <b>0.13</b> | 0.23  | -0.12  | 0.23        | -0.26  | <b>0.13</b> | .      |
| 108  | U   | SR        | <b>0.25</b> | 0.39  | -0.17  | -0.17       | -0.05  | 0.39        | .      |
| 109  | U   | SR        | 0.76        | 0.40  | -0.21  | -0.20       | 0.40   | -0.16       | .      |
| 110  | U   | SR        | 0.31        | 0.42  | 0.42   | <b>0.02</b> | -0.25  | -0.22       | .      |
| 111  | U   | SR        | 0.31        | 0.39  | -0.19  | -0.20       | -0.06  | 0.39        | .      |

**Appendix B**  
**Rater Agreement**  
**and**  
**CR/SPR Item Distributions**

## Tables List

|  |      |
|--|------|
| Table B1 Rater Agreement for Mathematics Grade 3 .....           | B-3  |
| Table B2 Rater Agreement for Mathematics Grade 4 .....           | B-5  |
| Table B3 Rater Agreement for Mathematics Grade 5 .....           | B-9  |
| Table B4 Rater Agreement for Mathematics Grade 6 .....           | B-11 |
| Table B5 Rater Agreement for Mathematics Grade 7 .....           | B-15 |
| Table B6 Rater Agreement for Mathematics Grade 8 .....           | B-18 |
| Table B7 Rater Agreement for Reading Grade 10 .....              | B-20 |
| Table B8 The CR Item Distribution for Mathematics Grade 3 .....  | B-21 |
| Table B9 The CR Item Distribution for Mathematics Grade 4 .....  | B-22 |
| Table B10 The CR Item Distribution for Mathematics Grade 5.....  | B-24 |
| Table B11 The CR Item Distribution for Mathematics Grade 6.....  | B-25 |
| Table B12 The CR Item Distribution for Mathematics Grade 7.....  | B-27 |
| Table B13 The SPR Item Distribution for Mathematics Grade 7..... | B-29 |
| Table B14 The CR Item Distribution for Mathematics Grade 8.....  | B-31 |
| Table B15 The SPR Item Distribution for Mathematics Grade 8..... | B-32 |
| Table B16 The CR Item Distribution for Reading Grade 10.....     | B-33 |

Table B1  
Rater Agreement for Mathematics Grade 3

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| 1    | 31A  | 36214 | 0.86       | 0.86       | 0.35     | 0.35     | 99.0                         | 1.0                           | 100.0                | 0.96        |
| 1    | 31B  | 35515 | 0.82       | 0.82       | 0.85     | 0.86     | 79.1                         | 19.0                          | 98.1                 | 0.82        |
| 1    | 37A  | 35595 | 0.83       | 0.83       | 0.37     | 0.37     | 99.3                         | 0.7                           | 100.0                | 0.98        |
| 1    | 37B  | 35286 | 1.14       | 1.14       | 0.81     | 0.81     | 80.8                         | 18.6                          | 99.4                 | 0.84        |
| 1    | 44A  | 35200 | 0.62       | 0.62       | 0.49     | 0.49     | 94.2                         | 5.8                           | 100.0                | 0.88        |
| 1    | 44B  | 34649 | 1.05       | 1.05       | 0.85     | 0.85     | 71.0                         | 27.0                          | 98.0                 | 0.76        |
| 1    | 56A  | 35761 | 0.82       | 0.82       | 0.38     | 0.38     | 96.5                         | 3.5                           | 100.0                | 0.88        |
| 1    | 56B  | 35418 | 1.15       | 1.15       | 0.82     | 0.82     | 70.1                         | 28.2                          | 98.3                 | 0.74        |
| 1    | 61A  | 35854 | 0.80       | 0.81       | 0.40     | 0.40     | 98.5                         | 1.5                           | 100.0                | 0.95        |
| 1    | 61B  | 35086 | 1.23       | 1.23       | 0.74     | 0.73     | 75.7                         | 22.9                          | 98.7                 | 0.73        |
| 1    | 69A  | 35959 | 0.89       | 0.89       | 0.31     | 0.31     | 99.5                         | 0.5                           | 100.0                | 0.97        |
| 1    | 69B  | 35290 | 0.74       | 0.74       | 0.55     | 0.55     | 86.7                         | 13.1                          | 99.8                 | 0.77        |
| 1    | 74A  | 35849 | 0.73       | 0.73       | 0.45     | 0.45     | 98.9                         | 1.1                           | 100.0                | 0.97        |
| 1    | 74B  | 35287 | 1.06       | 1.06       | 0.81     | 0.81     | 74.5                         | 23.8                          | 98.3                 | 0.77        |
| 2    | 31A  | 23977 | 0.76       | 0.76       | 0.43     | 0.43     | 99.1                         | 0.9                           | 100.0                | 0.97        |
| 2    | 31B  | 23452 | 0.87       | 0.87       | 0.64     | 0.64     | 84.3                         | 15.5                          | 99.8                 | 0.80        |
| 2    | 37A  | 24049 | 0.95       | 0.95       | 0.22     | 0.22     | 99.7                         | 0.3                           | 100.0                | 0.97        |
| 2    | 37B  | 23642 | 1.00       | 0.99       | 0.76     | 0.76     | 72.2                         | 26.5                          | 98.7                 | 0.73        |
| 2    | 44A  | 23396 | 0.63       | 0.63       | 0.48     | 0.48     | 96.2                         | 3.8                           | 100.0                | 0.91        |
| 2    | 44B  | 23008 | 1.14       | 1.14       | 0.82     | 0.82     | 76.5                         | 22.6                          | 99.1                 | 0.81        |
| 2    | 56A  | 23998 | 0.71       | 0.71       | 0.45     | 0.45     | 98.0                         | 2.0                           | 100.0                | 0.95        |
| 2    | 56B  | 23547 | 0.98       | 0.98       | 0.77     | 0.77     | 73.5                         | 25.9                          | 99.4                 | 0.76        |
| 2    | 61A  | 24048 | 0.88       | 0.88       | 0.32     | 0.32     | 98.6                         | 1.4                           | 100.0                | 0.93        |
| 2    | 61B  | 23587 | 0.74       | 0.74       | 0.60     | 0.60     | 83.9                         | 16.0                          | 99.9                 | 0.78        |

Table B1 (cont.)  
 Rater Agreement for Mathematics Grade 3

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| 2    | 69A  | 23857 | 0.90       | 0.91       | 0.29     | 0.29     | 99.5                         | 0.5                           | 100.0                | 0.97        |
| 2    | 69B  | 23380 | 0.77       | 0.77       | 0.57     | 0.58     | 82.6                         | 16.9                          | 99.5                 | 0.71        |
| 2    | 74A  | 23496 | 0.44       | 0.44       | 0.50     | 0.50     | 98.3                         | 1.7                           | 100.0                | 0.97        |
| 2    | 74B  | 22958 | 0.73       | 0.73       | 0.68     | 0.67     | 71.2                         | 27.6                          | 98.8                 | 0.65        |

G1: Rater group 1      G2: Rater group 2

Table B2  
Rater Agreement for Mathematics Grade 4

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| A    | 33A  | 11079 | 0.88       | 0.88       | 0.32     | 0.32     | 97.3                         | 2.7                           | 100.0                | 0.87        |
| A    | 33B  | 10791 | 0.60       | 0.61       | 0.61     | 0.61     | 74.8                         | 24.9                          | 99.7                 | 0.65        |
| A    | 40A  | 10925 | 0.73       | 0.74       | 0.44     | 0.44     | 99.3                         | 0.7                           | 100.0                | 0.98        |
| A    | 40B  | 10652 | 0.70       | 0.70       | 0.78     | 0.77     | 78.3                         | 21.1                          | 99.4                 | 0.81        |
| A    | 47A  | 10182 | 0.39       | 0.39       | 0.49     | 0.49     | 98.3                         | 1.7                           | 100.0                | 0.97        |
| A    | 47B  | 9993  | 0.71       | 0.70       | 0.74     | 0.74     | 75.2                         | 24.5                          | 99.7                 | 0.77        |
| A    | 60A  | 10894 | 0.38       | 0.38       | 0.49     | 0.49     | 97.8                         | 2.2                           | 100.0                | 0.95        |
| A    | 60B  | 10691 | 1.02       | 1.01       | 0.67     | 0.67     | 81.0                         | 18.9                          | 99.9                 | 0.79        |
| A    | 68A  | 10239 | 0.26       | 0.26       | 0.44     | 0.44     | 95.9                         | 4.1                           | 100.0                | 0.90        |
| A    | 68B  | 9983  | 0.96       | 0.98       | 0.77     | 0.77     | 74.5                         | 25.3                          | 99.7                 | 0.78        |
| A    | 74A  | 10864 | 0.47       | 0.47       | 0.50     | 0.50     | 98.8                         | 1.2                           | 100.0                | 0.98        |
| A    | 74B  | 10682 | 1.05       | 1.05       | 0.74     | 0.74     | 83.4                         | 16.4                          | 99.8                 | 0.84        |
| A    | 75A  | 10706 | 0.12       | 0.12       | 0.33     | 0.33     | 99.1                         | 0.9                           | 100.0                | 0.96        |
| A    | 75B  | 10417 | 0.54       | 0.54       | 0.62     | 0.62     | 83.3                         | 16.6                          | 99.9                 | 0.78        |
| B    | 33A  | 10797 | 0.68       | 0.68       | 0.47     | 0.47     | 97.4                         | 2.6                           | 100.0                | 0.94        |
| B    | 33B  | 10709 | 0.96       | 0.96       | 0.59     | 0.59     | 72.8                         | 26.9                          | 99.8                 | 0.60        |
| B    | 40A  | 10710 | 0.28       | 0.28       | 0.45     | 0.45     | 99.0                         | 1.0                           | 100.0                | 0.97        |
| B    | 40B  | 10403 | 0.63       | 0.64       | 0.67     | 0.68     | 77.4                         | 22.4                          | 99.8                 | 0.75        |
| B    | 47A  | 9995  | 0.17       | 0.16       | 0.37     | 0.37     | 98.7                         | 1.3                           | 100.0                | 0.95        |
| B    | 47B  | 9815  | 0.45       | 0.45       | 0.68     | 0.68     | 81.4                         | 18.3                          | 99.7                 | 0.79        |
| B    | 68A  | 10129 | 0.42       | 0.42       | 0.49     | 0.49     | 99.0                         | 1.0                           | 100.0                | 0.98        |
| B    | 68B  | 9885  | 0.72       | 0.73       | 0.84     | 0.84     | 85.2                         | 14.6                          | 99.8                 | 0.89        |
| B    | 74A  | 10623 | 0.43       | 0.43       | 0.50     | 0.50     | 98.8                         | 1.2                           | 100.0                | 0.98        |
| B    | 74B  | 10511 | 1.01       | 1.01       | 0.70     | 0.70     | 84.3                         | 15.6                          | 99.9                 | 0.83        |

Table B2 (cont.)  
 Rater Agreement for Mathematics Grade 4

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| B    | 75A  | 10285 | 0.30       | 0.30       | 0.46     | 0.46     | 99.2                         | 0.8                           | 100.0                | 0.98        |
| B    | 75B  | 10112 | 0.71       | 0.72       | 0.77     | 0.77     | 85.2                         | 14.7                          | 99.9                 | 0.87        |
| C    | 33A  | 10719 | 0.82       | 0.82       | 0.39     | 0.39     | 97.9                         | 2.1                           | 100.0                | 0.93        |
| C    | 33B  | 10569 | 0.65       | 0.64       | 0.65     | 0.66     | 80.8                         | 18.8                          | 99.7                 | 0.77        |
| C    | 40A  | 10613 | 0.68       | 0.68       | 0.46     | 0.46     | 99.0                         | 1.0                           | 100.0                | 0.98        |
| C    | 40B  | 10406 | 0.65       | 0.66       | 0.76     | 0.76     | 73.9                         | 25.5                          | 99.4                 | 0.76        |
| C    | 47A  | 10087 | 0.49       | 0.49       | 0.50     | 0.50     | 97.2                         | 2.8                           | 100.0                | 0.94        |
| C    | 47B  | 9762  | 0.51       | 0.51       | 0.64     | 0.63     | 78.4                         | 21.3                          | 99.7                 | 0.73        |
| C    | 60A  | 10475 | 0.46       | 0.45       | 0.50     | 0.50     | 98.4                         | 1.6                           | 100.0                | 0.97        |
| C    | 60B  | 10294 | 0.64       | 0.63       | 0.74     | 0.74     | 76.5                         | 23.2                          | 99.7                 | 0.78        |
| C    | 68A  | 10330 | 0.59       | 0.59       | 0.49     | 0.49     | 98.4                         | 1.6                           | 100.0                | 0.97        |
| C    | 68B  | 10185 | 0.92       | 0.93       | 0.80     | 0.80     | 77.2                         | 22.5                          | 99.7                 | 0.81        |
| C    | 74A  | 10685 | 0.39       | 0.39       | 0.49     | 0.49     | 98.3                         | 1.7                           | 100.0                | 0.97        |
| C    | 74B  | 10552 | 0.65       | 0.65       | 0.66     | 0.67     | 70.3                         | 28.9                          | 99.3                 | 0.64        |
| C    | 75A  | 10620 | 0.32       | 0.32       | 0.47     | 0.47     | 99.1                         | 0.9                           | 100.0                | 0.98        |
| C    | 75B  | 10498 | 0.82       | 0.83       | 0.61     | 0.61     | 76.3                         | 23.6                          | 99.9                 | 0.68        |
| D    | 33A  | 10582 | 0.93       | 0.93       | 0.26     | 0.26     | 98.4                         | 1.6                           | 100.0                | 0.88        |
| D    | 33B  | 10314 | 0.53       | 0.52       | 0.65     | 0.64     | 80.5                         | 19.0                          | 99.6                 | 0.75        |
| D    | 40A  | 10580 | 0.37       | 0.37       | 0.48     | 0.48     | 98.8                         | 1.2                           | 100.0                | 0.97        |
| D    | 40B  | 10300 | 0.49       | 0.49       | 0.58     | 0.58     | 80.9                         | 18.9                          | 99.8                 | 0.71        |
| D    | 47A  | 9957  | 0.36       | 0.36       | 0.48     | 0.48     | 98.5                         | 1.5                           | 100.0                | 0.97        |
| D    | 47B  | 9798  | 0.45       | 0.46       | 0.53     | 0.53     | 87.0                         | 13.0                          | 100.0                | 0.77        |
| D    | 60A  | 10599 | 0.60       | 0.60       | 0.49     | 0.49     | 97.5                         | 2.5                           | 100.0                | 0.95        |
| D    | 60B  | 10567 | 0.97       | 0.97       | 0.31     | 0.31     | 94.9                         | 5.1                           | 100.0                | 0.73        |

Table B2 (cont.)  
 Rater Agreement for Mathematics Grade 4

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| D    | 68A  | 10141 | 0.54       | 0.54       | 0.50     | 0.50     | 97.6                         | 2.4                           | 100.0                | 0.95        |
| D    | 68B  | 9929  | 0.67       | 0.68       | 0.82     | 0.82     | 84.0                         | 15.6                          | 99.6                 | 0.87        |
| D    | 74A  | 10537 | 0.67       | 0.67       | 0.47     | 0.47     | 98.9                         | 1.1                           | 100.0                | 0.98        |
| D    | 74B  | 10417 | 0.96       | 0.97       | 0.79     | 0.79     | 83.7                         | 16.1                          | 99.8                 | 0.86        |
| D    | 75A  | 10519 | 0.55       | 0.55       | 0.50     | 0.50     | 99.0                         | 1.0                           | 100.0                | 0.98        |
| D    | 75B  | 10385 | 0.66       | 0.66       | 0.53     | 0.53     | 84.7                         | 15.3                          | 100.0                | 0.73        |
| E    | 33A  | 10416 | 0.69       | 0.69       | 0.46     | 0.46     | 98.1                         | 1.9                           | 100.0                | 0.96        |
| E    | 33B  | 10353 | 0.94       | 0.94       | 0.66     | 0.66     | 79.6                         | 20.1                          | 99.7                 | 0.76        |
| E    | 40A  | 10491 | 0.38       | 0.38       | 0.49     | 0.49     | 98.3                         | 1.7                           | 100.0                | 0.96        |
| E    | 40B  | 10270 | 0.53       | 0.54       | 0.58     | 0.58     | 83.5                         | 16.3                          | 99.8                 | 0.75        |
| E    | 47A  | 9764  | 0.37       | 0.37       | 0.48     | 0.48     | 92.6                         | 7.4                           | 100.0                | 0.84        |
| E    | 47B  | 9550  | 0.42       | 0.42       | 0.63     | 0.63     | 77.2                         | 22.1                          | 99.3                 | 0.70        |
| E    | 68A  | 10161 | 0.85       | 0.86       | 0.35     | 0.35     | 98.6                         | 1.4                           | 100.0                | 0.95        |
| E    | 68B  | 10051 | 1.25       | 1.25       | 0.73     | 0.74     | 79.8                         | 19.8                          | 99.6                 | 0.80        |
| E    | 74A  | 10169 | 0.21       | 0.21       | 0.41     | 0.41     | 98.6                         | 1.4                           | 100.0                | 0.96        |
| E    | 74B  | 10029 | 0.51       | 0.51       | 0.76     | 0.76     | 86.5                         | 13.2                          | 99.7                 | 0.88        |
| E    | 75A  | 10060 | 0.54       | 0.54       | 0.50     | 0.50     | 98.3                         | 1.7                           | 100.0                | 0.96        |
| E    | 75B  | 9996  | 0.91       | 0.91       | 0.78     | 0.78     | 83.5                         | 16.4                          | 99.8                 | 0.86        |
| F    | 33A  | 10373 | 0.82       | 0.82       | 0.39     | 0.39     | 97.1                         | 2.9                           | 100.0                | 0.91        |
| F    | 33B  | 10177 | 0.82       | 0.82       | 0.76     | 0.77     | 68.3                         | 29.9                          | 98.3                 | 0.73        |
| F    | 40A  | 9971  | 0.74       | 0.74       | 0.44     | 0.44     | 95.6                         | 4.4                           | 100.0                | 0.89        |
| F    | 40B  | 9780  | 0.68       | 0.69       | 0.70     | 0.71     | 72.3                         | 26.9                          | 99.1                 | 0.73        |
| F    | 47A  | 9715  | 0.45       | 0.45       | 0.50     | 0.50     | 98.7                         | 1.3                           | 100.0                | 0.98        |
| F    | 47B  | 9663  | 0.69       | 0.72       | 0.81     | 0.81     | 78.3                         | 20.7                          | 99.1                 | 0.81        |



Table B2 (cont.)  
 Rater Agreement for Mathematics Grade 4

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| F    | 60A  | 10154 | 0.36       | 0.35       | 0.48     | 0.48     | 98.6                         | 1.4                           | 100.0                | 0.96        |
| F    | 60B  | 10212 | 1.27       | 1.28       | 0.63     | 0.63     | 81.6                         | 18.1                          | 99.7                 | 0.74        |
| F    | 68B  | 9418  | 0.81       | 0.77       | 0.55     | 0.56     | 73.8                         | 25.6                          | 99.5                 | 0.53        |
| F    | 74B  | 9732  | 0.79       | 0.80       | 0.55     | 0.56     | 85.2                         | 14.6                          | 99.8                 | 0.78        |
| F    | 75A  | 9051  | 0.64       | 0.64       | 0.48     | 0.48     | 97.3                         | 2.7                           | 100.0                | 0.93        |
| F    | 75B  | 9490  | 0.83       | 0.83       | 0.69     | 0.70     | 72.6                         | 26.9                          | 99.4                 | 0.72        |

G1: Rater group 1      G2: Rater group 2

Table B3  
Rater Agreement for Mathematics Grade 5

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| 1    | 33A  | 28156 | 0.86       | 0.86       | 0.35     | 0.34     | 99.2                         | 0.8                           | 100.0                | 0.96        |
| 1    | 33B  | 34726 | 1.04       | 1.04       | 0.78     | 0.79     | 83.6                         | 15.7                          | 99.3                 | 0.85        |
| 1    | 40A  | 35185 | 0.51       | 0.51       | 0.50     | 0.50     | 99.0                         | 1.0                           | 100.0                | 0.98        |
| 1    | 40B  | 35538 | 1.25       | 1.25       | 1.25     | 1.25     | 77.0                         | 20.5                          | 97.5                 | 0.90        |
| 1    | 45A  | 35426 | 0.32       | 0.32       | 0.47     | 0.47     | 98.5                         | 1.5                           | 100.0                | 0.96        |
| 1    | 45B  | 34467 | 0.76       | 0.76       | 0.83     | 0.83     | 82.2                         | 16.2                          | 98.4                 | 0.84        |
| 1    | 53A  | 35591 | 0.70       | 0.70       | 0.46     | 0.46     | 95.0                         | 5.0                           | 100.0                | 0.89        |
| 1    | 53B  | 35467 | 1.10       | 1.10       | 0.85     | 0.85     | 85.6                         | 13.5                          | 99.1                 | 0.88        |
| 1    | 54A  | 35155 | 0.42       | 0.42       | 0.49     | 0.49     | 98.6                         | 1.4                           | 100.0                | 0.97        |
| 1    | 54B  | 34422 | 0.70       | 0.70       | 0.69     | 0.69     | 85.7                         | 14.0                          | 99.7                 | 0.84        |
| 1    | 71A  | 37272 | 0.89       | 0.89       | 0.31     | 0.31     | 98.5                         | 1.5                           | 100.0                | 0.92        |
| 1    | 71B  | 36687 | 0.66       | 0.66       | 0.73     | 0.74     | 73.1                         | 25.6                          | 98.6                 | 0.71        |
| 1    | 72A  | 36009 | 0.35       | 0.35       | 0.48     | 0.48     | 99.1                         | 0.9                           | 100.0                | 0.98        |
| 1    | 72B  | 35343 | 0.60       | 0.60       | 0.84     | 0.84     | 85.0                         | 14.3                          | 99.3                 | 0.88        |
| 1    | 76A  | 36078 | 0.41       | 0.41       | 0.49     | 0.49     | 97.9                         | 2.1                           | 100.0                | 0.95        |
| 1    | 76B  | 35441 | 0.76       | 0.76       | 0.84     | 0.85     | 76.6                         | 22.5                          | 99.2                 | 0.82        |
| 2    | 33A  | 24563 | 0.47       | 0.47       | 0.50     | 0.50     | 97.6                         | 2.4                           | 100.0                | 0.95        |
| 2    | 33B  | 24389 | 1.03       | 1.03       | 0.83     | 0.83     | 74.9                         | 24.5                          | 99.3                 | 0.80        |
| 2    | 40A  | 24363 | 0.79       | 0.79       | 0.41     | 0.41     | 98.8                         | 1.2                           | 100.0                | 0.96        |
| 2    | 40B  | 24012 | 1.89       | 1.89       | 1.13     | 1.13     | 73.3                         | 24.4                          | 97.8                 | 0.86        |
| 2    | 45A  | 23065 | 0.32       | 0.32       | 0.47     | 0.47     | 97.5                         | 2.5                           | 100.0                | 0.94        |
| 2    | 45B  | 22137 | 0.63       | 0.65       | 0.76     | 0.76     | 74.3                         | 24.8                          | 99.0                 | 0.75        |
| 2    | 53A  | 24105 | 0.38       | 0.38       | 0.48     | 0.48     | 98.6                         | 1.4                           | 100.0                | 0.97        |
| 2    | 53B  | 23766 | 0.93       | 0.93       | 0.83     | 0.83     | 81.7                         | 17.6                          | 99.3                 | 0.85        |

Table B3 (cont.)  
 Rater Agreement for Mathematics Grade 5

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| 2    | 54A  | 18500 | 0.17       | 0.17       | 0.37     | 0.37     | 98.2                         | 1.8                           | 100.0                | 0.93        |
| 2    | 54B  | 17872 | 0.71       | 0.71       | 0.74     | 0.74     | 86.7                         | 12.7                          | 99.4                 | 0.86        |
| 2    | 66A  | 24632 | 0.94       | 0.94       | 0.24     | 0.24     | 99.6                         | 0.4                           | 100.0                | 0.97        |
| 2    | 66B  | 24560 | 0.78       | 0.78       | 0.71     | 0.72     | 73.6                         | 24.5                          | 98.1                 | 0.68        |
| 2    | 72A  | 24200 | 0.51       | 0.51       | 0.50     | 0.50     | 99.2                         | 0.8                           | 100.0                | 0.98        |
| 2    | 72B  | 23879 | 0.82       | 0.82       | 0.87     | 0.88     | 83.9                         | 15.6                          | 99.5                 | 0.87        |
| 2    | 76A  | 24716 | 0.80       | 0.80       | 0.40     | 0.40     | 97.7                         | 2.3                           | 100.0                | 0.93        |
| 2    | 76B  | 24624 | 1.43       | 1.42       | 0.78     | 0.78     | 80.0                         | 18.5                          | 98.5                 | 0.80        |

G1: Rater group 1

G2: Rater group 2

Table B4  
 Rater Agreement for Mathematics Grade 6

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| A    | 40A  | 9983  | 0.51       | 0.50       | 0.50     | 0.50     | 95.3                         | 4.7                           | 100.0                | 0.91        |
| A    | 40B  | 9970  | 0.82       | 0.83       | 0.89     | 0.88     | 70.6                         | 27.3                          | 97.9                 | 0.77        |
| A    | 49A  | 10530 | 0.15       | 0.15       | 0.36     | 0.36     | 99.4                         | 0.6                           | 100.0                | 0.98        |
| A    | 49B  | 10250 | 0.48       | 0.48       | 0.69     | 0.69     | 88.4                         | 11.5                          | 99.9                 | 0.87        |
| A    | 58A  | 10309 | 0.25       | 0.25       | 0.43     | 0.43     | 99.2                         | 0.8                           | 100.0                | 0.98        |
| A    | 58B  | 10187 | 1.01       | 1.01       | 0.86     | 0.86     | 86.8                         | 11.4                          | 98.2                 | 0.87        |
| A    | 64A  | 10678 | 0.40       | 0.40       | 0.49     | 0.49     | 97.8                         | 2.2                           | 100.0                | 0.96        |
| A    | 64B  | 10563 | 0.94       | 0.94       | 0.71     | 0.71     | 81.1                         | 18.8                          | 99.8                 | 0.81        |
| A    | 69A  | 10525 | 0.58       | 0.58       | 0.49     | 0.49     | 99.4                         | 0.6                           | 100.0                | 0.99        |
| A    | 69B  | 10257 | 1.25       | 1.25       | 0.82     | 0.82     | 81.7                         | 17.7                          | 99.4                 | 0.85        |
| A    | 75A  | 10510 | 0.53       | 0.52       | 0.50     | 0.50     | 95.2                         | 4.8                           | 100.0                | 0.90        |
| A    | 75B  | 10257 | 0.92       | 0.93       | 0.65     | 0.66     | 78.0                         | 21.8                          | 99.8                 | 0.74        |
| A    | 81A  | 10312 | 0.34       | 0.34       | 0.47     | 0.47     | 98.2                         | 1.8                           | 100.0                | 0.96        |
| A    | 81B  | 9864  | 0.63       | 0.63       | 0.67     | 0.67     | 75.8                         | 23.9                          | 99.7                 | 0.72        |
| B    | 40A  | 10062 | 0.60       | 0.60       | 0.49     | 0.49     | 94.5                         | 5.5                           | 100.0                | 0.89        |
| B    | 40B  | 9965  | 1.25       | 1.24       | 0.98     | 0.98     | 67.3                         | 29.6                          | 96.9                 | 0.78        |
| B    | 49A  | 10138 | 0.09       | 0.09       | 0.29     | 0.29     | 99.4                         | 0.6                           | 100.0                | 0.97        |
| B    | 49B  | 9871  | 0.47       | 0.46       | 0.62     | 0.62     | 90.3                         | 9.7                           | 100.0                | 0.87        |
| B    | 58A  | 10609 | 0.70       | 0.70       | 0.46     | 0.46     | 97.1                         | 2.9                           | 100.0                | 0.93        |
| B    | 58B  | 10512 | 0.90       | 0.90       | 0.70     | 0.70     | 78.9                         | 20.4                          | 99.3                 | 0.77        |
| B    | 64A  | 9432  | 0.38       | 0.38       | 0.49     | 0.49     | 98.5                         | 1.5                           | 100.0                | 0.97        |
| B    | 64B  | 9167  | 0.41       | 0.42       | 0.73     | 0.73     | 87.6                         | 11.4                          | 99.0                 | 0.86        |
| B    | 69A  | 9825  | 0.35       | 0.35       | 0.48     | 0.48     | 99.4                         | 0.6                           | 100.0                | 0.99        |
| B    | 69B  | 9478  | 0.69       | 0.70       | 0.70     | 0.70     | 77.5                         | 22.1                          | 99.6                 | 0.76        |

Table B4 (cont.)  
 Rater Agreement for Mathematics Grade 6

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| B    | 75A  | 9359  | 0.83       | 0.84       | 0.37     | 0.37     | 99.3                         | 0.7                           | 100.0                | 0.98        |
| B    | 75B  | 10253 | 0.87       | 0.87       | 0.55     | 0.55     | 88.3                         | 11.6                          | 99.8                 | 0.79        |
| B    | 81A  | 10670 | 0.47       | 0.47       | 0.50     | 0.50     | 98.4                         | 1.6                           | 100.0                | 0.97        |
| B    | 81B  | 10275 | 0.82       | 0.81       | 0.78     | 0.78     | 82.2                         | 17.4                          | 99.6                 | 0.84        |
| C    | 40A  | 8631  | 0.40       | 0.40       | 0.49     | 0.49     | 95.5                         | 4.5                           | 100.0                | 0.91        |
| C    | 40B  | 8404  | 0.92       | 0.92       | 1.02     | 1.02     | 80.4                         | 19.1                          | 99.5                 | 0.90        |
| C    | 49A  | 10237 | 0.15       | 0.15       | 0.35     | 0.35     | 99.5                         | 0.5                           | 100.0                | 0.98        |
| C    | 49B  | 9940  | 0.54       | 0.53       | 0.69     | 0.69     | 88.1                         | 11.7                          | 99.9                 | 0.87        |
| C    | 58A  | 10190 | 0.40       | 0.40       | 0.49     | 0.49     | 99.1                         | 0.9                           | 100.0                | 0.98        |
| C    | 58B  | 10062 | 1.04       | 1.03       | 0.92     | 0.92     | 85.5                         | 13.0                          | 98.5                 | 0.89        |
| C    | 64A  | 10437 | 0.22       | 0.22       | 0.42     | 0.42     | 99.1                         | 0.9                           | 100.0                | 0.97        |
| C    | 64B  | 10251 | 1.02       | 1.02       | 0.74     | 0.74     | 84.6                         | 15.3                          | 99.9                 | 0.86        |
| C    | 69A  | 10079 | 0.39       | 0.39       | 0.49     | 0.49     | 99.3                         | 0.7                           | 100.0                | 0.99        |
| C    | 69B  | 9937  | 0.97       | 0.96       | 0.75     | 0.76     | 87.0                         | 12.8                          | 99.8                 | 0.88        |
| C    | 75A  | 10866 | 0.66       | 0.66       | 0.47     | 0.47     | 99.1                         | 0.9                           | 100.0                | 0.98        |
| C    | 75B  | 10712 | 0.99       | 0.98       | 0.71     | 0.71     | 87.5                         | 12.3                          | 99.8                 | 0.87        |
| C    | 81A  | 9946  | 0.07       | 0.07       | 0.25     | 0.25     | 98.4                         | 1.6                           | 100.0                | 0.87        |
| C    | 81B  | 9549  | 0.70       | 0.70       | 0.57     | 0.57     | 86.7                         | 13.1                          | 99.7                 | 0.78        |
| D    | 40A  | 10497 | 0.52       | 0.52       | 0.50     | 0.50     | 97.9                         | 2.1                           | 100.0                | 0.96        |
| D    | 40B  | 10164 | 1.14       | 1.14       | 0.99     | 1.00     | 66.2                         | 30.9                          | 97.0                 | 0.78        |
| D    | 58A  | 10302 | 0.55       | 0.55       | 0.50     | 0.50     | 98.9                         | 1.1                           | 100.0                | 0.98        |
| D    | 58B  | 10208 | 0.95       | 0.95       | 0.86     | 0.86     | 85.5                         | 13.5                          | 99.0                 | 0.88        |
| D    | 75A  | 10805 | 0.40       | 0.40       | 0.49     | 0.49     | 99.3                         | 0.7                           | 100.0                | 0.98        |
| D    | 75B  | 10678 | 0.94       | 0.95       | 0.58     | 0.58     | 86.0                         | 13.9                          | 99.9                 | 0.79        |

Table B4 (cont.)  
 Rater Agreement for Mathematics Grade 6

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| D    | 81A  | 9977  | 0.51       | 0.51       | 0.50     | 0.50     | 98.4                         | 1.6                           | 100.0                | 0.97        |
| D    | 81B  | 9744  | 0.85       | 0.86       | 0.54     | 0.54     | 88.1                         | 11.5                          | 99.6                 | 0.77        |
| E    | 40A  | 9679  | 0.61       | 0.61       | 0.49     | 0.49     | 92.4                         | 7.6                           | 100.0                | 0.84        |
| E    | 40B  | 9567  | 1.22       | 1.22       | 0.98     | 0.98     | 72.1                         | 25.6                          | 97.8                 | 0.82        |
| E    | 49A  | 9841  | 0.11       | 0.11       | 0.31     | 0.31     | 99.0                         | 1.0                           | 100.0                | 0.95        |
| E    | 49B  | 9529  | 0.63       | 0.63       | 0.63     | 0.63     | 86.8                         | 13.1                          | 99.9                 | 0.83        |
| E    | 58A  | 9510  | 0.28       | 0.28       | 0.45     | 0.45     | 97.6                         | 2.4                           | 100.0                | 0.94        |
| E    | 58B  | 9310  | 0.40       | 0.40       | 0.63     | 0.63     | 82.1                         | 17.5                          | 99.5                 | 0.75        |
| E    | 64A  | 10469 | 0.40       | 0.40       | 0.49     | 0.49     | 97.4                         | 2.6                           | 100.0                | 0.95        |
| E    | 64B  | 10238 | 0.70       | 0.70       | 0.84     | 0.84     | 81.7                         | 17.4                          | 99.1                 | 0.85        |
| E    | 75A  | 9601  | 0.90       | 0.90       | 0.29     | 0.30     | 99.3                         | 0.7                           | 100.0                | 0.96        |
| E    | 75B  | 10301 | 0.91       | 0.92       | 0.47     | 0.47     | 92.4                         | 7.5                           | 100.0                | 0.82        |
| E    | 81A  | 9862  | 0.28       | 0.28       | 0.45     | 0.45     | 98.5                         | 1.5                           | 100.0                | 0.96        |
| E    | 81B  | 9529  | 0.45       | 0.45       | 0.63     | 0.63     | 78.2                         | 21.2                          | 99.4                 | 0.71        |
| F    | 49A  | 10091 | 0.59       | 0.59       | 0.49     | 0.49     | 99.1                         | 0.9                           | 100.0                | 0.98        |
| F    | 49B  | 9909  | 1.12       | 1.12       | 0.92     | 0.92     | 92.7                         | 6.9                           | 99.5                 | 0.95        |
| F    | 58A  | 10281 | 0.30       | 0.31       | 0.46     | 0.46     | 97.8                         | 2.2                           | 100.0                | 0.95        |
| F    | 58B  | 10135 | 0.93       | 0.94       | 0.77     | 0.77     | 82.9                         | 16.8                          | 99.7                 | 0.85        |
| F    | 64A  | 10343 | 0.44       | 0.44       | 0.50     | 0.50     | 97.1                         | 2.9                           | 100.0                | 0.94        |
| F    | 64B  | 10247 | 1.00       | 0.99       | 0.74     | 0.74     | 73.8                         | 25.5                          | 99.3                 | 0.74        |
| F    | 69A  | 9640  | 0.48       | 0.48       | 0.50     | 0.50     | 97.4                         | 2.6                           | 100.0                | 0.95        |
| F    | 69B  | 9384  | 0.77       | 0.77       | 0.74     | 0.75     | 73.9                         | 25.3                          | 99.2                 | 0.74        |
| F    | 75A  | 10500 | 0.41       | 0.41       | 0.49     | 0.49     | 99.0                         | 1.0                           | 100.0                | 0.98        |
| F    | 75B  | 10163 | 0.83       | 0.83       | 0.85     | 0.85     | 82.7                         | 16.4                          | 99.1                 | 0.86        |

Table B4 (cont.)  
 Rater Agreement for Mathematics Grade 6

| Form | Item | N    | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| F    | 81A  | 9772 | 0.07       | 0.07       | 0.25     | 0.25     | 97.8                         | 2.2                           | 100.0                | 0.82        |
| F    | 81B  | 9366 | 0.62       | 0.63       | 0.60     | 0.59     | 72.1                         | 27.4                          | 99.6                 | 0.59        |

G1: Rater group 1      G2: Rater group 2

Table B5  
Rater Agreement for Mathematics Grade 7

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| A    | 42A  | 9955  | 0.47       | 0.47       | 0.50     | 0.50     | 95.7                         | 4.3                           | 100.0                | 0.91        |
| A    | 42B  | 9793  | 0.28       | 0.29       | 0.52     | 0.53     | 85.7                         | 14.1                          | 99.8                 | 0.73        |
| A    | 43A  | 10124 | 0.43       | 0.43       | 0.50     | 0.50     | 98.6                         | 1.4                           | 100.0                | 0.97        |
| A    | 43B  | 10020 | 0.99       | 0.98       | 0.80     | 0.80     | 71.9                         | 27.2                          | 99.2                 | 0.76        |
| A    | 53A  | 7730  | 0.27       | 0.27       | 0.44     | 0.44     | 94.8                         | 5.2                           | 100.0                | 0.87        |
| A    | 53B  | 8133  | 0.47       | 0.47       | 0.67     | 0.68     | 74.1                         | 24.9                          | 98.9                 | 0.68        |
| A    | 63A  | 10855 | 0.61       | 0.61       | 0.49     | 0.49     | 97.1                         | 2.9                           | 100.0                | 0.94        |
| A    | 63B  | 10685 | 1.55       | 1.56       | 0.82     | 0.81     | 82.2                         | 16.4                          | 98.6                 | 0.83        |
| A    | 68A  | 9336  | 0.33       | 0.33       | 0.47     | 0.47     | 94.5                         | 5.5                           | 100.0                | 0.87        |
| A    | 68B  | 8913  | 1.05       | 1.05       | 0.69     | 0.69     | 74.7                         | 25.1                          | 99.8                 | 0.73        |
| A    | 76A  | 9938  | 0.48       | 0.48       | 0.50     | 0.50     | 98.1                         | 1.9                           | 100.0                | 0.96        |
| A    | 76B  | 9829  | 0.90       | 0.90       | 0.69     | 0.70     | 70.8                         | 29.0                          | 99.8                 | 0.69        |
| A    | 81A  | 9987  | 0.14       | 0.14       | 0.35     | 0.35     | 97.3                         | 2.7                           | 100.0                | 0.89        |
| A    | 81B  | 9647  | 0.95       | 0.95       | 0.90     | 0.89     | 70.9                         | 28.0                          | 98.8                 | 0.80        |
| B    | 42A  | 11162 | 0.57       | 0.57       | 0.49     | 0.49     | 99.1                         | 0.9                           | 100.0                | 0.98        |
| B    | 42B  | 10944 | 1.30       | 1.30       | 0.83     | 0.83     | 87.0                         | 12.8                          | 99.8                 | 0.90        |
| B    | 43A  | 10783 | 0.59       | 0.59       | 0.49     | 0.49     | 97.2                         | 2.8                           | 100.0                | 0.94        |
| B    | 43B  | 10512 | 1.25       | 1.25       | 0.82     | 0.82     | 79.5                         | 20.0                          | 99.5                 | 0.83        |
| B    | 53A  | 8736  | 0.29       | 0.29       | 0.46     | 0.45     | 97.7                         | 2.3                           | 100.0                | 0.94        |
| B    | 53B  | 8241  | 0.58       | 0.57       | 0.88     | 0.87     | 78.2                         | 20.2                          | 98.4                 | 0.82        |
| B    | 63A  | 10949 | 0.38       | 0.38       | 0.49     | 0.49     | 98.3                         | 1.7                           | 100.0                | 0.97        |
| B    | 63B  | 10400 | 1.47       | 1.46       | 1.05     | 1.05     | 87.7                         | 11.4                          | 99.0                 | 0.93        |
| B    | 68A  | 10144 | 0.40       | 0.40       | 0.49     | 0.49     | 94.3                         | 5.7                           | 100.0                | 0.88        |
| B    | 68B  | 9825  | 1.24       | 1.24       | 0.74     | 0.74     | 82.8                         | 16.4                          | 99.2                 | 0.82        |



Table B5 (cont.)  
 Rater Agreement for Mathematics Grade 7

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| B    | 76A  | 8621  | 0.14       | 0.14       | 0.35     | 0.35     | 96.0                         | 4.0                           | 100.0                | 0.84        |
| B    | 76B  | 8527  | 0.52       | 0.52       | 0.51     | 0.51     | 88.4                         | 11.6                          | 100.0                | 0.77        |
| C    | 42A  | 10587 | 0.32       | 0.32       | 0.47     | 0.47     | 98.5                         | 1.5                           | 100.0                | 0.97        |
| C    | 42B  | 10292 | 0.77       | 0.77       | 0.69     | 0.69     | 77.7                         | 21.5                          | 99.2                 | 0.74        |
| C    | 43A  | 10265 | 0.40       | 0.40       | 0.49     | 0.49     | 99.3                         | 0.7                           | 100.0                | 0.99        |
| C    | 43B  | 10012 | 1.02       | 1.02       | 0.85     | 0.85     | 84.2                         | 14.7                          | 99.0                 | 0.87        |
| C    | 53A  | 9631  | 0.56       | 0.56       | 0.50     | 0.50     | 94.1                         | 5.9                           | 100.0                | 0.88        |
| C    | 53B  | 9276  | 1.07       | 1.08       | 0.92     | 0.91     | 65.1                         | 33.0                          | 98.1                 | 0.76        |
| C    | 63A  | 10916 | 0.62       | 0.62       | 0.48     | 0.48     | 98.5                         | 1.5                           | 100.0                | 0.97        |
| C    | 63B  | 10725 | 1.76       | 1.76       | 0.87     | 0.87     | 80.7                         | 17.4                          | 98.1                 | 0.83        |
| C    | 68A  | 10287 | 0.44       | 0.44       | 0.50     | 0.50     | 93.0                         | 7.0                           | 100.0                | 0.86        |
| C    | 68B  | 9941  | 0.33       | 0.34       | 0.51     | 0.51     | 83.6                         | 16.1                          | 99.7                 | 0.67        |
| C    | 76A  | 10385 | 0.28       | 0.28       | 0.45     | 0.45     | 99.6                         | 0.4                           | 100.0                | 0.99        |
| C    | 76B  | 10008 | 0.88       | 0.88       | 0.79     | 0.79     | 91.4                         | 8.5                           | 99.9                 | 0.93        |
| C    | 81A  | 10345 | 0.49       | 0.49       | 0.50     | 0.50     | 93.3                         | 6.7                           | 100.0                | 0.87        |
| C    | 81B  | 10075 | 1.65       | 1.65       | 1.12     | 1.11     | 77.7                         | 21.2                          | 98.8                 | 0.90        |
| D    | 42A  | 9910  | 0.46       | 0.46       | 0.50     | 0.50     | 98.0                         | 2.0                           | 100.0                | 0.96        |
| D    | 42B  | 9707  | 1.02       | 1.03       | 0.76     | 0.76     | 74.7                         | 24.7                          | 99.5                 | 0.77        |
| D    | 53A  | 6573  | 0.20       | 0.21       | 0.40     | 0.41     | 93.5                         | 6.5                           | 100.0                | 0.81        |
| D    | 53B  | 6890  | 0.57       | 0.57       | 0.84     | 0.86     | 83.8                         | 14.8                          | 98.5                 | 0.86        |
| D    | 63A  | 10813 | 0.54       | 0.54       | 0.50     | 0.50     | 98.4                         | 1.6                           | 100.0                | 0.97        |
| D    | 63B  | 10614 | 1.66       | 1.67       | 0.87     | 0.87     | 75.9                         | 22.6                          | 98.6                 | 0.81        |
| D    | 76A  | 10508 | 0.40       | 0.40       | 0.49     | 0.49     | 99.0                         | 1.0                           | 100.0                | 0.98        |
| D    | 76B  | 10112 | 0.69       | 0.70       | 0.59     | 0.60     | 89.3                         | 10.7                          | 100.0                | 0.85        |

Table B5 (cont.)  
Rater Agreement for Mathematics Grade 7

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| E    | 42A  | 10910 | 0.64       | 0.64       | 0.48     | 0.48     | 99.5                         | 0.5                           | 100.0                | 0.99        |
| E    | 42B  | 10734 | 1.43       | 1.43       | 0.81     | 0.81     | 91.9                         | 7.8                           | 99.7                 | 0.93        |
| E    | 43A  | 10693 | 0.67       | 0.67       | 0.47     | 0.47     | 98.3                         | 1.7                           | 100.0                | 0.96        |
| E    | 43B  | 10560 | 1.44       | 1.44       | 0.76     | 0.76     | 85.7                         | 13.7                          | 99.5                 | 0.86        |
| E    | 53A  | 7431  | 0.23       | 0.23       | 0.42     | 0.42     | 98.3                         | 1.7                           | 100.0                | 0.95        |
| E    | 53B  | 7687  | 0.27       | 0.28       | 0.52     | 0.52     | 82.9                         | 16.7                          | 99.5                 | 0.66        |
| E    | 68A  | 9401  | 0.24       | 0.24       | 0.42     | 0.42     | 97.4                         | 2.6                           | 100.0                | 0.93        |
| E    | 68B  | 8987  | 0.97       | 0.97       | 0.75     | 0.74     | 85.8                         | 13.9                          | 99.7                 | 0.86        |
| E    | 76A  | 10179 | 0.23       | 0.23       | 0.42     | 0.42     | 98.7                         | 1.3                           | 100.0                | 0.96        |
| E    | 76B  | 9798  | 0.64       | 0.64       | 0.54     | 0.54     | 86.1                         | 13.9                          | 99.9                 | 0.75        |
| F    | 42A  | 10700 | 0.62       | 0.62       | 0.49     | 0.49     | 98.8                         | 1.2                           | 100.0                | 0.97        |
| F    | 42B  | 10495 | 1.10       | 1.10       | 0.67     | 0.67     | 91.3                         | 8.5                           | 99.8                 | 0.90        |
| F    | 43A  | 10289 | 0.36       | 0.36       | 0.48     | 0.48     | 99.4                         | 0.6                           | 100.0                | 0.99        |
| F    | 43B  | 9765  | 0.67       | 0.67       | 0.68     | 0.68     | 85.4                         | 13.9                          | 99.3                 | 0.82        |
| F    | 53A  | 6516  | 0.21       | 0.22       | 0.41     | 0.41     | 95.3                         | 4.7                           | 100.0                | 0.86        |
| F    | 53B  | 7083  | 0.59       | 0.60       | 0.86     | 0.86     | 83.4                         | 15.5                          | 98.9                 | 0.87        |
| F    | 76A  | 9668  | 0.10       | 0.10       | 0.30     | 0.30     | 96.7                         | 3.3                           | 100.0                | 0.82        |
| F    | 76B  | 9828  | 1.00       | 1.01       | 0.73     | 0.73     | 73.7                         | 25.1                          | 98.8                 | 0.72        |

G1: Rater group 1      G2: Rater group 2

Table B6  
Rater Agreement for Mathematics Grade 8

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| 1    | 37A  | 34575 | 0.60       | 0.60       | 0.49     | 0.49     | 98.8                         | 1.2                           | 100.0                | 0.97        |
| 1    | 37B  | 33403 | 1.48       | 1.48       | 1.10     | 1.10     | 83.8                         | 14.5                          | 98.3                 | 0.91        |
| 1    | 42A  | 32793 | 0.49       | 0.49       | 0.50     | 0.50     | 98.4                         | 1.6                           | 100.0                | 0.97        |
| 1    | 42B  | 31450 | 0.67       | 0.67       | 0.68     | 0.68     | 82.3                         | 17.3                          | 99.6                 | 0.80        |
| 1    | 47A  | 31792 | 0.44       | 0.44       | 0.50     | 0.50     | 86.6                         | 13.4                          | 100.0                | 0.73        |
| 1    | 47B  | 28726 | 0.84       | 0.84       | 0.80     | 0.80     | 80.7                         | 18.3                          | 99.0                 | 0.83        |
| 1    | 54A  | 34058 | 0.61       | 0.60       | 0.49     | 0.49     | 98.1                         | 1.9                           | 100.0                | 0.96        |
| 1    | 54B  | 33298 | 0.95       | 0.95       | 0.92     | 0.92     | 74.7                         | 23.5                          | 98.2                 | 0.82        |
| 1    | 64A  | 33206 | 0.48       | 0.48       | 0.50     | 0.50     | 98.9                         | 1.1                           | 100.0                | 0.98        |
| 1    | 64B  | 32825 | 1.28       | 1.28       | 0.72     | 0.72     | 85.5                         | 14.1                          | 99.6                 | 0.85        |
| 1    | 65A  | 28994 | 0.44       | 0.44       | 0.50     | 0.50     | 99.2                         | 0.8                           | 100.0                | 0.98        |
| 1    | 65B  | 27764 | 1.08       | 1.08       | 0.92     | 0.92     | 86.0                         | 13.0                          | 99.0                 | 0.90        |
| 1    | 71A  | 35972 | 0.20       | 0.20       | 0.40     | 0.40     | 99.6                         | 0.4                           | 100.0                | 0.99        |
| 1    | 71B  | 35337 | 0.54       | 0.54       | 0.78     | 0.78     | 88.6                         | 11.3                          | 99.9                 | 0.90        |
| 1    | 76A  | 34750 | 0.31       | 0.31       | 0.46     | 0.46     | 98.9                         | 1.1                           | 100.0                | 0.98        |
| 1    | 76B  | 33854 | 0.95       | 0.96       | 0.76     | 0.76     | 77.6                         | 22.1                          | 99.7                 | 0.79        |
| 2    | 37A  | 23073 | 0.60       | 0.60       | 0.49     | 0.49     | 98.6                         | 1.4                           | 100.0                | 0.97        |
| 2    | 37B  | 22277 | 1.47       | 1.47       | 1.11     | 1.11     | 83.3                         | 15.2                          | 98.6                 | 0.91        |
| 2    | 42A  | 21926 | 0.49       | 0.49       | 0.50     | 0.50     | 98.8                         | 1.2                           | 100.0                | 0.98        |
| 2    | 42B  | 21087 | 0.73       | 0.73       | 0.74     | 0.74     | 78.0                         | 21.3                          | 99.3                 | 0.79        |
| 2    | 48A  | 19497 | 0.33       | 0.33       | 0.47     | 0.47     | 99.3                         | 0.7                           | 100.0                | 0.99        |
| 2    | 48B  | 17972 | 0.50       | 0.50       | 0.76     | 0.76     | 85.4                         | 14.0                          | 99.4                 | 0.86        |
| 2    | 55A  | 24215 | 0.39       | 0.39       | 0.49     | 0.49     | 87.7                         | 12.3                          | 100.0                | 0.74        |
| 2    | 55B  | 22718 | 0.78       | 0.78       | 0.68     | 0.68     | 78.3                         | 21.4                          | 99.6                 | 0.75        |

Table B6 (cont.)  
 Rater Agreement for Mathematics Grade 8

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| 2    | 58A  | 22350 | 0.57       | 0.57       | 0.50     | 0.50     | 98.8                         | 1.2                           | 100.0                | 0.98        |
| 2    | 58B  | 22154 | 1.34       | 1.34       | 0.83     | 0.83     | 83.8                         | 15.6                          | 99.4                 | 0.87        |
| 2    | 65A  | 20819 | 0.50       | 0.50       | 0.50     | 0.50     | 99.1                         | 0.9                           | 100.0                | 0.98        |
| 2    | 65B  | 20351 | 1.26       | 1.25       | 0.74     | 0.74     | 85.9                         | 13.8                          | 99.7                 | 0.86        |
| 2    | 70A  | 23776 | 0.20       | 0.20       | 0.40     | 0.40     | 99.6                         | 0.4                           | 100.0                | 0.99        |
| 2    | 70B  | 23305 | 0.54       | 0.54       | 0.76     | 0.76     | 87.5                         | 12.4                          | 99.9                 | 0.89        |
| 2    | 76A  | 23567 | 0.66       | 0.66       | 0.48     | 0.48     | 98.2                         | 1.8                           | 100.0                | 0.96        |
| 2    | 76B  | 22848 | 1.34       | 1.34       | 0.74     | 0.74     | 78.7                         | 20.9                          | 99.6                 | 0.79        |

G1: Rater group 1

G2: Rater group 2

Table B7  
Rater Agreement for Reading Grade 10

| Form | Item | N     | Mean of G1 | Mean of G2 | SD of G1 | SD of G2 | Percent of Perfect Agreement | Percent of Adjacent Agreement | Percent of Agreement | Correlation |
|------|------|-------|------------|------------|----------|----------|------------------------------|-------------------------------|----------------------|-------------|
| 1    | 63   | 37629 | 1.57       | 1.57       | 0.76     | 0.77     | 59.6                         | 38.4                          | 98.0                 | 0.59        |
| 1    | 69   | 31527 | 1.35       | 1.35       | 0.91     | 0.91     | 63.4                         | 34.9                          | 98.3                 | 0.74        |
| 1    | 75   | 35801 | 1.65       | 1.65       | 0.77     | 0.77     | 60.3                         | 38.1                          | 98.3                 | 0.62        |
| 1    | 79   | 35021 | 1.71       | 1.70       | 0.73     | 0.73     | 66.0                         | 33.2                          | 99.3                 | 0.65        |
| 2    | 63   | 18872 | 1.82       | 1.82       | 0.70     | 0.71     | 66.9                         | 32.3                          | 99.1                 | 0.63        |
| 2    | 69   | 18333 | 1.72       | 1.73       | 0.75     | 0.75     | 64.1                         | 34.7                          | 98.7                 | 0.64        |
| 2    | 78   | 18639 | 1.69       | 1.70       | 0.70     | 0.69     | 63.6                         | 35.0                          | 98.6                 | 0.57        |
| 2    | 79   | 17111 | 1.63       | 1.64       | 0.82     | 0.81     | 60.1                         | 36.9                          | 97.0                 | 0.61        |

G1: Rater group 1

G2: Rater group 2

Table B8  
The CR Item Distribution for Mathematics Grade 3

| FORM | ITEMNO | N     | OMIT | Code B | 0     | 1     | 2     | % OMIT |
|------|--------|-------|------|--------|-------|-------|-------|--------|
| 1    | 31A    | 36521 | 219  | 35     | 4903  | 31364 | .     | 0.6    |
|      | 31B    | 36521 | 562  | 309    | 15304 | 8135  | 12211 | 1.5    |
|      | 37A    | 36521 | 856  | 9      | 5685  | 29971 | .     | 2.3    |
|      | 37B    | 36521 | 791  | 340    | 7720  | 11868 | 15802 | 2.2    |
|      | 44A    | 36521 | 1190 | 69     | 12416 | 22846 | .     | 3.3    |
|      | 44B    | 36521 | 1212 | 460    | 9063  | 9976  | 15810 | 3.3    |
|      | 56A    | 36521 | 619  | 60     | 5502  | 30340 | .     | 1.7    |
|      | 56B    | 36521 | 641  | 315    | 7334  | 9948  | 18283 | 1.8    |
|      | 61A    | 36521 | 503  | 97     | 6275  | 29646 | .     | 1.4    |
|      | 61B    | 36521 | 875  | 416    | 4931  | 12879 | 17420 | 2.4    |
|      | 69A    | 36521 | 421  | 90     | 3843  | 32167 | .     | 1.2    |
|      | 69B    | 36521 | 727  | 383    | 9832  | 22580 | 2999  | 2.0    |
|      | 74A    | 36521 | 422  | 181    | 9604  | 26314 | .     | 1.2    |
|      | 74B    | 36521 | 629  | 465    | 8947  | 11404 | 15076 | 1.7    |
| 2    | 31A    | 24296 | 227  | 65     | 5473  | 18531 | .     | 0.9    |
|      | 31B    | 24296 | 499  | 235    | 5368  | 14095 | 4099  | 2.1    |
|      | 37A    | 24296 | 213  | 20     | 1167  | 22896 | .     | 0.9    |
|      | 37B    | 24296 | 388  | 180    | 5200  | 10003 | 8525  | 1.6    |
|      | 44A    | 24296 | 845  | 33     | 8240  | 15178 | .     | 3.5    |
|      | 44B    | 24296 | 839  | 326    | 4855  | 7535  | 10741 | 3.5    |
|      | 56A    | 24296 | 211  | 41     | 6684  | 17360 | .     | 0.9    |
|      | 56B    | 24296 | 402  | 228    | 5844  | 9502  | 8320  | 1.7    |
|      | 61A    | 24296 | 216  | 18     | 2623  | 21439 | .     | 0.9    |
|      | 61B    | 24296 | 406  | 205    | 6788  | 14682 | 2215  | 1.7    |
|      | 69A    | 24296 | 317  | 64     | 2266  | 21649 | .     | 1.3    |
|      | 69B    | 24296 | 502  | 290    | 6178  | 14492 | 2834  | 2.1    |
|      | 74A    | 24296 | 544  | 151    | 13462 | 10139 | .     | 2.2    |
|      | 74B    | 24296 | 760  | 423    | 7352  | 11846 | 3915  | 3.1    |

Table B9  
The CR Item Distribution for Mathematics Grade 4

| FORM | ITEMNO | N     | OMIT | Code B | 0    | 1    | 2    | % OMIT |
|------|--------|-------|------|--------|------|------|------|--------|
| A    | 33A    | 11201 | 93   | 18     | 1167 | 9923 | .    | 0.8    |
|      | 33B    | 11201 | 262  | 114    | 3963 | 5776 | 1086 | 2.3    |
|      | 40A    | 11201 | 221  | 36     | 2841 | 8103 | .    | 2.0    |
|      | 40B    | 11201 | 364  | 141    | 4755 | 3250 | 2691 | 3.3    |
|      | 47A    | 11201 | 775  | 171    | 6145 | 4110 | .    | 6.9    |
|      | 47B    | 11201 | 847  | 260    | 3915 | 3947 | 2232 | 7.6    |
|      | 60A    | 11201 | 220  | 54     | 6603 | 4324 | .    | 2.0    |
|      | 60B    | 11201 | 331  | 116    | 1675 | 6174 | 2905 | 3.0    |
|      | 68A    | 11201 | 765  | 140    | 7343 | 2953 | .    | 6.8    |
|      | 68B    | 11201 | 888  | 215    | 2266 | 4536 | 3296 | 7.9    |
|      | 74A    | 11201 | 213  | 89     | 5648 | 5251 | .    | 1.9    |
|      | 74B    | 11201 | 293  | 150    | 2177 | 4993 | 3588 | 2.6    |
|      | 75A    | 11201 | 357  | 113    | 9349 | 1382 | .    | 3.2    |
|      | 75B    | 11201 | 491  | 218    | 4842 | 4735 | 915  | 4.4    |
| B    | 33A    | 10962 | 127  | 21     | 3279 | 7535 | .    | 1.2    |
|      | 33B    | 10962 | 170  | 57     | 1436 | 6824 | 2475 | 1.6    |
|      | 40A    | 10962 | 215  | 21     | 7627 | 3099 | .    | 2.0    |
|      | 40B    | 10962 | 435  | 90     | 4224 | 4608 | 1605 | 4.0    |
|      | 47A    | 10962 | 762  | 139    | 8317 | 1744 | .    | 7.0    |
|      | 47B    | 10962 | 831  | 225    | 5745 | 2880 | 1281 | 7.6    |
|      | 68A    | 10962 | 708  | 81     | 5813 | 4360 | .    | 6.5    |
|      | 68B    | 10962 | 836  | 166    | 4872 | 2160 | 2928 | 7.6    |
|      | 74A    | 10962 | 230  | 77     | 5961 | 4694 | .    | 2.1    |
|      | 74B    | 10962 | 276  | 120    | 2155 | 5288 | 3123 | 2.5    |
|      | 75A    | 10962 | 505  | 143    | 7118 | 3196 | .    | 4.6    |
|      | 75B    | 10962 | 567  | 227    | 4415 | 3457 | 2296 | 5.2    |
| C    | 33A    | 10881 | 102  | 47     | 1827 | 8905 | .    | 0.9    |
|      | 33B    | 10881 | 198  | 90     | 4177 | 4966 | 1450 | 1.8    |
|      | 40A    | 10881 | 198  | 45     | 3283 | 7355 | .    | 1.8    |
|      | 40B    | 10881 | 295  | 110    | 4650 | 3398 | 2428 | 2.7    |
|      | 47A    | 10881 | 693  | 69     | 4994 | 5125 | .    | 6.4    |
|      | 47B    | 10881 | 846  | 196    | 4806 | 3942 | 1091 | 7.8    |
|      | 60A    | 10881 | 329  | 49     | 5623 | 4880 | .    | 3.0    |
|      | 60B    | 10881 | 427  | 96     | 4586 | 3742 | 2030 | 3.9    |
|      | 68A    | 10881 | 477  | 43     | 4163 | 6198 | .    | 4.4    |
|      | 68B    | 10881 | 542  | 104    | 2938 | 3918 | 3379 | 5.0    |
|      | 74A    | 10881 | 155  | 17     | 6410 | 4299 | .    | 1.4    |
|      | 74B    | 10881 | 227  | 47     | 3671 | 5424 | 1512 | 2.1    |
|      | 75A    | 10881 | 211  | 20     | 7125 | 3525 | .    | 1.9    |
| 75B  | 10881  | 273   | 44   | 2128   | 6881 | 1555 | 2.5  |        |

Table B9 (cont.)  
The CR Item Distribution for Mathematics Grade 4

| FORM | ITEMNO | N     | OMIT | Code B | 0    | 1    | 2    | % OMIT |
|------|--------|-------|------|--------|------|------|------|--------|
| D    | 33A    | 10778 | 129  | 35     | 717  | 9897 | .    | 1.2    |
|      | 33B    | 10778 | 297  | 122    | 5103 | 4058 | 1198 | 2.8    |
|      | 40A    | 10778 | 160  | 25     | 6614 | 3979 | .    | 1.5    |
|      | 40B    | 10778 | 351  | 95     | 4911 | 4755 | 666  | 3.3    |
|      | 47A    | 10778 | 663  | 87     | 6338 | 3690 | .    | 6.2    |
|      | 47B    | 10778 | 750  | 174    | 4942 | 4666 | 246  | 7.0    |
|      | 60A    | 10778 | 160  | 11     | 4080 | 6527 | .    | 1.5    |
|      | 60B    | 10778 | 121  | 40     | 444  | 9781 | 392  | 1.1    |
|      | 68A    | 10778 | 575  | 41     | 4533 | 5629 | .    | 5.3    |
|      | 68B    | 10778 | 653  | 130    | 5077 | 2250 | 2668 | 6.1    |
|      | 74A    | 10778 | 189  | 30     | 3433 | 7126 | .    | 1.8    |
|      | 74B    | 10778 | 223  | 91     | 3115 | 3714 | 3635 | 2.1    |
|      | 75A    | 10778 | 204  | 32     | 4714 | 5828 | .    | 1.9    |
|      | 75B    | 10778 | 242  | 104    | 3218 | 6692 | 522  | 2.3    |
| E    | 33A    | 10649 | 147  | 52     | 3079 | 7371 | .    | 1.4    |
|      | 33B    | 10649 | 207  | 68     | 2116 | 5666 | 2592 | 1.9    |
|      | 40A    | 10649 | 127  | 17     | 6376 | 4129 | .    | 1.2    |
|      | 40B    | 10649 | 277  | 73     | 4558 | 5093 | 648  | 2.6    |
|      | 47A    | 10649 | 742  | 104    | 5779 | 4024 | .    | 7.0    |
|      | 47B    | 10649 | 840  | 205    | 5539 | 2997 | 1068 | 7.9    |
|      | 68A    | 10649 | 453  | 27     | 1395 | 8774 | .    | 4.3    |
|      | 68B    | 10649 | 511  | 74     | 1564 | 3374 | 5126 | 4.8    |
|      | 74A    | 10649 | 370  | 84     | 7946 | 2249 | .    | 3.5    |
|      | 74B    | 10649 | 454  | 121    | 6146 | 2002 | 1926 | 4.3    |
|      | 75A    | 10649 | 453  | 81     | 4569 | 5546 | .    | 4.3    |
| 75B  | 10649  | 462   | 119  | 3011   | 4139 | 2918 | 4.3  |        |
| F    | 33A    | 10542 | 128  | 30     | 1766 | 8618 | .    | 1.2    |
|      | 33B    | 10542 | 253  | 90     | 3999 | 4104 | 2096 | 2.4    |
|      | 40A    | 10542 | 434  | 100    | 2621 | 7387 | .    | 4.1    |
|      | 40B    | 10542 | 570  | 156    | 3870 | 4472 | 1474 | 5.4    |
|      | 47A    | 10542 | 684  | 109    | 5116 | 4633 | .    | 6.5    |
|      | 47B    | 10542 | 710  | 137    | 4639 | 2339 | 2717 | 6.7    |
|      | 60A    | 10542 | 312  | 52     | 6942 | 3236 | .    | 3.0    |
|      | 60B    | 10542 | 254  | 51     | 564  | 5886 | 3787 | 2.4    |
|      | 68B    | 10542 | 894  | 108    | 1844 | 6694 | 1002 | 8.5    |
|      | 74B    | 10542 | 634  | 117    | 2860 | 5921 | 1010 | 6.0    |
|      | 75A    | 10542 | 1390 | 36     | 3209 | 5907 | .    | 13.2   |
| 75B  | 10542  | 812   | 164  | 2871   | 4720 | 1975 | 7.7  |        |



Table B10  
The CR Item Distribution for Mathematics Grade 5

| FORM | ITEMNO | N     | OMIT | Code B | 0     | 1     | 2     | 3     | % OMIT |
|------|--------|-------|------|--------|-------|-------|-------|-------|--------|
| 1    | 33A    | 38022 | 8847 | 126    | 3913  | 25136 | .     | .     | 23.3   |
|      | 33B    | 38022 | 2378 | 580    | 8830  | 13089 | 13145 | .     | 6.3    |
|      | 40A    | 38022 | 2621 | 90     | 16840 | 18471 | .     | .     | 6.9    |
|      | 40B    | 38022 | 1837 | 434    | 14255 | 5149  | 6169  | 10178 | 4.8    |
|      | 45A    | 38022 | 2290 | 187    | 24194 | 11351 | .     | .     | 6.0    |
|      | 45B    | 38022 | 2866 | 477    | 15003 | 10729 | 8947  | .     | 7.5    |
|      | 53A    | 38022 | 1710 | 378    | 9976  | 25958 | .     | .     | 4.5    |
|      | 53B    | 38022 | 1847 | 429    | 10319 | 9438  | 15989 | .     | 4.9    |
|      | 54A    | 38022 | 2547 | 191    | 19880 | 15404 | .     | .     | 6.7    |
|      | 54B    | 38022 | 2928 | 428    | 13301 | 15249 | 6116  | .     | 7.7    |
|      | 71A    | 38022 | 620  | 81     | 3569  | 33752 | .     | .     | 1.6    |
|      | 71B    | 38022 | 931  | 258    | 15242 | 14209 | 7382  | .     | 2.5    |
|      | 72A    | 38022 | 1458 | 275    | 23663 | 12626 | .     | .     | 3.8    |
|      | 72B    | 38022 | 1829 | 523    | 21116 | 5182  | 9372  | .     | 4.8    |
|      | 76A    | 38022 | 1396 | 266    | 21561 | 14799 | .     | .     | 3.7    |
|      | 76B    | 38022 | 1711 | 526    | 15490 | 9684  | 10611 | .     | 4.5    |
| 2    | 33A    | 25278 | 547  | 88     | 13364 | 11279 | .     | .     | 2.2    |
|      | 33B    | 25278 | 676  | 123    | 6417  | 8429  | 9633  | .     | 2.7    |
|      | 40A    | 25278 | 754  | 102    | 5575  | 18847 | .     | .     | 3.0    |
|      | 40B    | 25278 | 988  | 164    | 4495  | 2994  | 6740  | 9897  | 3.9    |
|      | 45A    | 25278 | 2071 | 70     | 15927 | 7210  | .     | .     | 8.2    |
|      | 45B    | 25278 | 2659 | 330    | 10865 | 7163  | 4261  | .     | 10.5   |
|      | 53A    | 25278 | 879  | 178    | 15312 | 8909  | .     | .     | 3.5    |
|      | 53B    | 25278 | 1057 | 287    | 8600  | 7466  | 7868  | .     | 4.2    |
|      | 54A    | 25278 | 6144 | 519    | 15445 | 3170  | .     | .     | 24.3   |
|      | 54B    | 25278 | 6455 | 692    | 7731  | 7237  | 3163  | .     | 25.5   |
|      | 66A    | 25278 | 590  | 13     | 1521  | 23154 | .     | .     | 2.3    |
|      | 66B    | 25278 | 552  | 102    | 8461  | 11487 | 4676  | .     | 2.2    |
|      | 72A    | 25278 | 901  | 88     | 12427 | 11862 | .     | .     | 3.6    |
|      | 72B    | 25278 | 1053 | 209    | 11993 | 4052  | 7971  | .     | 4.2    |
| 76A  | 25278  | 406   | 97   | 5507   | 19268 | .     | .     | 1.6   |        |
| 76B  | 25278  | 420   | 125  | 4414   | 4916  | 15403 | .     | 1.7   |        |

Table B11  
The CR Item Distribution for Mathematics Grade 6

| FORM | ITEMNO | N     | OMIT | Code B | 0    | 1    | 2    | 3    | % OMIT |
|------|--------|-------|------|--------|------|------|------|------|--------|
| A    | 40A    | 11592 | 1493 | 50     | 4724 | 5325 | .    | .    | 12.9   |
|      | 40B    | 11592 | 1313 | 245    | 3829 | 3392 | 2199 | 614  | 11.3   |
|      | 49A    | 11592 | 1003 | 45     | 8931 | 1613 | .    | .    | 8.7    |
|      | 49B    | 11592 | 1181 | 123    | 5995 | 3048 | 1245 | .    | 10.2   |
|      | 58A    | 11592 | 1059 | 180    | 7721 | 2632 | .    | .    | 9.1    |
|      | 58B    | 11592 | 1125 | 233    | 3232 | 2981 | 4021 | .    | 9.7    |
|      | 64A    | 11592 | 755  | 120    | 6348 | 4369 | .    | .    | 6.5    |
|      | 64B    | 11592 | 814  | 153    | 2399 | 5486 | 2740 | .    | 7.0    |
|      | 69A    | 11592 | 992  | 61     | 4358 | 6181 | .    | .    | 8.6    |
|      | 69B    | 11592 | 1142 | 139    | 1899 | 3052 | 5360 | .    | 9.9    |
|      | 75A    | 11592 | 1013 | 38     | 4762 | 5779 | .    | .    | 8.7    |
|      | 75B    | 11592 | 983  | 230    | 2114 | 5839 | 2426 | .    | 8.5    |
|      | 81A    | 11592 | 1210 | 49     | 6768 | 3565 | .    | .    | 10.4   |
|      | 81B    | 11592 | 1490 | 187    | 3966 | 4501 | 1448 | .    | 12.9   |
| B    | 40A    | 11464 | 1309 | 30     | 3800 | 6325 | .    | .    | 11.4   |
|      | 40B    | 11464 | 1144 | 257    | 2136 | 3241 | 3256 | 1430 | 10.0   |
|      | 49A    | 11464 | 1234 | 67     | 9199 | 964  | .    | .    | 10.8   |
|      | 49B    | 11464 | 1357 | 171    | 5623 | 3548 | 765  | .    | 11.8   |
|      | 58A    | 11464 | 717  | 88     | 3014 | 7645 | .    | .    | 6.3    |
|      | 58B    | 11464 | 739  | 160    | 2607 | 5327 | 2631 | .    | 6.5    |
|      | 64A    | 11464 | 1689 | 284    | 5774 | 3717 | .    | .    | 14.7   |
|      | 64B    | 11464 | 1825 | 360    | 6501 | 1162 | 1616 | .    | 15.9   |
|      | 69A    | 11464 | 1500 | 109    | 6407 | 3448 | .    | .    | 13.1   |
|      | 69B    | 11464 | 1669 | 208    | 3384 | 4695 | 1508 | .    | 14.6   |
|      | 75A    | 11464 | 2009 | 39     | 1477 | 7939 | .    | .    | 17.5   |
|      | 75B    | 11464 | 868  | 193    | 2091 | 6965 | 1347 | .    | 7.6    |
|      | 81A    | 11464 | 737  | 35     | 5571 | 5121 | .    | .    | 6.4    |
|      | 81B    | 11464 | 968  | 139    | 3812 | 3748 | 2797 | .    | 8.4    |
| C    | 40A    | 11393 | 2337 | 356    | 5008 | 3692 | .    | .    | 20.5   |
|      | 40B    | 11393 | 2553 | 368    | 3629 | 1835 | 2221 | 787  | 22.4   |
|      | 49A    | 11393 | 1051 | 76     | 8742 | 1524 | .    | .    | 9.2    |
|      | 49B    | 11393 | 1259 | 140    | 5235 | 3574 | 1185 | .    | 11.1   |
|      | 58A    | 11393 | 1015 | 144    | 6091 | 4143 | .    | .    | 8.9    |
|      | 58B    | 11393 | 1092 | 187    | 3640 | 1749 | 4725 | .    | 9.6    |
|      | 64A    | 11393 | 865  | 73     | 8098 | 2357 | .    | .    | 7.6    |
|      | 64B    | 11393 | 971  | 142    | 2131 | 5012 | 3137 | .    | 8.5    |
|      | 69A    | 11393 | 1124 | 131    | 6144 | 3994 | .    | .    | 9.9    |
|      | 69B    | 11393 | 1204 | 170    | 2564 | 4613 | 2842 | .    | 10.6   |
|      | 75A    | 11393 | 438  | 65     | 3687 | 7203 | .    | .    | 3.8    |
|      | 75B    | 11393 | 534  | 89     | 2472 | 5363 | 2935 | .    | 4.7    |

Table B11 (cont.)  
The CR Item Distribution for Mathematics Grade 6

| FORM | ITEMNO | N     | OMIT | Code B | 0    | 1    | 2    | 3    | % OMIT |
|------|--------|-------|------|--------|------|------|------|------|--------|
| C    | 81A    | 11393 | 1167 | 230    | 9237 | 759  | .    | .    | 10.2   |
|      | 81B    | 11393 | 1357 | 304    | 3045 | 5947 | 740  | .    | 11.9   |
| D    | 40A    | 11351 | 764  | 34     | 4926 | 5627 | .    | .    | 6.7    |
|      | 40B    | 11351 | 972  | 172    | 2651 | 3261 | 2809 | 1486 | 8.6    |
|      | 58A    | 11351 | 845  | 133    | 4644 | 5729 | .    | .    | 7.4    |
|      | 58B    | 11351 | 909  | 160    | 3606 | 2859 | 3817 | .    | 8.0    |
|      | 75A    | 11351 | 445  | 34     | 6500 | 4372 | .    | .    | 3.9    |
|      | 75B    | 11351 | 541  | 66     | 1571 | 7468 | 1705 | .    | 4.8    |
|      | 81A    | 11351 | 1162 | 129    | 4899 | 5161 | .    | .    | 10.2   |
| E    | 81B    | 11351 | 1235 | 252    | 1772 | 7180 | 912  | .    | 10.9   |
|      | 40A    | 11244 | 1415 | 47     | 3427 | 6355 | .    | .    | 12.6   |
|      | 40B    | 11244 | 1367 | 207    | 2271 | 2986 | 3150 | 1263 | 12.2   |
|      | 49A    | 11244 | 1285 | 60     | 8795 | 1104 | .    | .    | 11.4   |
|      | 49B    | 11244 | 1451 | 147    | 3816 | 4996 | 834  | .    | 12.9   |
|      | 58A    | 11244 | 1495 | 148    | 6838 | 2763 | .    | .    | 13.3   |
|      | 58B    | 11244 | 1587 | 250    | 5682 | 2869 | 856  | .    | 14.1   |
|      | 64A    | 11244 | 694  | 53     | 6171 | 4326 | .    | .    | 6.2    |
|      | 64B    | 11244 | 825  | 120    | 5140 | 2222 | 2937 | .    | 7.3    |
|      | 75A    | 11244 | 1532 | 7      | 888  | 8817 | .    | .    | 13.6   |
|      | 75B    | 11244 | 679  | 113    | 1530 | 7907 | 1015 | .    | 6.0    |
| F    | 81A    | 11244 | 1276 | 68     | 7033 | 2867 | .    | .    | 11.4   |
|      | 81B    | 11244 | 1402 | 190    | 5273 | 3388 | 991  | .    | 12.5   |
|      | 49A    | 11185 | 999  | 74     | 4107 | 6005 | .    | .    | 8.9    |
|      | 49B    | 11185 | 1086 | 134    | 3511 | 1417 | 5037 | .    | 9.7    |
|      | 58A    | 11185 | 731  | 89     | 7084 | 3281 | .    | .    | 6.5    |
|      | 58B    | 11185 | 810  | 126    | 2849 | 4390 | 3010 | .    | 7.2    |
|      | 64A    | 11185 | 661  | 102    | 5651 | 4771 | .    | .    | 5.9    |
|      | 64B    | 11185 | 682  | 132    | 2021 | 5047 | 3303 | .    | 6.1    |
|      | 69A    | 11185 | 1439 | 13     | 4949 | 4784 | .    | .    | 12.9   |
|      | 69B    | 11185 | 1375 | 279    | 3325 | 3921 | 2285 | .    | 12.3   |
| F    | 75A    | 11185 | 597  | 65     | 6107 | 4416 | .    | .    | 5.3    |
|      | 75B    | 11185 | 755  | 148    | 4077 | 3054 | 3151 | .    | 6.8    |
|      | 81A    | 11185 | 1168 | 187    | 9059 | 771  | .    | .    | 10.4   |
|      | 81B    | 11185 | 1277 | 356    | 3098 | 5666 | 788  | .    | 11.4   |

Table B12  
The CR Item Distribution for Mathematics Grade 7

| FORM | ITEMNO | N     | OMIT | Code B | 0    | 1    | 2    | 3    | % OMIT |
|------|--------|-------|------|--------|------|------|------|------|--------|
| A    | 42A    | 11751 | 1474 | 164    | 5200 | 4913 | .    | .    | 12.5   |
|      | 42B    | 11751 | 1643 | 196    | 6863 | 2581 | 468  | .    | 14.0   |
|      | 43A    | 11751 | 1325 | 164    | 5773 | 4489 | .    | .    | 11.3   |
|      | 43B    | 11751 | 1420 | 207    | 2550 | 3813 | 3761 | .    | 12.1   |
|      | 53A    | 11751 | 3676 | 126    | 5620 | 2329 | .    | .    | 31.3   |
|      | 53B    | 11751 | 3034 | 492    | 4362 | 2956 | 797  | 110  | 25.8   |
|      | 63A    | 11751 | 845  | 29     | 4083 | 6794 | .    | .    | 7.2    |
|      | 63B    | 11751 | 812  | 125    | 1354 | 1879 | 6863 | 718  | 6.9    |
|      | 68A    | 11751 | 2315 | 40     | 6062 | 3334 | .    | .    | 19.7   |
|      | 68B    | 11751 | 2280 | 302    | 1269 | 5028 | 2872 | .    | 19.4   |
|      | 76A    | 11751 | 1447 | 78     | 5273 | 4953 | .    | .    | 12.3   |
|      | 76B    | 11751 | 1577 | 235    | 2276 | 4959 | 2704 | .    | 13.4   |
|      | 81A    | 11751 | 1573 | 132    | 8482 | 1564 | .    | .    | 13.4   |
|      | 81B    | 11751 | 1742 | 271    | 3135 | 3299 | 2619 | 685  | 14.8   |
| B    | 42A    | 11667 | 467  | 29     | 4719 | 6452 | .    | .    | 4.0    |
|      | 42B    | 11667 | 613  | 76     | 2568 | 1888 | 6522 | .    | 5.3    |
|      | 43A    | 11667 | 784  | 70     | 4265 | 6548 | .    | .    | 6.7    |
|      | 43B    | 11667 | 947  | 136    | 2149 | 2591 | 5844 | .    | 8.1    |
|      | 53A    | 11667 | 2468 | 192    | 6286 | 2721 | .    | .    | 21.2   |
|      | 53B    | 11667 | 2949 | 386    | 4755 | 2101 | 922  | 554  | 25.3   |
|      | 63A    | 11667 | 670  | 38     | 6668 | 4291 | .    | .    | 5.7    |
|      | 63B    | 11667 | 1022 | 161    | 2280 | 2593 | 3425 | 2186 | 8.8    |
|      | 68A    | 11667 | 1424 | 40     | 5820 | 4383 | .    | .    | 12.2   |
|      | 68B    | 11667 | 1432 | 161    | 1339 | 4233 | 4502 | .    | 12.3   |
|      | 76A    | 11667 | 2888 | 90     | 7261 | 1428 | .    | .    | 24.8   |
|      | 76B    | 11667 | 2489 | 531    | 3649 | 4944 | 54   | .    | 21.3   |
| C    | 42A    | 11603 | 921  | 66     | 7122 | 3494 | .    | .    | 7.9    |
|      | 42B    | 11603 | 1136 | 125    | 3276 | 5100 | 1966 | .    | 9.8    |
|      | 43A    | 11603 | 1210 | 82     | 6157 | 4154 | .    | .    | 10.4   |
|      | 43B    | 11603 | 1384 | 159    | 2971 | 3135 | 3954 | .    | 11.9   |
|      | 53A    | 11603 | 1805 | 78     | 3980 | 5740 | .    | .    | 15.6   |
|      | 53B    | 11603 | 1993 | 184    | 2426 | 3055 | 3161 | 784  | 17.2   |
|      | 63A    | 11603 | 616  | 41     | 4027 | 6919 | .    | .    | 5.3    |
|      | 63B    | 11603 | 766  | 75     | 1114 | 1315 | 6288 | 2045 | 6.6    |
|      | 68A    | 11603 | 1218 | 68     | 5453 | 4864 | .    | .    | 10.5   |
|      | 68B    | 11603 | 1458 | 147    | 6103 | 3644 | 251  | .    | 12.6   |
|      | 76A    | 11603 | 1109 | 77     | 7445 | 2972 | .    | .    | 9.6    |
|      | 76B    | 11603 | 1387 | 179    | 3497 | 3811 | 2729 | .    | 12.0   |
|      | 81A    | 11603 | 1191 | 34     | 4946 | 5432 | .    | .    | 10.3   |
| 81B  | 11603  | 1226  | 186  | 1661   | 2658 | 2379 | 3493 | 10.6 |        |

Table B12 (cont.)  
The CR Item Distribution for Mathematics Grade 7

| FORM | ITEMNO | N     | OMIT | Code B | 0    | 1    | 2    | 3    | % OMIT |
|------|--------|-------|------|--------|------|------|------|------|--------|
| D    | 42A    | 11522 | 1339 | 209    | 5280 | 4694 | .    | .    | 11.6   |
|      | 42B    | 11522 | 1505 | 217    | 2209 | 3971 | 3620 | .    | 13.1   |
|      | 53A    | 11522 | 4603 | 209    | 5090 | 1620 | .    | .    | 40.0   |
|      | 53B    | 11522 | 3746 | 678    | 4284 | 1195 | 1455 | 164  | 32.5   |
|      | 63A    | 11522 | 640  | 52     | 4894 | 5936 | .    | .    | 5.6    |
|      | 63B    | 11522 | 759  | 104    | 1087 | 1887 | 5990 | 1695 | 6.6    |
|      | 76A    | 11522 | 915  | 86     | 6221 | 4300 | .    | .    | 7.9    |
|      | 76B    | 11522 | 1197 | 194    | 3519 | 5634 | 978  | .    | 10.4   |
| E    | 42A    | 11452 | 490  | 26     | 3933 | 7003 | .    | .    | 4.3    |
|      | 42B    | 11452 | 620  | 81     | 2027 | 1660 | 7064 | .    | 5.4    |
|      | 43A    | 11452 | 659  | 61     | 3422 | 7310 | .    | .    | 5.8    |
|      | 43B    | 11452 | 749  | 107    | 1468 | 2233 | 6895 | .    | 6.5    |
|      | 53A    | 11452 | 3878 | 47     | 5714 | 1813 | .    | .    | 33.9   |
|      | 53B    | 11452 | 3108 | 598    | 5327 | 2079 | 313  | 27   | 27.1   |
|      | 68A    | 11452 | 1944 | 38     | 7116 | 2354 | .    | .    | 17.0   |
|      | 68B    | 11452 | 1955 | 323    | 2208 | 4384 | 2582 | .    | 17.1   |
|      | 76A    | 11452 | 1122 | 95     | 7791 | 2444 | .    | .    | 9.8    |
| 76B  | 11452  | 1358  | 228  | 3282   | 6172 | 412  | .    | 11.9 |        |
| F    | 42A    | 11332 | 544  | 63     | 4032 | 6693 | .    | .    | 4.8    |
|      | 42B    | 11332 | 716  | 87     | 1696 | 5661 | 3172 | .    | 6.3    |
|      | 43A    | 11332 | 880  | 108    | 6584 | 3760 | .    | .    | 7.8    |
|      | 43B    | 11332 | 1291 | 208    | 4095 | 4235 | 1503 | .    | 11.4   |
|      | 53A    | 11332 | 4567 | 104    | 5078 | 1583 | .    | .    | 40.3   |
|      | 53B    | 11332 | 3379 | 700    | 4180 | 1451 | 1414 | 208  | 29.8   |
|      | 76A    | 11332 | 1570 | 33     | 8622 | 1107 | .    | .    | 13.9   |
|      | 76B    | 11332 | 1197 | 186    | 2176 | 4301 | 3472 | .    | 10.6   |

Table B13  
The SPR Item Distribution for Mathematics Grade 7

| FORM | ITEMNO | N     | OMIT | 0     | 1    | %_OMIT |
|------|--------|-------|------|-------|------|--------|
| A    | 54     | 11748 | 2052 | 7810  | 1886 | 17.5   |
|      | 56     | 11748 | 2153 | 6572  | 3023 | 18.3   |
|      | 57     | 11748 | 2213 | 4468  | 5067 | 18.8   |
|      | 64     | 11748 | 1315 | 5390  | 5043 | 11.2   |
|      | 65     | 11748 | 778  | 6929  | 4041 | 6.6    |
|      | 66     | 11748 | 1140 | 5112  | 5496 | 9.7    |
|      | 67     | 11748 | 1441 | 6490  | 3817 | 12.3   |
|      | 77     | 11748 | 858  | 10705 | 185  | 7.3    |
|      | 78     | 11748 | 724  | 8141  | 2883 | 6.2    |
|      | 79     | 11748 | 835  | 5228  | 5685 | 7.1    |
|      | 80     | 11748 | 1131 | 7557  | 3060 | 9.6    |
| B    | 54     | 11665 | 1759 | 7184  | 2722 | 15.1   |
|      | 55     | 11665 | 1537 | 6048  | 4080 | 13.2   |
|      | 56     | 11665 | 2088 | 5719  | 3858 | 17.9   |
|      | 57     | 11665 | 2177 | 5540  | 3948 | 18.7   |
|      | 64     | 11665 | 1169 | 8682  | 1814 | 10.0   |
|      | 65     | 11665 | 2407 | 7780  | 1478 | 20.6   |
|      | 66     | 11665 | 1240 | 5626  | 4799 | 10.6   |
|      | 67     | 11665 | 1297 | 7572  | 2796 | 11.1   |
|      | 77     | 11665 | 731  | 9654  | 1280 | 6.3    |
|      | 78     | 11665 | 563  | 3756  | 7346 | 4.8    |
|      | 79     | 11665 | 745  | 3206  | 7714 | 6.4    |
| 80   | 11665  | 1145  | 5020 | 5500  | 9.8  |        |
| C    | 54     | 11601 | 1648 | 3239  | 6714 | 14.2   |
|      | 56     | 11601 | 2196 | 4228  | 5177 | 18.9   |
|      | 57     | 11601 | 2353 | 5215  | 4033 | 20.3   |
|      | 64     | 11601 | 1482 | 7080  | 3039 | 12.8   |
|      | 65     | 11601 | 1460 | 5377  | 4764 | 12.6   |
|      | 66     | 11601 | 1057 | 4676  | 5868 | 9.1    |
|      | 67     | 11601 | 995  | 3781  | 6825 | 8.6    |
|      | 77     | 11601 | 549  | 5055  | 5997 | 4.7    |
|      | 78     | 11601 | 548  | 3969  | 7084 | 4.7    |
|      | 79     | 11601 | 716  | 3652  | 7233 | 6.2    |

Table B13 (cont.)  
The SPR Item Distribution for Mathematics Grade 7

| FORM | ITEMNO | N     | OMIT  | 0    | 1    | %_OMIT |
|------|--------|-------|-------|------|------|--------|
| D    | 54     | 11519 | 1954  | 5826 | 3739 | 17.0   |
|      | 55     | 11519 | 2985  | 6197 | 2337 | 25.9   |
|      | 56     | 11519 | 2883  | 7179 | 1457 | 25.0   |
|      | 57     | 11519 | 2840  | 6444 | 2235 | 24.7   |
|      | 64     | 11519 | 819   | 2524 | 8176 | 7.1    |
|      | 65     | 11519 | 873   | 4989 | 5657 | 7.6    |
|      | 66     | 11519 | 1416  | 9407 | 696  | 12.3   |
|      | 67     | 11519 | 1700  | 3745 | 6074 | 14.8   |
|      | 77     | 11519 | 677   | 9480 | 1362 | 5.9    |
|      | 78     | 11519 | 748   | 6303 | 4468 | 6.5    |
|      | 79     | 11519 | 750   | 3447 | 7322 | 6.5    |
|      | 80     | 11519 | 958   | 7675 | 2886 | 8.3    |
|      | E      | 54    | 11450 | 1765 | 5841 | 3844   |
| 55   |        | 11450 | 2169  | 6805 | 2476 | 18.9   |
| 56   |        | 11450 | 2126  | 4284 | 5040 | 18.6   |
| 57   |        | 11450 | 3143  | 5599 | 2708 | 27.5   |
| 64   |        | 11450 | 954   | 5598 | 4898 | 8.3    |
| 65   |        | 11450 | 1136  | 3730 | 6584 | 9.9    |
| 67   |        | 11450 | 1031  | 4132 | 6287 | 9.0    |
| 77   |        | 11450 | 776   | 8664 | 2010 | 6.8    |
| 78   |        | 11450 | 923   | 7491 | 3036 | 8.1    |
| 79   |        | 11450 | 925   | 3668 | 6857 | 8.1    |
| 80   |        | 11450 | 1355  | 5356 | 4739 | 11.8   |
| F    | 54     | 11327 | 1211  | 2289 | 7827 | 10.7   |
|      | 55     | 11327 | 1586  | 7302 | 2439 | 14.0   |
|      | 56     | 11327 | 1802  | 4154 | 5371 | 15.9   |
|      | 57     | 11327 | 2002  | 7996 | 1329 | 17.7   |
|      | 64     | 11327 | 1468  | 6835 | 3024 | 13.0   |
|      | 65     | 11327 | 752   | 5392 | 5183 | 6.6    |
|      | 66     | 11327 | 826   | 6127 | 4374 | 7.3    |
|      | 67     | 11327 | 865   | 3475 | 6987 | 7.6    |
|      | 77     | 11327 | 557   | 4877 | 5893 | 4.9    |
|      | 78     | 11327 | 862   | 7366 | 3099 | 7.6    |
|      | 79     | 11327 | 619   | 6905 | 3803 | 5.5    |

Table B14  
The CR Item Distribution for Mathematics Grade 8

| FORM | ITEMNO | N     | OMIT | Code B | 0     | 1     | 2     | 3    | % OMIT |
|------|--------|-------|------|--------|-------|-------|-------|------|--------|
| 1    | 37A    | 39038 | 3881 | 410    | 13909 | 20838 | .     | .    | 9.9    |
|      | 37B    | 39038 | 4824 | 576    | 9189  | 4120  | 13538 | 6791 | 12.4   |
|      | 42A    | 39038 | 5712 | 435    | 16459 | 16432 | .     | .    | 14.6   |
|      | 42B    | 39038 | 6639 | 747    | 13075 | 13210 | 5367  | .    | 17.0   |
|      | 47A    | 39038 | 6938 | 67     | 15899 | 16134 | .     | .    | 17.8   |
|      | 47B    | 39038 | 9281 | 713    | 9903  | 10972 | 8169  | .    | 23.8   |
|      | 54A    | 39038 | 4201 | 443    | 13422 | 20972 | .     | .    | 10.8   |
|      | 54B    | 39038 | 4843 | 587    | 10450 | 14381 | 4928  | 3849 | 12.4   |
|      | 64A    | 39038 | 4902 | 711    | 17230 | 16195 | .     | .    | 12.6   |
|      | 64B    | 39038 | 5249 | 731    | 4087  | 13434 | 15537 | .    | 13.5   |
|      | 65A    | 39038 | 9054 | 851    | 16333 | 12800 | .     | .    | 23.2   |
|      | 65B    | 39038 | 9784 | 1111   | 9729  | 4709  | 13705 | .    | 25.1   |
|      | 71A    | 39038 | 2730 | 242    | 28972 | 7094  | .     | .    | 7.0    |
|      | 71B    | 39038 | 3192 | 393    | 21443 | 7202  | 6808  | .    | 8.2    |
|      | 76A    | 39038 | 3753 | 418    | 24077 | 10790 | .     | .    | 9.6    |
|      | 76B    | 39038 | 4336 | 610    | 7960  | 16299 | 9833  | .    | 11.1   |
| 2    | 37A    | 26055 | 2615 | 289    | 9289  | 13862 | .     | .    | 10.0   |
|      | 37B    | 26055 | 3223 | 388    | 6285  | 2803  | 8694  | 4662 | 12.4   |
|      | 42A    | 26055 | 3744 | 307    | 11069 | 10935 | .     | .    | 14.4   |
|      | 42B    | 26055 | 4351 | 487    | 8520  | 7592  | 5105  | .    | 16.7   |
|      | 48A    | 26055 | 6259 | 211    | 13219 | 6366  | .     | .    | 24.0   |
|      | 48B    | 26055 | 7344 | 516    | 11747 | 2749  | 3699  | .    | 28.2   |
|      | 55A    | 26055 | 1715 | 40     | 13283 | 11017 | .     | .    | 6.6    |
|      | 55B    | 26055 | 2882 | 282    | 6530  | 12787 | 3180  | 394  | 11.1   |
|      | 58A    | 26055 | 3335 | 306    | 9566  | 12848 | .     | .    | 12.8   |
|      | 58B    | 26055 | 3396 | 389    | 4775  | 3208  | 14287 | .    | 13.0   |
|      | 65A    | 26055 | 4703 | 449    | 10373 | 10530 | .     | .    | 18.1   |
|      | 65B    | 26055 | 4964 | 580    | 2894  | 8170  | 9447  | .    | 19.1   |
|      | 70A    | 26055 | 2071 | 151    | 19020 | 4813  | .     | .    | 8.0    |
|      | 70B    | 26055 | 2390 | 251    | 13795 | 5361  | 4258  | .    | 9.2    |
| 76A  | 26055  | 2224  | 192  | 8032   | 15607 | .     | .     | 8.5  |        |
| 76B  | 26055  | 2701  | 355  | 2900   | 7113  | 12986 | .     | 10.4 |        |



Table B15  
The SPR Item Distribution for Mathematics Grade 8

| FORM | ITEMNO | N     | OMIT  | 0     | 1     | %_OMIT |
|------|--------|-------|-------|-------|-------|--------|
| 1    | 43     | 38631 | 2636  | 6178  | 29817 | 6.8    |
|      | 44     | 38631 | 3384  | 21524 | 13723 | 8.8    |
|      | 45     | 38631 | 4556  | 16126 | 17949 | 11.8   |
|      | 46     | 38631 | 6037  | 16833 | 15761 | 15.6   |
|      | 55     | 38631 | 4456  | 26575 | 7600  | 11.5   |
|      | 56     | 38631 | 2173  | 30567 | 5891  | 5.6    |
|      | 57     | 38631 | 2779  | 16989 | 18863 | 7.2    |
|      | 58     | 38631 | 2933  | 17098 | 18600 | 7.6    |
|      | 72     | 38631 | 1797  | 20854 | 15980 | 4.7    |
|      | 73     | 38631 | 1819  | 15078 | 21734 | 4.7    |
|      | 75     | 38631 | 4072  | 23888 | 10671 | 10.5   |
| 2    | 43     | 25792 | 2830  | 19146 | 3816  | 11.0   |
|      | 44     | 25792 | 2532  | 14998 | 8262  | 9.8    |
|      | 45     | 25792 | 3870  | 12013 | 9909  | 15.0   |
|      | 46     | 25792 | 4320  | 10655 | 10817 | 16.8   |
|      | 47     | 25792 | 4835  | 14094 | 6863  | 18.8   |
|      | 56     | 25792 | 2067  | 8229  | 15496 | 8.0    |
|      | 57     | 25792 | 2192  | 10786 | 12814 | 8.5    |
|      | 71     | 25792 | 1325  | 13170 | 11297 | 5.1    |
|      | 72     | 25792 | 1309  | 13357 | 11126 | 5.1    |
|      | 73     | 25792 | 1304  | 9407  | 15081 | 5.1    |
|      | 74     | 25792 | 1812  | 14998 | 8982  | 7.0    |
| 75   | 25792  | 3435  | 17164 | 5193  | 13.3  |        |

Table B16  
The CR Item Distribution for Reading Grade 10

| FORM | ITEMNO | N     | OMIT | Code B | 0    | 1     | 2     | 3    | %_Omit |
|------|--------|-------|------|--------|------|-------|-------|------|--------|
| 1    | 63     | 41962 | 3248 | 792    | 1320 | 12318 | 18673 | 5611 | 7.7    |
|      | 69     | 41962 | 5389 | 3828   | 5561 | 9146  | 13916 | 4122 | 12.8   |
|      | 75     | 41962 | 4276 | 1246   | 1184 | 10561 | 18133 | 6562 | 10.2   |
|      | 79     | 41962 | 4863 | 1284   | 1200 | 8574  | 20333 | 5708 | 11.6   |
| 2    | 63     | 20996 | 1250 | 593    | 416  | 3579  | 11197 | 3961 | 6.0    |
|      | 69     | 20996 | 1985 | 470    | 535  | 4286  | 10303 | 3417 | 9.5    |
|      | 78     | 20996 | 1648 | 489    | 316  | 4406  | 11447 | 2690 | 7.9    |
|      | 79     | 20996 | 2832 | 696    | 1211 | 3776  | 9525  | 2956 | 13.5   |

**Appendix C**  
**Differential Item Functioning (DIF)**

## Tables List

|  |      |
|--|------|
| Table C1 DIF for Mathematics Grade 3 ..... | C-3  |
| Table C2 DIF for Mathematics Grade 4 ..... | C-5  |
| Table C3 DIF for Mathematics Grade 5 ..... | C-8  |
| Table C4 DIF for Mathematics Grade 6 ..... | C-11 |
| Table C5 DIF for Mathematics Grade 7 ..... | C-13 |
| Table C6 DIF for Mathematics Grade 8 ..... | C-15 |
| Table C7 DIF for Reading Grade 10 .....    | C-17 |

Table C1  
DIF for Mathematics Grade 3

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | A    | 2      | C   | +B  | Eth       | 2     | 1.00                 | 6151  | 4722  |
| OP    | SR        | A    | 4      | C   | +B  | Eth       | 4     | 1.33                 | 6151  | 874   |
| OP    | SR        | A    | 5      | C   | +B  | Eth       | 2     | 1.38                 | 6151  | 4722  |
| OP    | SR        | A    | 5      | C   | +C  | Eth       | 4     | 1.55                 | 6151  | 874   |
| OP    | SR        | A    | 11     | C   | -B  | Sex       | 2     | -1.41                | 6494  | 5951  |
| OP    | SR        | A    | 12     | C   | +B  | Eth       | 4     | 1.31                 | 6151  | 874   |
| OP    | SR        | A    | 13     | C   | -B  | Sex       | 2     | -1.14                | 6494  | 5951  |
| OP    | SR        | A    | 21     | C   | -B  | Eth       | 2     | -1.01                | 6151  | 4722  |
| OP    | SR        | A    | 24     | C   | -B  | Eth       | 4     | -1.13                | 6151  | 874   |
| OP    | SR        | A    | 26     | C   | -B  | Eth       | 4     | -1.19                | 6151  | 874   |
| OP    | SR        | A    | 41     | C   | -B  | Eth       | 2     | -1.12                | 6151  | 4722  |
| OP    | SR        | A    | 41     | C   | -B  | Eth       | 4     | -1.14                | 6151  | 874   |
| OP    | SR        | A    | 50     | C   | -B  | Eth       | 4     | -1.18                | 6151  | 874   |
| OP    | SR        | A    | 50     | C   | +B  | Sex       | 2     | 1.39                 | 6494  | 5951  |
| OP    | SR        | A    | 67     | U   | -B  | Sex       | 2     | -1.00                | 6494  | 5951  |
| FT    | SR        | A    | 78     | U   | +B  | Eth       | 4     | 1.25                 | 6151  | 874   |
| FT    | SR        | A    | 82     | U   | -C  | Sex       | 2     | -2.00                | 6494  | 5951  |
| FT    | CR        | A    | 84A    | U   | -BB | Eth       | 2     | -0.22                | 6151  | 4722  |
| FT    | CR        | A    | 92A    | U   | -BB | Eth       | 2     | -0.21                | 6151  | 4722  |
| FT    | CR        | A    | 92B    | U   | -BB | Eth       | 2     | -0.17                | 6151  | 4722  |
| OP    | SR        | B    | 4      | C   | +B  | Eth       | 2     | 1.26                 | 6157  | 4659  |
| OP    | SR        | B    | 4      | C   | +B  | Eth       | 4     | 1.01                 | 6157  | 807   |
| OP    | SR        | B    | 5      | C   | +B  | Eth       | 2     | 1.12                 | 6157  | 4659  |
| OP    | SR        | B    | 5      | C   | +B  | Eth       | 4     | 1.41                 | 6157  | 807   |
| OP    | SR        | B    | 6      | C   | +B  | Eth       | 2     | 1.28                 | 6157  | 4659  |
| OP    | SR        | B    | 7      | C   | +B  | Eth       | 2     | 1.00                 | 6157  | 4659  |
| OP    | SR        | B    | 11     | C   | -B  | Sex       | 2     | -1.16                | 6269  | 5974  |
| OP    | SR        | B    | 13     | C   | -B  | Sex       | 2     | -1.06                | 6269  | 5974  |
| OP    | SR        | B    | 42     | C   | +B  | Sex       | 2     | 1.02                 | 6269  | 5974  |
| OP    | SR        | B    | 53     | C   | -B  | Eth       | 4     | -1.09                | 6157  | 807   |
| OP    | CR        | B    | 61B    | U   | +BB | Sex       | 2     | 0.20                 | 6269  | 5974  |
| OP    | SR        | B    | 63     | U   | -B  | Eth       | 4     | -1.23                | 6157  | 807   |
| FT    | SR        | B    | 86     | U   | +B  | Eth       | 4     | 1.15                 | 6157  | 807   |
| FT    | SR        | B    | 90     | U   | -B  | Sex       | 2     | -1.00                | 6269  | 5974  |
| OP    | SR        | C    | 2      | C   | +B  | Eth       | 2     | 1.20                 | 6015  | 4677  |
| OP    | SR        | C    | 4      | C   | +B  | Eth       | 2     | 1.10                 | 6015  | 4677  |
| OP    | SR        | C    | 4      | C   | +B  | Eth       | 4     | 1.40                 | 6015  | 754   |
| OP    | SR        | C    | 5      | C   | +B  | Eth       | 2     | 1.32                 | 6015  | 4677  |
| OP    | SR        | C    | 5      | C   | +C  | Eth       | 4     | 1.85                 | 6015  | 754   |
| OP    | SR        | C    | 6      | C   | +B  | Eth       | 4     | 1.06                 | 6015  | 754   |
| OP    | SR        | C    | 10     | C   | -B  | Eth       | 2     | -1.05                | 6015  | 4677  |
| OP    | SR        | C    | 11     | C   | -B  | Sex       | 2     | -1.17                | 6210  | 5903  |
| OP    | SR        | C    | 12     | C   | +B  | Eth       | 4     | 1.17                 | 6015  | 754   |
| OP    | SR        | C    | 13     | C   | -B  | Sex       | 2     | -1.08                | 6210  | 5903  |

Table C1 (cont.)  
DIF for Mathematics Grade 3

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | C    | 18     | C   | +C  | Eth       | 4     | 1.71                 | 6015  | 754   |
| OP    | SR        | C    | 26     | C   | -B  | Eth       | 4     | -1.39                | 6015  | 754   |
| OP    | SR        | C    | 32     | C   | +B  | Eth       | 2     | 1.04                 | 6015  | 4677  |
| OP    | SR        | C    | 50     | C   | +B  | Sex       | 2     | 1.02                 | 6210  | 5903  |
| OP    | SR        | C    | 77     | C   | +B  | Eth       | 4     | 1.18                 | 6015  | 754   |
| FT    | SR        | C    | 81     | U   | +B  | Eth       | 4     | 1.05                 | 6015  | 754   |
| FT    | CR        | C    | 82A    | U   | -BB | Eth       | 2     | -0.24                | 6015  | 4677  |
| FT    | CR        | C    | 82B    | U   | -BB | Eth       | 2     | -0.22                | 6015  | 4677  |
| OP    | SR        | D    | 2      | C   | +B  | Eth       | 4     | 1.08                 | 5901  | 774   |
| OP    | SR        | D    | 4      | C   | +B  | Eth       | 2     | 1.36                 | 5901  | 4628  |
| OP    | SR        | D    | 5      | C   | +B  | Eth       | 2     | 1.34                 | 5901  | 4628  |
| OP    | SR        | D    | 5      | C   | +B  | Eth       | 4     | 1.45                 | 5901  | 774   |
| OP    | SR        | D    | 6      | C   | +B  | Eth       | 2     | 1.02                 | 5901  | 4628  |
| OP    | SR        | D    | 10     | C   | -B  | Eth       | 2     | -1.11                | 5901  | 4628  |
| OP    | SR        | D    | 10     | C   | -B  | Eth       | 4     | -1.01                | 5901  | 774   |
| OP    | SR        | D    | 10     | C   | -B  | Sex       | 2     | -1.24                | 6016  | 5948  |
| OP    | SR        | D    | 11     | C   | -B  | Sex       | 2     | -1.47                | 6016  | 5948  |
| OP    | SR        | D    | 13     | C   | -B  | Sex       | 2     | -1.02                | 6016  | 5948  |
| OP    | SR        | D    | 26     | C   | -B  | Eth       | 4     | -1.02                | 5901  | 774   |
| OP    | CR        | D    | 31B    | U   | +BB | Sex       | 2     | 0.19                 | 6016  | 5948  |
| OP    | SR        | D    | 46     | C   | +B  | Eth       | 4     | 1.48                 | 5901  | 774   |
| OP    | SR        | D    | 60     | U   | +B  | Sex       | 2     | 1.06                 | 6016  | 5948  |
| OP    | CR        | D    | 61B    | U   | +BB | Sex       | 2     | 0.17                 | 6016  | 5948  |
| OP    | SR        | D    | 63     | U   | -C  | Eth       | 4     | -1.50                | 5901  | 774   |
| OP    | CR        | D    | 69A    | U   | -BB | Eth       | 4     | -0.24                | 5901  | 774   |
| FT    | CR        | D    | 78A    | U   | -BB | Eth       | 2     | -0.22                | 5901  | 4628  |
| FT    | CR        | D    | 82B    | U   | -BB | Eth       | 2     | -0.20                | 5901  | 4628  |
| OP    | SR        | E    | 5      | C   | +B  | Eth       | 2     | 1.30                 | 5899  | 4487  |
| OP    | SR        | E    | 6      | C   | +B  | Eth       | 2     | 1.25                 | 5899  | 4487  |
| OP    | SR        | E    | 11     | C   | -B  | Sex       | 2     | -1.38                | 6059  | 5773  |
| OP    | SR        | E    | 12     | C   | +B  | Eth       | 4     | 1.49                 | 5899  | 805   |
| OP    | SR        | E    | 21     | C   | -B  | Eth       | 2     | -1.06                | 5899  | 4487  |
| OP    | SR        | E    | 26     | C   | -B  | Eth       | 4     | -1.31                | 5899  | 805   |
| OP    | SR        | E    | 41     | C   | -B  | Eth       | 2     | -1.14                | 5899  | 4487  |
| OP    | SR        | E    | 41     | C   | -B  | Eth       | 4     | -1.43                | 5899  | 805   |
| OP    | SR        | E    | 50     | C   | +B  | Sex       | 2     | 1.00                 | 6059  | 5773  |
| OP    | SR        | E    | 68     | U   | +C  | Eth       | 4     | 1.73                 | 5899  | 805   |
| OP    | CR        | E    | 69A    | U   | -BB | Eth       | 4     | -0.18                | 5899  | 805   |
| FT    | SR        | E    | 93     | U   | -B  | Eth       | 2     | -1.25                | 5899  | 4487  |
| FT    | SR        | E    | 93     | U   | -B  | Sex       | 2     | -1.05                | 6059  | 5773  |
| FT    | SR        | E    | 94     | U   | -B  | Sex       | 2     | -1.06                | 6059  | 5773  |

Table C2  
DIF for Mathematics Grade 4

| Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| SR        | A    | 20     | C   | -B  | Eth       | 2     | -1.01                | 5325  | 4311  |
| CR        | A    | 33B    | U   | +BB | Sex       | 2     | 0.19                 | 5852  | 5119  |
| SR        | A    | 36     | C   | +B  | Eth       | 2     | 1.29                 | 5325  | 4311  |
| SR        | A    | 38     | C   | +B  | Eth       | 2     | 1.18                 | 5325  | 4311  |
| SR        | A    | 38     | C   | +B  | Eth       | 4     | 1.01                 | 5325  | 768   |
| SR        | A    | 44     | C   | +B  | Eth       | 2     | 1.25                 | 5325  | 4311  |
| SR        | A    | 72     | U   | -B  | Eth       | 2     | -1.38                | 5325  | 4311  |
| SR        | A    | 72     | U   | -C  | Eth       | 4     | -1.87                | 5325  | 768   |
| SR        | A    | 73     | U   | +B  | Eth       | 2     | 1.05                 | 5325  | 4311  |
| CR        | A    | 74A    | U   | -BB | Sex       | 2     | -0.21                | 5852  | 5119  |
| CR        | A    | 75B    | U   | +BB | Eth       | 4     | 0.18                 | 5325  | 768   |
| SR        | A    | 89     | U   | +B  | Eth       | 2     | 1.09                 | 5325  | 4311  |
| SR        | A    | 89     | U   | +C  | Eth       | 4     | 2.23                 | 5325  | 768   |
| SR        | A    | 98     | U   | +B  | Eth       | 2     | 1.17                 | 5325  | 4311  |
| SR        | A    | 102    | U   | +B  | Sex       | 2     | 1.04                 | 5852  | 5119  |
| SR        | A    | 103    | U   | -B  | Eth       | 2     | -1.25                | 5325  | 4311  |
| SR        | A    | 107    | U   | -B  | Eth       | 4     | -1.12                | 5325  | 768   |
| SR        | B    | 3      | C   | -B  | Eth       | 2     | -1.13                | 5293  | 4164  |
| CR        | B    | 33B    | U   | +BB | Sex       | 2     | 0.20                 | 5564  | 5171  |
| SR        | B    | 36     | C   | +B  | Eth       | 2     | 1.03                 | 5293  | 4164  |
| SR        | B    | 41     | C   | +B  | Eth       | 4     | 1.32                 | 5293  | 727   |
| SR        | B    | 44     | C   | +B  | Eth       | 2     | 1.20                 | 5293  | 4164  |
| CR        | B    | 74A    | U   | -BB | Sex       | 2     | -0.20                | 5564  | 5171  |
| CR        | B    | 75A    | U   | +BB | Eth       | 2     | 0.23                 | 5293  | 4164  |
| CR        | B    | 75B    | U   | +BB | Eth       | 2     | 0.25                 | 5293  | 4164  |
| SR        | B    | 76     | U   | +B  | Eth       | 2     | 1.02                 | 5293  | 4164  |
| SR        | B    | 76     | U   | +C  | Eth       | 4     | 1.64                 | 5293  | 727   |
| SR        | B    | 83     | U   | +C  | Eth       | 2     | 1.83                 | 5293  | 4164  |
| SR        | B    | 84     | U   | +B  | Eth       | 2     | 1.19                 | 5293  | 4164  |
| SR        | B    | 84     | U   | +C  | Eth       | 4     | 1.54                 | 5293  | 727   |
| SR        | B    | 98     | U   | -B  | Eth       | 2     | -1.24                | 5293  | 4164  |
| SR        | B    | 98     | U   | -C  | Sex       | 2     | -1.65                | 5564  | 5171  |
| SR        | C    | 27     | C   | +B  | Eth       | 2     | 1.09                 | 5171  | 4183  |
| CR        | C    | 33B    | U   | +BB | Sex       | 2     | 0.23                 | 5429  | 5204  |
| SR        | C    | 34     | C   | +B  | Sex       | 2     | 1.06                 | 5429  | 5204  |
| SR        | C    | 36     | C   | +B  | Eth       | 2     | 1.25                 | 5171  | 4183  |
| SR        | C    | 38     | C   | +B  | Eth       | 2     | 1.12                 | 5171  | 4183  |
| SR        | C    | 39     | C   | +B  | Eth       | 4     | 1.24                 | 5171  | 696   |
| SR        | C    | 41     | C   | +B  | Eth       | 4     | 1.16                 | 5171  | 696   |
| SR        | C    | 44     | C   | +B  | Eth       | 2     | 1.22                 | 5171  | 4183  |
| SR        | C    | 67     | C   | -B  | Eth       | 4     | -1.02                | 5171  | 696   |
| SR        | C    | 70     | U   | -B  | Eth       | 4     | -1.37                | 5171  | 696   |
| CR        | C    | 75B    | U   | -BB | Eth       | 2     | -0.18                | 5171  | 4183  |
| SR        | C    | 77     | U   | -B  | Eth       | 2     | -1.03                | 5171  | 4183  |

Table C2 (cont.)  
DIF for Mathematics Grade 4

| Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| SR        | C    | 77     | U   | -B  | Sex       | 2     | -1.09                | 5429  | 5204  |
| SR        | C    | 79     | U   | +C  | Eth       | 4     | 1.73                 | 5171  | 696   |
| SR        | C    | 89     | U   | +B  | Eth       | 4     | 1.00                 | 5171  | 696   |
| SR        | C    | 97     | U   | +B  | Eth       | 2     | 1.08                 | 5171  | 4183  |
| SR        | C    | 98     | U   | -B  | Sex       | 2     | -1.33                | 5429  | 5204  |
| SR        | C    | 99     | U   | +B  | Eth       | 2     | 1.28                 | 5171  | 4183  |
| SR        | C    | 99     | U   | +C  | Eth       | 4     | 1.52                 | 5171  | 696   |
| SR        | C    | 101    | U   | -C  | Eth       | 4     | -1.67                | 5171  | 696   |
| SR        | D    | 3      | C   | -B  | Eth       | 2     | -1.17                | 5069  | 4074  |
| SR        | D    | 27     | C   | +B  | Eth       | 2     | 1.13                 | 5069  | 4074  |
| CR        | D    | 33B    | U   | +BB | Sex       | 2     | 0.20                 | 5261  | 5112  |
| SR        | D    | 36     | C   | +B  | Eth       | 2     | 1.18                 | 5069  | 4074  |
| SR        | D    | 38     | C   | +C  | Eth       | 4     | 1.89                 | 5069  | 653   |
| SR        | D    | 44     | C   | +B  | Eth       | 2     | 1.45                 | 5069  | 4074  |
| SR        | D    | 71     | U   | -B  | Eth       | 4     | -1.04                | 5069  | 653   |
| CR        | D    | 74A    | U   | -BB | Eth       | 4     | -0.20                | 5069  | 653   |
| SR        | D    | 76     | U   | +C  | Eth       | 4     | 1.55                 | 5069  | 653   |
| SR        | D    | 79     | U   | +C  | Eth       | 4     | 1.95                 | 5069  | 653   |
| SR        | D    | 84     | U   | -B  | Sex       | 2     | -1.11                | 5261  | 5112  |
| SR        | D    | 91     | U   | +C  | Eth       | 2     | 1.60                 | 5069  | 4074  |
| SR        | D    | 97     | U   | +B  | Sex       | 2     | 1.03                 | 5261  | 5112  |
| SR        | D    | 99     | U   | -C  | Eth       | 2     | -1.52                | 5069  | 4074  |
| SR        | D    | 99     | U   | -B  | Eth       | 4     | -1.38                | 5069  | 653   |
| SR        | D    | 100    | U   | +B  | Eth       | 2     | 1.17                 | 5069  | 4074  |
| SR        | D    | 102    | U   | -B  | Eth       | 2     | -1.27                | 5069  | 4074  |
| SR        | E    | 34     | C   | +B  | Sex       | 2     | 1.05                 | 5156  | 5022  |
| SR        | E    | 36     | C   | +B  | Eth       | 2     | 1.37                 | 4914  | 4031  |
| SR        | E    | 36     | C   | +B  | Eth       | 4     | 1.36                 | 4914  | 656   |
| SR        | E    | 38     | C   | +B  | Eth       | 2     | 1.01                 | 4914  | 4031  |
| CR        | E    | 40A    | U   | -BB | Eth       | 2     | -0.18                | 4914  | 4031  |
| SR        | E    | 41     | C   | +B  | Eth       | 4     | 1.40                 | 4914  | 656   |
| SR        | E    | 44     | C   | +B  | Eth       | 2     | 1.30                 | 4914  | 4031  |
| SR        | E    | 54     | C   | -B  | Eth       | 4     | -1.24                | 4914  | 656   |
| SR        | E    | 71     | U   | -B  | Eth       | 4     | -1.09                | 4914  | 656   |
| SR        | E    | 78     | U   | +B  | Eth       | 4     | 1.07                 | 4914  | 656   |
| SR        | E    | 81     | U   | -B  | Eth       | 2     | -1.00                | 4914  | 4031  |
| SR        | E    | 82     | U   | +B  | Sex       | 2     | 1.32                 | 5156  | 5022  |
| SR        | E    | 83     | U   | +B  | Eth       | 2     | 1.16                 | 4914  | 4031  |
| SR        | E    | 88     | U   | +B  | Eth       | 4     | 1.06                 | 4914  | 656   |
| SR        | E    | 95     | U   | +B  | Eth       | 4     | 1.19                 | 4914  | 656   |
| SR        | E    | 97     | U   | -B  | Eth       | 2     | -1.00                | 4914  | 4031  |
| SR        | E    | 97     | U   | -B  | Eth       | 4     | -1.13                | 4914  | 656   |
| SR        | E    | 100    | U   | +B  | Eth       | 2     | 1.20                 | 4914  | 4031  |
| SR        | E    | 101    | U   | -B  | Sex       | 2     | -1.01                | 5156  | 5022  |



Table C2 (cont.)  
DIF for Mathematics Grade 4

| Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| SR        | F    | 3      | C   | -B  | Eth       | 2     | -1.11                | 4973  | 4032  |
| SR        | F    | 20     | C   | -B  | Eth       | 4     | -1.22                | 4973  | 755   |
| CR        | F    | 33B    | U   | +BB | Sex       | 2     | 0.21                 | 5354  | 4949  |
| SR        | F    | 36     | C   | +B  | Eth       | 2     | 1.19                 | 4973  | 4032  |
| SR        | F    | 41     | C   | +B  | Eth       | 4     | 1.26                 | 4973  | 755   |
| SR        | F    | 44     | C   | +B  | Eth       | 2     | 1.25                 | 4973  | 4032  |
| SR        | F    | 51     | C   | -B  | Eth       | 4     | -1.02                | 4973  | 755   |
| SR        | F    | 55     | C   | -B  | Eth       | 4     | -1.08                | 4973  | 755   |
| SR        | F    | 73     | U   | +B  | Eth       | 2     | 1.35                 | 4973  | 4032  |
| SR        | F    | 79     | U   | +B  | Eth       | 4     | 1.13                 | 4973  | 755   |
| SR        | F    | 88     | U   | +C  | Eth       | 2     | 1.56                 | 4973  | 4032  |
| SR        | F    | 100    | U   | -B  | Sex       | 2     | -1.01                | 5354  | 4949  |

Table C3  
DIF for Mathematics Grade 5

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | A    | 3      | C   | +B  | Eth       | 2     | 1.00                 | 6390  | 5156  |
| OP    | SR        | A    | 3      | C   | +C  | Eth       | 4     | 1.59                 | 6390  | 797   |
| OP    | SR        | A    | 18     | C   | +C  | Sex       | 2     | 1.54                 | 6715  | 6257  |
| OP    | SR        | A    | 19     | C   | -B  | Sex       | 2     | -1.14                | 6715  | 6257  |
| OP    | SR        | A    | 20     | C   | +B  | Sex       | 2     | 1.21                 | 6715  | 6257  |
| OP    | SR        | A    | 22     | C   | -B  | Eth       | 2     | -1.26                | 6390  | 5156  |
| OP    | SR        | A    | 22     | C   | -B  | Eth       | 4     | -1.02                | 6390  | 797   |
| OP    | SR        | A    | 24     | C   | -B  | Eth       | 2     | -1.22                | 6390  | 5156  |
| OP    | SR        | A    | 25     | C   | -B  | Sex       | 2     | -1.02                | 6715  | 6257  |
| OP    | SR        | A    | 26     | C   | -B  | Eth       | 2     | -1.31                | 6390  | 5156  |
| OP    | SR        | A    | 32     | C   | -B  | Eth       | 4     | -1.48                | 6390  | 797   |
| OP    | SR        | A    | 34     | C   | +C  | Eth       | 4     | 1.61                 | 6390  | 797   |
| OP    | SR        | A    | 55     | C   | -B  | Eth       | 4     | -1.27                | 6390  | 797   |
| OP    | SR        | A    | 60     | C   | +B  | Eth       | 2     | 1.17                 | 6390  | 5156  |
| OP    | SR        | A    | 60     | C   | +B  | Eth       | 4     | 1.01                 | 6390  | 797   |
| OP    | SR        | A    | 63     | U   | +B  | Eth       | 2     | 1.20                 | 6390  | 5156  |
| OP    | SR        | A    | 63     | U   | +B  | Eth       | 4     | 1.19                 | 6390  | 797   |
| OP    | SR        | A    | 69     | U   | -B  | Sex       | 2     | -1.04                | 6715  | 6257  |
| OP    | CR        | A    | 71B    | U   | +BB | Sex       | 2     | 0.24                 | 6715  | 6257  |
| OP    | SR        | A    | 73     | C   | -B  | Eth       | 2     | -1.12                | 6390  | 5156  |
| OP    | CR        | A    | 76B    | U   | +BB | Sex       | 2     | 0.20                 | 6715  | 6257  |
| FT    | SR        | A    | 77     | U   | -B  | Sex       | 2     | -1.20                | 6715  | 6257  |
| FT    | SR        | A    | 81     | U   | +B  | Eth       | 2     | 1.12                 | 6390  | 5156  |
| FT    | SR        | A    | 81     | U   | +B  | Eth       | 4     | 1.09                 | 6390  | 797   |
| FT    | SR        | A    | 87     | U   | +B  | Eth       | 2     | 1.13                 | 6390  | 5156  |
| FT    | SR        | A    | 87     | U   | +B  | Eth       | 4     | 1.15                 | 6390  | 797   |
| OP    | SR        | B    | 3      | C   | +B  | Eth       | 4     | 1.23                 | 6302  | 766   |
| OP    | SR        | B    | 12     | C   | -B  | Sex       | 2     | -1.04                | 6562  | 6207  |
| OP    | SR        | B    | 14     | C   | +B  | Eth       | 2     | 1.05                 | 6302  | 5077  |
| OP    | SR        | B    | 16     | C   | +B  | Sex       | 2     | 1.21                 | 6562  | 6207  |
| OP    | SR        | B    | 18     | C   | +B  | Sex       | 2     | 1.19                 | 6562  | 6207  |
| OP    | SR        | B    | 19     | C   | -B  | Sex       | 2     | -1.12                | 6562  | 6207  |
| OP    | SR        | B    | 22     | C   | -B  | Eth       | 2     | -1.00                | 6302  | 5077  |
| OP    | SR        | B    | 24     | C   | -B  | Eth       | 2     | -1.20                | 6302  | 5077  |
| OP    | SR        | B    | 26     | C   | -C  | Eth       | 2     | -1.57                | 6302  | 5077  |
| OP    | SR        | B    | 32     | C   | -C  | Eth       | 4     | -1.60                | 6302  | 766   |
| OP    | CR        | B    | 33B    | U   | +BB | Sex       | 2     | 0.17                 | 6562  | 6207  |
| OP    | CR        | B    | 40B    | U   | +BB | Eth       | 4     | 0.19                 | 6302  | 766   |
| OP    | SR        | B    | 42     | C   | +B  | Eth       | 2     | 1.07                 | 6302  | 5077  |
| OP    | SR        | B    | 52     | C   | +B  | Eth       | 2     | 1.01                 | 6302  | 5077  |
| OP    | CR        | B    | 54B    | U   | +BB | Eth       | 2     | 0.21                 | 6302  | 5077  |
| OP    | SR        | B    | 55     | C   | -B  | Eth       | 4     | -1.10                | 6302  | 766   |
| OP    | SR        | B    | 62     | U   | -B  | Sex       | 2     | -1.46                | 6562  | 6207  |
| OP    | SR        | B    | 65     | C   | +B  | Eth       | 2     | 1.13                 | 6302  | 5077  |

Table C3 (cont.)  
DIF for Mathematics Grade 5

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | CR        | B    | 76A    | U   | -BB | Eth       | 4     | -0.24                | 6302  | 766   |
| OP    | CR        | B    | 76B    | U   | -BB | Eth       | 2     | -0.17                | 6302  | 5077  |
| OP    | CR        | B    | 76B    | U   | -CC | Eth       | 4     | -0.26                | 6302  | 766   |
| FT    | SR        | B    | 80     | U   | -B  | Eth       | 4     | -1.00                | 6302  | 766   |
| FT    | SR        | B    | 81     | U   | +B  | Eth       | 2     | 1.02                 | 6302  | 5077  |
| FT    | SR        | B    | 82     | U   | +B  | Sex       | 2     | 1.32                 | 6562  | 6207  |
| FT    | SR        | B    | 83     | U   | -B  | Eth       | 2     | -1.21                | 6302  | 5077  |
| FT    | CR        | B    | 87B    | U   | -BB | Eth       | 2     | -0.22                | 6302  | 5077  |
| FT    | SR        | B    | 89     | U   | +B  | Sex       | 2     | 1.12                 | 6562  | 6207  |
| FT    | CR        | B    | 91A    | U   | -BB | Eth       | 2     | -0.21                | 6302  | 5077  |
| FT    | CR        | B    | 91B    | U   | -BB | Eth       | 2     | -0.18                | 6302  | 5077  |
| OP    | SR        | C    | 3      | C   | +B  | Eth       | 4     | 1.44                 | 6283  | 719   |
| OP    | SR        | C    | 12     | C   | -B  | Sex       | 2     | -1.08                | 6363  | 6253  |
| OP    | SR        | C    | 18     | C   | +B  | Sex       | 2     | 1.18                 | 6363  | 6253  |
| OP    | SR        | C    | 19     | C   | -B  | Sex       | 2     | -1.17                | 6363  | 6253  |
| OP    | SR        | C    | 20     | C   | +B  | Sex       | 2     | 1.46                 | 6363  | 6253  |
| OP    | SR        | C    | 22     | C   | -B  | Eth       | 2     | -1.01                | 6283  | 4974  |
| OP    | SR        | C    | 24     | C   | -B  | Eth       | 2     | -1.10                | 6283  | 4974  |
| OP    | SR        | C    | 25     | C   | -B  | Sex       | 2     | -1.17                | 6363  | 6253  |
| OP    | SR        | C    | 26     | C   | -B  | Eth       | 2     | -1.48                | 6283  | 4974  |
| OP    | SR        | C    | 32     | C   | -B  | Eth       | 4     | -1.33                | 6283  | 719   |
| OP    | SR        | C    | 42     | C   | +B  | Eth       | 2     | 1.01                 | 6283  | 4974  |
| OP    | SR        | C    | 52     | C   | +B  | Eth       | 4     | 1.09                 | 6283  | 719   |
| OP    | SR        | C    | 55     | C   | -B  | Eth       | 4     | -1.25                | 6283  | 719   |
| OP    | SR        | C    | 60     | C   | +B  | Eth       | 2     | 1.04                 | 6283  | 4974  |
| OP    | SR        | C    | 63     | U   | +B  | Eth       | 2     | 1.25                 | 6283  | 4974  |
| OP    | SR        | C    | 63     | U   | +B  | Eth       | 4     | 1.28                 | 6283  | 719   |
| OP    | CR        | C    | 71B    | U   | +CC | Sex       | 2     | 0.27                 | 6363  | 6253  |
| OP    | CR        | C    | 76B    | U   | +BB | Sex       | 2     | 0.18                 | 6363  | 6253  |
| FT    | CR        | C    | 77A    | U   | -CC | Eth       | 2     | -0.26                | 6283  | 4974  |
| FT    | CR        | C    | 77A    | U   | -CC | Eth       | 4     | -0.25                | 6283  | 719   |
| FT    | CR        | C    | 77B    | U   | -BB | Eth       | 2     | -0.22                | 6283  | 4974  |
| FT    | CR        | C    | 77B    | U   | -BB | Eth       | 4     | -0.19                | 6283  | 719   |
| FT    | SR        | C    | 78     | U   | +B  | Sex       | 2     | 1.07                 | 6363  | 6253  |
| FT    | SR        | C    | 82     | U   | +B  | Eth       | 2     | 1.38                 | 6283  | 4974  |
| FT    | SR        | C    | 83     | U   | -B  | Eth       | 2     | -1.17                | 6283  | 4974  |
| FT    | CR        | C    | 85A    | U   | -BB | Sex       | 2     | -0.20                | 6363  | 6253  |
| FT    | SR        | C    | 87     | U   | +B  | Sex       | 2     | 1.03                 | 6363  | 6253  |
| OP    | SR        | D    | 1      | C   | +B  | Eth       | 4     | 1.02                 | 6155  | 758   |
| OP    | SR        | D    | 3      | C   | +B  | Eth       | 2     | 1.12                 | 6155  | 4904  |
| OP    | SR        | D    | 3      | C   | +B  | Eth       | 4     | 1.06                 | 6155  | 758   |
| OP    | SR        | D    | 16     | C   | +C  | Eth       | 4     | 1.52                 | 6155  | 758   |
| OP    | SR        | D    | 16     | C   | +B  | Sex       | 2     | 1.05                 | 6332  | 6106  |
| OP    | SR        | D    | 18     | C   | +C  | Sex       | 2     | 1.51                 | 6332  | 6106  |

Table C3 (cont.)  
DIF for Mathematics Grade 5

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | D    | 19     | C   | -B  | Sex       | 2     | -1.20                | 6332  | 6106  |
| OP    | SR        | D    | 25     | C   | -B  | Sex       | 2     | -1.01                | 6332  | 6106  |
| OP    | SR        | D    | 26     | C   | -B  | Eth       | 2     | -1.13                | 6155  | 4904  |
| OP    | SR        | D    | 32     | C   | -B  | Eth       | 4     | -1.05                | 6155  | 758   |
| OP    | SR        | D    | 52     | C   | +B  | Eth       | 2     | 1.06                 | 6155  | 4904  |
| OP    | CR        | D    | 54B    | U   | +BB | Eth       | 2     | 0.21                 | 6155  | 4904  |
| OP    | SR        | D    | 55     | C   | -B  | Eth       | 4     | -1.03                | 6155  | 758   |
| OP    | SR        | D    | 62     | U   | -B  | Sex       | 2     | -1.42                | 6332  | 6106  |
| OP    | SR        | D    | 65     | C   | +B  | Eth       | 2     | 1.11                 | 6155  | 4904  |
| OP    | CR        | D    | 76A    | U   | -CC | Eth       | 4     | -0.28                | 6155  | 758   |
| OP    | CR        | D    | 76B    | U   | -CC | Eth       | 4     | -0.28                | 6155  | 758   |
| FT    | CR        | D    | 77A    | U   | -CC | Eth       | 2     | -0.29                | 6155  | 4904  |
| FT    | CR        | D    | 77B    | U   | -CC | Eth       | 2     | -0.32                | 6155  | 4904  |
| FT    | SR        | D    | 80     | U   | +B  | Eth       | 4     | 1.25                 | 6155  | 758   |
| FT    | SR        | D    | 81     | U   | -B  | Eth       | 2     | -1.36                | 6155  | 4904  |
| FT    | CR        | D    | 85A    | U   | -BB | Eth       | 2     | -0.17                | 6155  | 4904  |
| FT    | CR        | D    | 85B    | U   | -BB | Eth       | 2     | -0.22                | 6155  | 4904  |
| FT    | CR        | D    | 85B    | U   | -BB | Eth       | 4     | -0.20                | 6155  | 758   |
| OP    | SR        | E    | 3      | C   | +B  | Eth       | 2     | 1.07                 | 6049  | 4928  |
| OP    | SR        | E    | 3      | C   | +B  | Eth       | 4     | 1.40                 | 6049  | 698   |
| OP    | SR        | E    | 18     | C   | -B  | Eth       | 4     | -1.32                | 6049  | 698   |
| OP    | SR        | E    | 18     | C   | +C  | Sex       | 2     | 1.58                 | 6324  | 5982  |
| OP    | SR        | E    | 19     | C   | -B  | Sex       | 2     | -1.28                | 6324  | 5982  |
| OP    | SR        | E    | 24     | C   | -B  | Eth       | 2     | -1.17                | 6049  | 4928  |
| OP    | SR        | E    | 25     | C   | -B  | Sex       | 2     | -1.27                | 6324  | 5982  |
| OP    | SR        | E    | 26     | C   | -B  | Eth       | 2     | -1.50                | 6049  | 4928  |
| OP    | SR        | E    | 34     | C   | +C  | Eth       | 4     | 1.86                 | 6049  | 698   |
| OP    | SR        | E    | 42     | C   | +B  | Eth       | 2     | 1.08                 | 6049  | 4928  |
| OP    | SR        | E    | 55     | C   | -B  | Eth       | 4     | -1.02                | 6049  | 698   |
| OP    | SR        | E    | 60     | C   | +B  | Eth       | 2     | 1.02                 | 6049  | 4928  |
| OP    | SR        | E    | 63     | U   | +B  | Eth       | 2     | 1.15                 | 6049  | 4928  |
| OP    | SR        | E    | 63     | U   | +B  | Eth       | 4     | 1.09                 | 6049  | 698   |
| OP    | SR        | E    | 69     | U   | -B  | Sex       | 2     | -1.04                | 6324  | 5982  |
| OP    | CR        | E    | 71B    | U   | +CC | Sex       | 2     | 0.26                 | 6324  | 5982  |
| OP    | CR        | E    | 76B    | U   | +BB | Sex       | 2     | 0.18                 | 6324  | 5982  |
| FT    | SR        | E    | 83     | U   | -B  | Eth       | 4     | -1.31                | 6049  | 698   |
| FT    | CR        | E    | 89B    | U   | -BB | Eth       | 2     | -0.22                | 6049  | 4928  |

Table C4  
DIF for Mathematics Grade 6

| Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| SR        | A    | 20     | C   | -B  | Eth       | 2     | -1.06                | 5646  | 4585  |
| SR        | A    | 20     | C   | -C  | Sex       | 2     | -2.01                | 6058  | 5475  |
| CR        | A    | 58A    | U   | -BB | Eth       | 4     | -0.17                | 5646  | 697   |
| SR        | A    | 60     | C   | -B  | Sex       | 2     | -1.05                | 6058  | 5475  |
| CR        | A    | 75B    | U   | +BB | Sex       | 2     | 0.24                 | 6058  | 5475  |
| SR        | A    | 97     | U   | -B  | Sex       | 2     | -1.36                | 6058  | 5475  |
| SR        | A    | 106    | U   | -B  | Sex       | 2     | -1.14                | 6058  | 5475  |
| SR        | A    | 107    | U   | +B  | Sex       | 2     | 1.25                 | 6058  | 5475  |
| SR        | B    | 20     | C   | -C  | Sex       | 2     | -1.97                | 5857  | 5564  |
| CR        | B    | 58A    | U   | -BB | Eth       | 4     | -0.18                | 5667  | 695   |
| SR        | B    | 60     | C   | -B  | Sex       | 2     | -1.00                | 5857  | 5564  |
| CR        | B    | 69A    | U   | -BB | Sex       | 2     | -0.22                | 5857  | 5564  |
| SR        | B    | 82     | U   | +B  | Eth       | 2     | 1.07                 | 5667  | 4465  |
| SR        | C    | 20     | C   | -B  | Eth       | 2     | -1.05                | 5615  | 4446  |
| SR        | C    | 20     | C   | -C  | Sex       | 2     | -2.17                | 5843  | 5506  |
| SR        | C    | 98     | U   | -B  | Eth       | 4     | -1.05                | 5615  | 673   |
| SR        | D    | 20     | C   | -B  | Eth       | 2     | -1.38                | 5560  | 4505  |
| SR        | D    | 20     | C   | -B  | Eth       | 4     | -1.01                | 5560  | 643   |
| SR        | D    | 20     | C   | -C  | Sex       | 2     | -2.28                | 5746  | 5556  |
| SR        | D    | 44     | C   | -B  | Eth       | 2     | -1.46                | 5560  | 4505  |
| SR        | D    | 70     | U   | +B  | Sex       | 2     | 1.13                 | 5746  | 5556  |
| CR        | D    | 75B    | U   | +BB | Sex       | 2     | 0.17                 | 5746  | 5556  |
| SR        | D    | 83     | U   | -B  | Sex       | 2     | -1.01                | 5746  | 5556  |
| SR        | D    | 84     | U   | +B  | Eth       | 2     | 1.00                 | 5560  | 4505  |
| SR        | D    | 94     | U   | -B  | Sex       | 2     | -1.15                | 5746  | 5556  |
| SR        | D    | 101    | U   | -B  | Sex       | 2     | -1.08                | 5746  | 5556  |
| SR        | D    | 104    | U   | -B  | Sex       | 2     | -1.01                | 5746  | 5556  |
| SR        | E    | 20     | C   | -B  | Eth       | 2     | -1.34                | 5649  | 4294  |
| SR        | E    | 20     | C   | -C  | Sex       | 2     | -2.22                | 5837  | 5359  |
| SR        | E    | 44     | C   | -B  | Eth       | 2     | -1.34                | 5649  | 4294  |
| SR        | E    | 60     | C   | -B  | Sex       | 2     | -1.03                | 5837  | 5359  |
| SR        | E    | 65     | C   | -B  | Eth       | 4     | -1.17                | 5649  | 687   |
| SR        | E    | 70     | U   | +B  | Sex       | 2     | 1.01                 | 5837  | 5359  |
| SR        | E    | 71     | U   | +B  | Sex       | 2     | 1.40                 | 5837  | 5359  |
| SR        | E    | 83     | U   | +B  | Eth       | 2     | 1.01                 | 5649  | 4294  |
| SR        | E    | 85     | U   | +B  | Eth       | 2     | 1.03                 | 5649  | 4294  |
| SR        | E    | 94     | U   | -B  | Sex       | 2     | -1.14                | 5837  | 5359  |
| SR        | E    | 103    | U   | -B  | Sex       | 2     | -1.49                | 5837  | 5359  |
| SR        | F    | 20     | C   | -B  | Eth       | 2     | -1.35                | 5545  | 4333  |
| SR        | F    | 20     | C   | -B  | Eth       | 4     | -1.23                | 5545  | 681   |
| SR        | F    | 20     | C   | -C  | Sex       | 2     | -2.24                | 5762  | 5368  |
| SR        | F    | 44     | C   | -B  | Eth       | 2     | -1.18                | 5545  | 4333  |
| SR        | F    | 95     | U   | -C  | Sex       | 2     | -1.54                | 5762  | 5368  |
| SR        | F    | 106    | U   | -B  | Sex       | 2     | -1.36                | 5762  | 5368  |

Table C4 (cont.)  
DIF for Mathematics Grade 6

| Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| SR        | F    | 107    | U   | +B  | Sex       | 2     | 1.17                 | 5762  | 5368  |

Table C5  
DIF for Mathematics Grade 7

| Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| SR        | A    | 13     | C   | -B  | Eth       | 4     | -1.13                | 5819  | 689   |
| SR        | A    | 13     | C   | -B  | Sex       | 2     | -1.09                | 6038  | 5631  |
| SR        | A    | 24     | C   | -B  | Eth       | 2     | -1.46                | 5819  | 4567  |
| SR        | A    | 24     | C   | -B  | Sex       | 2     | -1.48                | 6038  | 5631  |
| SR        | A    | 38     | C   | -B  | Sex       | 2     | -1.34                | 6038  | 5631  |
| CR        | A    | 43B    | U   | +BB | Sex       | 2     | 0.18                 | 6038  | 5631  |
| SR        | A    | 50     | C   | -B  | Eth       | 2     | -1.03                | 5819  | 4567  |
| SPR       | A    | 57     | U   | -BB | Eth       | 2     | -0.19                | 5819  | 4567  |
| SR        | A    | 62     | C   | -B  | Eth       | 4     | -1.41                | 5819  | 689   |
| SPR       | A    | 63B    | U   | +BB | Eth       | 4     | 0.19                 | 5819  | 689   |
| SR        | A    | 88     | U   | -B  | Sex       | 2     | -1.07                | 6038  | 5631  |
| SR        | B    | 3      | C   | -B  | Sex       | 2     | -1.02                | 5944  | 5674  |
| SR        | B    | 13     | C   | -B  | Sex       | 2     | -1.01                | 5944  | 5674  |
| SR        | B    | 24     | C   | -B  | Eth       | 2     | -1.35                | 5858  | 4393  |
| SR        | B    | 24     | C   | -B  | Sex       | 2     | -1.45                | 5944  | 5674  |
| SR        | B    | 33     | C   | +B  | Eth       | 4     | 1.16                 | 5858  | 721   |
| SR        | B    | 38     | C   | -B  | Sex       | 2     | -1.28                | 5944  | 5674  |
| CR        | B    | 43A    | U   | -BB | Eth       | 4     | -0.21                | 5858  | 721   |
| CR        | B    | 43B    | U   | -BB | Eth       | 4     | -0.20                | 5858  | 721   |
| SR        | B    | 50     | C   | -B  | Eth       | 2     | -1.12                | 5858  | 4393  |
| SR        | B    | 61     | C   | -B  | Eth       | 4     | -1.04                | 5858  | 721   |
| SR        | B    | 62     | C   | -B  | Eth       | 4     | -1.26                | 5858  | 721   |
| CR        | B    | 63A    | U   | +BB | Eth       | 4     | 0.19                 | 5858  | 721   |
| CR        | B    | 63A    | U   | +BB | Sex       | 2     | 0.17                 | 5944  | 5674  |
| CR        | B    | 63B    | U   | +BB | Eth       | 4     | 0.22                 | 5858  | 721   |
| CR        | B    | 63B    | U   | +BB | Sex       | 2     | 0.18                 | 5944  | 5674  |
| SPR       | B    | 66     | U   | -BB | Eth       | 4     | -0.19                | 5858  | 721   |
| SR        | B    | 73     | C   | -B  | Sex       | 2     | -1.05                | 5944  | 5674  |
| SPR       | B    | 79     | U   | +BB | Eth       | 2     | 0.18                 | 5858  | 4393  |
| SR        | B    | 85     | U   | +B  | Eth       | 2     | 1.17                 | 5858  | 4393  |
| SR        | B    | 103    | U   | +B  | Eth       | 2     | 1.21                 | 5858  | 4393  |
| SR        | B    | 106    | U   | +B  | Eth       | 2     | 1.19                 | 5858  | 4393  |
| SR        | C    | 24     | C   | -B  | Eth       | 2     | -1.27                | 5770  | 4463  |
| SR        | C    | 24     | C   | -B  | Sex       | 2     | -1.46                | 5896  | 5644  |
| SR        | C    | 38     | C   | -B  | Sex       | 2     | -1.29                | 5896  | 5644  |
| CR        | C    | 43B    | U   | -BB | Eth       | 4     | -0.20                | 5770  | 684   |
| SR        | C    | 50     | C   | -B  | Eth       | 2     | -1.08                | 5770  | 4463  |
| CR        | C    | 53A    | U   | -BB | Eth       | 2     | -0.20                | 5770  | 4463  |
| CR        | C    | 53B    | U   | -BB | Eth       | 2     | -0.20                | 5770  | 4463  |
| SPR       | C    | 66     | U   | -BB | Eth       | 4     | -0.19                | 5770  | 684   |
| SR        | C    | 73     | C   | -B  | Sex       | 2     | -1.04                | 5896  | 5644  |
| SPR       | C    | 77     | U   | -BB | Eth       | 2     | -0.22                | 5770  | 4463  |
| SPR       | C    | 77     | U   | -BB | Sex       | 2     | -0.18                | 5896  | 5644  |
| SR        | C    | 102    | U   | +B  | Eth       | 2     | 1.01                 | 5770  | 4463  |

Table C5 (cont.)  
DIF for Mathematics Grade 7

| Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| SR        | C    | 104    | U   | +B  | Eth       | 2     | 1.15                 | 5770  | 4463  |
| SR        | D    | 13     | C   | -B  | Eth       | 4     | -1.03                | 5769  | 650   |
| SR        | D    | 24     | C   | -C  | Eth       | 2     | -1.59                | 5769  | 4441  |
| SR        | D    | 24     | C   | -C  | Sex       | 2     | -1.57                | 5906  | 5567  |
| SR        | D    | 38     | C   | -B  | Sex       | 2     | -1.17                | 5906  | 5567  |
| CR        | D    | 43A    | U   | -BB | Eth       | 4     | -0.23                | 5769  | 650   |
| CR        | D    | 43B    | U   | -CC | Eth       | 4     | -0.25                | 5769  | 650   |
| SR        | D    | 50     | C   | -B  | Eth       | 2     | -1.16                | 5769  | 4441  |
| SR        | D    | 73     | C   | -B  | Eth       | 2     | -1.01                | 5769  | 4441  |
| SR        | D    | 73     | C   | -B  | Sex       | 2     | -1.23                | 5906  | 5567  |
| SPR       | D    | 79     | U   | +BB | Eth       | 2     | 0.21                 | 5769  | 4441  |
| CR        | D    | 81B    | U   | +BB | Sex       | 2     | 0.21                 | 5906  | 5567  |
| SR        | E    | 13     | C   | -B  | Eth       | 4     | -1.10                | 5742  | 621   |
| SR        | E    | 24     | C   | -B  | Eth       | 2     | -1.30                | 5742  | 4422  |
| SR        | E    | 24     | C   | -B  | Sex       | 2     | -1.38                | 5836  | 5556  |
| SR        | E    | 34     | C   | -B  | Eth       | 4     | -1.01                | 5742  | 621   |
| SR        | E    | 38     | C   | -B  | Sex       | 2     | -1.29                | 5836  | 5556  |
| CR        | E    | 43A    | U   | -BB | Eth       | 4     | -0.18                | 5742  | 621   |
| CR        | E    | 43B    | U   | -BB | Eth       | 4     | -0.24                | 5742  | 621   |
| SPR       | E    | 67     | U   | -BB | Eth       | 4     | -0.21                | 5742  | 621   |
| SPR       | E    | 67     | U   | -BB | Sex       | 2     | -0.20                | 5836  | 5556  |
| SR        | E    | 73     | C   | -B  | Sex       | 2     | -1.15                | 5836  | 5556  |
| SPR       | E    | 79     | U   | +BB | Eth       | 2     | 0.18                 | 5742  | 4422  |
| SR        | E    | 85     | U   | +B  | Eth       | 4     | 1.02                 | 5742  | 621   |
| SR        | F    | 13     | C   | -B  | Eth       | 4     | -1.04                | 5716  | 640   |
| SR        | F    | 15     | C   | +B  | Sex       | 2     | 1.09                 | 5686  | 5582  |
| SR        | F    | 24     | C   | -B  | Eth       | 2     | -1.31                | 5716  | 4317  |
| SR        | F    | 24     | C   | -B  | Sex       | 2     | -1.43                | 5686  | 5582  |
| SR        | F    | 38     | C   | -B  | Eth       | 2     | -1.19                | 5716  | 4317  |
| SR        | F    | 38     | C   | -B  | Sex       | 2     | -1.34                | 5686  | 5582  |
| CR        | F    | 43B    | U   | -BB | Eth       | 4     | -0.22                | 5716  | 640   |
| SR        | F    | 45     | C   | +B  | Sex       | 2     | 1.07                 | 5686  | 5582  |
| SR        | F    | 50     | C   | -B  | Eth       | 2     | -1.14                | 5716  | 4317  |
| SR        | F    | 73     | C   | -B  | Sex       | 2     | -1.15                | 5686  | 5582  |
| SR        | F    | 83     | U   | +B  | Eth       | 2     | 1.17                 | 5716  | 4317  |
| SR        | F    | 104    | U   | -B  | Eth       | 4     | -1.24                | 5716  | 640   |
| SR        | F    | 105    | U   | -B  | Sex       | 2     | -1.18                | 5686  | 5582  |



Table C6  
DIF for Mathematics Grade 8

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | A    | 18     | C   | -B  | Eth       | 2     | -1.19                | 6703  | 4872  |
| OP    | SR        | A    | 18     | C   | -C  | Sex       | 2     | -1.88                | 6668  | 6314  |
| OP    | SR        | A    | 24     | C   | -B  | Sex       | 2     | -1.29                | 6668  | 6314  |
| OP    | SR        | A    | 26     | C   | -B  | Sex       | 2     | -1.27                | 6668  | 6314  |
| OP    | CR        | A    | 37B    | C   | +BB | Sex       | 2     | 0.18                 | 6668  | 6314  |
| FT    | SR        | A    | 77     | U   | -B  | Sex       | 2     | -1.24                | 6668  | 6314  |
| FT    | CR        | A    | 80B    | U   | +BB | Sex       | 2     | 0.17                 | 6668  | 6314  |
| OP    | SR        | B    | 16     | C   | -B  | Sex       | 2     | -1.02                | 6562  | 6315  |
| OP    | SR        | B    | 17     | C   | -B  | Eth       | 2     | -1.09                | 6697  | 4809  |
| OP    | SR        | B    | 18     | C   | -C  | Eth       | 2     | -1.57                | 6697  | 4809  |
| OP    | SR        | B    | 18     | C   | -B  | Eth       | 4     | -1.15                | 6697  | 723   |
| OP    | SR        | B    | 18     | C   | -C  | Sex       | 2     | -2.07                | 6562  | 6315  |
| OP    | SR        | B    | 24     | C   | -C  | Sex       | 2     | -1.53                | 6562  | 6315  |
| OP    | SR        | B    | 26     | C   | -B  | Sex       | 2     | -1.31                | 6562  | 6315  |
| OP    | CR        | B    | 37B    | C   | +BB | Sex       | 2     | 0.18                 | 6562  | 6315  |
| OP    | CR        | B    | 76B    | U   | +BB | Sex       | 2     | 0.18                 | 6562  | 6315  |
| FT    | SR        | B    | 81     | U   | +B  | Eth       | 2     | 1.05                 | 6697  | 4809  |
| OP    | SR        | C    | 13     | C   | +B  | Eth       | 4     | 1.12                 | 6694  | 731   |
| OP    | SR        | C    | 16     | C   | -B  | Sex       | 2     | -1.29                | 6566  | 6255  |
| OP    | SR        | C    | 18     | C   | -B  | Eth       | 2     | -1.36                | 6694  | 4761  |
| OP    | SR        | C    | 18     | C   | -B  | Eth       | 4     | -1.07                | 6694  | 731   |
| OP    | SR        | C    | 18     | C   | -C  | Sex       | 2     | -1.86                | 6566  | 6255  |
| OP    | SR        | C    | 24     | C   | -C  | Sex       | 2     | -1.55                | 6566  | 6255  |
| OP    | SR        | C    | 26     | C   | -B  | Sex       | 2     | -1.29                | 6566  | 6255  |
| OP    | CR        | C    | 37A    | C   | +BB | Eth       | 4     | 0.18                 | 6694  | 731   |
| OP    | CR        | C    | 37B    | C   | +BB | Eth       | 4     | 0.18                 | 6694  | 731   |
| OP    | CR        | C    | 37B    | C   | +BB | Sex       | 2     | 0.18                 | 6566  | 6255  |
| OP    | SR        | D    | 4      | C   | +B  | Eth       | 4     | 1.13                 | 6611  | 720   |
| OP    | SR        | D    | 6      | C   | +B  | Eth       | 4     | 1.02                 | 6611  | 720   |
| OP    | SR        | D    | 16     | C   | -B  | Eth       | 2     | -1.12                | 6611  | 4827  |
| OP    | SR        | D    | 17     | C   | -B  | Eth       | 2     | -1.15                | 6611  | 4827  |
| OP    | SR        | D    | 18     | C   | -B  | Eth       | 2     | -1.40                | 6611  | 4827  |
| OP    | SR        | D    | 18     | C   | -C  | Sex       | 2     | -1.91                | 6493  | 6305  |
| OP    | SR        | D    | 24     | C   | -C  | Sex       | 2     | -1.53                | 6493  | 6305  |
| OP    | SR        | D    | 26     | C   | -B  | Sex       | 2     | -1.37                | 6493  | 6305  |
| OP    | CR        | D    | 37B    | C   | +BB | Sex       | 2     | 0.18                 | 6493  | 6305  |
| FT    | CR        | D    | 88B    | U   | +BB | Sex       | 2     | 0.18                 | 6493  | 6305  |
| OP    | SR        | E    | 4      | C   | +B  | Eth       | 2     | 1.07                 | 6500  | 4770  |
| OP    | SR        | E    | 4      | C   | +B  | Eth       | 4     | 1.23                 | 6500  | 717   |
| OP    | SR        | E    | 5      | C   | -B  | Sex       | 2     | -1.03                | 6385  | 6266  |
| OP    | SR        | E    | 10     | C   | +B  | Eth       | 2     | 1.02                 | 6500  | 4770  |
| OP    | SR        | E    | 13     | C   | +B  | Eth       | 4     | 1.01                 | 6500  | 717   |
| OP    | SR        | E    | 13     | C   | +B  | Sex       | 2     | 1.02                 | 6385  | 6266  |
| OP    | SR        | E    | 17     | C   | -B  | Eth       | 2     | -1.01                | 6500  | 4770  |

Table C6 (cont.)  
DIF for Mathematics Grade 8

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | E    | 18     | C   | -B  | Eth       | 2     | -1.28                | 6500  | 4770  |
| OP    | SR        | E    | 18     | C   | -C  | Sex       | 2     | -1.93                | 6385  | 6266  |
| OP    | SR        | E    | 24     | C   | -B  | Sex       | 2     | -1.48                | 6385  | 6266  |
| OP    | SR        | E    | 26     | C   | -B  | Sex       | 2     | -1.38                | 6385  | 6266  |
| OP    | CR        | E    | 37B    | C   | +BB | Sex       | 2     | 0.21                 | 6385  | 6266  |
| OP    | CR        | E    | 64B    | C   | +BB | Sex       | 2     | 0.18                 | 6385  | 6266  |
| FT    | CR        | E    | 81B    | U   | -BB | Eth       | 4     | -0.20                | 6500  | 717   |

Table C7  
DIF for Reading Grade 10

| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | A    | 1      | C   | -B  | Sex       | 2     | -1.18                | 10567 | 10385 |
| OP    | SR        | A    | 2      | C   | -B  | Sex       | 2     | -1.32                | 10567 | 10385 |
| OP    | SR        | A    | 3      | C   | -B  | Sex       | 2     | -1.18                | 10567 | 10385 |
| OP    | SR        | A    | 31     | C   | -B  | Eth       | 2     | -1.29                | 11332 | 7241  |
| OP    | SR        | A    | 33     | C   | -B  | Sex       | 2     | -1.22                | 10567 | 10385 |
| OP    | SR        | A    | 34     | C   | -B  | Sex       | 2     | -1.05                | 10567 | 10385 |
| OP    | SR        | A    | 35     | C   | -C  | Sex       | 2     | -1.51                | 10567 | 10385 |
| OP    | SR        | A    | 44     | C   | +B  | Eth       | 4     | 1.29                 | 11332 | 1130  |
| OP    | SR        | A    | 51     | C   | +B  | Eth       | 4     | 1.16                 | 11332 | 1130  |
| OP    | SR        | A    | 57     | C   | +B  | Eth       | 4     | 1.32                 | 11332 | 1130  |
| OP    | CR        | A    | 63     | U   | +BB | Sex       | 2     | 0.21                 | 10567 | 10385 |
| OP    | SR        | A    | 65     | U   | -B  | Eth       | 2     | -1.25                | 11332 | 7241  |
| OP    | SR        | A    | 65     | U   | -B  | Eth       | 4     | -1.34                | 11332 | 1130  |
| OP    | CR        | A    | 69     | U   | -BB | Eth       | 4     | -0.17                | 11332 | 1130  |
| OP    | SR        | A    | 77     | U   | -B  | Eth       | 2     | -1.10                | 11332 | 7241  |
| OP    | SR        | A    | 77     | U   | -B  | Sex       | 2     | -1.15                | 10567 | 10385 |
| FT    | CR        | A    | 91     | U   | +BB | Sex       | 2     | 0.17                 | 10567 | 10385 |
| OP    | SR        | B    | 1      | C   | -B  | Sex       | 2     | -1.30                | 10485 | 10332 |
| OP    | SR        | B    | 2      | C   | -B  | Sex       | 2     | -1.26                | 10485 | 10332 |
| OP    | SR        | B    | 3      | C   | -B  | Sex       | 2     | -1.28                | 10485 | 10332 |
| OP    | SR        | B    | 7      | C   | +B  | Eth       | 4     | 1.12                 | 11211 | 1182  |
| OP    | SR        | B    | 31     | C   | -B  | Eth       | 2     | -1.13                | 11211 | 7122  |
| OP    | SR        | B    | 33     | C   | -B  | Sex       | 2     | -1.29                | 10485 | 10332 |
| OP    | SR        | B    | 34     | C   | -B  | Sex       | 2     | -1.15                | 10485 | 10332 |
| OP    | SR        | B    | 35     | C   | -C  | Sex       | 2     | -1.62                | 10485 | 10332 |
| OP    | SR        | B    | 47     | C   | -B  | Sex       | 2     | -1.03                | 10485 | 10332 |
| OP    | SR        | B    | 51     | C   | +B  | Eth       | 4     | 1.16                 | 11211 | 1182  |
| OP    | SR        | B    | 57     | C   | +B  | Eth       | 4     | 1.07                 | 11211 | 1182  |
| OP    | SR        | B    | 62     | U   | +B  | Eth       | 4     | 1.19                 | 11211 | 1182  |
| OP    | SR        | B    | 66     | U   | -B  | Eth       | 4     | -1.17                | 11211 | 1182  |
| OP    | SR        | B    | 68     | U   | -B  | Eth       | 4     | -1.25                | 11211 | 1182  |
| OP    | CR        | B    | 78     | U   | +BB | Sex       | 2     | 0.20                 | 10485 | 10332 |
| OP    | CR        | B    | 79     | U   | +BB | Sex       | 2     | 0.17                 | 10485 | 10332 |
| FT    | CR        | B    | 87     | U   | +BB | Sex       | 2     | 0.25                 | 10485 | 10332 |
| FT    | CR        | B    | 90     | U   | +CC | Sex       | 2     | 0.26                 | 10485 | 10332 |
| OP    | SR        | C    | 1      | C   | -B  | Sex       | 2     | -1.22                | 10272 | 10333 |
| OP    | SR        | C    | 2      | C   | -B  | Sex       | 2     | -1.28                | 10272 | 10333 |
| OP    | SR        | C    | 3      | C   | -B  | Sex       | 2     | -1.17                | 10272 | 10333 |
| OP    | SR        | C    | 31     | C   | -B  | Eth       | 2     | -1.04                | 11211 | 7061  |
| OP    | SR        | C    | 33     | C   | -B  | Sex       | 2     | -1.16                | 10272 | 10333 |
| OP    | SR        | C    | 35     | C   | -C  | Sex       | 2     | -1.53                | 10272 | 10333 |
| OP    | SR        | C    | 51     | C   | +B  | Eth       | 4     | 1.19                 | 11211 | 1095  |
| OP    | SR        | C    | 57     | C   | +B  | Eth       | 4     | 1.02                 | 11211 | 1095  |
| OP    | CR        | C    | 63     | U   | +BB | Sex       | 2     | 0.22                 | 10272 | 10333 |

Table C7 (cont.)  
DIF for Reading Grade 10

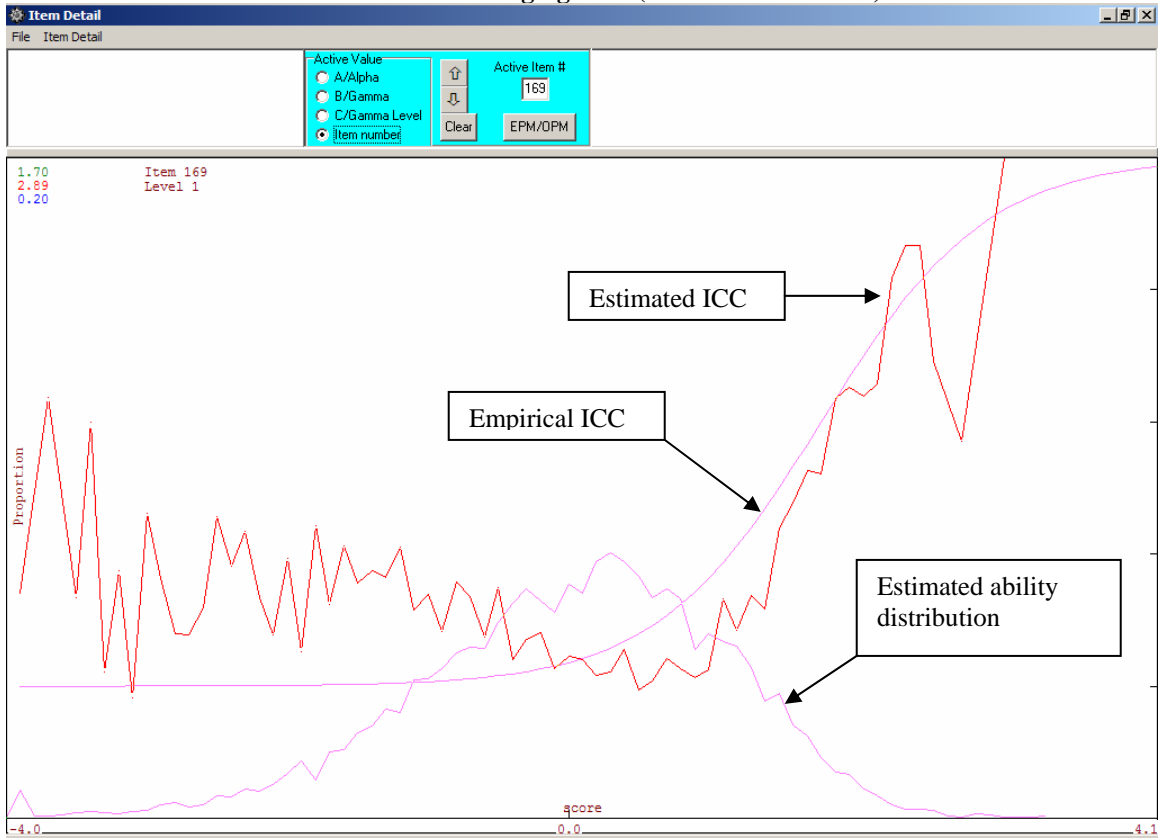
| OP/FT | Item Type | Form | Item # | C/U | DIF | Bias Type | Focal | Delta(SR)<br>ES (CR) | N_Ref | N_Foc |
|-------|-----------|------|--------|-----|-----|-----------|-------|----------------------|-------|-------|
| OP    | SR        | C    | 65     | U   | -B  | Eth       | 2     | -1.30                | 11211 | 7061  |
| OP    | SR        | C    | 65     | U   | -B  | Eth       | 4     | -1.21                | 11211 | 1095  |
| OP    | SR        | C    | 68     | U   | -B  | Eth       | 4     | -1.09                | 11211 | 1095  |
| OP    | SR        | C    | 77     | U   | -B  | Eth       | 2     | -1.16                | 11211 | 7061  |
| OP    | SR        | C    | 77     | U   | -B  | Sex       | 2     | -1.22                | 10272 | 10333 |
| FT    | CR        | C    | 85     | U   | +BB | Sex       | 2     | 0.19                 | 10272 | 10333 |
| FT    | CR        | C    | 91     | U   | +BB | Sex       | 2     | 0.19                 | 10272 | 10333 |

**Appendix D**  
**Non-Converging Item Plots**

## Figures List

|   |      |
|---|------|
| Figure D1 Grade 4 Non-Converging Item (Form B – Item #109).....   | D-3  |
| Figure D2 Grade 6 Non-Converging Item (All Forms – Item #47)..... | D-4  |
| Figure D3 Grade 6 Non-Converging Item (Form A – Item #95).....    | D-5  |
| Figure D4 Grade 6 Non-Converging Item (Form B – Item #93).....    | D-6  |
| Figure D5 Grade 6 Non-Converging Item (Form B – Item #94).....    | D-7  |
| Figure D6 Grade 6 Non-Converging Item (Form B – Item #95).....    | D-8  |
| Figure D7 Grade 6 Non-Converging Item (Form E – Item #72).....    | D-9  |
| Figure D8 Grade 6 Non-Converging Item (Form E – Item #92).....    | D-10 |
| Figure D9 Grade 6 Non-Converging Item (Form E – Item #94).....    | D-11 |
| Figure D10 Grade 7 Non-Converging Item (Form E – Item #66).....   | D-12 |
| Figure D11 Grade 10 Non-Converging Item (Form C – Item #80).....  | D-14 |

**Figure D1**  
**Grade 4 Non-Converging Item (Form B – Item #109)**



**Figure D2**  
**Grade 6 Non-Converging Item (All Forms – Item #47)**

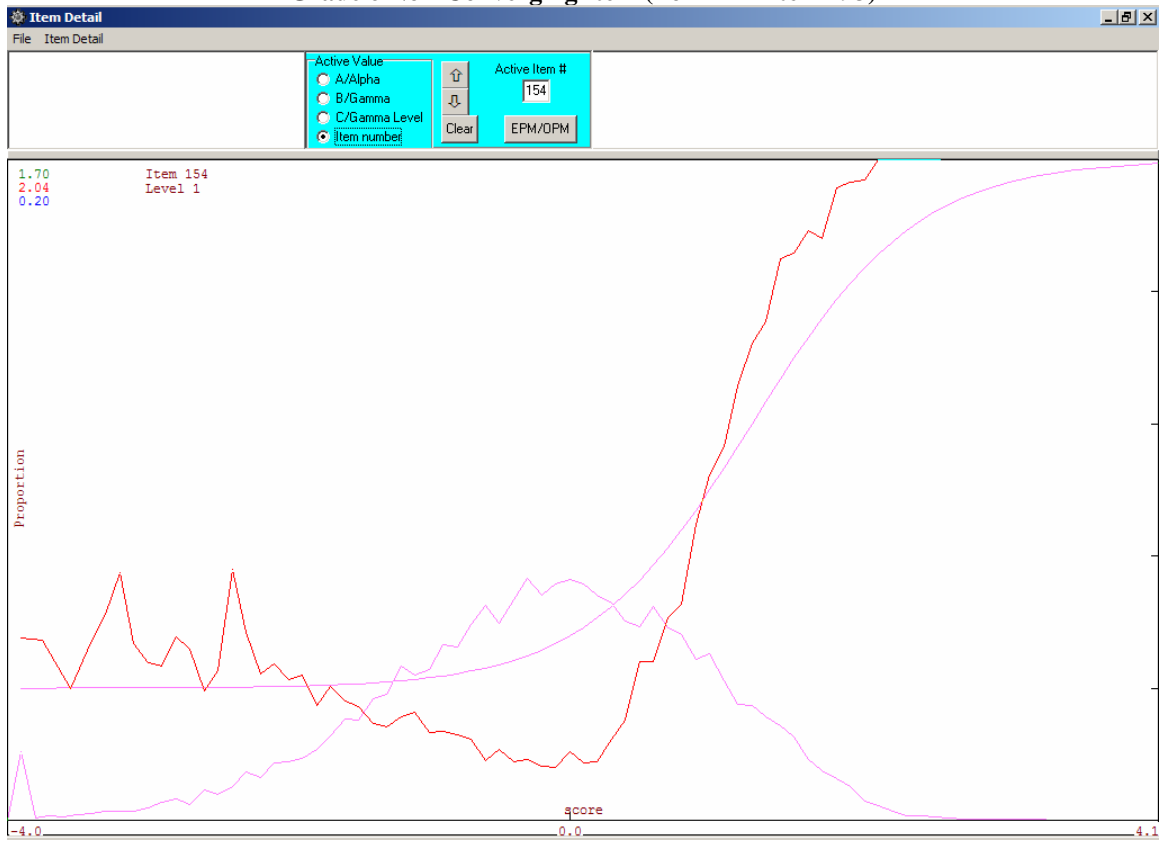




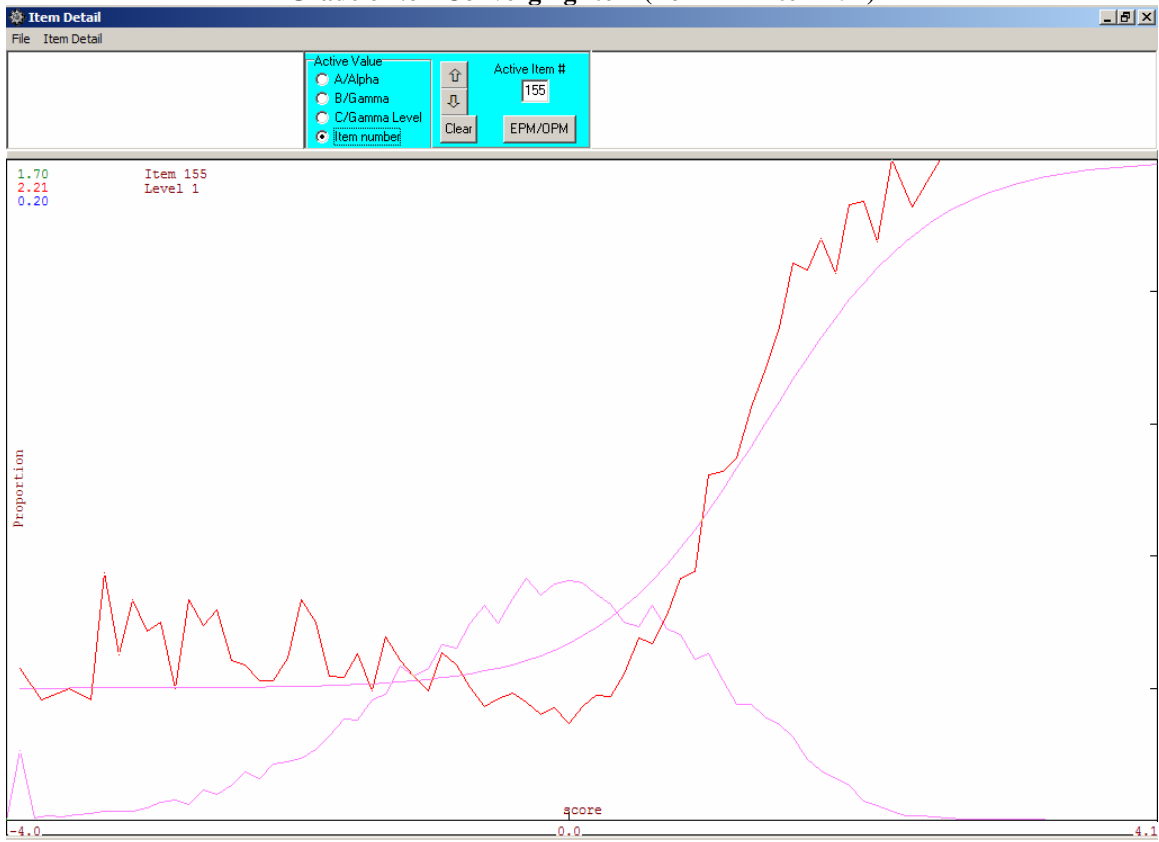
**Figure D3**  
**Grade 6 Non-Converging Item (Form A – Item #95)**



**Figure D4**  
**Grade 6 Non-Converging Item (Form B – Item #93)**



**Figure D5**  
**Grade 6 Non-Converging Item (Form B – Item #94)**



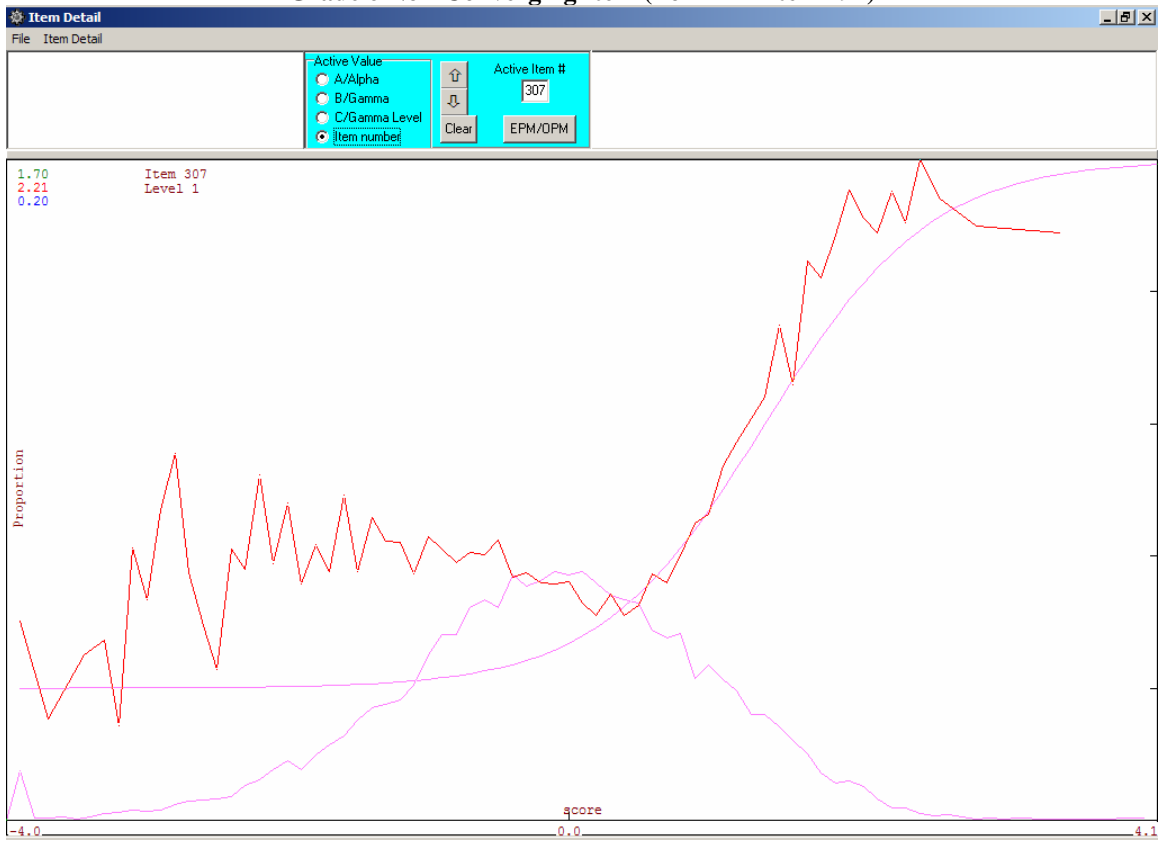
**Figure D6**  
**Grade 6 Non-Converging Item (Form B – Item #95)**



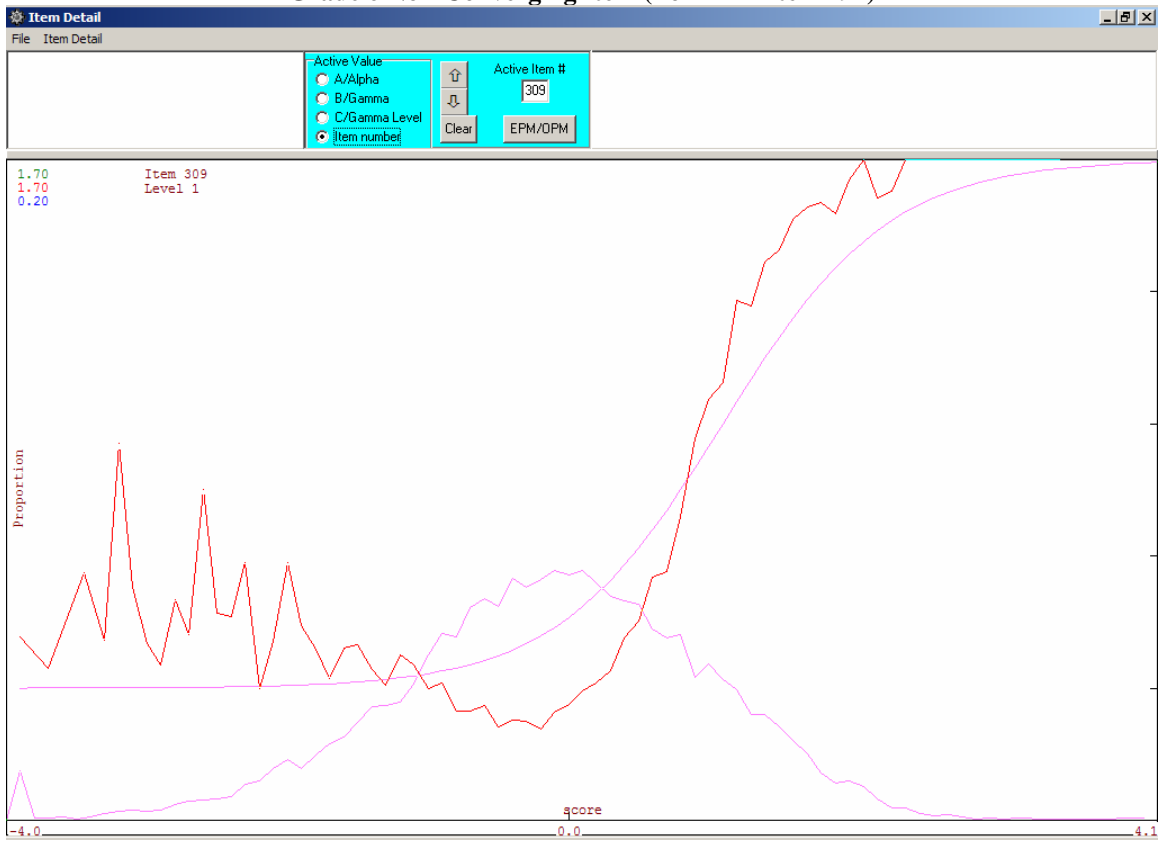
**Figure D7**  
**Grade 6 Non-Converging Item (Form E – Item #72)**



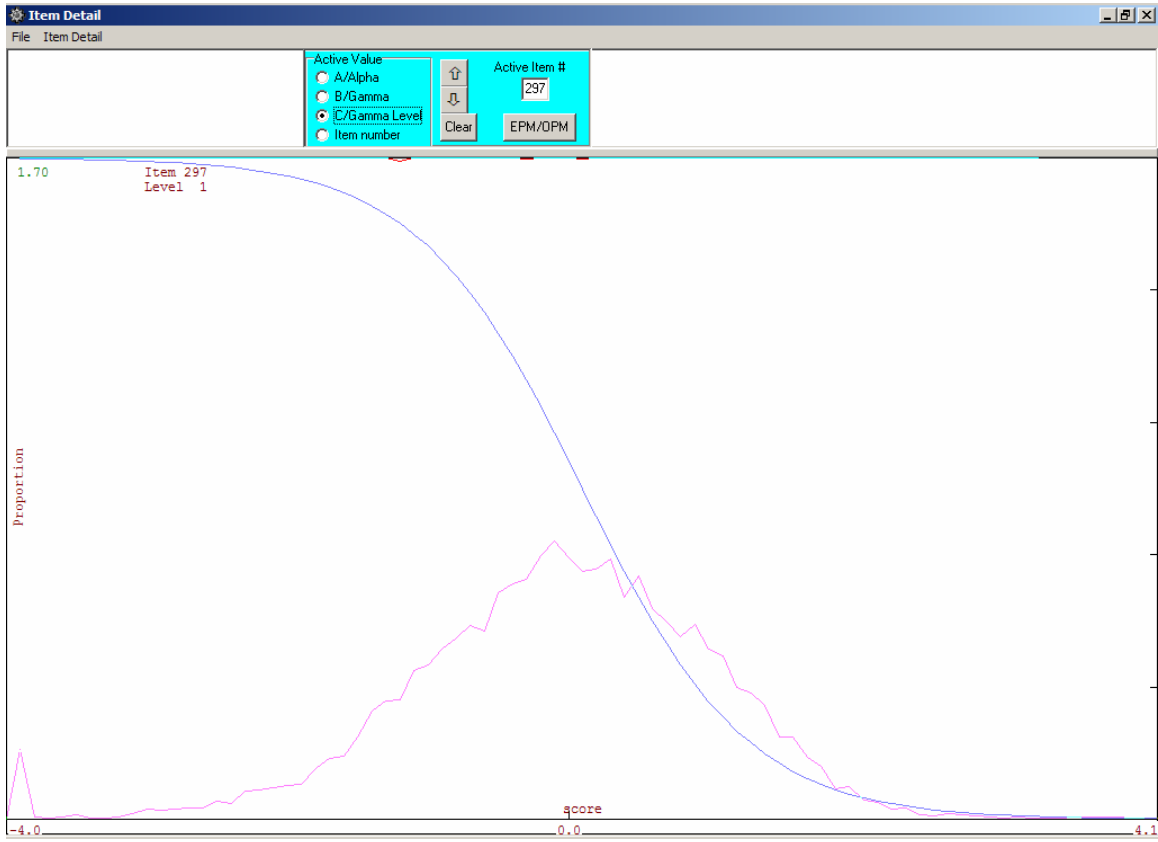
**Figure D8**  
**Grade 6 Non-Converging Item (Form E – Item #92)**



**Figure D9**  
**Grade 6 Non-Converging Item (Form E – Item #94)**

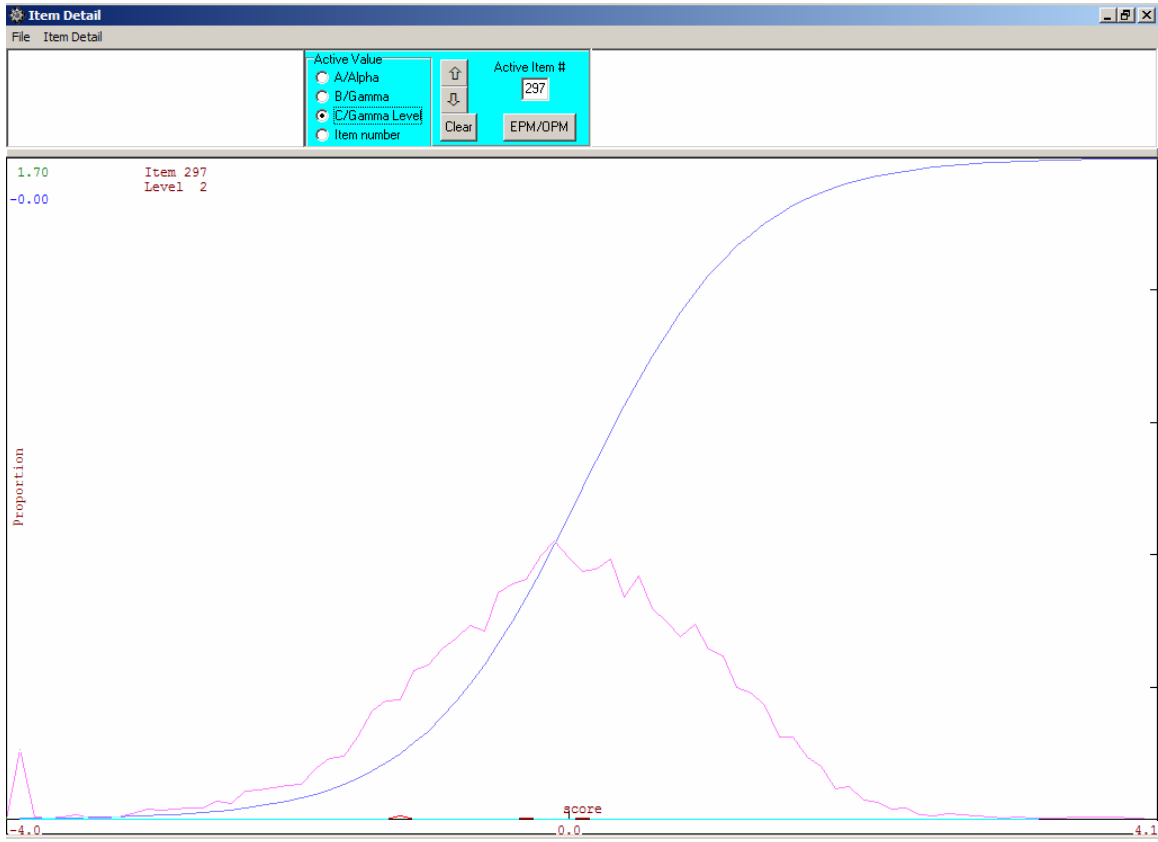


**Figure D10**  
**Grade 7 Non-Converging Item (Form E – Item #66)**  
**Level 1**

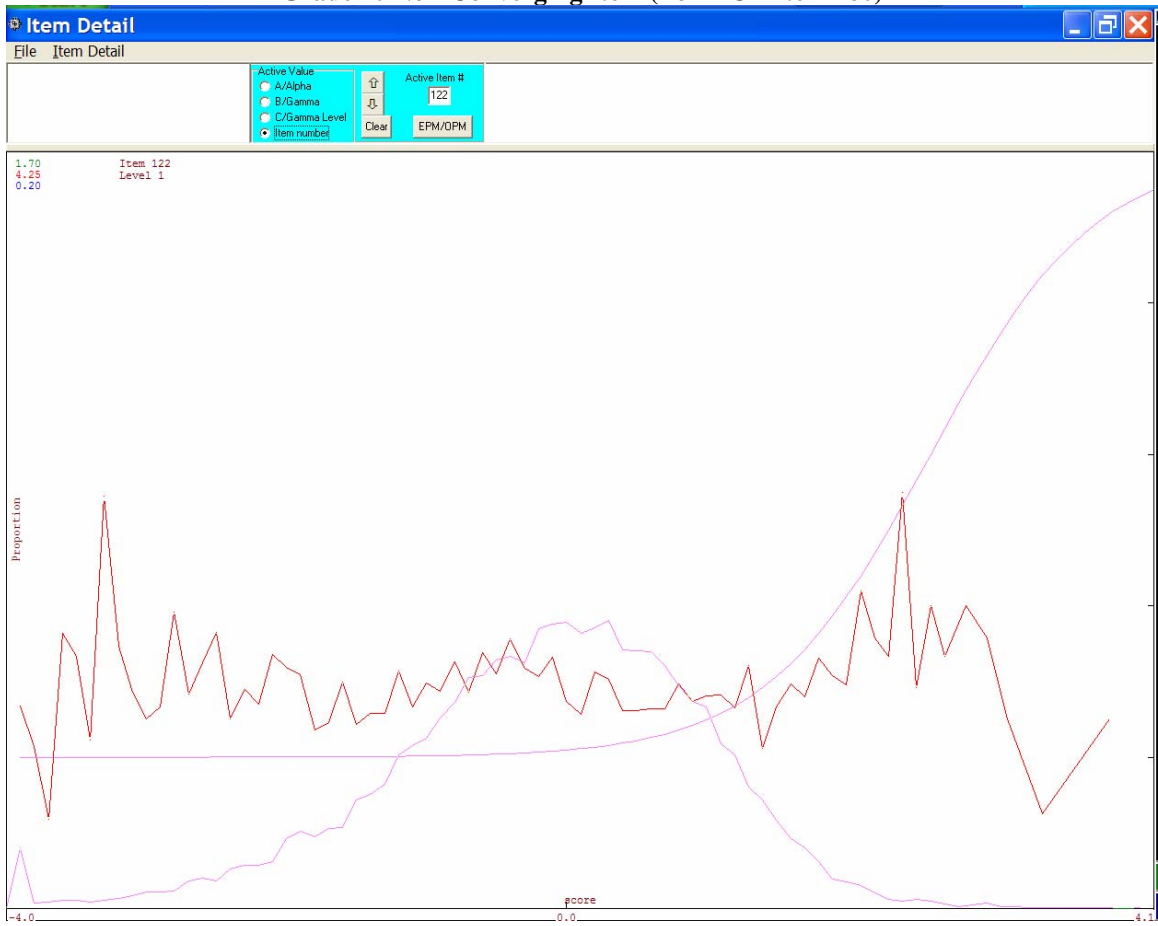




**Figure D10 (cont.)**  
**Grade 7 Non-Converging Item (Form E – Item #66)**  
**Level 2**



**Figure D11**  
**Grade 10 Non-Converging Item (Form C – Item #80)**



**Appendix E**  
**IRT Item Parameters**

## Tables List

|  |      |
|--|------|
| Table E1 Item Parameters for Mathematics Grade 3 Form A .....  | E-3  |
| Table E2 Item Parameters for Mathematics Grade 3 Form B .....  | E-6  |
| Table E3 Item Parameters for Mathematics Grade 3 Form C .....  | E-9  |
| Table E4 Item Parameters for Mathematics Grade 3 Form D .....  | E-12 |
| Table E5 Item Parameters for Mathematics Grade 3 Form E .....  | E-15 |
| Table E6 Item Parameters for Mathematics Grade 4 Form A .....  | E-18 |
| Table E7 Item Parameters for Mathematics Grade 4 Form B .....  | E-20 |
| Table E8 Item Parameters for Mathematics Grade 4 Form C .....  | E-22 |
| Table E9 Item Parameters for Mathematics Grade 4 Form D .....  | E-24 |
| Table E10 Item Parameters for Mathematics Grade 4 Form E ..... | E-26 |
| Table E11 Item Parameters for Mathematics Grade 4 Form F ..... | E-28 |
| Table E12 Item Parameters for Mathematics Grade 5 Form A ..... | E-30 |
| Table E13 Item Parameters for Mathematics Grade 5 Form B ..... | E-32 |
| Table E14 Item Parameters for Mathematics Grade 5 Form C ..... | E-34 |
| Table E15 Item Parameters for Mathematics Grade 5 Form D ..... | E-36 |
| Table E16 Item Parameters for Mathematics Grade 5 Form E ..... | E-38 |
| Table E17 Item Parameters for Mathematics Grade 6 Form A ..... | E-40 |
| Table E18 Item Parameters for Mathematics Grade 6 Form B ..... | E-42 |
| Table E19 Item Parameters for Mathematics Grade 6 Form C ..... | E-44 |
| Table E20 Item Parameters for Mathematics Grade 6 Form D ..... | E-46 |
| Table E21 Item Parameters for Mathematics Grade 6 Form E ..... | E-48 |
| Table E22 Item Parameters for Mathematics Grade 6 Form F ..... | E-50 |
| Table E23 Item Parameters for Mathematics Grade 7 Form A ..... | E-52 |
| Table E24 Item Parameters for Mathematics Grade 7 Form B ..... | E-54 |
| Table E25 Item Parameters for Mathematics Grade 7 Form C ..... | E-56 |
| Table E26 Item Parameters for Mathematics Grade 7 Form D ..... | E-58 |
| Table E27 Item Parameters for Mathematics Grade 7 Form E ..... | E-60 |
| Table E28 Item Parameters for Mathematics Grade 7 Form F ..... | E-62 |
| Table E29 Item Parameters for Mathematics Grade 8 Form A ..... | E-64 |
| Table E30 Item Parameters for Mathematics Grade 8 Form B ..... | E-66 |
| Table E31 Item Parameters for Mathematics Grade 8 Form C ..... | E-68 |
| Table E32 Item Parameters for Mathematics Grade 8 Form D ..... | E-70 |
| Table E33 Item Parameters for Mathematics Grade 8 Form E ..... | E-72 |
| Table E34 Item Parameters for Reading Grade 10 Form A .....    | E-74 |
| Table E35 Item Parameters for Reading Grade 10 Form B .....    | E-76 |
| Table E36 Item Parameters for Reading Grade 10 Form C .....    | E-78 |

Table E1  
Item Parameters for Mathematics Grade 3 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |
|--------|------------------|-----------|-----------------|--------|--------|
|        |                  |           | a               | b      | c      |
| 1      | C                | SR        | 0.458           | -2.339 | 0.150  |
| 2      | C                | SR        | 0.541           | -2.918 | 0.150  |
| 4      | C                | SR        | 0.633           | -2.298 | 0.150  |
| 10     | C                | SR        | 0.745           | -2.125 | 0.082  |
| 12     | C                | SR        | 0.763           | -2.068 | 0.200  |
| 13     | C                | SR        | 0.981           | -1.488 | 0.241  |
| 14     | C                | SR        | 0.528           | -2.191 | 0.200  |
| 16     | C                | SR        | 0.630           | -3.161 | 0.200  |
| 17     | C                | SR        | 0.595           | -2.473 | 0.166  |
| 18     | C                | SR        | 0.576           | -4.238 | 0.200  |
| 24     | C                | SR        | 0.994           | -2.952 | 0.166  |
| 31A    | U                | CR        | 1.534           | -2.809 | .      |
| 31B    | U                | CR        | 0.753           | 0.378  | -0.199 |
| 32     | C                | SR        | 1.071           | -2.686 | 0.107  |
| 33     | C                | SR        | 0.736           | 0.207  | 0.297  |
| 34     | C                | SR        | 0.677           | -1.050 | 0.159  |
| 35     | C                | SR        | 0.390           | -2.412 | 0.200  |
| 36     | C                | SR        | 0.964           | -0.150 | 0.244  |
| 37A    | U                | CR        | 0.922           | -2.017 | .      |
| 37B    | U                | CR        | 0.844           | -0.883 | -0.200 |
| 38     | C                | SR        | 0.789           | -3.166 | 0.200  |
| 39     | C                | SR        | 0.989           | -2.187 | 0.151  |
| 40     | C                | SR        | 1.174           | -0.900 | 0.115  |
| 41     | C                | SR        | 0.694           | -1.562 | 0.200  |
| 42     | C                | SR        | 1.180           | -1.924 | 0.070  |
| 43     | C                | SR        | 0.686           | -1.155 | 0.074  |
| 44A    | U                | CR        | 1.181           | -0.861 | .      |
| 44B    | U                | CR        | 1.018           | -0.627 | -0.322 |
| 45     | C                | SR        | 0.731           | -2.458 | 0.200  |
| 46     | C                | SR        | 1.301           | -1.813 | 0.130  |
| 47     | C                | SR        | 0.822           | -1.576 | 0.166  |
| 48     | C                | SR        | 0.912           | -1.142 | 0.087  |
| 49     | C                | SR        | 0.713           | 1.712  | 0.339  |
| 50     | C                | SR        | 0.781           | -2.467 | 0.200  |
| 51     | C                | SR        | 0.785           | -0.755 | 0.236  |
| 52     | C                | SR        | 0.760           | -2.314 | 0.166  |
| 53     | C                | SR        | 0.868           | -1.283 | 0.421  |

Table E1 (cont.)  
Item Parameters for Mathematics Grade 3 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |
|--------|------------------|-----------|-----------------|--------|--------|
|        |                  |           | a               | b      | c      |
| 54     | U                | SR        | 0.643           | -1.542 | 0.336  |
| 55     | C                | SR        | 0.635           | -0.695 | 0.326  |
| 56A    | U                | CR        | 1.328           | -2.357 | .      |
| 56B    | U                | CR        | 0.880           | -0.827 | -0.563 |
| 57     | C                | SR        | 0.795           | -2.447 | 0.191  |
| 58     | U                | SR        | 0.730           | -0.428 | 0.107  |
| 59     | C                | SR        | 0.865           | -2.449 | 0.091  |
| 60     | U                | SR        | 1.319           | -1.819 | 0.259  |
| 61A    | U                | CR        | 1.169           | -2.060 | .      |
| 61B    | U                | CR        | 0.823           | -1.441 | -0.286 |
| 62     | C                | SR        | 1.079           | -0.051 | 0.194  |
| 63     | U                | SR        | 0.616           | -1.679 | 0.075  |
| 64     | C                | SR        | 0.886           | -1.464 | 0.200  |
| 65     | U                | SR        | 0.874           | 0.034  | 0.059  |
| 66     | C                | SR        | 1.193           | -0.247 | 0.259  |
| 67     | U                | SR        | 0.961           | -1.086 | 0.220  |
| 68     | U                | SR        | 0.749           | -3.555 | 0.200  |
| 69A    | U                | CR        | 1.376           | -2.963 | .      |
| 69B    | U                | CR        | 1.225           | -1.262 | 2.689  |
| 70     | U                | SR        | 1.166           | 0.480  | 0.152  |
| 71     | C                | SR        | 0.715           | -1.534 | 0.103  |
| 72     | U                | SR        | 0.686           | -1.602 | 0.166  |
| 73     | U                | SR        | 0.777           | -2.927 | 0.200  |
| 74A    | U                | CR        | 0.610           | -1.144 | .      |
| 74B    | U                | CR        | 0.535           | -0.433 | -0.247 |
| 75     | C                | SR        | 0.714           | 1.456  | 0.121  |
| 76     | C                | SR        | 0.881           | -1.110 | 0.098  |
| 77     | C                | SR        | 1.228           | -1.912 | 0.183  |
| 78     | U                | SR        | 1.270           | -1.714 | .      |
| 79     | U                | SR        | 1.137           | -1.449 | 1.680  |
| 80     | U                | SR        | 1.218           | -3.759 | .      |
| 81     | U                | SR        | 0.784           | -1.008 | 0.287  |
| 82     | U                | SR        | 0.674           | -0.716 | .      |
| 83     | U                | SR        | 1.078           | -1.049 | -0.233 |
| 84A    | U                | CR        | 0.670           | -1.944 | 0.166  |
| 84B    | U                | CR        | 1.126           | -1.305 | .      |
| 85     | U                | SR        | 1.289           | -1.199 | 0.447  |

Table E1 (cont.)  
Item Parameters for Mathematics Grade 3 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 86     | U                | SR        | 0.713           | -1.805 | 0.166 |
| 87     | U                | SR        | 0.876           | -2.610 | 0.200 |
| 88     | U                | SR        | 1.227           | -2.797 | .     |
| 89     | U                | SR        | 0.837           | -1.007 | 2.242 |
| 90     | U                | SR        | 0.741           | -0.594 | 0.283 |
| 91     | U                | SR        | 0.443           | -0.668 | 0.200 |
| 92A    | U                | CR        | 0.990           | -1.340 | 0.200 |
| 92B    | U                | CR        | 0.895           | -0.635 | 0.066 |

Table E2  
Item Parameters for Mathematics Grade 3 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.458           | -2.339 | 0.150 |
| 2      | C                | SR        | 0.541           | -2.918 | 0.150 |
| 4      | C                | SR        | 0.633           | -2.298 | 0.150 |
| 10     | C                | SR        | 0.745           | -2.125 | 0.082 |
| 12     | C                | SR        | 0.763           | -2.068 | 0.200 |
| 13     | C                | SR        | 0.981           | -1.488 | 0.241 |
| 14     | C                | SR        | 0.528           | -2.191 | 0.200 |
| 16     | C                | SR        | 0.630           | -3.161 | 0.200 |
| 17     | C                | SR        | 0.595           | -2.473 | 0.166 |
| 18     | C                | SR        | 0.576           | -4.238 | 0.200 |
| 24     | C                | SR        | 0.994           | -2.952 | 0.166 |
| 31A    | U                | CR        | 1.572           | -3.294 | .     |
| 31B    | U                | CR        | 1.107           | -1.236 | 2.157 |
| 32     | C                | SR        | 1.071           | -2.686 | 0.107 |
| 33     | C                | SR        | 0.736           | 0.207  | 0.297 |
| 34     | C                | SR        | 0.677           | -1.050 | 0.159 |
| 35     | C                | SR        | 0.390           | -2.412 | 0.200 |
| 36     | C                | SR        | 0.964           | -0.150 | 0.244 |
| 37A    | U                | CR        | 1.033           | -0.047 | 0.117 |
| 37B    | U                | CR        | 1.022           | -2.002 | 0.200 |
| 38     | C                | SR        | 0.789           | -3.166 | 0.200 |
| 39     | C                | SR        | 0.989           | -2.187 | 0.151 |
| 40     | C                | SR        | 1.174           | -0.900 | 0.115 |
| 41     | C                | SR        | 0.694           | -1.562 | 0.200 |
| 42     | C                | SR        | 1.180           | -1.924 | 0.070 |
| 43     | C                | SR        | 0.686           | -1.155 | 0.074 |
| 44A    | U                | CR        | 1.180           | -1.093 | 0.416 |
| 44B    | U                | CR        | 0.477           | 0.263  | .     |
| 45     | C                | SR        | 0.731           | -2.458 | 0.200 |
| 46     | C                | SR        | 1.301           | -1.813 | 0.130 |
| 47     | C                | SR        | 0.822           | -1.576 | 0.166 |
| 48     | C                | SR        | 0.912           | -1.142 | 0.087 |
| 49     | C                | SR        | 0.713           | 1.712  | 0.339 |
| 50     | C                | SR        | 0.781           | -2.467 | 0.200 |
| 51     | C                | SR        | 0.785           | -0.755 | 0.236 |
| 52     | C                | SR        | 0.760           | -2.314 | 0.166 |
| 53     | C                | SR        | 0.868           | -1.283 | 0.421 |



Table E2 (cont.)  
Item Parameters for Mathematics Grade 3 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 54     | U                | SR        | 0.765           | -0.660 | 1.378 |
| 55     | C                | SR        | 0.635           | -0.695 | 0.326 |
| 56A    | U                | CR        | 0.808           | -1.489 | 0.200 |
| 56B    | U                | CR        | 0.925           | -1.152 | 0.284 |
| 57     | C                | SR        | 0.795           | -2.447 | 0.191 |
| 58     | U                | SR        | 0.610           | -0.118 | 0.315 |
| 59     | C                | SR        | 0.865           | -2.449 | 0.091 |
| 60     | U                | SR        | 1.286           | -0.633 | 0.144 |
| 61A    | U                | CR        | 1.432           | -0.181 | 0.174 |
| 61B    | U                | CR        | 0.950           | -2.085 | 0.119 |
| 62     | C                | SR        | 1.079           | -0.051 | 0.194 |
| 63     | U                | SR        | 1.183           | -1.340 | .     |
| 64     | C                | SR        | 0.886           | -1.464 | 0.200 |
| 65     | U                | SR        | 0.936           | -0.145 | 0.435 |
| 66     | C                | SR        | 1.193           | -0.247 | 0.259 |
| 67     | U                | SR        | 0.782           | -0.202 | 0.152 |
| 68     | U                | SR        | 1.065           | -1.548 | 0.236 |
| 69A    | U                | CR        | 0.882           | -2.258 | 0.135 |
| 69B    | U                | CR        | 0.630           | -1.347 | 0.200 |
| 70     | U                | SR        | 1.068           | -1.845 | 0.081 |
| 71     | C                | SR        | 0.715           | -1.534 | 0.103 |
| 72     | U                | SR        | 0.666           | -1.085 | 0.139 |
| 73     | U                | SR        | 0.650           | 0.516  | 0.127 |
| 74A    | U                | CR        | 1.220           | -1.606 | .     |
| 74B    | U                | CR        | 1.143           | -0.842 | 0.632 |
| 75     | C                | SR        | 0.714           | 1.456  | 0.121 |
| 76     | C                | SR        | 0.881           | -1.110 | 0.098 |
| 77     | C                | SR        | 1.228           | -1.912 | 0.183 |
| 78     | U                | SR        | 0.666           | -0.384 | 0.182 |
| 79     | U                | SR        | 0.926           | 0.280  | 0.211 |
| 80     | U                | SR        | 0.881           | 0.193  | 0.231 |
| 81     | U                | SR        | 1.333           | -0.863 | 0.221 |
| 82     | U                | SR        | 0.962           | -0.015 | 0.191 |
| 83     | U                | SR        | 1.390           | -1.302 | 0.148 |
| 84     | U                | SR        | 0.601           | -0.618 | 0.106 |
| 85     | U                | SR        | 0.349           | -4.512 | 0.200 |
| 86     | U                | SR        | 0.652           | -1.333 | 0.200 |

Table E2 (cont.)  
Item Parameters for Mathematics Grade 3 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 87     | U                | SR        | 0.923           | -0.420 | 0.273 |
| 88A    | U                | CR        | 1.638           | -0.394 | .     |
| 88B    | U                | CR        | 1.182           | -1.152 | 1.799 |
| 89     | U                | SR        | 0.995           | 0.143  | 0.188 |
| 90     | U                | SR        | 0.960           | -0.223 | 0.186 |
| 91     | U                | SR        | 1.189           | -0.552 | 0.202 |
| 92A    | U                | CR        | 1.474           | 0.076  | .     |
| 92B    | U                | CR        | 1.301           | -0.256 | 1.564 |

Table E3  
Item Parameters for Mathematics Grade 3 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |
|--------|------------------|-----------|-----------------|--------|--------|
|        |                  |           | a               | b      | c      |
| 1      | C                | SR        | 0.458           | -2.339 | 0.150  |
| 2      | C                | SR        | 0.541           | -2.918 | 0.150  |
| 4      | C                | SR        | 0.633           | -2.298 | 0.150  |
| 10     | C                | SR        | 0.745           | -2.125 | 0.082  |
| 12     | C                | SR        | 0.763           | -2.068 | 0.200  |
| 13     | C                | SR        | 0.981           | -1.488 | 0.241  |
| 14     | C                | SR        | 0.528           | -2.191 | 0.200  |
| 16     | C                | SR        | 0.630           | -3.161 | 0.200  |
| 17     | C                | SR        | 0.595           | -2.473 | 0.166  |
| 18     | C                | SR        | 0.576           | -4.238 | 0.200  |
| 24     | C                | SR        | 0.994           | -2.952 | 0.166  |
| 31A    | U                | CR        | 1.534           | -2.809 | .      |
| 31B    | U                | CR        | 0.753           | 0.378  | -0.199 |
| 32     | C                | SR        | 1.071           | -2.686 | 0.107  |
| 33     | C                | SR        | 0.736           | 0.207  | 0.297  |
| 34     | C                | SR        | 0.677           | -1.050 | 0.159  |
| 35     | C                | SR        | 0.390           | -2.412 | 0.200  |
| 36     | C                | SR        | 0.964           | -0.150 | 0.244  |
| 37A    | U                | CR        | 0.922           | -2.017 | .      |
| 37B    | U                | CR        | 0.844           | -0.883 | -0.200 |
| 38     | C                | SR        | 0.789           | -3.166 | 0.200  |
| 39     | C                | SR        | 0.989           | -2.187 | 0.151  |
| 40     | C                | SR        | 1.174           | -0.900 | 0.115  |
| 41     | C                | SR        | 0.694           | -1.562 | 0.200  |
| 42     | C                | SR        | 1.180           | -1.924 | 0.070  |
| 43     | C                | SR        | 0.686           | -1.155 | 0.074  |
| 44A    | U                | CR        | 1.181           | -0.861 | .      |
| 44B    | U                | CR        | 1.018           | -0.627 | -0.322 |
| 45     | C                | SR        | 0.731           | -2.458 | 0.200  |
| 46     | C                | SR        | 1.301           | -1.813 | 0.130  |
| 47     | C                | SR        | 0.822           | -1.576 | 0.166  |
| 48     | C                | SR        | 0.912           | -1.142 | 0.087  |
| 49     | C                | SR        | 0.713           | 1.712  | 0.339  |
| 50     | C                | SR        | 0.781           | -2.467 | 0.200  |
| 51     | C                | SR        | 0.785           | -0.755 | 0.236  |
| 52     | C                | SR        | 0.760           | -2.314 | 0.166  |
| 53     | C                | SR        | 0.868           | -1.283 | 0.421  |

Table E3 (cont.)  
Item Parameters for Mathematics Grade 3 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |
|--------|------------------|-----------|-----------------|--------|--------|
|        |                  |           | a               | b      | c      |
| 54     | U                | SR        | 0.643           | -1.542 | 0.336  |
| 55     | C                | SR        | 0.635           | -0.695 | 0.326  |
| 56A    | U                | CR        | 1.328           | -2.357 | .      |
| 56B    | U                | CR        | 0.880           | -0.827 | -0.563 |
| 57     | C                | SR        | 0.795           | -2.447 | 0.191  |
| 58     | U                | SR        | 0.730           | -0.428 | 0.107  |
| 59     | C                | SR        | 0.865           | -2.449 | 0.091  |
| 60     | U                | SR        | 1.319           | -1.819 | 0.259  |
| 61A    | U                | CR        | 1.169           | -2.060 | .      |
| 61B    | U                | CR        | 0.823           | -1.441 | -0.286 |
| 62     | C                | SR        | 1.079           | -0.051 | 0.194  |
| 63     | U                | SR        | 0.616           | -1.679 | 0.075  |
| 64     | C                | SR        | 0.886           | -1.464 | 0.200  |
| 65     | U                | SR        | 0.874           | 0.034  | 0.059  |
| 66     | C                | SR        | 1.193           | -0.247 | 0.259  |
| 67     | U                | SR        | 0.961           | -1.086 | 0.220  |
| 68     | U                | SR        | 0.749           | -3.555 | 0.200  |
| 69A    | U                | CR        | 1.376           | -2.963 | .      |
| 69B    | U                | CR        | 1.225           | -1.262 | 2.689  |
| 70     | U                | SR        | 1.166           | 0.480  | 0.152  |
| 71     | C                | SR        | 0.715           | -1.534 | 0.103  |
| 72     | U                | SR        | 0.686           | -1.602 | 0.166  |
| 73     | U                | SR        | 0.777           | -2.927 | 0.200  |
| 74A    | U                | CR        | 0.610           | -1.144 | .      |
| 74B    | U                | CR        | 0.535           | -0.433 | -0.247 |
| 75     | C                | SR        | 0.714           | 1.456  | 0.121  |
| 76     | C                | SR        | 0.881           | -1.110 | 0.098  |
| 77     | C                | SR        | 1.228           | -1.912 | 0.183  |
| 78A    | U                | CR        | 0.993           | -0.976 | .      |
| 78B    | U                | CR        | 0.539           | -0.055 | 0.218  |
| 79     | U                | SR        | 0.864           | 2.148  | 0.152  |
| 80     | U                | SR        | 1.207           | 0.278  | 0.087  |
| 81     | U                | SR        | 0.545           | -1.490 | 0.200  |
| 82A    | U                | CR        | 1.416           | -1.334 | .      |
| 82B    | U                | CR        | 1.029           | -0.355 | -0.918 |
| 83     | U                | SR        | 0.552           | 0.280  | 0.171  |
| 84     | U                | SR        | 1.066           | 0.441  | 0.189  |

Table E3 (cont.)  
Item Parameters for Mathematics Grade 3 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 85A    | U                | CR        | 1.637           | 0.060  | .     |
| 85B    | U                | CR        | 1.017           | -0.534 | 0.434 |

Table E4  
Item Parameters for Mathematics Grade 3 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.458           | -2.339 | 0.150 |
| 2      | C                | SR        | 0.541           | -2.918 | 0.150 |
| 4      | C                | SR        | 0.633           | -2.298 | 0.150 |
| 10     | C                | SR        | 0.745           | -2.125 | 0.082 |
| 12     | C                | SR        | 0.763           | -2.068 | 0.200 |
| 13     | C                | SR        | 0.981           | -1.488 | 0.241 |
| 14     | C                | SR        | 0.528           | -2.191 | 0.200 |
| 16     | C                | SR        | 0.630           | -3.161 | 0.200 |
| 17     | C                | SR        | 0.595           | -2.473 | 0.166 |
| 18     | C                | SR        | 0.576           | -4.238 | 0.200 |
| 24     | C                | SR        | 0.994           | -2.952 | 0.166 |
| 31A    | U                | CR        | 1.572           | -3.294 | .     |
| 31B    | U                | CR        | 1.107           | -1.236 | 2.157 |
| 32     | C                | SR        | 1.071           | -2.686 | 0.107 |
| 33     | C                | SR        | 0.736           | 0.207  | 0.297 |
| 34     | C                | SR        | 0.677           | -1.050 | 0.159 |
| 35     | C                | SR        | 0.390           | -2.412 | 0.200 |
| 36     | C                | SR        | 0.964           | -0.150 | 0.244 |
| 37A    | U                | CR        | 1.033           | -0.047 | 0.117 |
| 37B    | U                | CR        | 1.022           | -2.002 | 0.200 |
| 38     | C                | SR        | 0.789           | -3.166 | 0.200 |
| 39     | C                | SR        | 0.989           | -2.187 | 0.151 |
| 40     | C                | SR        | 1.174           | -0.900 | 0.115 |
| 41     | C                | SR        | 0.694           | -1.562 | 0.200 |
| 42     | C                | SR        | 1.180           | -1.924 | 0.070 |
| 43     | C                | SR        | 0.686           | -1.155 | 0.074 |
| 44A    | U                | CR        | 1.180           | -1.093 | 0.416 |
| 44B    | U                | CR        | 0.477           | 0.263  | .     |
| 45     | C                | SR        | 0.731           | -2.458 | 0.200 |
| 46     | C                | SR        | 1.301           | -1.813 | 0.130 |
| 47     | C                | SR        | 0.822           | -1.576 | 0.166 |
| 48     | C                | SR        | 0.912           | -1.142 | 0.087 |
| 49     | C                | SR        | 0.713           | 1.712  | 0.339 |
| 50     | C                | SR        | 0.781           | -2.467 | 0.200 |
| 51     | C                | SR        | 0.785           | -0.755 | 0.236 |
| 52     | C                | SR        | 0.760           | -2.314 | 0.166 |
| 53     | C                | SR        | 0.868           | -1.283 | 0.421 |

Table E4 (cont.)  
Item Parameters for Mathematics Grade 3 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 54     | U                | SR        | 0.765           | -0.660 | 1.378 |
| 55     | C                | SR        | 0.635           | -0.695 | 0.326 |
| 56A    | U                | CR        | 0.808           | -1.489 | 0.200 |
| 56B    | U                | CR        | 0.925           | -1.152 | 0.284 |
| 57     | C                | SR        | 0.795           | -2.447 | 0.191 |
| 58     | U                | SR        | 0.610           | -0.118 | 0.315 |
| 59     | C                | SR        | 0.865           | -2.449 | 0.091 |
| 60     | U                | SR        | 1.286           | -0.633 | 0.144 |
| 61A    | U                | CR        | 1.432           | -0.181 | 0.174 |
| 61B    | U                | CR        | 0.950           | -2.085 | 0.119 |
| 62     | C                | SR        | 1.079           | -0.051 | 0.194 |
| 63     | U                | SR        | 1.183           | -1.340 | .     |
| 64     | C                | SR        | 0.886           | -1.464 | 0.200 |
| 65     | U                | SR        | 0.936           | -0.145 | 0.435 |
| 66     | C                | SR        | 1.193           | -0.247 | 0.259 |
| 67     | U                | SR        | 0.782           | -0.202 | 0.152 |
| 68     | U                | SR        | 1.065           | -1.548 | 0.236 |
| 69A    | U                | CR        | 0.882           | -2.258 | 0.135 |
| 69B    | U                | CR        | 0.630           | -1.347 | 0.200 |
| 70     | U                | SR        | 1.068           | -1.845 | 0.081 |
| 71     | C                | SR        | 0.715           | -1.534 | 0.103 |
| 72     | U                | SR        | 0.666           | -1.085 | 0.139 |
| 73     | U                | SR        | 0.650           | 0.516  | 0.127 |
| 74A    | U                | CR        | 1.220           | -1.606 | .     |
| 74B    | U                | CR        | 1.143           | -0.842 | 0.632 |
| 75     | C                | SR        | 0.714           | 1.456  | 0.121 |
| 76     | C                | SR        | 0.881           | -1.110 | 0.098 |
| 77     | C                | SR        | 1.228           | -1.912 | 0.183 |
| 78A    | U                | CR        | 0.319           | 0.070  | .     |
| 78B    | U                | CR        | 0.827           | 0.034  | 2.330 |
| 79     | U                | SR        | 0.852           | -1.593 | 0.177 |
| 80     | U                | SR        | 0.410           | -1.814 | 0.200 |
| 81     | U                | SR        | 1.334           | 1.556  | 0.255 |
| 82A    | U                | CR        | 1.037           | -0.444 | .     |
| 82B    | U                | CR        | 0.769           | -1.094 | 1.117 |
| 83     | U                | SR        | 0.997           | -2.087 | 0.200 |
| 84     | U                | SR        | 1.461           | -0.075 | 0.230 |

Table E4 (cont.)  
Item Parameters for Mathematics Grade 3 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 85     | U                | SR        | 1.227           | -0.267 | 0.197 |
| 86     | U                | SR        | 0.783           | -0.915 | 0.246 |
| 87     | U                | SR        | 1.267           | -1.963 | 0.109 |
| 88     | U                | SR        | 0.560           | -1.346 | 0.200 |
| 89     | U                | SR        | 0.947           | -1.125 | 0.241 |
| 90     | U                | SR        | 1.072           | -1.341 | 0.135 |
| 91     | U                | SR        | 0.529           | 0.366  | 0.225 |
| 92     | U                | SR        | 0.871           | -0.792 | 0.419 |
| 93     | U                | SR        | 1.256           | -0.378 | 0.240 |
| 94     | U                | SR        | 1.039           | 0.510  | 0.168 |



Table E5  
Item Parameters for Mathematics Grade 3 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |        |
|--------|------------------|-----------|-----------------|--------|--------|
|        |                  |           | a               | b      | c      |
| 1      | C                | SR        | 0.458           | -2.339 | 0.150  |
| 2      | C                | SR        | 0.541           | -2.918 | 0.150  |
| 4      | C                | SR        | 0.633           | -2.298 | 0.150  |
| 10     | C                | SR        | 0.745           | -2.125 | 0.082  |
| 12     | C                | SR        | 0.763           | -2.068 | 0.200  |
| 13     | C                | SR        | 0.981           | -1.488 | 0.241  |
| 14     | C                | SR        | 0.528           | -2.191 | 0.200  |
| 16     | C                | SR        | 0.630           | -3.161 | 0.200  |
| 17     | C                | SR        | 0.595           | -2.473 | 0.166  |
| 18     | C                | SR        | 0.576           | -4.238 | 0.200  |
| 24     | C                | SR        | 0.994           | -2.952 | 0.166  |
| 31A    | U                | CR        | 1.534           | -2.809 | .      |
| 31B    | U                | CR        | 0.753           | 0.378  | -0.199 |
| 32     | C                | SR        | 1.071           | -2.686 | 0.107  |
| 33     | C                | SR        | 0.736           | 0.207  | 0.297  |
| 34     | C                | SR        | 0.677           | -1.050 | 0.159  |
| 35     | C                | SR        | 0.390           | -2.412 | 0.200  |
| 36     | C                | SR        | 0.964           | -0.150 | 0.244  |
| 37A    | U                | CR        | 0.922           | -2.017 | .      |
| 37B    | U                | CR        | 0.844           | -0.883 | -0.200 |
| 38     | C                | SR        | 0.789           | -3.166 | 0.200  |
| 39     | C                | SR        | 0.989           | -2.187 | 0.151  |
| 40     | C                | SR        | 1.174           | -0.900 | 0.115  |
| 41     | C                | SR        | 0.694           | -1.562 | 0.200  |
| 42     | C                | SR        | 1.180           | -1.924 | 0.070  |
| 43     | C                | SR        | 0.686           | -1.155 | 0.074  |
| 44A    | U                | CR        | 1.181           | -0.861 | .      |
| 44B    | U                | CR        | 1.018           | -0.627 | -0.322 |
| 45     | C                | SR        | 0.731           | -2.458 | 0.200  |
| 46     | C                | SR        | 1.301           | -1.813 | 0.130  |
| 47     | C                | SR        | 0.822           | -1.576 | 0.166  |
| 48     | C                | SR        | 0.912           | -1.142 | 0.087  |
| 49     | C                | SR        | 0.713           | 1.712  | 0.339  |
| 50     | C                | SR        | 0.781           | -2.467 | 0.200  |
| 51     | C                | SR        | 0.785           | -0.755 | 0.236  |
| 52     | C                | SR        | 0.760           | -2.314 | 0.166  |
| 53     | C                | SR        | 0.868           | -1.283 | 0.421  |

Table E5 (cont.)  
Item Parameters for Mathematics Grade 3 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |        |
|--------|------------------|-----------|-----------------|--------|--------|
|        |                  |           | a               | b      | c      |
| 54     | U                | SR        | 0.643           | -1.542 | 0.336  |
| 55     | C                | SR        | 0.635           | -0.695 | 0.326  |
| 56A    | U                | CR        | 1.328           | -2.357 | .      |
| 56B    | U                | CR        | 0.880           | -0.827 | -0.563 |
| 57     | C                | SR        | 0.795           | -2.447 | 0.191  |
| 58     | U                | SR        | 0.730           | -0.428 | 0.107  |
| 59     | C                | SR        | 0.865           | -2.449 | 0.091  |
| 60     | U                | SR        | 1.319           | -1.819 | 0.259  |
| 61A    | U                | CR        | 1.169           | -2.060 | .      |
| 61B    | U                | CR        | 0.823           | -1.441 | -0.286 |
| 62     | C                | SR        | 1.079           | -0.051 | 0.194  |
| 63     | U                | SR        | 0.616           | -1.679 | 0.075  |
| 64     | C                | SR        | 0.886           | -1.464 | 0.200  |
| 65     | U                | SR        | 0.874           | 0.034  | 0.059  |
| 66     | C                | SR        | 1.193           | -0.247 | 0.259  |
| 67     | U                | SR        | 0.961           | -1.086 | 0.220  |
| 68     | U                | SR        | 0.749           | -3.555 | 0.200  |
| 69A    | U                | CR        | 1.376           | -2.963 | .      |
| 69B    | U                | CR        | 1.225           | -1.262 | 2.689  |
| 70     | U                | SR        | 1.166           | 0.480  | 0.152  |
| 71     | C                | SR        | 0.715           | -1.534 | 0.103  |
| 72     | U                | SR        | 0.686           | -1.602 | 0.166  |
| 73     | U                | SR        | 0.777           | -2.927 | 0.200  |
| 74A    | U                | CR        | 0.610           | -1.144 | .      |
| 74B    | U                | CR        | 0.535           | -0.433 | -0.247 |
| 75     | C                | SR        | 0.714           | 1.456  | 0.121  |
| 76     | C                | SR        | 0.881           | -1.110 | 0.098  |
| 77     | C                | SR        | 1.228           | -1.912 | 0.183  |
| 78A    | U                | CR        | 1.447           | 0.561  | .      |
| 78B    | U                | CR        | 1.289           | 0.329  | 3.681  |
| 79     | U                | SR        | 0.546           | -0.858 | 0.200  |
| 80     | U                | SR        | 0.905           | -1.381 | 0.102  |
| 81     | U                | SR        | 0.768           | -2.057 | 0.177  |
| 83     | U                | SR        | 1.270           | 1.229  | 0.131  |
| 84     | U                | SR        | 0.597           | -1.518 | 0.200  |
| 85     | U                | SR        | 1.260           | -0.243 | 0.177  |
| 86     | U                | SR        | 0.838           | -0.626 | 0.412  |

Table E5 (cont.)  
Item Parameters for Mathematics Grade 3 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 87     | U                | SR        | 0.519           | 0.454  | 0.229 |
| 88     | U                | SR        | 0.743           | -1.370 | 0.200 |
| 89     | U                | SR        | 1.056           | -0.431 | 0.195 |
| 90     | U                | SR        | 0.858           | -0.464 | 0.170 |
| 91     | U                | SR        | 0.858           | -0.458 | 0.165 |
| 92     | U                | SR        | 0.530           | -2.619 | 0.200 |
| 93     | U                | SR        | 1.257           | 0.522  | 0.235 |
| 94     | U                | SR        | 0.498           | -0.081 | 0.200 |

Table E6  
Item Parameters for Mathematics Grade 4 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.552           | -1.519 | 0.132 |
| 2      | C                | SR        | 0.535           | -0.516 | 0.103 |
| 3      | C                | SR        | 0.906           | -0.737 | 0.349 |
| 4      | C                | SR        | 0.920           | 0.301  | 0.303 |
| 10     | C                | SR        | 1.104           | 0.329  | 0.340 |
| 17     | C                | SR        | 1.230           | -1.529 | 0.240 |
| 18     | C                | SR        | 0.759           | 0.266  | 0.192 |
| 20     | C                | SR        | 0.833           | -0.683 | 0.248 |
| 27     | C                | SR        | 0.763           | 0.115  | 0.226 |
| 31     | C                | SR        | 0.937           | 0.383  | 0.163 |
| 33A    | U                | CR        | 1.243           | -2.874 | .     |
| 33B    | U                | CR        | 1.056           | -0.668 | 2.260 |
| 35     | C                | SR        | 0.894           | -0.790 | 0.249 |
| 36     | C                | SR        | 0.435           | -0.609 | 0.147 |
| 37     | C                | SR        | 1.042           | -1.563 | 0.240 |
| 38     | C                | SR        | 0.572           | -2.369 | 0.200 |
| 39     | C                | SR        | 0.879           | -1.523 | 0.157 |
| 40A    | U                | CR        | 0.905           | -1.330 | .     |
| 40B    | U                | CR        | 1.225           | 0.004  | 0.768 |
| 41     | C                | SR        | 0.853           | 0.745  | 0.142 |
| 42     | C                | SR        | 0.941           | 0.108  | 0.165 |
| 43     | C                | SR        | 0.858           | 0.893  | 0.186 |
| 44     | C                | SR        | 0.779           | 0.951  | 0.212 |
| 45     | C                | SR        | 1.369           | 0.002  | 0.196 |
| 46     | C                | SR        | 1.375           | 0.226  | 0.258 |
| 47A    | U                | CR        | 1.791           | 0.562  | .     |
| 47B    | U                | CR        | 1.404           | -0.414 | 1.314 |
| 48     | C                | SR        | 0.748           | -1.649 | 0.200 |
| 49     | C                | SR        | 0.697           | 0.955  | 0.105 |
| 50     | C                | SR        | 0.558           | -1.049 | 0.102 |
| 51     | C                | SR        | 0.751           | -1.968 | 0.200 |
| 52     | C                | SR        | 0.888           | 0.159  | 0.264 |
| 53     | C                | SR        | 0.984           | -0.841 | 0.337 |
| 54     | C                | SR        | 0.798           | 0.260  | 0.148 |
| 55     | C                | SR        | 0.760           | -1.367 | 0.200 |
| 57     | C                | SR        | 0.374           | -2.444 | 0.200 |
| 58     | C                | SR        | 1.032           | -0.577 | 0.196 |

Table E6 (cont.)  
Item Parameters for Mathematics Grade 4 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 60A    | U                | CR        | 1.885           | 0.503  | .     |
| 60B    | U                | CR        | 1.497           | -2.315 | 1.192 |
| 61     | C                | SR        | 0.732           | 0.759  | 0.243 |
| 62     | C                | SR        | 0.671           | -1.367 | 0.111 |
| 63     | C                | SR        | 0.905           | 0.378  | 0.139 |
| 64     | C                | SR        | 0.496           | 0.404  | 0.200 |
| 65     | C                | SR        | 0.989           | -0.058 | 0.158 |
| 66     | C                | SR        | 1.056           | -0.345 | 0.232 |
| 67     | C                | SR        | 1.150           | -0.102 | 0.104 |
| 68A    | U                | CR        | 1.723           | 1.299  | .     |
| 68B    | U                | CR        | 1.799           | -1.802 | 0.911 |
| 69     | U                | SR        | 0.922           | 0.218  | 0.114 |
| 70     | U                | SR        | 0.878           | 0.064  | 0.228 |
| 71     | U                | SR        | 0.824           | -0.525 | 0.109 |
| 73     | U                | SR        | 1.069           | 0.745  | 0.192 |
| 74A    | U                | CR        | 2.256           | -0.089 | .     |
| 74B    | U                | CR        | 1.870           | -2.153 | 0.843 |
| 75A    | U                | CR        | 1.620           | 2.588  | .     |
| 75B    | U                | CR        | 1.139           | -0.153 | 2.404 |
| 76     | U                | SR        | 0.881           | -1.455 | 0.200 |
| 77     | U                | SR        | 0.883           | -0.574 | 0.165 |
| 79     | U                | SR        | 0.998           | 0.759  | 0.216 |
| 83     | U                | SR        | 0.969           | 0.311  | 0.214 |
| 87     | U                | SR        | 0.773           | -0.352 | 0.147 |
| 91     | U                | SR        | 1.148           | 0.210  | 0.365 |
| 103    | U                | SR        | 1.076           | -1.079 | 0.121 |
| 107    | U                | SR        | 1.333           | 0.058  | 0.174 |

Table E7  
Item Parameters for Mathematics Grade 4 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.552           | -1.519 | 0.132 |
| 2      | C                | SR        | 0.535           | -0.516 | 0.103 |
| 3      | C                | SR        | 0.906           | -0.737 | 0.349 |
| 4      | C                | SR        | 0.920           | 0.301  | 0.303 |
| 10     | C                | SR        | 1.104           | 0.329  | 0.340 |
| 17     | C                | SR        | 1.230           | -1.529 | 0.240 |
| 18     | C                | SR        | 0.759           | 0.266  | 0.192 |
| 20     | C                | SR        | 0.833           | -0.683 | 0.248 |
| 27     | C                | SR        | 0.763           | 0.115  | 0.226 |
| 31     | C                | SR        | 0.937           | 0.383  | 0.163 |
| 33A    | U                | CR        | 1.036           | -1.095 | .     |
| 33B    | U                | CR        | 1.099           | -2.177 | 1.328 |
| 35     | C                | SR        | 0.894           | -0.790 | 0.249 |
| 36     | C                | SR        | 0.435           | -0.609 | 0.147 |
| 37     | C                | SR        | 1.042           | -1.563 | 0.240 |
| 38     | C                | SR        | 0.572           | -2.369 | 0.200 |
| 39     | C                | SR        | 0.879           | -1.523 | 0.157 |
| 40A    | U                | CR        | 1.227           | 1.095  | .     |
| 40B    | U                | CR        | 1.284           | -0.381 | 1.794 |
| 41     | C                | SR        | 0.853           | 0.745  | 0.142 |
| 42     | C                | SR        | 0.941           | 0.108  | 0.165 |
| 43     | C                | SR        | 0.858           | 0.893  | 0.186 |
| 45     | C                | SR        | 1.369           | 0.002  | 0.196 |
| 46     | C                | SR        | 1.375           | 0.226  | 0.258 |
| 47A    | U                | CR        | 2.018           | 2.464  | .     |
| 47B    | U                | CR        | 1.699           | 0.721  | 2.211 |
| 48     | C                | SR        | 0.748           | -1.649 | 0.200 |
| 49     | C                | SR        | 0.697           | 0.955  | 0.105 |
| 50     | C                | SR        | 0.558           | -1.049 | 0.102 |
| 51     | C                | SR        | 0.751           | -1.968 | 0.200 |
| 52     | C                | SR        | 0.888           | 0.159  | 0.264 |
| 53     | C                | SR        | 0.984           | -0.841 | 0.337 |
| 54     | C                | SR        | 0.798           | 0.260  | 0.148 |
| 55     | C                | SR        | 0.760           | -1.367 | 0.200 |
| 57     | C                | SR        | 0.374           | -2.444 | 0.200 |
| 58     | C                | SR        | 1.032           | -0.577 | 0.196 |
| 61     | C                | SR        | 0.732           | 0.759  | 0.243 |

Table E7 (cont.)  
Item Parameters for Mathematics Grade 4 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 62     | C                | SR        | 0.671           | -1.367 | 0.111 |
| 63     | C                | SR        | 0.905           | 0.378  | 0.139 |
| 64     | C                | SR        | 0.496           | 0.404  | 0.200 |
| 65     | C                | SR        | 0.989           | -0.058 | 0.158 |
| 66     | C                | SR        | 1.056           | -0.345 | 0.232 |
| 67     | C                | SR        | 1.150           | -0.102 | 0.104 |
| 68A    | U                | CR        | 2.270           | 0.477  | .     |
| 68B    | U                | CR        | 1.449           | 0.503  | 0.465 |
| 70     | U                | SR        | 1.230           | -0.171 | 0.164 |
| 71     | U                | SR        | 0.631           | 0.126  | 0.127 |
| 72     | U                | SR        | 1.164           | -0.312 | 0.183 |
| 73     | U                | SR        | 0.595           | 0.113  | 0.194 |
| 74A    | U                | CR        | 1.807           | 0.295  | .     |
| 74B    | U                | CR        | 1.580           | -1.820 | 1.049 |
| 75A    | U                | CR        | 1.310           | 1.010  | .     |
| 75B    | U                | CR        | 0.932           | 0.070  | 0.815 |
| 78     | U                | SR        | 1.059           | -0.952 | 0.113 |
| 79     | U                | SR        | 1.058           | 0.096  | 0.225 |
| 81     | U                | SR        | 0.361           | -1.027 | 0.200 |
| 89     | U                | SR        | 0.840           | -1.327 | 0.200 |
| 91     | U                | SR        | 1.213           | -0.051 | 0.192 |
| 93     | U                | SR        | 0.908           | 0.686  | 0.199 |
| 95     | U                | SR        | 1.003           | -1.024 | 0.176 |
| 96     | U                | SR        | 0.957           | -0.719 | 0.285 |
| 98     | U                | SR        | 1.605           | 0.247  | 0.148 |
| 108    | U                | SR        | 0.907           | 1.086  | 0.244 |

Table E8  
Item Parameters for Mathematics Grade 4 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.552           | -1.519 | 0.132 |
| 2      | C                | SR        | 0.535           | -0.516 | 0.103 |
| 3      | C                | SR        | 0.906           | -0.737 | 0.349 |
| 4      | C                | SR        | 0.920           | 0.301  | 0.303 |
| 10     | C                | SR        | 1.104           | 0.329  | 0.340 |
| 17     | C                | SR        | 1.230           | -1.529 | 0.240 |
| 18     | C                | SR        | 0.759           | 0.266  | 0.192 |
| 20     | C                | SR        | 0.833           | -0.683 | 0.248 |
| 27     | C                | SR        | 0.763           | 0.115  | 0.226 |
| 31     | C                | SR        | 0.937           | 0.383  | 0.163 |
| 33A    | U                | CR        | 0.775           | -1.780 | .     |
| 33B    | U                | CR        | 0.931           | -0.339 | 1.716 |
| 35     | C                | SR        | 0.894           | -0.790 | 0.249 |
| 36     | C                | SR        | 0.435           | -0.609 | 0.147 |
| 37     | C                | SR        | 1.042           | -1.563 | 0.240 |
| 38     | C                | SR        | 0.572           | -2.369 | 0.200 |
| 39     | C                | SR        | 0.879           | -1.523 | 0.157 |
| 40A    | U                | CR        | 1.073           | -1.012 | .     |
| 40B    | U                | CR        | 1.142           | 0.088  | 0.925 |
| 41     | C                | SR        | 0.853           | 0.745  | 0.142 |
| 42     | C                | SR        | 0.941           | 0.108  | 0.165 |
| 43     | C                | SR        | 0.858           | 0.893  | 0.186 |
| 44     | C                | SR        | 0.779           | 0.951  | 0.212 |
| 45     | C                | SR        | 1.369           | 0.002  | 0.196 |
| 46     | C                | SR        | 1.375           | 0.226  | 0.258 |
| 47A    | U                | CR        | 1.184           | -0.022 | .     |
| 47B    | U                | CR        | 1.582           | 0.108  | 2.548 |
| 49     | C                | SR        | 0.697           | 0.955  | 0.105 |
| 50     | C                | SR        | 0.558           | -1.049 | 0.102 |
| 51     | C                | SR        | 0.751           | -1.968 | 0.200 |
| 52     | C                | SR        | 0.888           | 0.159  | 0.264 |
| 53     | C                | SR        | 0.984           | -0.841 | 0.337 |
| 54     | C                | SR        | 0.798           | 0.260  | 0.148 |
| 55     | C                | SR        | 0.760           | -1.367 | 0.200 |
| 57     | C                | SR        | 0.374           | -2.444 | 0.200 |
| 58     | C                | SR        | 1.032           | -0.577 | 0.196 |
| 60A    | U                | CR        | 1.581           | 0.174  | .     |



Table E8 (cont.)  
Item Parameters for Mathematics Grade 4 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 60B    | U                | CR        | 1.520           | -0.109 | 1.561 |
| 61     | C                | SR        | 0.732           | 0.759  | 0.243 |
| 63     | C                | SR        | 0.905           | 0.378  | 0.139 |
| 64     | C                | SR        | 0.496           | 0.404  | 0.200 |
| 65     | C                | SR        | 0.989           | -0.058 | 0.158 |
| 66     | C                | SR        | 1.056           | -0.345 | 0.232 |
| 67     | C                | SR        | 1.150           | -0.102 | 0.104 |
| 68A    | U                | CR        | 1.375           | -0.559 | .     |
| 68B    | U                | CR        | 1.247           | -0.802 | 0.587 |
| 69     | U                | SR        | 0.614           | -0.515 | 0.200 |
| 70     | U                | SR        | 1.271           | -0.447 | 0.223 |
| 71     | U                | SR        | 0.674           | -0.258 | 0.107 |
| 72     | U                | SR        | 1.113           | 0.432  | 0.207 |
| 74A    | U                | CR        | 1.414           | 0.509  | .     |
| 74B    | U                | CR        | 1.061           | -0.653 | 1.818 |
| 75A    | U                | CR        | 1.647           | 1.005  | .     |
| 75B    | U                | CR        | 1.411           | -1.810 | 2.208 |
| 76     | U                | SR        | 0.526           | -2.744 | 0.200 |
| 77     | U                | SR        | 1.466           | -0.514 | 0.269 |
| 78     | U                | SR        | 0.894           | 0.488  | 0.275 |
| 82     | U                | SR        | 0.772           | -0.947 | 0.120 |
| 83     | U                | SR        | 0.485           | -2.271 | 0.200 |
| 91     | U                | SR        | 0.673           | 0.401  | 0.244 |
| 92     | U                | SR        | 0.325           | -0.926 | 0.200 |
| 94     | U                | SR        | 1.327           | 0.592  | 0.162 |
| 98     | U                | SR        | 1.173           | 0.789  | 0.190 |
| 107    | U                | SR        | 0.751           | 0.913  | 0.218 |

Table E9  
Item Parameters for Mathematics Grade 4 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.552           | -1.519 | 0.132 |
| 2      | C                | SR        | 0.535           | -0.516 | 0.103 |
| 3      | C                | SR        | 0.906           | -0.737 | 0.349 |
| 4      | C                | SR        | 0.920           | 0.301  | 0.303 |
| 10     | C                | SR        | 1.104           | 0.329  | 0.340 |
| 17     | C                | SR        | 1.230           | -1.529 | 0.240 |
| 18     | C                | SR        | 0.759           | 0.266  | 0.192 |
| 20     | C                | SR        | 0.833           | -0.683 | 0.248 |
| 27     | C                | SR        | 0.763           | 0.115  | 0.226 |
| 31     | C                | SR        | 0.937           | 0.383  | 0.163 |
| 33A    | U                | CR        | 0.904           | -2.995 | .     |
| 33B    | U                | CR        | 0.935           | 0.175  | 1.775 |
| 35     | C                | SR        | 0.894           | -0.790 | 0.249 |
| 36     | C                | SR        | 0.435           | -0.609 | 0.147 |
| 37     | C                | SR        | 1.042           | -1.563 | 0.240 |
| 38     | C                | SR        | 0.572           | -2.369 | 0.200 |
| 39     | C                | SR        | 0.879           | -1.523 | 0.157 |
| 40A    | U                | CR        | 1.189           | 0.646  | .     |
| 40B    | U                | CR        | 1.311           | -0.042 | 3.005 |
| 41     | C                | SR        | 0.853           | 0.745  | 0.142 |
| 42     | C                | SR        | 0.941           | 0.108  | 0.165 |
| 43     | C                | SR        | 0.858           | 0.893  | 0.186 |
| 44     | C                | SR        | 0.779           | 0.951  | 0.212 |
| 45     | C                | SR        | 1.369           | 0.002  | 0.196 |
| 46     | C                | SR        | 1.375           | 0.226  | 0.258 |
| 47A    | U                | CR        | 1.534           | 0.821  | .     |
| 47B    | U                | CR        | 1.649           | 0.127  | 4.570 |
| 48     | C                | SR        | 0.748           | -1.649 | 0.200 |
| 49     | C                | SR        | 0.697           | 0.955  | 0.105 |
| 50     | C                | SR        | 0.558           | -1.049 | 0.102 |
| 51     | C                | SR        | 0.751           | -1.968 | 0.200 |
| 52     | C                | SR        | 0.888           | 0.159  | 0.264 |
| 53     | C                | SR        | 0.984           | -0.841 | 0.337 |
| 54     | C                | SR        | 0.798           | 0.260  | 0.148 |
| 55     | C                | SR        | 0.760           | -1.367 | 0.200 |
| 57     | C                | SR        | 0.374           | -2.444 | 0.200 |
| 58     | C                | SR        | 1.032           | -0.577 | 0.196 |

Table E9 (cont.)  
Item Parameters for Mathematics Grade 4 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 60A    | U                | CR        | 1.182           | -0.607 | .     |
| 60B    | U                | CR        | 1.578           | -4.187 | 4.225 |
| 61     | C                | SR        | 0.732           | 0.759  | 0.243 |
| 63     | C                | SR        | 0.905           | 0.378  | 0.139 |
| 64     | C                | SR        | 0.496           | 0.404  | 0.200 |
| 65     | C                | SR        | 0.989           | -0.058 | 0.158 |
| 66     | C                | SR        | 1.056           | -0.345 | 0.232 |
| 67     | C                | SR        | 1.150           | -0.102 | 0.104 |
| 68A    | U                | CR        | 1.163           | -0.249 | .     |
| 68B    | U                | CR        | 1.133           | 0.666  | 0.457 |
| 70     | U                | SR        | 1.252           | -0.198 | 0.176 |
| 71     | U                | SR        | 1.884           | -0.430 | 0.242 |
| 72     | U                | SR        | 1.475           | -0.306 | 0.114 |
| 73     | U                | SR        | 0.643           | 1.174  | 0.180 |
| 74A    | U                | CR        | 1.672           | -1.098 | .     |
| 74B    | U                | CR        | 1.404           | -0.788 | 0.543 |
| 75A    | U                | CR        | 1.832           | -0.324 | .     |
| 75B    | U                | CR        | 1.820           | -1.221 | 4.064 |
| 78     | U                | SR        | 1.607           | 0.025  | 0.261 |
| 80     | U                | SR        | 0.599           | 2.388  | 0.138 |
| 83     | U                | SR        | 0.990           | -0.111 | 0.185 |
| 86     | U                | SR        | 0.392           | -0.467 | 0.200 |
| 88     | U                | SR        | 1.580           | 0.510  | 0.206 |
| 92     | U                | SR        | 0.850           | 0.418  | 0.258 |
| 98     | U                | SR        | 0.753           | -1.285 | 0.200 |
| 102    | U                | SR        | 0.987           | -0.494 | 0.196 |
| 108    | U                | SR        | 0.785           | -0.048 | 0.318 |

Table E10  
Item Parameters for Mathematics Grade 4 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.552           | -1.519 | 0.132 |
| 2      | C                | SR        | 0.535           | -0.516 | 0.103 |
| 3      | C                | SR        | 0.906           | -0.737 | 0.349 |
| 4      | C                | SR        | 0.920           | 0.301  | 0.303 |
| 10     | C                | SR        | 1.104           | 0.329  | 0.340 |
| 17     | C                | SR        | 1.230           | -1.529 | 0.240 |
| 18     | C                | SR        | 0.759           | 0.266  | 0.192 |
| 20     | C                | SR        | 0.833           | -0.683 | 0.248 |
| 27     | C                | SR        | 0.763           | 0.115  | 0.226 |
| 31     | C                | SR        | 0.937           | 0.383  | 0.163 |
| 33A    | U                | CR        | 1.801           | -1.386 | .     |
| 33B    | U                | CR        | 1.225           | -1.552 | 1.219 |
| 35     | C                | SR        | 0.894           | -0.790 | 0.249 |
| 36     | C                | SR        | 0.435           | -0.609 | 0.147 |
| 37     | C                | SR        | 1.042           | -1.563 | 0.240 |
| 38     | C                | SR        | 0.572           | -2.369 | 0.200 |
| 39     | C                | SR        | 0.879           | -1.523 | 0.157 |
| 40A    | U                | CR        | 0.956           | 0.488  | .     |
| 40B    | U                | CR        | 1.240           | -0.249 | 2.939 |
| 41     | C                | SR        | 0.853           | 0.745  | 0.142 |
| 42     | C                | SR        | 0.941           | 0.108  | 0.165 |
| 44     | C                | SR        | 0.779           | 0.951  | 0.212 |
| 45     | C                | SR        | 1.369           | 0.002  | 0.196 |
| 46     | C                | SR        | 1.375           | 0.226  | 0.258 |
| 47A    | U                | CR        | 1.500           | 0.538  | .     |
| 47B    | U                | CR        | 1.626           | 0.693  | 2.414 |
| 48     | C                | SR        | 0.748           | -1.649 | 0.200 |
| 49     | C                | SR        | 0.697           | 0.955  | 0.105 |
| 50     | C                | SR        | 0.558           | -1.049 | 0.102 |
| 51     | C                | SR        | 0.751           | -1.968 | 0.200 |
| 52     | C                | SR        | 0.888           | 0.159  | 0.264 |
| 53     | C                | SR        | 0.984           | -0.841 | 0.337 |
| 54     | C                | SR        | 0.798           | 0.260  | 0.148 |
| 55     | C                | SR        | 0.760           | -1.367 | 0.200 |
| 57     | C                | SR        | 0.374           | -2.444 | 0.200 |
| 58     | C                | SR        | 1.032           | -0.577 | 0.196 |
| 59     | C                | SR        | 1.294           | 1.918  | 0.054 |

Table E10 (cont.)  
Item Parameters for Mathematics Grade 4 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |        |
|--------|------------------|-----------|-----------------|--------|--------|
|        |                  |           | a               | b      | c      |
| 61     | C                | SR        | 0.732           | 0.759  | 0.243  |
| 62     | C                | SR        | 0.671           | -1.367 | 0.111  |
| 63     | C                | SR        | 0.905           | 0.378  | 0.139  |
| 64     | C                | SR        | 0.496           | 0.404  | 0.200  |
| 65     | C                | SR        | 0.989           | -0.058 | 0.158  |
| 66     | C                | SR        | 1.056           | -0.345 | 0.232  |
| 67     | C                | SR        | 1.150           | -0.102 | 0.104  |
| 68A    | U                | CR        | 1.469           | -2.536 | .      |
| 68B    | U                | CR        | 1.101           | -1.490 | -0.304 |
| 70     | U                | SR        | 1.320           | -0.336 | 0.258  |
| 71     | U                | SR        | 1.278           | -0.679 | 0.116  |
| 72     | U                | SR        | 1.184           | 0.457  | 0.201  |
| 73     | U                | SR        | 1.006           | -1.016 | 0.138  |
| 74A    | U                | CR        | 2.139           | 2.079  | .      |
| 74B    | U                | CR        | 1.594           | 1.088  | 1.212  |
| 75A    | U                | CR        | 2.185           | -0.325 | .      |
| 75B    | U                | CR        | 1.511           | -0.929 | 0.991  |
| 76     | U                | SR        | 1.177           | -0.019 | 0.149  |
| 77     | U                | SR        | 0.454           | -0.538 | 0.194  |
| 78     | U                | SR        | 0.650           | -2.193 | 0.200  |
| 79     | U                | SR        | 0.878           | -1.013 | 0.116  |
| 90     | U                | SR        | 1.105           | -0.504 | 0.181  |
| 96     | U                | SR        | 1.443           | 0.145  | 0.253  |
| 101    | U                | SR        | 0.955           | 0.356  | 0.258  |
| 104    | U                | SR        | 0.414           | -0.662 | 0.200  |
| 107    | U                | SR        | 0.987           | 0.871  | 0.230  |

Table E11  
Item Parameters for Mathematics Grade 4 Form F

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 1      | C                | SR        | 0.552           | -1.519 | 0.132 |
| 2      | C                | SR        | 0.535           | -0.516 | 0.103 |
| 3      | C                | SR        | 0.906           | -0.737 | 0.349 |
| 4      | C                | SR        | 0.920           | 0.301  | 0.303 |
| 10     | C                | SR        | 1.104           | 0.329  | 0.340 |
| 17     | C                | SR        | 1.230           | -1.529 | 0.240 |
| 18     | C                | SR        | 0.759           | 0.266  | 0.192 |
| 20     | C                | SR        | 0.833           | -0.683 | 0.248 |
| 27     | C                | SR        | 0.763           | 0.115  | 0.226 |
| 31     | C                | SR        | 0.937           | 0.383  | 0.163 |
| 33A    | U                | CR        | 0.822           | -1.837 | .     |
| 33B    | U                | CR        | 1.043           | -0.270 | 1.161 |
| 35     | C                | SR        | 0.894           | -0.790 | 0.249 |
| 36     | C                | SR        | 0.435           | -0.609 | 0.147 |
| 37     | C                | SR        | 1.042           | -1.563 | 0.240 |
| 38     | C                | SR        | 0.572           | -2.369 | 0.200 |
| 39     | C                | SR        | 0.879           | -1.523 | 0.157 |
| 40A    | U                | CR        | 0.642           | -1.114 | .     |
| 40B    | U                | CR        | 1.091           | -0.324 | 1.712 |
| 41     | C                | SR        | 0.853           | 0.745  | 0.142 |
| 42     | C                | SR        | 0.941           | 0.108  | 0.165 |
| 43     | C                | SR        | 0.858           | 0.893  | 0.186 |
| 44     | C                | SR        | 0.779           | 0.951  | 0.212 |
| 45     | C                | SR        | 1.369           | 0.002  | 0.196 |
| 46     | C                | SR        | 1.375           | 0.226  | 0.258 |
| 47A    | U                | CR        | 1.697           | 0.187  | .     |
| 47B    | U                | CR        | 1.210           | 0.480  | 0.464 |
| 49     | C                | SR        | 0.697           | 0.955  | 0.105 |
| 50     | C                | SR        | 0.558           | -1.049 | 0.102 |
| 51     | C                | SR        | 0.751           | -1.968 | 0.200 |
| 52     | C                | SR        | 0.888           | 0.159  | 0.264 |
| 53     | C                | SR        | 0.984           | -0.841 | 0.337 |
| 54     | C                | SR        | 0.798           | 0.260  | 0.148 |
| 55     | C                | SR        | 0.760           | -1.367 | 0.200 |
| 57     | C                | SR        | 0.374           | -2.444 | 0.200 |
| 58     | C                | SR        | 1.032           | -0.577 | 0.196 |
| 60A    | U                | CR        | 1.745           | 1.144  | .     |

Table E11 (cont.)  
Item Parameters for Mathematics Grade 4 Form F

| Item # | Item Designation | Item Type | Item Parameters |        |       |
|--------|------------------|-----------|-----------------|--------|-------|
|        |                  |           | a               | b      | c     |
| 60B    | U                | CR        | 1.544           | -3.677 | 0.689 |
| 61     | C                | SR        | 0.732           | 0.759  | 0.243 |
| 62     | C                | SR        | 0.671           | -1.367 | 0.111 |
| 63     | C                | SR        | 0.905           | 0.378  | 0.139 |
| 64     | C                | SR        | 0.496           | 0.404  | 0.200 |
| 65     | C                | SR        | 0.989           | -0.058 | 0.158 |
| 66     | C                | SR        | 1.056           | -0.345 | 0.232 |
| 67     | C                | SR        | 1.150           | -0.102 | 0.104 |
| 68B    | U                | CR        | 1.153           | -1.674 | 2.488 |
| 69     | U                | SR        | 0.627           | -1.487 | 0.200 |
| 70     | U                | SR        | 1.382           | -0.352 | 0.224 |
| 71     | U                | SR        | 1.069           | -0.094 | 0.171 |
| 72     | U                | SR        | 1.061           | -0.675 | 0.161 |
| 73     | U                | SR        | 0.920           | 1.003  | 0.300 |
| 74B    | U                | CR        | 1.285           | -1.095 | 2.533 |
| 75A    | U                | CR        | 1.143           | -0.659 | .     |
| 75B    | U                | CR        | 1.192           | -0.840 | 1.445 |
| 76     | U                | SR        | 0.749           | 0.242  | 0.302 |
| 77     | U                | SR        | 0.990           | 0.138  | 0.204 |
| 79     | U                | SR        | 0.737           | -2.071 | 0.200 |
| 83     | U                | SR        | 0.608           | 0.718  | 0.351 |
| 92     | U                | SR        | 0.801           | -0.050 | 0.280 |
| 93     | U                | SR        | 1.219           | 0.646  | 0.247 |
| 102    | U                | SR        | 0.766           | -0.820 | 0.250 |
| 104    | U                | SR        | 1.145           | 0.512  | 0.132 |
| 105    | U                | SR        | 1.093           | -1.774 | 0.200 |
| 109    | U                | SR        | 1.042           | 0.633  | 0.177 |

Table E12  
Item Parameters for Mathematics Grade 5 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 2      | C                | SR        | 0.844           | -0.830 | 0.070  | .     |
| 4      | C                | SR        | 0.824           | -0.540 | 0.092  | .     |
| 6      | C                | SR        | 0.713           | -1.273 | 0.213  | .     |
| 8      | C                | SR        | 0.968           | 0.028  | 0.270  | .     |
| 12     | C                | SR        | 1.008           | -0.566 | 0.234  | .     |
| 13     | C                | SR        | 0.429           | -1.786 | 0.200  | .     |
| 17     | C                | SR        | 0.467           | 1.026  | 0.500  | .     |
| 23     | C                | SR        | 1.183           | -0.326 | 0.186  | .     |
| 26     | C                | SR        | 1.045           | 0.236  | 0.145  | .     |
| 27     | C                | SR        | 1.334           | -0.190 | 0.175  | .     |
| 28     | C                | SR        | 1.126           | 0.300  | 0.402  | .     |
| 31     | C                | SR        | 1.011           | -0.081 | 0.180  | .     |
| 32     | C                | SR        | 0.877           | -1.084 | 0.183  | .     |
| 33A    | U                | CR        | 1.302           | -2.060 | .      | .     |
| 33B    | U                | CR        | 0.831           | -0.671 | 0.226  | .     |
| 34     | C                | SR        | 0.819           | -1.961 | 0.142  | .     |
| 35     | C                | SR        | 1.549           | 0.250  | 0.307  | .     |
| 36     | C                | SR        | 0.741           | 0.738  | 0.427  | .     |
| 37     | C                | SR        | 1.123           | 1.073  | 0.336  | .     |
| 38     | C                | SR        | 0.984           | 0.396  | 0.176  | .     |
| 40A    | U                | CR        | 2.021           | -0.063 | .      | .     |
| 40B    | U                | CR        | 1.297           | 0.442  | -0.004 | 0.359 |
| 41     | C                | SR        | 0.742           | 0.524  | 0.260  | .     |
| 42     | C                | SR        | 1.066           | -0.296 | 0.218  | .     |
| 43     | C                | SR        | 0.639           | -1.500 | 0.213  | .     |
| 44     | C                | SR        | 1.061           | -0.318 | 0.170  | .     |
| 45A    | U                | CR        | 1.230           | 0.998  | .      | .     |
| 45B    | U                | CR        | 0.830           | 0.185  | 0.565  | .     |
| 46     | U                | SR        | 0.714           | -0.140 | 0.261  | .     |
| 47     | C                | SR        | 1.064           | 0.324  | 0.337  | .     |
| 48     | C                | SR        | 1.101           | 0.061  | 0.163  | .     |
| 49     | C                | SR        | 0.864           | 0.849  | 0.233  | .     |
| 50     | C                | SR        | 0.968           | 0.407  | 0.190  | .     |
| 51     | C                | SR        | 0.803           | -0.880 | 0.212  | .     |
| 52     | C                | SR        | 0.866           | -0.409 | 0.268  | .     |
| 53A    | U                | CR        | 2.355           | -1.709 | .      | .     |
| 53B    | U                | CR        | 1.094           | -0.410 | -0.246 | .     |
| 54A    | U                | CR        | 0.631           | 0.275  | .      | .     |
| 54B    | U                | CR        | 1.222           | -0.418 | 1.634  | .     |
| 55     | C                | SR        | 0.935           | -0.299 | 0.171  | .     |



Table E12 (cont.)  
Item Parameters for Mathematics Grade 5 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |        |
|--------|------------------|-----------|-----------------|--------|--------|--------|
|        |                  |           | a               | b      | c      | d      |
| 56     | C                | SR        | 1.405           | 1.032  | 0.180  | .      |
| 57     | C                | SR        | 0.614           | 0.146  | 0.203  | .      |
| 58     | C                | SR        | 0.804           | 0.933  | 0.165  | .      |
| 59     | C                | SR        | 0.777           | 1.991  | 0.192  | .      |
| 60     | C                | SR        | 0.737           | 0.170  | 0.132  | .      |
| 61     | U                | SR        | 1.211           | 0.749  | 0.223  | .      |
| 62     | U                | SR        | 0.894           | -1.029 | 0.211  | .      |
| 63     | U                | SR        | 0.852           | -0.178 | 0.119  | .      |
| 64     | U                | SR        | 0.854           | -1.286 | 0.200  | .      |
| 65     | U                | SR        | 0.911           | -0.322 | 0.352  | .      |
| 66     | U                | SR        | 1.509           | 1.178  | 0.071  | .      |
| 67     | C                | SR        | 0.344           | -0.442 | 0.331  | .      |
| 68     | U                | SR        | 0.422           | 0.220  | 0.200  | .      |
| 69     | U                | SR        | 1.195           | 0.186  | 0.165  | .      |
| 70     | U                | SR        | 0.976           | 0.430  | 0.211  | .      |
| 71A    | U                | CR        | 0.391           | -2.308 | .      | .      |
| 71B    | U                | CR        | 0.679           | -0.050 | 0.929  | .      |
| 72A    | U                | CR        | 1.944           | 1.045  | .      | .      |
| 72B    | U                | CR        | 1.352           | 1.299  | 0.293  | .      |
| 73     | C                | SR        | 0.862           | 0.964  | 0.143  | .      |
| 74     | C                | SR        | 0.575           | 0.692  | 0.182  | .      |
| 75     | C                | SR        | 1.222           | -0.764 | 0.230  | .      |
| 76A    | U                | CR        | 2.004           | 0.639  | .      | .      |
| 76B    | U                | CR        | 1.429           | 0.109  | 0.649  | .      |
| 77     | U                | SR        | 1.174           | 0.183  | .      | .      |
| 78     | U                | SR        | 0.985           | -0.725 | 0.097  | .      |
| 79     | U                | SR        | 1.801           | -1.899 | .      | .      |
| 80     | U                | SR        | 1.066           | -0.455 | -1.122 | -0.067 |
| 81     | U                | SR        | 1.676           | 1.164  | .      | .      |
| 82A    | U                | CR        | 1.690           | 0.184  | 1.705  | .      |
| 82B    | U                | CR        | 2.030           | 0.853  | .      | .      |
| 83     | U                | SR        | 1.517           | -0.450 | 0.561  | .      |
| 84     | U                | SR        | 1.389           | 2.137  | .      | .      |
| 85     | U                | SR        | 1.015           | -0.100 | 1.409  | .      |
| 86     | U                | SR        | 1.402           | 1.291  | 0.359  | .      |
| 87     | U                | SR        | 0.878           | 0.928  | 0.215  | .      |
| 88     | U                | SR        | 0.765           | -0.218 | 0.133  | .      |
| 89     | U                | SR        | 0.873           | 0.630  | 0.180  | .      |
| 90A    | U                | CR        | 1.058           | -0.075 | 0.194  | .      |
| 90B    | U                | CR        | 1.564           | 0.191  | 0.088  | .      |

Table E13  
Item Parameters for Mathematics Grade 5 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |        |   |
|--------|------------------|-----------|-----------------|--------|--------|---|
|        |                  |           | a               | b      | c      | d |
| 2      | C                | SR        | 0.844           | -0.830 | 0.070  | . |
| 4      | C                | SR        | 0.824           | -0.540 | 0.092  | . |
| 6      | C                | SR        | 0.713           | -1.273 | 0.213  | . |
| 8      | C                | SR        | 0.968           | 0.028  | 0.270  | . |
| 12     | C                | SR        | 1.008           | -0.566 | 0.234  | . |
| 13     | C                | SR        | 0.429           | -1.786 | 0.200  | . |
| 17     | C                | SR        | 0.467           | 1.026  | 0.500  | . |
| 23     | C                | SR        | 1.183           | -0.326 | 0.186  | . |
| 26     | C                | SR        | 1.045           | 0.236  | 0.145  | . |
| 27     | C                | SR        | 1.334           | -0.190 | 0.175  | . |
| 28     | C                | SR        | 1.126           | 0.300  | 0.402  | . |
| 31     | C                | SR        | 1.011           | -0.081 | 0.180  | . |
| 32     | C                | SR        | 0.877           | -1.084 | 0.183  | . |
| 33A    | U                | CR        | 1.185           | -3.362 | .      | . |
| 33B    | U                | CR        | 0.785           | -0.515 | 1.204  | . |
| 34     | C                | SR        | 0.819           | -1.961 | 0.142  | . |
| 35     | C                | SR        | 1.549           | 0.250  | 0.307  | . |
| 36     | C                | SR        | 0.741           | 0.738  | 0.427  | . |
| 37     | C                | SR        | 1.123           | 1.073  | 0.336  | . |
| 38     | C                | SR        | 0.984           | 0.396  | 0.176  | . |
| 40A    | U                | CR        | 0.807           | -1.647 | 0.200  | . |
| 40B    | U                | CR        | 1.504           | 0.734  | 0.140  | . |
| 41     | C                | SR        | 0.742           | 0.524  | 0.260  | . |
| 42     | C                | SR        | 1.066           | -0.296 | 0.218  | . |
| 43     | C                | SR        | 0.639           | -1.500 | 0.213  | . |
| 44     | C                | SR        | 1.061           | -0.318 | 0.170  | . |
| 45A    | U                | CR        | 0.842           | -0.056 | 0.388  | . |
| 45B    | U                | CR        | 0.983           | -0.088 | 0.300  | . |
| 46     | C                | SR        | 0.777           | 1.991  | 0.192  | . |
| 47     | C                | SR        | 1.064           | 0.324  | 0.337  | . |
| 48     | C                | SR        | 1.101           | 0.061  | 0.163  | . |
| 49     | C                | SR        | 0.864           | 0.849  | 0.233  | . |
| 50     | C                | SR        | 0.968           | 0.407  | 0.190  | . |
| 51     | C                | SR        | 0.803           | -0.880 | 0.212  | . |
| 52     | C                | SR        | 0.866           | -0.409 | 0.268  | . |
| 53A    | U                | CR        | 1.530           | 0.037  | .      | . |
| 53B    | U                | CR        | 1.356           | 0.758  | -0.033 | . |
| 54A    | U                | CR        | 1.999           | -2.126 | .      | . |
| 54B    | U                | CR        | 1.240           | -1.087 | -1.159 | . |
| 55     | C                | SR        | 0.935           | -0.299 | 0.171  | . |

Table E13 (cont.)  
Item Parameters for Mathematics Grade 5 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |       |
|--------|------------------|-----------|-----------------|--------|-------|-------|
|        |                  |           | a               | b      | c     | d     |
| 56     | C                | SR        | 1.405           | 1.032  | 0.180 | .     |
| 57     | C                | SR        | 0.614           | 0.146  | 0.203 | .     |
| 58     | C                | SR        | 0.804           | 0.933  | 0.165 | .     |
| 59     | U                | SR        | 1.137           | -0.055 | 0.116 | .     |
| 60     | U                | SR        | 0.794           | 1.310  | 0.230 | .     |
| 61     | U                | SR        | 0.690           | 0.447  | 0.119 | .     |
| 62     | U                | SR        | 1.021           | -1.532 | 0.200 | .     |
| 63     | U                | SR        | 0.781           | -1.453 | 0.200 | .     |
| 65     | C                | SR        | 0.737           | 0.170  | 0.132 | .     |
| 66B    | U                | CR        | 1.183           | 1.240  | 0.183 | .     |
| 67     | U                | SR        | 1.222           | -0.093 | 0.293 | .     |
| 68     | C                | SR        | 0.344           | -0.442 | 0.331 | .     |
| 69     | U                | SR        | 0.950           | 0.035  | 0.268 | .     |
| 70     | U                | SR        | 1.075           | 0.394  | 0.152 | .     |
| 71     | U                | SR        | 0.861           | 0.393  | 0.264 | .     |
| 72A    | U                | CR        | 0.867           | -1.269 | 0.200 | .     |
| 72B    | U                | CR        | 1.138           | -0.272 | 0.191 | .     |
| 73     | C                | SR        | 0.862           | 0.964  | 0.143 | .     |
| 74     | C                | SR        | 0.575           | 0.692  | 0.182 | .     |
| 75     | C                | SR        | 1.222           | -0.764 | 0.230 | .     |
| 77     | U                | SR        | 1.095           | 1.586  | 0.230 | .     |
| 78     | U                | SR        | 0.677           | 1.577  | 0.178 | .     |
| 79     | U                | SR        | 0.902           | 0.637  | 0.195 | .     |
| 80     | U                | SR        | 0.706           | -1.298 | 0.176 | .     |
| 81     | U                | SR        | 0.953           | 0.158  | 0.286 | .     |
| 82     | U                | SR        | 1.144           | -1.317 | 0.226 | .     |
| 83     | U                | SR        | 1.257           | -0.305 | 0.363 | .     |
| 84     | U                | SR        | 0.764           | -0.454 | 0.326 | .     |
| 85     | U                | SR        | 1.066           | 0.492  | 0.258 | .     |
| 86     | U                | SR        | 0.977           | 0.161  | 0.168 | .     |
| 87A    | U                | CR        | 1.145           | 0.650  | .     | .     |
| 87B    | U                | CR        | 1.129           | -0.473 | 1.352 | 1.627 |
| 88     | U                | SR        | 1.152           | -1.155 | 0.148 | .     |
| 89     | U                | SR        | 0.638           | -0.709 | 0.210 | .     |
| 90     | U                | SR        | 0.587           | -2.490 | 0.200 | .     |
| 91A    | U                | CR        | 1.352           | 0.914  | .     | .     |
| 91B    | U                | CR        | 1.228           | 0.545  | 3.440 | .     |

Table E14  
Item Parameters for Mathematics Grade 5 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 2      | C                | SR        | 0.844           | -0.830 | 0.070  | .     |
| 4      | C                | SR        | 0.824           | -0.540 | 0.092  | .     |
| 6      | C                | SR        | 0.713           | -1.273 | 0.213  | .     |
| 8      | C                | SR        | 0.968           | 0.028  | 0.270  | .     |
| 12     | C                | SR        | 1.008           | -0.566 | 0.234  | .     |
| 13     | C                | SR        | 0.429           | -1.786 | 0.200  | .     |
| 17     | C                | SR        | 0.467           | 1.026  | 0.500  | .     |
| 23     | C                | SR        | 1.183           | -0.326 | 0.186  | .     |
| 26     | C                | SR        | 1.045           | 0.236  | 0.145  | .     |
| 27     | C                | SR        | 1.334           | -0.190 | 0.175  | .     |
| 28     | C                | SR        | 1.126           | 0.300  | 0.402  | .     |
| 31     | C                | SR        | 1.011           | -0.081 | 0.180  | .     |
| 32     | C                | SR        | 0.877           | -1.084 | 0.183  | .     |
| 33A    | U                | CR        | 1.302           | -2.060 | .      | .     |
| 33B    | U                | CR        | 0.831           | -0.671 | 0.226  | .     |
| 34     | C                | SR        | 0.819           | -1.961 | 0.142  | .     |
| 35     | C                | SR        | 1.549           | 0.250  | 0.307  | .     |
| 36     | C                | SR        | 0.741           | 0.738  | 0.427  | .     |
| 37     | C                | SR        | 1.123           | 1.073  | 0.336  | .     |
| 38     | C                | SR        | 0.984           | 0.396  | 0.176  | .     |
| 40A    | U                | CR        | 2.021           | -0.063 | .      | .     |
| 40B    | U                | CR        | 1.297           | 0.442  | -0.004 | 0.359 |
| 41     | C                | SR        | 0.742           | 0.524  | 0.260  | .     |
| 42     | C                | SR        | 1.066           | -0.296 | 0.218  | .     |
| 43     | C                | SR        | 0.639           | -1.500 | 0.213  | .     |
| 44     | C                | SR        | 1.061           | -0.318 | 0.170  | .     |
| 45A    | U                | CR        | 1.230           | 0.998  | .      | .     |
| 45B    | U                | CR        | 0.830           | 0.185  | 0.565  | .     |
| 46     | U                | SR        | 0.714           | -0.140 | 0.261  | .     |
| 47     | C                | SR        | 1.064           | 0.324  | 0.337  | .     |
| 48     | C                | SR        | 1.101           | 0.061  | 0.163  | .     |
| 49     | C                | SR        | 0.864           | 0.849  | 0.233  | .     |
| 50     | C                | SR        | 0.968           | 0.407  | 0.190  | .     |
| 51     | C                | SR        | 0.803           | -0.880 | 0.212  | .     |
| 52     | C                | SR        | 0.866           | -0.409 | 0.268  | .     |
| 53A    | U                | CR        | 2.355           | -1.709 | .      | .     |
| 53B    | U                | CR        | 1.094           | -0.410 | -0.246 | .     |
| 54A    | U                | CR        | 0.631           | 0.275  | .      | .     |
| 54B    | U                | CR        | 1.222           | -0.418 | 1.634  | .     |
| 55     | C                | SR        | 0.935           | -0.299 | 0.171  | .     |

Table E14 (cont.)  
Item Parameters for Mathematics Grade 5 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 56     | C                | SR        | 1.405           | 1.032  | 0.180 | . |
| 57     | C                | SR        | 0.614           | 0.146  | 0.203 | . |
| 58     | C                | SR        | 0.804           | 0.933  | 0.165 | . |
| 59     | C                | SR        | 0.777           | 1.991  | 0.192 | . |
| 60     | C                | SR        | 0.737           | 0.170  | 0.132 | . |
| 61     | U                | SR        | 1.211           | 0.749  | 0.223 | . |
| 62     | U                | SR        | 0.894           | -1.029 | 0.211 | . |
| 63     | U                | SR        | 0.852           | -0.178 | 0.119 | . |
| 64     | U                | SR        | 0.854           | -1.286 | 0.200 | . |
| 65     | U                | SR        | 0.911           | -0.322 | 0.352 | . |
| 66     | U                | SR        | 1.509           | 1.178  | 0.071 | . |
| 67     | C                | SR        | 0.344           | -0.442 | 0.331 | . |
| 68     | U                | SR        | 0.422           | 0.220  | 0.200 | . |
| 69     | U                | SR        | 1.195           | 0.186  | 0.165 | . |
| 70     | U                | SR        | 0.976           | 0.430  | 0.211 | . |
| 71A    | U                | CR        | 0.391           | -2.308 | .     | . |
| 71B    | U                | CR        | 0.679           | -0.050 | 0.929 | . |
| 72A    | U                | CR        | 1.944           | 1.045  | .     | . |
| 72B    | U                | CR        | 1.352           | 1.299  | 0.293 | . |
| 73     | C                | SR        | 0.862           | 0.964  | 0.143 | . |
| 74     | C                | SR        | 0.575           | 0.692  | 0.182 | . |
| 75     | C                | SR        | 1.222           | -0.764 | 0.230 | . |
| 76A    | U                | CR        | 2.004           | 0.639  | .     | . |
| 76B    | U                | CR        | 1.429           | 0.109  | 0.649 | . |
| 77A    | U                | CR        | 1.869           | 0.271  | .     | . |
| 77B    | U                | CR        | 1.150           | -0.345 | 1.235 | . |
| 78     | U                | SR        | 0.836           | -1.304 | 0.138 | . |
| 79     | U                | SR        | 0.552           | 0.407  | 0.319 | . |
| 80     | U                | SR        | 1.322           | -0.251 | 0.262 | . |
| 81     | U                | SR        | 1.149           | 0.093  | 0.258 | . |
| 82     | U                | SR        | 1.414           | -0.168 | 0.217 | . |
| 83     | U                | SR        | 1.045           | 0.483  | 0.183 | . |
| 84     | U                | SR        | 1.270           | 1.151  | 0.237 | . |
| 85A    | U                | CR        | 1.605           | 1.391  | .     | . |
| 85B    | U                | CR        | 1.248           | -0.038 | 1.152 | . |
| 86     | U                | SR        | 1.147           | 0.493  | 0.101 | . |
| 87     | U                | SR        | 0.771           | -2.382 | 0.200 | . |
| 88     | U                | SR        | 1.080           | -0.415 | 0.220 | . |
| 89A    | U                | CR        | 2.744           | 4.939  | .     | . |
| 89B    | U                | CR        | 1.639           | 1.836  | 2.847 | . |

Table E15  
Item Parameters for Mathematics Grade 5 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |        |   |
|--------|------------------|-----------|-----------------|--------|--------|---|
|        |                  |           | a               | b      | c      | d |
| 2      | C                | SR        | 0.844           | -0.830 | 0.070  | . |
| 4      | C                | SR        | 0.824           | -0.540 | 0.092  | . |
| 6      | C                | SR        | 0.713           | -1.273 | 0.213  | . |
| 8      | C                | SR        | 0.968           | 0.028  | 0.270  | . |
| 12     | C                | SR        | 1.008           | -0.566 | 0.234  | . |
| 13     | C                | SR        | 0.429           | -1.786 | 0.200  | . |
| 17     | C                | SR        | 0.467           | 1.026  | 0.500  | . |
| 23     | C                | SR        | 1.183           | -0.326 | 0.186  | . |
| 26     | C                | SR        | 1.045           | 0.236  | 0.145  | . |
| 27     | C                | SR        | 1.334           | -0.190 | 0.175  | . |
| 28     | C                | SR        | 1.126           | 0.300  | 0.402  | . |
| 31     | C                | SR        | 1.011           | -0.081 | 0.180  | . |
| 32     | C                | SR        | 0.877           | -1.084 | 0.183  | . |
| 33A    | U                | CR        | 1.185           | -3.362 | .      | . |
| 33B    | U                | CR        | 0.785           | -0.515 | 1.204  | . |
| 34     | C                | SR        | 0.819           | -1.961 | 0.142  | . |
| 35     | C                | SR        | 1.549           | 0.250  | 0.307  | . |
| 36     | C                | SR        | 0.741           | 0.738  | 0.427  | . |
| 37     | C                | SR        | 1.123           | 1.073  | 0.336  | . |
| 38     | C                | SR        | 0.984           | 0.396  | 0.176  | . |
| 40A    | U                | CR        | 0.807           | -1.647 | 0.200  | . |
| 40B    | U                | CR        | 1.504           | 0.734  | 0.140  | . |
| 41     | C                | SR        | 0.742           | 0.524  | 0.260  | . |
| 42     | C                | SR        | 1.066           | -0.296 | 0.218  | . |
| 43     | C                | SR        | 0.639           | -1.500 | 0.213  | . |
| 44     | C                | SR        | 1.061           | -0.318 | 0.170  | . |
| 45A    | U                | CR        | 0.842           | -0.056 | 0.388  | . |
| 45B    | U                | CR        | 0.983           | -0.088 | 0.300  | . |
| 46     | C                | SR        | 0.777           | 1.991  | 0.192  | . |
| 47     | C                | SR        | 1.064           | 0.324  | 0.337  | . |
| 48     | C                | SR        | 1.101           | 0.061  | 0.163  | . |
| 49     | C                | SR        | 0.864           | 0.849  | 0.233  | . |
| 50     | C                | SR        | 0.968           | 0.407  | 0.190  | . |
| 51     | C                | SR        | 0.803           | -0.880 | 0.212  | . |
| 52     | C                | SR        | 0.866           | -0.409 | 0.268  | . |
| 53A    | U                | CR        | 1.530           | 0.037  | .      | . |
| 53B    | U                | CR        | 1.356           | 0.758  | -0.033 | . |
| 54A    | U                | CR        | 1.999           | -2.126 | .      | . |
| 54B    | U                | CR        | 1.240           | -1.087 | -1.159 | . |
| 55     | C                | SR        | 0.935           | -0.299 | 0.171  | . |

Table E15 (cont.)  
Item Parameters for Mathematics Grade 5 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |        |   |
|--------|------------------|-----------|-----------------|--------|--------|---|
|        |                  |           | a               | b      | c      | d |
| 56     | C                | SR        | 1.405           | 1.032  | 0.180  | . |
| 57     | C                | SR        | 0.614           | 0.146  | 0.203  | . |
| 58     | C                | SR        | 0.804           | 0.933  | 0.165  | . |
| 59     | U                | SR        | 1.137           | -0.055 | 0.116  | . |
| 60     | U                | SR        | 0.794           | 1.310  | 0.230  | . |
| 61     | U                | SR        | 0.690           | 0.447  | 0.119  | . |
| 62     | U                | SR        | 1.021           | -1.532 | 0.200  | . |
| 63     | U                | SR        | 0.781           | -1.453 | 0.200  | . |
| 65     | C                | SR        | 0.737           | 0.170  | 0.132  | . |
| 66B    | U                | CR        | 1.183           | 1.240  | 0.183  | . |
| 67     | U                | SR        | 1.222           | -0.093 | 0.293  | . |
| 68     | C                | SR        | 0.344           | -0.442 | 0.331  | . |
| 69     | U                | SR        | 0.950           | 0.035  | 0.268  | . |
| 70     | U                | SR        | 1.075           | 0.394  | 0.152  | . |
| 71     | U                | SR        | 0.861           | 0.393  | 0.264  | . |
| 72A    | U                | CR        | 0.867           | -1.269 | 0.200  | . |
| 72B    | U                | CR        | 1.138           | -0.272 | 0.191  | . |
| 73     | C                | SR        | 0.862           | 0.964  | 0.143  | . |
| 74     | C                | SR        | 0.575           | 0.692  | 0.182  | . |
| 75     | C                | SR        | 1.222           | -0.764 | 0.230  | . |
| 77A    | U                | CR        | 1.484           | -0.593 | .      | . |
| 77B    | U                | CR        | 0.820           | 0.214  | -1.114 | . |
| 78     | U                | SR        | 0.837           | 0.959  | 0.219  | . |
| 79     | U                | SR        | 0.992           | -1.259 | 0.186  | . |
| 80     | U                | SR        | 0.784           | -1.680 | 0.200  | . |
| 81     | U                | SR        | 1.142           | -0.242 | 0.263  | . |
| 82     | U                | SR        | 0.547           | -1.251 | 0.200  | . |
| 83     | U                | SR        | 1.346           | 0.657  | 0.134  | . |
| 84     | U                | SR        | 1.487           | 0.348  | 0.326  | . |
| 85A    | U                | CR        | 1.502           | -0.196 | .      | . |
| 85B    | U                | CR        | 0.937           | -0.714 | 0.008  | . |
| 86     | U                | SR        | 0.723           | -2.825 | 0.200  | . |
| 87     | U                | SR        | 0.787           | -0.845 | 0.137  | . |
| 88     | U                | SR        | 0.879           | -0.374 | 0.163  | . |
| 89A    | U                | CR        | 2.510           | 1.929  | .      | . |
| 89B    | U                | CR        | 1.495           | 1.371  | 0.694  | . |

Table E16  
Item Parameters for Mathematics Grade 5 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 2      | C                | SR        | 0.844           | -0.830 | 0.070  | .     |
| 4      | C                | SR        | 0.824           | -0.540 | 0.092  | .     |
| 6      | C                | SR        | 0.713           | -1.273 | 0.213  | .     |
| 8      | C                | SR        | 0.968           | 0.028  | 0.270  | .     |
| 12     | C                | SR        | 1.008           | -0.566 | 0.234  | .     |
| 13     | C                | SR        | 0.429           | -1.786 | 0.200  | .     |
| 17     | C                | SR        | 0.467           | 1.026  | 0.500  | .     |
| 23     | C                | SR        | 1.183           | -0.326 | 0.186  | .     |
| 26     | C                | SR        | 1.045           | 0.236  | 0.145  | .     |
| 27     | C                | SR        | 1.334           | -0.190 | 0.175  | .     |
| 28     | C                | SR        | 1.126           | 0.300  | 0.402  | .     |
| 31     | C                | SR        | 1.011           | -0.081 | 0.180  | .     |
| 32     | C                | SR        | 0.877           | -1.084 | 0.183  | .     |
| 33A    | U                | CR        | 1.302           | -2.060 | .      | .     |
| 33B    | U                | CR        | 0.831           | -0.671 | 0.226  | .     |
| 34     | C                | SR        | 0.819           | -1.961 | 0.142  | .     |
| 35     | C                | SR        | 1.549           | 0.250  | 0.307  | .     |
| 36     | C                | SR        | 0.741           | 0.738  | 0.427  | .     |
| 37     | C                | SR        | 1.123           | 1.073  | 0.336  | .     |
| 38     | C                | SR        | 0.984           | 0.396  | 0.176  | .     |
| 40A    | U                | CR        | 2.021           | -0.063 | .      | .     |
| 40B    | U                | CR        | 1.297           | 0.442  | -0.004 | 0.359 |
| 41     | C                | SR        | 0.742           | 0.524  | 0.260  | .     |
| 42     | C                | SR        | 1.066           | -0.296 | 0.218  | .     |
| 43     | C                | SR        | 0.639           | -1.500 | 0.213  | .     |
| 44     | C                | SR        | 1.061           | -0.318 | 0.170  | .     |
| 45A    | U                | CR        | 1.230           | 0.998  | .      | .     |
| 45B    | U                | CR        | 0.830           | 0.185  | 0.565  | .     |
| 46     | U                | SR        | 0.714           | -0.140 | 0.261  | .     |
| 47     | C                | SR        | 1.064           | 0.324  | 0.337  | .     |
| 48     | C                | SR        | 1.101           | 0.061  | 0.163  | .     |
| 49     | C                | SR        | 0.864           | 0.849  | 0.233  | .     |
| 50     | C                | SR        | 0.968           | 0.407  | 0.190  | .     |
| 51     | C                | SR        | 0.803           | -0.880 | 0.212  | .     |
| 52     | C                | SR        | 0.866           | -0.409 | 0.268  | .     |
| 53A    | U                | CR        | 2.355           | -1.709 | .      | .     |
| 53B    | U                | CR        | 1.094           | -0.410 | -0.246 | .     |
| 54A    | U                | CR        | 0.631           | 0.275  | .      | .     |
| 54B    | U                | CR        | 1.222           | -0.418 | 1.634  | .     |
| 55     | C                | SR        | 0.935           | -0.299 | 0.171  | .     |



Table E16 (cont.)  
Item Parameters for Mathematics Grade 5 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 56     | C                | SR        | 1.405           | 1.032  | 0.180 | . |
| 57     | C                | SR        | 0.614           | 0.146  | 0.203 | . |
| 58     | C                | SR        | 0.804           | 0.933  | 0.165 | . |
| 59     | C                | SR        | 0.777           | 1.991  | 0.192 | . |
| 60     | C                | SR        | 0.737           | 0.170  | 0.132 | . |
| 61     | U                | SR        | 1.211           | 0.749  | 0.223 | . |
| 62     | U                | SR        | 0.894           | -1.029 | 0.211 | . |
| 63     | U                | SR        | 0.852           | -0.178 | 0.119 | . |
| 64     | U                | SR        | 0.854           | -1.286 | 0.200 | . |
| 65     | U                | SR        | 0.911           | -0.322 | 0.352 | . |
| 66     | U                | SR        | 1.509           | 1.178  | 0.071 | . |
| 67     | C                | SR        | 0.344           | -0.442 | 0.331 | . |
| 68     | U                | SR        | 0.422           | 0.220  | 0.200 | . |
| 69     | U                | SR        | 1.195           | 0.186  | 0.165 | . |
| 70     | U                | SR        | 0.976           | 0.430  | 0.211 | . |
| 71A    | U                | CR        | 0.391           | -2.308 | .     | . |
| 71B    | U                | CR        | 0.679           | -0.050 | 0.929 | . |
| 72A    | U                | CR        | 1.944           | 1.045  | .     | . |
| 72B    | U                | CR        | 1.352           | 1.299  | 0.293 | . |
| 73     | C                | SR        | 0.862           | 0.964  | 0.143 | . |
| 74     | C                | SR        | 0.575           | 0.692  | 0.182 | . |
| 75     | C                | SR        | 1.222           | -0.764 | 0.230 | . |
| 76A    | U                | CR        | 2.004           | 0.639  | .     | . |
| 76B    | U                | CR        | 1.429           | 0.109  | 0.649 | . |
| 77A    | U                | CR        | 1.717           | 0.789  | .     | . |
| 77B    | U                | CR        | 1.192           | 0.774  | 1.512 | . |
| 78     | U                | SR        | 0.518           | 2.328  | 0.159 | . |
| 79     | U                | SR        | 1.060           | 0.766  | 0.152 | . |
| 80     | U                | SR        | 0.542           | -1.485 | 0.200 | . |
| 82     | U                | SR        | 0.807           | 0.059  | 0.157 | . |
| 83     | U                | SR        | 0.878           | -0.465 | 0.209 | . |
| 85A    | U                | CR        | 1.602           | 0.570  | .     | . |
| 85B    | U                | CR        | 1.283           | 0.298  | 2.290 | . |
| 86     | U                | SR        | 0.622           | -1.656 | 0.200 | . |
| 87     | U                | SR        | 1.049           | 0.185  | 0.142 | . |
| 88     | U                | SR        | 1.069           | 0.092  | 0.246 | . |
| 89A    | U                | CR        | 1.735           | 1.570  | .     | . |
| 89B    | U                | CR        | 1.134           | -1.244 | 1.705 | . |

Table E17  
Item Parameters for Mathematics Grade 6 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 0.761           | -0.914 | 0.053  | .     |
| 13     | C                | SR        | 1.097           | -0.542 | 0.290  | .     |
| 17     | C                | SR        | 0.740           | -0.639 | 0.183  | .     |
| 18     | C                | SR        | 1.078           | -0.631 | 0.277  | .     |
| 20     | C                | SR        | 1.407           | -0.332 | 0.207  | .     |
| 32     | C                | SR        | 1.107           | 0.407  | 0.131  | .     |
| 33     | C                | SR        | 1.100           | 1.325  | 0.260  | .     |
| 34     | C                | SR        | 1.117           | 1.472  | 0.119  | .     |
| 36     | C                | SR        | 1.093           | 0.255  | 0.241  | .     |
| 38     | C                | SR        | 0.938           | 0.043  | 0.310  | .     |
| 39     | C                | SR        | 0.442           | 0.452  | 0.331  | .     |
| 40A    | U                | CR        | 1.227           | -0.102 | .      | .     |
| 40B    | U                | CR        | 1.308           | -0.249 | 0.992  | 2.632 |
| 41     | C                | SR        | 1.129           | 0.210  | 0.316  | .     |
| 43     | C                | SR        | 1.239           | -0.002 | 0.185  | .     |
| 44     | C                | SR        | 1.767           | 1.135  | 0.088  | .     |
| 45     | C                | SR        | 1.552           | 1.101  | 0.340  | .     |
| 48     | C                | SR        | 0.905           | 1.475  | 0.201  | .     |
| 49A    | U                | CR        | 2.391           | 2.950  | .      | .     |
| 49B    | U                | CR        | 1.571           | 0.643  | 2.178  | .     |
| 50     | C                | SR        | 0.476           | 0.366  | 0.245  | .     |
| 51     | C                | SR        | 0.980           | 0.295  | 0.214  | .     |
| 53     | C                | SR        | 1.100           | -0.190 | 0.211  | .     |
| 54     | C                | SR        | 1.354           | 1.428  | 0.247  | .     |
| 55     | C                | SR        | 0.647           | 1.151  | 0.150  | .     |
| 56     | C                | SR        | 1.479           | 1.003  | 0.259  | .     |
| 57     | C                | SR        | 0.770           | 0.712  | 0.209  | .     |
| 58A    | U                | CR        | 1.117           | 1.308  | .      | .     |
| 58B    | U                | CR        | 0.921           | -0.256 | -0.068 | .     |
| 60     | C                | SR        | 1.405           | 0.650  | 0.232  | .     |
| 61     | C                | SR        | 1.033           | 0.199  | 0.242  | .     |
| 62     | C                | SR        | 0.990           | 0.466  | 0.320  | .     |
| 63     | C                | SR        | 0.657           | -1.111 | 0.208  | .     |
| 64A    | U                | CR        | 1.512           | 0.490  | .      | .     |
| 64B    | U                | CR        | 1.378           | -1.506 | 1.221  | .     |
| 65     | C                | SR        | 0.386           | -1.225 | 0.200  | .     |
| 66     | C                | SR        | 1.040           | -1.360 | 0.149  | .     |
| 67     | C                | SR        | 0.873           | 0.383  | 0.190  | .     |
| 68     | C                | SR        | 1.496           | 0.434  | 0.122  | .     |
| 69A    | U                | CR        | 1.656           | -0.602 | .      | .     |

Table E17 (cont.)  
Item Parameters for Mathematics Grade 6 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |   |
|--------|------------------|-----------|-----------------|--------|--------|---|
|        |                  |           | a               | b      | c      | d |
| 69B    | U                | CR        | 1.423           | -1.520 | -0.429 | . |
| 70     | U                | SR        | 0.736           | -0.641 | 0.090  | . |
| 71     | U                | SR        | 0.887           | 0.138  | 0.128  | . |
| 73     | U                | SR        | 0.878           | 0.099  | 0.183  | . |
| 74     | U                | SR        | 0.734           | -0.421 | 0.175  | . |
| 75A    | U                | CR        | 1.557           | -0.282 | .      | . |
| 75B    | U                | CR        | 1.642           | -1.820 | 1.625  | . |
| 76     | U                | SR        | 1.136           | 0.004  | 0.161  | . |
| 77     | U                | SR        | 1.186           | 1.850  | 0.196  | . |
| 78     | U                | SR        | 1.098           | -0.310 | 0.254  | . |
| 79     | U                | SR        | 0.552           | 1.292  | 0.240  | . |
| 80     | U                | SR        | 0.778           | 0.778  | 0.205  | . |
| 81A    | U                | CR        | 1.456           | 0.862  | .      | . |
| 81B    | U                | CR        | 1.769           | -0.513 | 2.405  | . |
| 85     | U                | SR        | 1.024           | -0.305 | 0.255  | . |
| 87     | U                | SR        | 0.981           | 1.232  | 0.176  | . |
| 88     | U                | SR        | 0.642           | -1.659 | 0.200  | . |
| 92     | U                | SR        | 2.000           | 1.804  | 0.234  | . |
| 94     | U                | SR        | 1.088           | 0.982  | 0.250  | . |
| 99     | U                | SR        | 0.423           | 0.658  | 0.153  | . |
| 104    | U                | SR        | 0.788           | 0.231  | 0.229  | . |

Table E18  
Item Parameters for Mathematics Grade 6 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |       |
|--------|------------------|-----------|-----------------|--------|-------|-------|
|        |                  |           | a               | b      | c     | d     |
| 6      | C                | SR        | 0.761           | -0.914 | 0.053 | .     |
| 13     | C                | SR        | 1.097           | -0.542 | 0.290 | .     |
| 17     | C                | SR        | 0.740           | -0.639 | 0.183 | .     |
| 18     | C                | SR        | 1.078           | -0.631 | 0.277 | .     |
| 20     | C                | SR        | 1.407           | -0.332 | 0.207 | .     |
| 32     | C                | SR        | 1.107           | 0.407  | 0.131 | .     |
| 33     | C                | SR        | 1.100           | 1.325  | 0.260 | .     |
| 34     | C                | SR        | 1.117           | 1.472  | 0.119 | .     |
| 36     | C                | SR        | 1.093           | 0.255  | 0.241 | .     |
| 38     | C                | SR        | 0.938           | 0.043  | 0.310 | .     |
| 39     | C                | SR        | 0.442           | 0.452  | 0.331 | .     |
| 40A    | U                | CR        | 1.636           | -0.631 | .     | .     |
| 40B    | U                | CR        | 1.278           | -1.079 | 0.169 | 1.801 |
| 41     | C                | SR        | 1.129           | 0.210  | 0.316 | .     |
| 43     | C                | SR        | 1.239           | -0.002 | 0.185 | .     |
| 44     | C                | SR        | 1.767           | 1.135  | 0.088 | .     |
| 45     | C                | SR        | 1.552           | 1.101  | 0.340 | .     |
| 48     | C                | SR        | 0.905           | 1.475  | 0.201 | .     |
| 49A    | U                | CR        | 2.864           | 4.314  | .     | .     |
| 49B    | U                | CR        | 1.947           | 0.538  | 3.382 | .     |
| 50     | C                | SR        | 0.476           | 0.366  | 0.245 | .     |
| 51     | C                | SR        | 0.980           | 0.295  | 0.214 | .     |
| 53     | C                | SR        | 1.100           | -0.190 | 0.211 | .     |
| 54     | C                | SR        | 1.354           | 1.428  | 0.247 | .     |
| 55     | C                | SR        | 0.647           | 1.151  | 0.150 | .     |
| 56     | C                | SR        | 1.479           | 1.003  | 0.259 | .     |
| 57     | C                | SR        | 0.770           | 0.712  | 0.209 | .     |
| 58A    | U                | CR        | 1.223           | -1.214 | .     | .     |
| 58B    | U                | CR        | 1.097           | -1.122 | 1.117 | .     |
| 60     | C                | SR        | 1.405           | 0.650  | 0.232 | .     |
| 61     | C                | SR        | 1.033           | 0.199  | 0.242 | .     |
| 62     | C                | SR        | 0.990           | 0.466  | 0.320 | .     |
| 63     | C                | SR        | 0.657           | -1.111 | 0.208 | .     |
| 64A    | U                | CR        | 0.768           | 0.556  | .     | .     |
| 64B    | U                | CR        | 1.033           | 1.846  | 0.433 | .     |
| 65     | C                | SR        | 0.386           | -1.225 | 0.200 | .     |
| 66     | C                | SR        | 1.040           | -1.360 | 0.149 | .     |
| 67     | C                | SR        | 0.873           | 0.383  | 0.190 | .     |
| 68     | C                | SR        | 1.496           | 0.434  | 0.122 | .     |
| 69A    | U                | CR        | 1.941           | 1.060  | .     | .     |

Table E18 (cont.)  
Item Parameters for Mathematics Grade 6 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 69B    | U                | CR        | 1.177           | -0.549 | 1.820 | . |
| 70     | U                | SR        | 0.652           | -0.414 | 0.135 | . |
| 71     | U                | SR        | 0.665           | -0.762 | 0.200 | . |
| 72     | U                | SR        | 1.244           | 0.426  | 0.207 | . |
| 74     | U                | SR        | 0.842           | 0.914  | 0.248 | . |
| 75A    | U                | CR        | 1.840           | -2.198 | .     | . |
| 75B    | U                | CR        | 1.473           | -1.764 | 2.474 | . |
| 76     | U                | SR        | 0.994           | -0.946 | 0.090 | . |
| 77     | U                | SR        | 0.621           | 1.297  | 0.123 | . |
| 78     | U                | SR        | 1.020           | 0.172  | 0.207 | . |
| 79     | U                | SR        | 0.853           | -0.579 | 0.181 | . |
| 80     | U                | SR        | 0.864           | -0.766 | 0.118 | . |
| 81A    | U                | CR        | 2.659           | 0.180  | .     | . |
| 81B    | U                | CR        | 1.738           | -0.539 | 1.230 | . |
| 85     | U                | SR        | 1.202           | -0.163 | 0.317 | . |
| 87     | U                | SR        | 1.145           | 2.013  | 0.265 | . |
| 89     | U                | SR        | 0.673           | 1.053  | 0.236 | . |
| 90     | U                | SR        | 1.079           | 0.773  | 0.351 | . |
| 97     | U                | SR        | 1.011           | 0.691  | 0.228 | . |
| 105    | U                | SR        | 0.760           | 0.500  | 0.219 | . |
| 108    | U                | SR        | 1.344           | 1.105  | 0.267 | . |

Table E19  
Item Parameters for Mathematics Grade 6 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 0.761           | -0.914 | 0.053  | .     |
| 13     | C                | SR        | 1.097           | -0.542 | 0.290  | .     |
| 17     | C                | SR        | 0.740           | -0.639 | 0.183  | .     |
| 18     | C                | SR        | 1.078           | -0.631 | 0.277  | .     |
| 20     | C                | SR        | 1.407           | -0.332 | 0.207  | .     |
| 32     | C                | SR        | 1.107           | 0.407  | 0.131  | .     |
| 33     | C                | SR        | 1.100           | 1.325  | 0.260  | .     |
| 34     | C                | SR        | 1.117           | 1.472  | 0.119  | .     |
| 36     | C                | SR        | 1.093           | 0.255  | 0.241  | .     |
| 38     | C                | SR        | 0.938           | 0.043  | 0.310  | .     |
| 39     | C                | SR        | 0.442           | 0.452  | 0.331  | .     |
| 40A    | U                | CR        | 2.517           | 0.842  | .      | .     |
| 40B    | U                | CR        | 1.402           | 0.383  | 0.434  | 2.496 |
| 41     | C                | SR        | 1.129           | 0.210  | 0.316  | .     |
| 43     | C                | SR        | 1.239           | -0.002 | 0.185  | .     |
| 44     | C                | SR        | 1.767           | 1.135  | 0.088  | .     |
| 45     | C                | SR        | 1.552           | 1.101  | 0.340  | .     |
| 48     | C                | SR        | 0.905           | 1.475  | 0.201  | .     |
| 49A    | U                | CR        | 2.540           | 3.218  | .      | .     |
| 49B    | U                | CR        | 1.631           | 0.324  | 2.447  | .     |
| 50     | C                | SR        | 0.476           | 0.366  | 0.245  | .     |
| 51     | C                | SR        | 0.980           | 0.295  | 0.214  | .     |
| 53     | C                | SR        | 1.100           | -0.190 | 0.211  | .     |
| 54     | C                | SR        | 1.354           | 1.428  | 0.247  | .     |
| 55     | C                | SR        | 0.647           | 1.151  | 0.150  | .     |
| 56     | C                | SR        | 1.479           | 1.003  | 0.259  | .     |
| 57     | C                | SR        | 0.770           | 0.712  | 0.209  | .     |
| 58A    | U                | CR        | 1.122           | 0.498  | .      | .     |
| 58B    | U                | CR        | 0.865           | 0.454  | -0.777 | .     |
| 60     | C                | SR        | 1.405           | 0.650  | 0.232  | .     |
| 61     | C                | SR        | 1.033           | 0.199  | 0.242  | .     |
| 62     | C                | SR        | 0.990           | 0.466  | 0.320  | .     |
| 63     | C                | SR        | 0.657           | -1.111 | 0.208  | .     |
| 64A    | U                | CR        | 1.920           | 1.953  | .      | .     |
| 64B    | U                | CR        | 1.817           | -1.873 | 1.193  | .     |
| 65     | C                | SR        | 0.386           | -1.225 | 0.200  | .     |
| 66     | C                | SR        | 1.040           | -1.360 | 0.149  | .     |
| 67     | C                | SR        | 0.873           | 0.383  | 0.190  | .     |
| 68     | C                | SR        | 1.496           | 0.434  | 0.122  | .     |
| 69A    | U                | CR        | 1.656           | 0.701  | .      | .     |

Table E19 (cont.)  
Item Parameters for Mathematics Grade 6 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 69B    | U                | CR        | 1.560           | -1.231 | 1.185 | . |
| 70     | U                | SR        | 0.637           | -0.555 | 0.133 | . |
| 71     | U                | SR        | 0.587           | 0.590  | 0.139 | . |
| 72     | U                | SR        | 0.899           | -0.315 | 0.295 | . |
| 74     | U                | SR        | 0.558           | 0.969  | 0.242 | . |
| 75A    | U                | CR        | 1.985           | -1.117 | .     | . |
| 75B    | U                | CR        | 1.342           | -1.393 | 1.121 | . |
| 77     | U                | SR        | 1.191           | 0.761  | 0.219 | . |
| 78     | U                | SR        | 0.508           | 0.237  | 0.208 | . |
| 79     | U                | SR        | 1.423           | -0.213 | 0.234 | . |
| 81A    | U                | CR        | 1.625           | 3.437  | .     | . |
| 81B    | U                | CR        | 1.004           | -0.774 | 2.677 | . |
| 87     | U                | SR        | 0.881           | 0.897  | 0.234 | . |
| 88     | U                | SR        | 1.291           | 0.506  | 0.088 | . |
| 89     | U                | SR        | 0.589           | 0.224  | 0.140 | . |
| 94     | U                | SR        | 1.864           | 1.134  | 0.261 | . |
| 95     | U                | SR        | 0.884           | -0.276 | 0.181 | . |
| 98     | U                | SR        | 1.279           | -0.307 | 0.164 | . |
| 102    | U                | SR        | 1.495           | 0.706  | 0.220 | . |
| 104    | U                | SR        | 1.647           | 0.602  | 0.182 | . |
| 105    | U                | SR        | 1.028           | 0.799  | 0.214 | . |
| 110    | U                | SR        | 0.943           | -0.196 | 0.173 | . |

Table E20  
Item Parameters for Mathematics Grade 6 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 0.761           | -0.914 | 0.053  | .     |
| 13     | C                | SR        | 1.097           | -0.542 | 0.290  | .     |
| 17     | C                | SR        | 0.740           | -0.639 | 0.183  | .     |
| 18     | C                | SR        | 1.078           | -0.631 | 0.277  | .     |
| 20     | C                | SR        | 1.407           | -0.332 | 0.207  | .     |
| 32     | C                | SR        | 1.107           | 0.407  | 0.131  | .     |
| 33     | C                | SR        | 1.100           | 1.325  | 0.260  | .     |
| 34     | C                | SR        | 1.117           | 1.472  | 0.119  | .     |
| 36     | C                | SR        | 1.093           | 0.255  | 0.241  | .     |
| 38     | C                | SR        | 0.938           | 0.043  | 0.310  | .     |
| 39     | C                | SR        | 0.442           | 0.452  | 0.331  | .     |
| 40A    | U                | CR        | 1.486           | -0.134 | .      | .     |
| 40B    | U                | CR        | 1.089           | -0.667 | 0.358  | 1.477 |
| 41     | C                | SR        | 1.129           | 0.210  | 0.316  | .     |
| 43     | C                | SR        | 1.239           | -0.002 | 0.185  | .     |
| 44     | C                | SR        | 1.767           | 1.135  | 0.088  | .     |
| 45     | C                | SR        | 1.552           | 1.101  | 0.340  | .     |
| 48     | C                | SR        | 0.905           | 1.475  | 0.201  | .     |
| 50     | C                | SR        | 0.476           | 0.366  | 0.245  | .     |
| 51     | C                | SR        | 0.980           | 0.295  | 0.214  | .     |
| 53     | C                | SR        | 1.100           | -0.190 | 0.211  | .     |
| 54     | C                | SR        | 1.354           | 1.428  | 0.247  | .     |
| 55     | C                | SR        | 0.647           | 1.151  | 0.150  | .     |
| 56     | C                | SR        | 1.479           | 1.003  | 0.259  | .     |
| 57     | C                | SR        | 0.770           | 0.712  | 0.209  | .     |
| 58A    | U                | CR        | 0.608           | -0.198 | .      | .     |
| 58B    | U                | CR        | 0.600           | 0.125  | -0.135 | .     |
| 60     | C                | SR        | 1.405           | 0.650  | 0.232  | .     |
| 61     | C                | SR        | 1.033           | 0.199  | 0.242  | .     |
| 62     | C                | SR        | 0.990           | 0.466  | 0.320  | .     |
| 63     | C                | SR        | 0.657           | -1.111 | 0.208  | .     |
| 65     | C                | SR        | 0.386           | -1.225 | 0.200  | .     |
| 66     | C                | SR        | 1.040           | -1.360 | 0.149  | .     |
| 67     | C                | SR        | 0.873           | 0.383  | 0.190  | .     |
| 68     | C                | SR        | 1.496           | 0.434  | 0.122  | .     |
| 70     | U                | SR        | 0.706           | -1.075 | 0.140  | .     |
| 71     | U                | SR        | 0.589           | 0.816  | 0.125  | .     |
| 73     | U                | SR        | 1.272           | 1.199  | 0.144  | .     |
| 74     | U                | SR        | 1.234           | 1.116  | 0.276  | .     |
| 75A    | U                | CR        | 1.823           | 0.643  | .      | .     |



Table E20 (cont.)  
Item Parameters for Mathematics Grade 6 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 75B    | U                | CR        | 1.344           | -2.208 | 2.113 | . |
| 76     | U                | SR        | 1.372           | -0.686 | 0.274 | . |
| 77     | U                | SR        | 1.147           | -0.895 | 0.263 | . |
| 78     | U                | SR        | 0.871           | -1.131 | 0.165 | . |
| 79     | U                | SR        | 0.838           | 0.832  | 0.223 | . |
| 80     | U                | SR        | 1.094           | -0.467 | 0.145 | . |
| 81A    | U                | CR        | 0.426           | -0.023 | .     | . |
| 81B    | U                | CR        | 1.078           | -1.639 | 2.636 | . |
| 83     | U                | SR        | 2.000           | 0.585  | 0.315 | . |
| 84     | U                | SR        | 0.890           | 0.507  | 0.340 | . |
| 87     | U                | SR        | 1.185           | 0.101  | 0.274 | . |
| 88     | U                | SR        | 0.663           | 0.846  | 0.257 | . |
| 90     | U                | SR        | 1.046           | -0.281 | 0.224 | . |
| 92     | U                | SR        | 0.766           | 1.770  | 0.238 | . |
| 94     | U                | SR        | 2.000           | 1.029  | 0.157 | . |
| 98     | U                | SR        | 0.669           | 1.262  | 0.288 | . |
| 100    | U                | SR        | 1.819           | 1.363  | 0.258 | . |
| 105    | U                | SR        | 1.742           | 0.864  | 0.363 | . |
| 108    | U                | SR        | 1.818           | 1.191  | 0.231 | . |

Table E21  
Item Parameters for Mathematics Grade 6 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |       |       |
|--------|------------------|-----------|-----------------|--------|-------|-------|
|        |                  |           | a               | b      | c     | d     |
| 6      | C                | SR        | 0.761           | -0.914 | 0.053 | .     |
| 13     | C                | SR        | 1.097           | -0.542 | 0.290 | .     |
| 17     | C                | SR        | 0.740           | -0.639 | 0.183 | .     |
| 18     | C                | SR        | 1.078           | -0.631 | 0.277 | .     |
| 20     | C                | SR        | 1.407           | -0.332 | 0.207 | .     |
| 32     | C                | SR        | 1.107           | 0.407  | 0.131 | .     |
| 33     | C                | SR        | 1.100           | 1.325  | 0.260 | .     |
| 34     | C                | SR        | 1.117           | 1.472  | 0.119 | .     |
| 36     | C                | SR        | 1.093           | 0.255  | 0.241 | .     |
| 38     | C                | SR        | 0.938           | 0.043  | 0.310 | .     |
| 39     | C                | SR        | 0.442           | 0.452  | 0.331 | .     |
| 40A    | U                | CR        | 1.832           | -0.736 | .     | .     |
| 40B    | U                | CR        | 1.350           | -0.872 | 0.225 | 2.066 |
| 41     | C                | SR        | 1.129           | 0.210  | 0.316 | .     |
| 43     | C                | SR        | 1.239           | -0.002 | 0.185 | .     |
| 44     | C                | SR        | 1.767           | 1.135  | 0.088 | .     |
| 45     | C                | SR        | 1.552           | 1.101  | 0.340 | .     |
| 48     | C                | SR        | 0.905           | 1.475  | 0.201 | .     |
| 49A    | U                | CR        | 1.827           | 3.135  | .     | .     |
| 49B    | U                | CR        | 1.631           | -0.462 | 3.130 | .     |
| 50     | C                | SR        | 0.476           | 0.366  | 0.245 | .     |
| 51     | C                | SR        | 0.980           | 0.295  | 0.214 | .     |
| 53     | C                | SR        | 1.100           | -0.190 | 0.211 | .     |
| 54     | C                | SR        | 1.354           | 1.428  | 0.247 | .     |
| 55     | C                | SR        | 0.647           | 1.151  | 0.150 | .     |
| 56     | C                | SR        | 1.479           | 1.003  | 0.259 | .     |
| 57     | C                | SR        | 0.770           | 0.712  | 0.209 | .     |
| 58A    | U                | CR        | 1.655           | 1.470  | .     | .     |
| 58B    | U                | CR        | 1.294           | 0.859  | 2.378 | .     |
| 60     | C                | SR        | 1.405           | 0.650  | 0.232 | .     |
| 61     | C                | SR        | 1.033           | 0.199  | 0.242 | .     |
| 62     | C                | SR        | 0.990           | 0.466  | 0.320 | .     |
| 63     | C                | SR        | 0.657           | -1.111 | 0.208 | .     |
| 64A    | U                | CR        | 1.820           | 0.583  | .     | .     |
| 64B    | U                | CR        | 1.494           | 0.590  | 0.590 | .     |
| 65     | C                | SR        | 0.386           | -1.225 | 0.200 | .     |
| 66     | C                | SR        | 1.040           | -1.360 | 0.149 | .     |
| 67     | C                | SR        | 0.873           | 0.383  | 0.190 | .     |
| 68     | C                | SR        | 1.496           | 0.434  | 0.122 | .     |
| 70     | U                | SR        | 0.961           | -1.008 | 0.095 | .     |

Table E21 (cont.)  
Item Parameters for Mathematics Grade 6 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 73     | U                | SR        | 1.203           | 0.036  | 0.193 | . |
| 74     | U                | SR        | 0.884           | 1.534  | 0.130 | . |
| 75A    | U                | CR        | 2.384           | -3.516 | .     | . |
| 75B    | U                | CR        | 1.720           | -2.439 | 3.181 | . |
| 76     | U                | SR        | 0.898           | -0.965 | 0.183 | . |
| 77     | U                | SR        | 1.009           | -0.678 | 0.238 | . |
| 78     | U                | SR        | 1.027           | 0.479  | 0.283 | . |
| 79     | U                | SR        | 1.275           | -0.430 | 0.301 | . |
| 80     | U                | SR        | 1.052           | -0.792 | 0.220 | . |
| 81A    | U                | CR        | 1.639           | 1.407  | .     | . |
| 81B    | U                | CR        | 1.712           | 0.542  | 2.814 | . |
| 82     | U                | SR        | 0.728           | 0.351  | 0.155 | . |
| 87     | U                | SR        | 0.779           | 1.082  | 0.220 | . |
| 90     | U                | SR        | 0.596           | -0.224 | 0.207 | . |
| 93     | U                | SR        | 2.000           | 1.280  | 0.303 | . |
| 95     | U                | SR        | 0.730           | -0.923 | 0.200 | . |
| 96     | U                | SR        | 0.822           | -1.133 | 0.172 | . |
| 98     | U                | SR        | 1.142           | -0.333 | 0.197 | . |
| 102    | U                | SR        | 0.878           | -0.267 | 0.185 | . |
| 106    | U                | SR        | 1.198           | 0.359  | 0.321 | . |

Table E22  
Item Parameters for Mathematics Grade 6 Form F

| Item # | Item Designation | Item Type | Item Parameters |        |        |   |
|--------|------------------|-----------|-----------------|--------|--------|---|
|        |                  |           | a               | b      | c      | d |
| 6      | C                | SR        | 0.761           | -0.914 | 0.053  | . |
| 13     | C                | SR        | 1.097           | -0.542 | 0.290  | . |
| 17     | C                | SR        | 0.740           | -0.639 | 0.183  | . |
| 18     | C                | SR        | 1.078           | -0.631 | 0.277  | . |
| 20     | C                | SR        | 1.407           | -0.332 | 0.207  | . |
| 32     | C                | SR        | 1.107           | 0.407  | 0.131  | . |
| 33     | C                | SR        | 1.100           | 1.325  | 0.260  | . |
| 34     | C                | SR        | 1.117           | 1.472  | 0.119  | . |
| 36     | C                | SR        | 1.093           | 0.255  | 0.241  | . |
| 38     | C                | SR        | 0.938           | 0.043  | 0.310  | . |
| 39     | C                | SR        | 0.442           | 0.452  | 0.331  | . |
| 41     | C                | SR        | 1.129           | 0.210  | 0.316  | . |
| 43     | C                | SR        | 1.239           | -0.002 | 0.185  | . |
| 44     | C                | SR        | 1.767           | 1.135  | 0.088  | . |
| 45     | C                | SR        | 1.552           | 1.101  | 0.340  | . |
| 48     | C                | SR        | 0.905           | 1.475  | 0.201  | . |
| 49A    | U                | CR        | 1.876           | -0.591 | .      | . |
| 49B    | U                | CR        | 1.033           | 0.491  | -1.029 | . |
| 50     | C                | SR        | 0.476           | 0.366  | 0.245  | . |
| 51     | C                | SR        | 0.980           | 0.295  | 0.214  | . |
| 53     | C                | SR        | 1.100           | -0.190 | 0.211  | . |
| 54     | C                | SR        | 1.354           | 1.428  | 0.247  | . |
| 55     | C                | SR        | 0.647           | 1.151  | 0.150  | . |
| 56     | C                | SR        | 1.479           | 1.003  | 0.259  | . |
| 57     | C                | SR        | 0.770           | 0.712  | 0.209  | . |
| 58A    | U                | CR        | 1.369           | 1.033  | .      | . |
| 58B    | U                | CR        | 0.939           | -0.751 | 0.685  | . |
| 60     | C                | SR        | 1.405           | 0.650  | 0.232  | . |
| 61     | C                | SR        | 1.033           | 0.199  | 0.242  | . |
| 62     | C                | SR        | 0.990           | 0.466  | 0.320  | . |
| 63     | C                | SR        | 0.657           | -1.111 | 0.208  | . |
| 64A    | U                | CR        | 1.690           | 0.262  | .      | . |
| 64B    | U                | CR        | 1.417           | -1.665 | 0.888  | . |
| 65     | C                | SR        | 0.386           | -1.225 | 0.200  | . |
| 66     | C                | SR        | 1.040           | -1.360 | 0.149  | . |
| 67     | C                | SR        | 0.873           | 0.383  | 0.190  | . |
| 68     | C                | SR        | 1.496           | 0.434  | 0.122  | . |
| 69A    | U                | CR        | 1.351           | 0.127  | .      | . |
| 69B    | U                | CR        | 1.219           | -0.416 | 1.174  | . |
| 70     | U                | SR        | 0.672           | -1.405 | 0.200  | . |

Table E22 (cont.)  
Item Parameters for Mathematics Grade 6 Form F

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 71     | U                | SR        | 0.726           | -0.984 | 0.200 | . |
| 72     | U                | SR        | 0.771           | -1.795 | 0.200 | . |
| 73     | U                | SR        | 1.622           | 1.657  | 0.193 | . |
| 74     | U                | SR        | 1.277           | 1.311  | 0.176 | . |
| 75A    | U                | CR        | 2.503           | 0.607  | .     | . |
| 75B    | U                | CR        | 1.506           | -0.175 | 0.694 | . |
| 76     | U                | SR        | 0.765           | -0.442 | 0.208 | . |
| 77     | U                | SR        | 1.121           | -0.518 | 0.275 | . |
| 78     | U                | SR        | 0.785           | 0.974  | 0.174 | . |
| 79     | U                | SR        | 1.407           | 0.945  | 0.108 | . |
| 80     | U                | SR        | 1.114           | -0.586 | 0.199 | . |
| 81A    | U                | CR        | 1.721           | 3.502  | .     | . |
| 81B    | U                | CR        | 0.976           | -0.685 | 2.543 | . |
| 83     | U                | SR        | 1.322           | 0.784  | 0.214 | . |
| 88     | U                | SR        | 0.909           | -0.309 | 0.197 | . |
| 91     | U                | SR        | 1.385           | 0.572  | 0.238 | . |
| 93     | U                | SR        | 0.983           | 0.190  | 0.186 | . |
| 97     | U                | SR        | 0.943           | -0.671 | 0.157 | . |
| 102    | U                | SR        | 1.054           | 0.081  | 0.217 | . |
| 104    | U                | SR        | 0.788           | 0.231  | 0.229 | . |
| 108    | U                | SR        | 0.911           | 0.293  | 0.137 | . |

Table E23  
Item Parameters for Mathematics Grade 7 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 3      | C                | SR        | 1.272           | 0.466  | 0.286  | .     |
| 9      | C                | SR        | 0.804           | -0.509 | 0.383  | .     |
| 13     | C                | SR        | 1.274           | -0.211 | 0.127  | .     |
| 15     | C                | SR        | 0.802           | -1.862 | 0.200  | .     |
| 24     | C                | SR        | 1.413           | -0.131 | 0.134  | .     |
| 32     | C                | SR        | 1.179           | 0.502  | 0.283  | .     |
| 34     | C                | SR        | 1.380           | 0.496  | 0.197  | .     |
| 35     | C                | SR        | 1.302           | 0.449  | 0.165  | .     |
| 36     | C                | SR        | 1.124           | 1.539  | 0.111  | .     |
| 38     | C                | SR        | 1.510           | 1.371  | 0.074  | .     |
| 39     | C                | SR        | 1.421           | 0.605  | 0.209  | .     |
| 40     | C                | SR        | 1.083           | -0.411 | 0.113  | .     |
| 42A    | U                | CR        | 1.020           | 0.134  | .      | .     |
| 42B    | U                | CR        | 1.184           | 1.244  | 2.909  | .     |
| 43A    | U                | CR        | 1.917           | 0.576  | .      | .     |
| 43B    | U                | CR        | 1.408           | -0.966 | 0.573  | .     |
| 44     | C                | SR        | 1.027           | -0.118 | 0.207  | .     |
| 45     | C                | SR        | 0.963           | -0.107 | 0.200  | .     |
| 46     | C                | SR        | 0.889           | 0.029  | 0.249  | .     |
| 48     | C                | SR        | 0.871           | -0.014 | 0.190  | .     |
| 49     | C                | SR        | 0.847           | 1.236  | 0.196  | .     |
| 50     | C                | SR        | 0.996           | -0.363 | 0.110  | .     |
| 51     | C                | SR        | 2.000           | 1.518  | 0.224  | .     |
| 52     | C                | SR        | 1.668           | 1.252  | 0.125  | .     |
| 53A    | U                | CR        | 1.660           | 1.747  | .      | .     |
| 53B    | U                | CR        | 1.353           | 0.609  | 2.547  | 4.035 |
| 54     | U                | SPR       | 2.041           | 2.440  | .      | .     |
| 56     | U                | SPR       | 1.908           | 1.395  | .      | .     |
| 57     | U                | SPR       | 1.261           | -0.078 | .      | .     |
| 59     | C                | SR        | 0.801           | 0.767  | 0.190  | .     |
| 60     | C                | SR        | 0.645           | -0.936 | 0.213  | .     |
| 61     | C                | SR        | 1.370           | -0.335 | 0.112  | .     |
| 63A    | U                | CR        | 0.993           | -0.581 | .      | .     |
| 63B    | U                | CR        | 0.998           | -1.057 | -1.382 | 2.897 |
| 64     | U                | SPR       | 1.623           | 0.200  | .      | .     |
| 65     | U                | SPR       | 1.074           | 0.694  | .      | .     |
| 66     | U                | SPR       | 1.587           | -0.016 | .      | .     |
| 67     | U                | SPR       | 1.158           | 0.755  | .      | .     |
| 68A    | U                | CR        | 1.839           | 1.187  | .      | .     |
| 68B    | U                | CR        | 1.661           | -2.134 | 1.330  | .     |

Table E23 (cont.)  
Item Parameters for Mathematics Grade 7 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |       |       |
|--------|------------------|-----------|-----------------|--------|-------|-------|
|        |                  |           | a               | b      | c     | d     |
| 69     | C                | SR        | 1.234           | 1.150  | 0.210 | .     |
| 70     | C                | SR        | 1.836           | 0.347  | 0.145 | .     |
| 71     | C                | SR        | 1.139           | -0.146 | 0.224 | .     |
| 72     | C                | SR        | 1.720           | 0.671  | 0.418 | .     |
| 73     | C                | SR        | 1.191           | 0.051  | 0.217 | .     |
| 74     | C                | SR        | 1.244           | 0.867  | 0.125 | .     |
| 76A    | U                | CR        | 1.438           | 0.219  | .     | .     |
| 76B    | U                | CR        | 1.429           | -1.254 | 1.324 | .     |
| 77     | U                | SPR       | 0.010           | 4.073  | .     | .     |
| 78     | U                | SPR       | 1.878           | 1.695  | .     | .     |
| 79     | U                | SPR       | 1.262           | -0.055 | .     | .     |
| 80     | U                | SPR       | 2.761           | 1.999  | .     | .     |
| 81A    | U                | CR        | 2.162           | 3.013  | .     | .     |
| 81B    | U                | CR        | 1.565           | -0.556 | 0.923 | 3.098 |
| 89     | U                | SR        | 1.209           | 2.009  | 0.337 | .     |
| 95     | U                | SR        | 1.766           | 0.526  | 0.227 | .     |
| 97     | U                | SR        | 0.428           | 0.002  | 0.129 | .     |
| 98     | U                | SR        | 1.192           | 0.488  | 0.212 | .     |
| 103    | U                | SR        | 1.087           | 1.077  | 0.253 | .     |
| 104    | U                | SR        | 1.229           | 0.155  | 0.194 | .     |
| 109    | U                | SR        | 0.904           | -0.712 | 0.333 | .     |
| 110    | U                | SR        | 0.838           | 1.099  | 0.095 | .     |

Table E24  
Item Parameters for Mathematics Grade 7 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 3      | C                | SR        | 1.272           | 0.466  | 0.286  | .     |
| 9      | C                | SR        | 0.804           | -0.509 | 0.383  | .     |
| 13     | C                | SR        | 1.274           | -0.211 | 0.127  | .     |
| 15     | C                | SR        | 0.802           | -1.862 | 0.200  | .     |
| 24     | C                | SR        | 1.413           | -0.131 | 0.134  | .     |
| 32     | C                | SR        | 1.179           | 0.502  | 0.283  | .     |
| 34     | C                | SR        | 1.380           | 0.496  | 0.197  | .     |
| 35     | C                | SR        | 1.302           | 0.449  | 0.165  | .     |
| 36     | C                | SR        | 1.124           | 1.539  | 0.111  | .     |
| 38     | C                | SR        | 1.510           | 1.371  | 0.074  | .     |
| 39     | C                | SR        | 1.421           | 0.605  | 0.209  | .     |
| 40     | C                | SR        | 1.083           | -0.411 | 0.113  | .     |
| 42A    | U                | CR        | 1.616           | -0.456 | .      | .     |
| 42B    | U                | CR        | 1.239           | -0.465 | -1.108 | .     |
| 43A    | U                | CR        | 1.928           | -0.624 | .      | .     |
| 43B    | U                | CR        | 1.301           | -0.964 | -0.620 | .     |
| 44     | C                | SR        | 1.027           | -0.118 | 0.207  | .     |
| 45     | C                | SR        | 0.963           | -0.107 | 0.200  | .     |
| 46     | C                | SR        | 0.889           | 0.029  | 0.249  | .     |
| 48     | C                | SR        | 0.871           | -0.014 | 0.190  | .     |
| 49     | C                | SR        | 0.847           | 1.236  | 0.196  | .     |
| 50     | C                | SR        | 0.996           | -0.363 | 0.110  | .     |
| 51     | C                | SR        | 2.000           | 1.518  | 0.224  | .     |
| 52     | C                | SR        | 1.668           | 1.252  | 0.125  | .     |
| 53A    | U                | CR        | 1.180           | 1.231  | .      | .     |
| 53B    | U                | CR        | 0.975           | 0.935  | 1.500  | 1.699 |
| 54     | U                | SPR       | 2.427           | 1.971  | .      | .     |
| 55     | U                | SPR       | 1.808           | 0.741  | .      | .     |
| 56     | U                | SPR       | 1.456           | 0.660  | .      | .     |
| 57     | U                | SPR       | 2.077           | 0.740  | .      | .     |
| 59     | C                | SR        | 0.801           | 0.767  | 0.190  | .     |
| 60     | C                | SR        | 0.645           | -0.936 | 0.213  | .     |
| 61     | C                | SR        | 1.370           | -0.335 | 0.112  | .     |
| 63A    | U                | CR        | 0.846           | 0.525  | .      | .     |
| 63B    | U                | CR        | 0.738           | -0.438 | -0.254 | 0.856 |
| 64     | U                | SPR       | 2.379           | 2.902  | .      | .     |
| 65     | U                | SPR       | 1.785           | 2.640  | .      | .     |
| 66     | U                | SPR       | 1.378           | 0.344  | .      | .     |
| 67     | U                | SPR       | 1.307           | 1.377  | .      | .     |
| 68A    | U                | CR        | 2.160           | 0.661  | .      | .     |



Table E24 (cont.)  
Item Parameters for Mathematics Grade 7 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 68B    | U                | CR        | 1.727           | -2.295 | 0.363 | . |
| 69     | C                | SR        | 1.234           | 1.150  | 0.210 | . |
| 70     | C                | SR        | 1.836           | 0.347  | 0.145 | . |
| 71     | C                | SR        | 1.139           | -0.146 | 0.224 | . |
| 72     | C                | SR        | 1.720           | 0.671  | 0.418 | . |
| 73     | C                | SR        | 1.191           | 0.051  | 0.217 | . |
| 74     | C                | SR        | 1.244           | 0.867  | 0.125 | . |
| 75     | C                | SR        | 1.298           | 0.320  | 0.340 | . |
| 76A    | U                | CR        | 0.844           | 1.990  | .     | . |
| 76B    | U                | CR        | 0.975           | -0.119 | 5.353 | . |
| 77     | U                | SPR       | 2.465           | 3.657  | .     | . |
| 78     | U                | SPR       | 1.051           | -0.804 | .     | . |
| 79     | U                | SPR       | 1.116           | -1.019 | .     | . |
| 80     | U                | SPR       | 2.080           | -0.055 | .     | . |
| 82     | U                | SR        | 1.440           | -0.100 | 0.164 | . |
| 86     | U                | SR        | 0.880           | -0.487 | 0.184 | . |
| 90     | U                | SR        | 1.110           | -0.906 | 0.236 | . |
| 95     | U                | SR        | 1.825           | 0.417  | 0.203 | . |
| 104    | U                | SR        | 0.773           | -0.809 | 0.151 | . |
| 106    | U                | SR        | 0.782           | -0.629 | 0.211 | . |
| 108    | U                | SR        | 0.581           | 2.049  | 0.439 | . |

Table E25  
Item Parameters for Mathematics Grade 7 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 3      | C                | SR        | 1.272           | 0.466  | 0.286  | .     |
| 9      | C                | SR        | 0.804           | -0.509 | 0.383  | .     |
| 13     | C                | SR        | 1.274           | -0.211 | 0.127  | .     |
| 15     | C                | SR        | 0.802           | -1.862 | 0.200  | .     |
| 24     | C                | SR        | 1.413           | -0.131 | 0.134  | .     |
| 32     | C                | SR        | 1.179           | 0.502  | 0.283  | .     |
| 34     | C                | SR        | 1.380           | 0.496  | 0.197  | .     |
| 35     | C                | SR        | 1.302           | 0.449  | 0.165  | .     |
| 36     | C                | SR        | 1.124           | 1.539  | 0.111  | .     |
| 38     | C                | SR        | 1.510           | 1.371  | 0.074  | .     |
| 39     | C                | SR        | 1.421           | 0.605  | 0.209  | .     |
| 40     | C                | SR        | 1.083           | -0.411 | 0.113  | .     |
| 42A    | U                | CR        | 2.017           | 1.269  | .      | .     |
| 42B    | U                | CR        | 1.390           | -0.804 | 1.789  | .     |
| 43A    | U                | CR        | 2.247           | 0.877  | .      | .     |
| 43B    | U                | CR        | 1.650           | -0.710 | 0.460  | .     |
| 44     | C                | SR        | 1.027           | -0.118 | 0.207  | .     |
| 45     | C                | SR        | 0.963           | -0.107 | 0.200  | .     |
| 46     | C                | SR        | 0.889           | 0.029  | 0.249  | .     |
| 48     | C                | SR        | 0.871           | -0.014 | 0.190  | .     |
| 49     | C                | SR        | 0.847           | 1.236  | 0.196  | .     |
| 50     | C                | SR        | 0.996           | -0.363 | 0.110  | .     |
| 51     | C                | SR        | 2.000           | 1.518  | 0.224  | .     |
| 52     | C                | SR        | 1.668           | 1.252  | 0.125  | .     |
| 53A    | U                | CR        | 1.329           | -0.338 | .      | .     |
| 53B    | U                | CR        | 1.230           | -0.705 | 0.338  | 2.565 |
| 54     | U                | SPR       | 1.724           | -0.993 | .      | .     |
| 56     | U                | SPR       | 1.469           | -0.158 | .      | .     |
| 57     | U                | SPR       | 2.114           | 0.640  | .      | .     |
| 59     | C                | SR        | 0.801           | 0.767  | 0.190  | .     |
| 60     | C                | SR        | 0.645           | -0.936 | 0.213  | .     |
| 61     | C                | SR        | 1.370           | -0.335 | 0.112  | .     |
| 63A    | U                | CR        | 1.057           | -0.644 | .      | .     |
| 63B    | U                | CR        | 1.378           | -1.548 | -1.957 | 1.869 |
| 64     | U                | SPR       | 1.317           | 1.191  | .      | .     |
| 65     | U                | SPR       | 1.176           | 0.239  | .      | .     |
| 66     | U                | SPR       | 1.657           | -0.208 | .      | .     |
| 67     | U                | SPR       | 1.617           | -0.793 | .      | .     |
| 68A    | U                | CR        | 2.579           | 0.411  | .      | .     |
| 68B    | U                | CR        | 1.394           | 0.762  | 4.145  | .     |

Table E25 (cont.)  
Item Parameters for Mathematics Grade 7 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 69     | C                | SR        | 1.234           | 1.150  | 0.210  | .     |
| 70     | C                | SR        | 1.836           | 0.347  | 0.145  | .     |
| 71     | C                | SR        | 1.139           | -0.146 | 0.224  | .     |
| 72     | C                | SR        | 1.720           | 0.671  | 0.418  | .     |
| 73     | C                | SR        | 1.191           | 0.051  | 0.217  | .     |
| 74     | C                | SR        | 1.244           | 0.867  | 0.125  | .     |
| 75     | C                | SR        | 1.298           | 0.320  | 0.340  | .     |
| 76A    | U                | CR        | 2.432           | 1.862  | .      | .     |
| 76B    | U                | CR        | 1.593           | -0.506 | 1.246  | .     |
| 77     | U                | SPR       | 1.786           | -0.216 | .      | .     |
| 78     | U                | SPR       | 1.596           | -0.821 | .      | .     |
| 79     | U                | SPR       | 1.013           | -0.800 | .      | .     |
| 81A    | U                | CR        | 2.136           | 0.032  | .      | .     |
| 81B    | U                | CR        | 1.615           | -1.617 | -0.014 | 0.547 |
| 84     | U                | SR        | 1.588           | 0.300  | 0.348  | .     |
| 91     | U                | SR        | 1.176           | -0.688 | 0.210  | .     |
| 95     | U                | SR        | 1.783           | 0.464  | 0.146  | .     |
| 101    | U                | SR        | 1.135           | 0.890  | 0.176  | .     |
| 103    | U                | SR        | 1.049           | -0.072 | 0.128  | .     |
| 105    | U                | SR        | 0.884           | -0.235 | 0.189  | .     |
| 110    | U                | SR        | 0.946           | 1.108  | 0.294  | .     |
| 111    | U                | SR        | 0.943           | 0.441  | 0.339  | .     |

Table E26  
Item Parameters for Mathematics Grade 7 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 3      | C                | SR        | 1.272           | 0.466  | 0.286  | .     |
| 9      | C                | SR        | 0.804           | -0.509 | 0.383  | .     |
| 13     | C                | SR        | 1.274           | -0.211 | 0.127  | .     |
| 15     | C                | SR        | 0.802           | -1.862 | 0.200  | .     |
| 24     | C                | SR        | 1.413           | -0.131 | 0.134  | .     |
| 32     | C                | SR        | 1.179           | 0.502  | 0.283  | .     |
| 34     | C                | SR        | 1.380           | 0.496  | 0.197  | .     |
| 35     | C                | SR        | 1.302           | 0.449  | 0.165  | .     |
| 36     | C                | SR        | 1.124           | 1.539  | 0.111  | .     |
| 38     | C                | SR        | 1.510           | 1.371  | 0.074  | .     |
| 39     | C                | SR        | 1.421           | 0.605  | 0.209  | .     |
| 40     | C                | SR        | 1.083           | -0.411 | 0.113  | .     |
| 42A    | U                | CR        | 2.006           | 0.359  | .      | .     |
| 42B    | U                | CR        | 1.484           | -1.247 | 0.660  | .     |
| 44     | C                | SR        | 1.027           | -0.118 | 0.207  | .     |
| 45     | C                | SR        | 0.963           | -0.107 | 0.200  | .     |
| 46     | C                | SR        | 0.889           | 0.029  | 0.249  | .     |
| 48     | C                | SR        | 0.871           | -0.014 | 0.190  | .     |
| 49     | C                | SR        | 0.847           | 1.236  | 0.196  | .     |
| 50     | C                | SR        | 0.996           | -0.363 | 0.110  | .     |
| 51     | C                | SR        | 2.000           | 1.518  | 0.224  | .     |
| 52     | C                | SR        | 1.668           | 1.252  | 0.125  | .     |
| 53A    | U                | CR        | 0.908           | 1.585  | .      | .     |
| 53B    | U                | CR        | 0.678           | 1.433  | 0.204  | 2.918 |
| 54     | U                | SPR       | 1.872           | 0.853  | .      | .     |
| 55     | U                | SPR       | 1.965           | 1.817  | .      | .     |
| 56     | U                | SPR       | 1.931           | 2.708  | .      | .     |
| 57     | U                | SPR       | 2.176           | 2.062  | .      | .     |
| 59     | C                | SR        | 0.801           | 0.767  | 0.190  | .     |
| 60     | C                | SR        | 0.645           | -0.936 | 0.213  | .     |
| 61     | C                | SR        | 1.370           | -0.335 | 0.112  | .     |
| 63A    | U                | CR        | 1.183           | -0.213 | .      | .     |
| 63B    | U                | CR        | 1.348           | -1.781 | -1.432 | 2.088 |
| 64     | U                | SPR       | 1.363           | -1.478 | .      | .     |
| 65     | U                | SPR       | 1.863           | -0.093 | .      | .     |
| 66     | U                | SPR       | 1.959           | 4.050  | .      | .     |
| 67     | U                | SPR       | 1.262           | -0.525 | .      | .     |
| 69     | C                | SR        | 1.234           | 1.150  | 0.210  | .     |
| 70     | C                | SR        | 1.836           | 0.347  | 0.145  | .     |
| 71     | C                | SR        | 1.139           | -0.146 | 0.224  | .     |

Table E26 (cont.)  
Item Parameters for Mathematics Grade 7 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 72     | C                | SR        | 1.720           | 0.671  | 0.418 | . |
| 73     | C                | SR        | 1.191           | 0.051  | 0.217 | . |
| 74     | C                | SR        | 1.244           | 0.867  | 0.125 | . |
| 75     | C                | SR        | 1.298           | 0.320  | 0.340 | . |
| 76A    | U                | CR        | 1.915           | 0.693  | .     | . |
| 76B    | U                | CR        | 1.171           | -0.609 | 2.567 | . |
| 77     | U                | SPR       | 2.021           | 3.127  | .     | . |
| 78     | U                | SPR       | 1.880           | 0.629  | .     | . |
| 79     | U                | SPR       | 1.204           | -0.923 | .     | . |
| 80     | U                | SPR       | 1.802           | 1.615  | .     | . |
| 85     | U                | SR        | 1.131           | 1.577  | 0.256 | . |
| 87     | U                | SR        | 1.674           | 0.531  | 0.346 | . |
| 88     | U                | SR        | 1.065           | -0.491 | 0.324 | . |
| 95     | U                | SR        | 1.531           | 0.630  | 0.233 | . |
| 101    | U                | SR        | 1.225           | 1.143  | 0.293 | . |
| 104    | U                | SR        | 0.604           | 0.171  | 0.198 | . |
| 105    | U                | SR        | 0.812           | 0.475  | 0.249 | . |
| 107    | U                | SR        | 1.199           | 0.340  | 0.080 | . |
| 111    | U                | SR        | 0.887           | 0.531  | 0.175 | . |

Table E27  
Item Parameters for Mathematics Grade 7 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 3      | C                | SR        | 1.272           | 0.466  | 0.286  | .     |
| 9      | C                | SR        | 0.804           | -0.509 | 0.383  | .     |
| 13     | C                | SR        | 1.274           | -0.211 | 0.127  | .     |
| 15     | C                | SR        | 0.802           | -1.862 | 0.200  | .     |
| 24     | C                | SR        | 1.413           | -0.131 | 0.134  | .     |
| 32     | C                | SR        | 1.179           | 0.502  | 0.283  | .     |
| 34     | C                | SR        | 1.380           | 0.496  | 0.197  | .     |
| 35     | C                | SR        | 1.302           | 0.449  | 0.165  | .     |
| 36     | C                | SR        | 1.124           | 1.539  | 0.111  | .     |
| 38     | C                | SR        | 1.510           | 1.371  | 0.074  | .     |
| 39     | C                | SR        | 1.421           | 0.605  | 0.209  | .     |
| 40     | C                | SR        | 1.083           | -0.411 | 0.113  | .     |
| 42A    | U                | CR        | 1.417           | -0.744 | .      | .     |
| 42B    | U                | CR        | 0.900           | -0.302 | -1.397 | .     |
| 43A    | U                | CR        | 1.894           | -1.082 | .      | .     |
| 43B    | U                | CR        | 1.392           | -1.452 | -1.095 | .     |
| 44     | C                | SR        | 1.027           | -0.118 | 0.207  | .     |
| 45     | C                | SR        | 0.963           | -0.107 | 0.200  | .     |
| 46     | C                | SR        | 0.889           | 0.029  | 0.249  | .     |
| 48     | C                | SR        | 0.871           | -0.014 | 0.190  | .     |
| 49     | C                | SR        | 0.847           | 1.236  | 0.196  | .     |
| 50     | C                | SR        | 0.996           | -0.363 | 0.110  | .     |
| 51     | C                | SR        | 2.000           | 1.518  | 0.224  | .     |
| 52     | C                | SR        | 1.668           | 1.252  | 0.125  | .     |
| 53A    | U                | CR        | 1.784           | 2.270  | .      | .     |
| 53B    | U                | CR        | 1.259           | 1.435  | 3.317  | 4.664 |
| 54     | U                | SPR       | 1.913           | 0.858  | .      | .     |
| 55     | U                | SPR       | 1.857           | 1.800  | .      | .     |
| 56     | U                | SPR       | 1.568           | -0.050 | .      | .     |
| 57     | U                | SPR       | 1.534           | 1.263  | .      | .     |
| 59     | C                | SR        | 0.801           | 0.767  | 0.190  | .     |
| 60     | C                | SR        | 0.645           | -0.936 | 0.213  | .     |
| 61     | C                | SR        | 1.370           | -0.335 | 0.112  | .     |
| 64     | U                | SPR       | 0.874           | 0.237  | .      | .     |
| 65     | U                | SPR       | 1.908           | -0.732 | .      | .     |
| 67     | U                | SPR       | 1.769           | -0.507 | .      | .     |
| 68A    | U                | CR        | 2.629           | 2.528  | .      | .     |
| 68B    | U                | CR        | 1.783           | -1.183 | 1.578  | .     |
| 69     | C                | SR        | 1.234           | 1.150  | 0.210  | .     |
| 70     | C                | SR        | 1.836           | 0.347  | 0.145  | .     |

Table E27 (cont.)  
Item Parameters for Mathematics Grade 7 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 71     | C                | SR        | 1.139           | -0.146 | 0.224 | . |
| 72     | C                | SR        | 1.720           | 0.671  | 0.418 | . |
| 73     | C                | SR        | 1.191           | 0.051  | 0.217 | . |
| 74     | C                | SR        | 1.244           | 0.867  | 0.125 | . |
| 75     | C                | SR        | 1.298           | 0.320  | 0.340 | . |
| 76A    | U                | CR        | 1.896           | 1.968  | .     | . |
| 76B    | U                | CR        | 1.242           | -0.713 | 3.696 | . |
| 77     | U                | SPR       | 1.137           | 1.853  | .     | . |
| 78     | U                | SPR       | 2.338           | 1.777  | .     | . |
| 79     | U                | SPR       | 1.101           | -0.654 | .     | . |
| 80     | U                | SPR       | 1.872           | 0.367  | .     | . |
| 87     | U                | SR        | 0.888           | -0.854 | 0.224 | . |
| 89     | U                | SR        | 0.963           | 0.017  | 0.295 | . |
| 95     | U                | SR        | 1.974           | 0.447  | 0.203 | . |
| 97     | U                | SR        | 1.130           | -0.038 | 0.184 | . |
| 101    | U                | SR        | 1.281           | 1.318  | 0.392 | . |
| 103    | U                | SR        | 0.881           | 0.130  | 0.202 | . |
| 104    | U                | SR        | 0.659           | -0.528 | 0.182 | . |
| 105    | U                | SR        | 1.307           | 0.135  | 0.090 | . |
| 107    | U                | SR        | 0.544           | -0.523 | 0.200 | . |

Table E28  
Item Parameters for Mathematics Grade 7 Form F

| Item # | Item Designation | Item Type | Item Parameters |        |       |       |
|--------|------------------|-----------|-----------------|--------|-------|-------|
|        |                  |           | a               | b      | c     | d     |
| 3      | C                | SR        | 1.272           | 0.466  | 0.286 | .     |
| 9      | C                | SR        | 0.804           | -0.509 | 0.383 | .     |
| 13     | C                | SR        | 1.274           | -0.211 | 0.127 | .     |
| 15     | C                | SR        | 0.802           | -1.862 | 0.200 | .     |
| 24     | C                | SR        | 1.413           | -0.131 | 0.134 | .     |
| 32     | C                | SR        | 1.179           | 0.502  | 0.283 | .     |
| 34     | C                | SR        | 1.380           | 0.496  | 0.197 | .     |
| 35     | C                | SR        | 1.302           | 0.449  | 0.165 | .     |
| 36     | C                | SR        | 1.124           | 1.539  | 0.111 | .     |
| 38     | C                | SR        | 1.510           | 1.371  | 0.074 | .     |
| 39     | C                | SR        | 1.421           | 0.605  | 0.209 | .     |
| 40     | C                | SR        | 1.083           | -0.411 | 0.113 | .     |
| 42A    | U                | CR        | 1.651           | -0.718 | .     | .     |
| 42B    | U                | CR        | 1.293           | -1.863 | 1.027 | .     |
| 43A    | U                | CR        | 2.231           | 1.115  | .     | .     |
| 43B    | U                | CR        | 1.552           | -0.183 | 2.200 | .     |
| 44     | C                | SR        | 1.027           | -0.118 | 0.207 | .     |
| 45     | C                | SR        | 0.963           | -0.107 | 0.200 | .     |
| 46     | C                | SR        | 0.889           | 0.029  | 0.249 | .     |
| 48     | C                | SR        | 0.871           | -0.014 | 0.190 | .     |
| 49     | C                | SR        | 0.847           | 1.236  | 0.196 | .     |
| 50     | C                | SR        | 0.996           | -0.363 | 0.110 | .     |
| 51     | C                | SR        | 2.000           | 1.518  | 0.224 | .     |
| 52     | C                | SR        | 1.668           | 1.252  | 0.125 | .     |
| 53A    | U                | CR        | 1.006           | 1.663  | .     | .     |
| 53B    | U                | CR        | 0.720           | 1.213  | 0.446 | 2.679 |
| 54     | U                | SPR       | 1.398           | -1.617 | .     | .     |
| 55     | U                | SPR       | 1.700           | 1.728  | .     | .     |
| 56     | U                | SPR       | 1.401           | -0.268 | .     | .     |
| 57     | U                | SPR       | 1.672           | 2.671  | .     | .     |
| 59     | C                | SR        | 0.801           | 0.767  | 0.190 | .     |
| 60     | C                | SR        | 0.645           | -0.936 | 0.213 | .     |
| 61     | C                | SR        | 1.370           | -0.335 | 0.112 | .     |
| 64     | U                | SPR       | 2.035           | 1.517  | .     | .     |
| 65     | U                | SPR       | 1.643           | 0.124  | .     | .     |
| 66     | U                | SPR       | 2.093           | 0.655  | .     | .     |
| 67     | U                | SPR       | 1.622           | -0.956 | .     | .     |
| 69     | C                | SR        | 1.234           | 1.150  | 0.210 | .     |
| 70     | C                | SR        | 1.836           | 0.347  | 0.145 | .     |
| 71     | C                | SR        | 1.139           | -0.146 | 0.224 | .     |



Table E28 (cont.)  
Item Parameters for Mathematics Grade 7 Form F

| Item # | Item Designation | Item Type | Item Parameters |        |       |   |
|--------|------------------|-----------|-----------------|--------|-------|---|
|        |                  |           | a               | b      | c     | d |
| 72     | C                | SR        | 1.720           | 0.671  | 0.418 | . |
| 73     | C                | SR        | 1.191           | 0.051  | 0.217 | . |
| 74     | C                | SR        | 1.244           | 0.867  | 0.125 | . |
| 75     | C                | SR        | 1.298           | 0.320  | 0.340 | . |
| 76A    | U                | CR        | 0.981           | 2.460  | .     | . |
| 76B    | U                | CR        | 0.806           | -0.896 | 0.444 | . |
| 77     | U                | SPR       | 1.817           | -0.261 | .     | . |
| 78     | U                | SPR       | 1.688           | 1.326  | .     | . |
| 79     | U                | SPR       | 1.641           | 0.925  | .     | . |
| 82     | U                | SR        | 0.992           | 0.534  | 0.250 | . |
| 83     | U                | SR        | 1.514           | -0.038 | 0.231 | . |
| 87     | U                | SR        | 1.095           | 0.134  | 0.296 | . |
| 89     | U                | SR        | 1.209           | 2.009  | 0.337 | . |
| 95     | U                | SR        | 1.766           | 0.526  | 0.227 | . |
| 96     | U                | SR        | 0.908           | -0.115 | 0.123 | . |
| 97     | U                | SR        | 0.428           | 0.002  | 0.129 | . |
| 98     | U                | SR        | 1.192           | 0.488  | 0.212 | . |
| 103    | U                | SR        | 1.087           | 1.077  | 0.253 | . |
| 104    | U                | SR        | 1.229           | 0.155  | 0.194 | . |

Table E29  
Item Parameters for Mathematics Grade 8 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 1.416           | 0.362  | 0.354  | .     |
| 7      | C                | SR        | 0.986           | -0.002 | 0.308  | .     |
| 13     | C                | SR        | 0.605           | -2.208 | 0.200  | .     |
| 16     | C                | SR        | 1.106           | -1.410 | 0.177  | .     |
| 20     | C                | SR        | 0.951           | 1.000  | 0.171  | .     |
| 26     | C                | SR        | 0.665           | 1.263  | 0.235  | .     |
| 27     | C                | SR        | 0.995           | 0.180  | 0.147  | .     |
| 29     | C                | SR        | 0.684           | 0.600  | 0.273  | .     |
| 32     | C                | SR        | 0.723           | -0.716 | 0.172  | .     |
| 33     | C                | SR        | 0.788           | 1.461  | 0.063  | .     |
| 34     | C                | SR        | 1.039           | 1.031  | 0.165  | .     |
| 35     | C                | SR        | 1.434           | 0.931  | 0.284  | .     |
| 36     | C                | SR        | 0.671           | 0.123  | 0.132  | .     |
| 37A    | C                | CR        | 2.478           | -0.608 | .      | .     |
| 37B    | C                | CR        | 1.313           | 0.048  | -1.080 | 1.602 |
| 38     | C                | SR        | 0.943           | 0.573  | 0.254  | .     |
| 39     | C                | SR        | 0.622           | -0.185 | 0.104  | .     |
| 40     | C                | SR        | 1.064           | 0.186  | 0.284  | .     |
| 41     | C                | SR        | 0.968           | 2.316  | 0.200  | .     |
| 42A    | C                | CR        | 1.719           | 0.225  | .      | .     |
| 42B    | C                | CR        | 1.384           | -0.074 | 1.661  | .     |
| 43     | U                | SPR       | 1.771           | -2.218 | .      | .     |
| 44     | U                | SPR       | 1.060           | 0.603  | .      | .     |
| 45     | U                | SPR       | 1.039           | -0.053 | .      | .     |
| 46     | C                | SPR       | 1.583           | 0.205  | .      | .     |
| 47A    | U                | CR        | 0.815           | 0.059  | .      | .     |
| 47B    | U                | CR        | 1.119           | -0.352 | 0.895  | .     |
| 48     | C                | SR        | 0.670           | 0.539  | 0.133  | .     |
| 49     | C                | SR        | 0.581           | 1.105  | 0.064  | .     |
| 50     | C                | SR        | 1.144           | 1.050  | 0.287  | .     |
| 51     | C                | SR        | 0.969           | 0.660  | 0.239  | .     |
| 52     | C                | SR        | 1.537           | 0.763  | 0.261  | .     |
| 53     | C                | SR        | 1.319           | 0.593  | 0.381  | .     |
| 54A    | U                | CR        | 2.071           | -0.576 | .      | .     |
| 54B    | U                | CR        | 1.737           | -0.875 | 1.870  | 2.210 |
| 55     | U                | SPR       | 1.213           | 1.661  | .      | .     |
| 56     | U                | SPR       | 1.205           | 2.112  | .      | .     |
| 57     | C                | SPR       | 2.015           | -0.106 | .      | .     |
| 58     | U                | SPR       | 1.308           | -0.015 | .      | .     |
| 59     | C                | SR        | 1.370           | 1.283  | 0.107  | .     |

Table E29 (cont.)  
Item Parameters for Mathematics Grade 8 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 60     | U                | SR        | 1.043           | 1.787  | 0.206  | .     |
| 61     | U                | SR        | 0.882           | -0.085 | 0.334  | .     |
| 62     | U                | SR        | 1.669           | 2.131  | 0.221  | .     |
| 63     | U                | SR        | 2.000           | 1.058  | 0.280  | .     |
| 64A    | C                | CR        | 2.264           | 0.394  | .      | .     |
| 64B    | C                | CR        | 1.740           | -2.235 | 0.368  | .     |
| 65A    | U                | CR        | 2.426           | 0.890  | .      | .     |
| 65B    | U                | CR        | 1.667           | 0.224  | -0.322 | .     |
| 66     | U                | SR        | 0.695           | 0.424  | 0.223  | .     |
| 67     | U                | SR        | 1.029           | 0.835  | 0.114  | .     |
| 68     | U                | SR        | 0.984           | 1.113  | 0.207  | .     |
| 69     | U                | SR        | 0.226           | -0.119 | 0.200  | .     |
| 70     | U                | SR        | 0.620           | -0.373 | 0.221  | .     |
| 71A    | C                | CR        | 3.136           | 3.166  | .      | .     |
| 71B    | C                | CR        | 2.218           | 1.099  | 2.073  | .     |
| 72     | C                | SPR       | 1.854           | 0.409  | .      | .     |
| 73     | C                | SPR       | 1.560           | -0.567 | .      | .     |
| 75     | U                | SPR       | 2.090           | 1.528  | .      | .     |
| 76A    | U                | CR        | 2.244           | 1.554  | .      | .     |
| 76B    | U                | CR        | 1.779           | -1.487 | 1.369  | .     |
| 77     | U                | SR        | 2.292           | 2.894  | .      | .     |
| 78     | U                | SR        | 1.379           | 0.917  | .      | .     |
| 79     | U                | SR        | 1.359           | 0.393  | .      | .     |
| 80A    | U                | CR        | 2.418           | 1.600  | .      | .     |
| 80B    | U                | CR        | 1.798           | 1.293  | .      | .     |
| 81     | U                | SR        | 1.260           | 1.563  | 0.782  | .     |
| 82     | U                | SR        | 0.784           | 0.242  | .      | .     |
| 83     | U                | SR        | 1.383           | -1.073 | 2.239  | 3.937 |
| 84A    | U                | CR        | 2.058           | -0.914 | .      | .     |
| 84B    | U                | CR        | 1.179           | -0.258 | .      | .     |
| 85     | U                | SPR       | 1.115           | -0.222 | -1.291 | .     |
| 86     | U                | SPR       | 0.987           | 0.848  | 0.200  | .     |
| 87A    | U                | CR        | 1.419           | 0.571  | 0.130  | .     |
| 87B    | U                | CR        | 0.939           | 0.626  | 0.270  | .     |
| 88     | U                | SR        | 1.077           | 0.915  | 0.215  | .     |
| 89     | U                | SR        | 0.509           | 1.937  | 0.175  | .     |
| 90     | U                | SR        | 0.418           | 1.588  | 0.119  | .     |

Table E30  
Item Parameters for Mathematics Grade 8 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 1.416           | 0.362  | 0.354  | .     |
| 7      | C                | SR        | 0.986           | -0.002 | 0.308  | .     |
| 13     | C                | SR        | 0.605           | -2.208 | 0.200  | .     |
| 16     | C                | SR        | 1.106           | -1.410 | 0.177  | .     |
| 20     | C                | SR        | 0.951           | 1.000  | 0.171  | .     |
| 26     | C                | SR        | 0.665           | 1.263  | 0.235  | .     |
| 27     | C                | SR        | 0.995           | 0.180  | 0.147  | .     |
| 29     | C                | SR        | 0.684           | 0.600  | 0.273  | .     |
| 32     | C                | SR        | 0.723           | -0.716 | 0.172  | .     |
| 33     | C                | SR        | 0.788           | 1.461  | 0.063  | .     |
| 34     | C                | SR        | 1.039           | 1.031  | 0.165  | .     |
| 35     | C                | SR        | 1.434           | 0.931  | 0.284  | .     |
| 36     | C                | SR        | 0.671           | 0.123  | 0.132  | .     |
| 37A    | C                | CR        | 2.478           | -0.608 | .      | .     |
| 37B    | C                | CR        | 1.313           | 0.048  | -1.080 | 1.602 |
| 38     | C                | SR        | 0.943           | 0.573  | 0.254  | .     |
| 39     | C                | SR        | 0.622           | -0.185 | 0.104  | .     |
| 40     | C                | SR        | 1.064           | 0.186  | 0.284  | .     |
| 41     | C                | SR        | 0.968           | 2.316  | 0.200  | .     |
| 42A    | C                | CR        | 1.719           | 0.225  | .      | .     |
| 42B    | C                | CR        | 1.384           | -0.074 | 1.661  | .     |
| 43     | U                | SPR       | 0.783           | 0.876  | 0.244  | .     |
| 44     | U                | SPR       | 0.908           | 0.947  | 0.235  | .     |
| 45     | U                | SPR       | 1.004           | 0.488  | 0.232  | .     |
| 46     | C                | SPR       | 1.583           | 0.205  | .      | .     |
| 47     | U                | SPR       | 1.388           | 0.261  | .      | .     |
| 48A    | U                | CR        | 1.876           | 0.907  | .      | .     |
| 48B    | U                | CR        | 2.274           | 2.315  | .      | .     |
| 49     | C                | SR        | 0.670           | 0.539  | 0.133  | .     |
| 50     | C                | SR        | 0.581           | 1.105  | 0.064  | .     |
| 51     | C                | SR        | 1.144           | 1.050  | 0.287  | .     |
| 52     | C                | SR        | 0.969           | 0.660  | 0.239  | .     |
| 53     | C                | SR        | 1.537           | 0.763  | 0.261  | .     |
| 54     | C                | SR        | 1.319           | 0.593  | 0.381  | .     |
| 55A    | U                | CR        | 1.535           | -0.841 | .      | .     |
| 55B    | U                | CR        | 1.183           | -1.697 | -0.443 | .     |
| 56     | U                | SPR       | 1.052           | 1.048  | 0.085  | .     |
| 57     | C                | SPR       | 2.015           | -0.106 | .      | .     |
| 58A    | U                | CR        | 0.415           | 3.164  | 0.200  | .     |
| 58B    | U                | CR        | 1.554           | 0.907  | 0.112  | .     |

Table E30 (cont.)  
Item Parameters for Mathematics Grade 8 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 59     | C                | SR        | 1.370           | 1.283  | 0.107  | .     |
| 60     | U                | SR        | 1.331           | -0.133 | .      | .     |
| 61     | U                | SR        | 0.669           | -0.156 | 0.089  | .     |
| 62     | U                | SR        | 0.731           | -0.064 | 0.218  | .     |
| 64     | U                | SR        | 0.853           | 1.882  | 0.335  | .     |
| 65A    | C                | CR        | 2.264           | 0.394  | .      | .     |
| 65B    | C                | CR        | 1.740           | -2.235 | 0.368  | .     |
| 66     | U                | SR        | 2.599           | 3.041  | .      | .     |
| 67     | U                | SR        | 1.603           | 1.382  | 2.037  | 3.246 |
| 68     | U                | SR        | 1.624           | 1.833  | .      | .     |
| 69     | U                | SR        | 1.723           | 0.736  | .      | .     |
| 70A    | C                | CR        | 3.136           | 3.166  | .      | .     |
| 70B    | C                | CR        | 2.218           | 1.099  | 2.073  | .     |
| 71     | U                | SPR       | 2.892           | 3.408  | .      | .     |
| 72     | C                | SPR       | 1.854           | 0.409  | .      | .     |
| 73     | C                | SPR       | 1.560           | -0.567 | .      | .     |
| 74     | U                | SPR       | 1.853           | 1.545  | 2.761  | .     |
| 75     | U                | SPR       | 1.451           | -0.046 | 0.127  | .     |
| 76A    | U                | CR        | 1.246           | 1.255  | 0.241  | .     |
| 76B    | U                | CR        | 1.803           | 0.948  | 0.141  | .     |
| 77     | U                | SPR       | 1.672           | 0.376  | .      | .     |
| 78     | U                | SPR       | 1.324           | 1.862  | .      | .     |
| 79     | U                | SPR       | 0.476           | 0.862  | .      | .     |
| 80A    | U                | CR        | 2.521           | 2.943  | .      | .     |
| 80B    | U                | CR        | 1.080           | 0.229  | 1.028  | 1.887 |
| 81     | U                | SR        | 0.146           | -2.475 | 0.200  | .     |
| 83     | U                | SR        | 0.797           | 0.091  | 0.254  | .     |
| 84     | U                | SR        | 1.137           | -0.456 | 0.273  | .     |
| 85     | U                | SR        | 1.052           | 0.566  | 0.242  | .     |
| 86     | U                | SR        | 0.747           | 0.469  | 0.320  | .     |
| 87     | U                | SR        | 0.930           | -1.882 | 0.200  | .     |
| 88     | U                | SR        | 1.610           | 1.008  | 0.203  | .     |
| 89     | U                | SPR       | 1.015           | 1.004  | .      | .     |
| 90     | U                | SPR       | 1.161           | 1.060  | .      | .     |
| 91A    | U                | CR        | 2.646           | 2.747  | .      | .     |
| 91B    | U                | CR        | 1.131           | 1.318  | -0.278 | .     |

Table E31  
Item Parameters for Mathematics Grade 8 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 1.416           | 0.362  | 0.354  | .     |
| 7      | C                | SR        | 0.986           | -0.002 | 0.308  | .     |
| 13     | C                | SR        | 0.605           | -2.208 | 0.200  | .     |
| 16     | C                | SR        | 1.106           | -1.410 | 0.177  | .     |
| 20     | C                | SR        | 0.951           | 1.000  | 0.171  | .     |
| 26     | C                | SR        | 0.665           | 1.263  | 0.235  | .     |
| 27     | C                | SR        | 0.995           | 0.180  | 0.147  | .     |
| 29     | C                | SR        | 0.684           | 0.600  | 0.273  | .     |
| 32     | C                | SR        | 0.723           | -0.716 | 0.172  | .     |
| 33     | C                | SR        | 0.788           | 1.461  | 0.063  | .     |
| 34     | C                | SR        | 1.039           | 1.031  | 0.165  | .     |
| 35     | C                | SR        | 1.434           | 0.931  | 0.284  | .     |
| 36     | C                | SR        | 0.671           | 0.123  | 0.132  | .     |
| 37A    | C                | CR        | 2.478           | -0.608 | .      | .     |
| 37B    | C                | CR        | 1.313           | 0.048  | -1.080 | 1.602 |
| 38     | C                | SR        | 0.943           | 0.573  | 0.254  | .     |
| 39     | C                | SR        | 0.622           | -0.185 | 0.104  | .     |
| 40     | C                | SR        | 1.064           | 0.186  | 0.284  | .     |
| 41     | C                | SR        | 0.968           | 2.316  | 0.200  | .     |
| 42A    | C                | CR        | 1.719           | 0.225  | .      | .     |
| 42B    | C                | CR        | 1.384           | -0.074 | 1.661  | .     |
| 43     | U                | SPR       | 1.771           | -2.218 | .      | .     |
| 44     | U                | SPR       | 1.060           | 0.603  | .      | .     |
| 45     | U                | SPR       | 1.039           | -0.053 | .      | .     |
| 46     | C                | SPR       | 1.583           | 0.205  | .      | .     |
| 47A    | U                | CR        | 0.815           | 0.059  | .      | .     |
| 47B    | U                | CR        | 1.119           | -0.352 | 0.895  | .     |
| 48     | C                | SR        | 0.670           | 0.539  | 0.133  | .     |
| 49     | C                | SR        | 0.581           | 1.105  | 0.064  | .     |
| 50     | C                | SR        | 1.144           | 1.050  | 0.287  | .     |
| 51     | C                | SR        | 0.969           | 0.660  | 0.239  | .     |
| 52     | C                | SR        | 1.537           | 0.763  | 0.261  | .     |
| 53     | C                | SR        | 1.319           | 0.593  | 0.381  | .     |
| 54A    | U                | CR        | 2.071           | -0.576 | .      | .     |
| 54B    | U                | CR        | 1.737           | -0.875 | 1.870  | 2.210 |
| 55     | U                | SPR       | 1.213           | 1.661  | .      | .     |
| 56     | U                | SPR       | 1.205           | 2.112  | .      | .     |
| 57     | C                | SPR       | 2.015           | -0.106 | .      | .     |
| 58     | U                | SPR       | 1.308           | -0.015 | .      | .     |
| 59     | C                | SR        | 1.370           | 1.283  | 0.107  | .     |

Table E31 (cont.)  
Item Parameters for Mathematics Grade 8 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 60     | U                | SR        | 1.043           | 1.787  | 0.206  | .     |
| 61     | U                | SR        | 0.882           | -0.085 | 0.334  | .     |
| 62     | U                | SR        | 1.669           | 2.131  | 0.221  | .     |
| 63     | U                | SR        | 2.000           | 1.058  | 0.280  | .     |
| 64A    | C                | CR        | 2.264           | 0.394  | .      | .     |
| 64B    | C                | CR        | 1.740           | -2.235 | 0.368  | .     |
| 65A    | U                | CR        | 2.426           | 0.890  | .      | .     |
| 65B    | U                | CR        | 1.667           | 0.224  | -0.322 | .     |
| 66     | U                | SR        | 0.695           | 0.424  | 0.223  | .     |
| 67     | U                | SR        | 1.029           | 0.835  | 0.114  | .     |
| 68     | U                | SR        | 0.984           | 1.113  | 0.207  | .     |
| 69     | U                | SR        | 0.226           | -0.119 | 0.200  | .     |
| 70     | U                | SR        | 0.620           | -0.373 | 0.221  | .     |
| 71A    | C                | CR        | 3.136           | 3.166  | .      | .     |
| 71B    | C                | CR        | 2.218           | 1.099  | 2.073  | .     |
| 72     | C                | SPR       | 1.854           | 0.409  | .      | .     |
| 73     | C                | SPR       | 1.560           | -0.567 | .      | .     |
| 75     | U                | SPR       | 2.090           | 1.528  | .      | .     |
| 76A    | U                | CR        | 2.244           | 1.554  | .      | .     |
| 76B    | U                | CR        | 1.779           | -1.487 | 1.369  | .     |
| 77     | U                | SR        | 1.327           | 0.986  | 0.210  | .     |
| 78     | U                | SR        | 1.146           | 1.138  | 0.156  | .     |
| 79     | U                | SPR       | 2.236           | 1.489  | .      | .     |
| 80     | U                | SPR       | 2.574           | 3.160  | .      | .     |
| 81A    | U                | CR        | 2.069           | 1.378  | .      | .     |
| 81B    | U                | CR        | 0.943           | -0.201 | 0.639  | .     |
| 82A    | U                | CR        | 2.603           | 2.960  | .      | .     |
| 82B    | U                | CR        | 1.509           | 1.275  | 1.515  | 4.427 |
| 83     | U                | SR        | 1.623           | 0.284  | 0.261  | .     |
| 84     | U                | SR        | 0.618           | -0.367 | 0.216  | .     |
| 85A    | U                | CR        | 0.770           | -0.242 | .      | .     |
| 85B    | U                | CR        | 0.526           | 0.655  | -1.303 | 1.271 |

Table E32  
Item Parameters for Mathematics Grade 8 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 1.416           | 0.362  | 0.354  | .     |
| 7      | C                | SR        | 0.986           | -0.002 | 0.308  | .     |
| 13     | C                | SR        | 0.605           | -2.208 | 0.200  | .     |
| 16     | C                | SR        | 1.106           | -1.410 | 0.177  | .     |
| 20     | C                | SR        | 0.951           | 1.000  | 0.171  | .     |
| 26     | C                | SR        | 0.665           | 1.263  | 0.235  | .     |
| 27     | C                | SR        | 0.995           | 0.180  | 0.147  | .     |
| 29     | C                | SR        | 0.684           | 0.600  | 0.273  | .     |
| 32     | C                | SR        | 0.723           | -0.716 | 0.172  | .     |
| 33     | C                | SR        | 0.788           | 1.461  | 0.063  | .     |
| 34     | C                | SR        | 1.039           | 1.031  | 0.165  | .     |
| 35     | C                | SR        | 1.434           | 0.931  | 0.284  | .     |
| 36     | C                | SR        | 0.671           | 0.123  | 0.132  | .     |
| 37A    | C                | CR        | 2.478           | -0.608 | .      | .     |
| 37B    | C                | CR        | 1.313           | 0.048  | -1.080 | 1.602 |
| 38     | C                | SR        | 0.943           | 0.573  | 0.254  | .     |
| 39     | C                | SR        | 0.622           | -0.185 | 0.104  | .     |
| 40     | C                | SR        | 1.064           | 0.186  | 0.284  | .     |
| 41     | C                | SR        | 0.968           | 2.316  | 0.200  | .     |
| 42A    | C                | CR        | 1.719           | 0.225  | .      | .     |
| 42B    | C                | CR        | 1.384           | -0.074 | 1.661  | .     |
| 43     | U                | SPR       | 0.783           | 0.876  | 0.244  | .     |
| 44     | U                | SPR       | 0.908           | 0.947  | 0.235  | .     |
| 45     | U                | SPR       | 1.004           | 0.488  | 0.232  | .     |
| 46     | C                | SPR       | 1.583           | 0.205  | .      | .     |
| 47     | U                | SPR       | 1.388           | 0.261  | .      | .     |
| 48A    | U                | CR        | 1.876           | 0.907  | .      | .     |
| 48B    | U                | CR        | 2.274           | 2.315  | .      | .     |
| 49     | C                | SR        | 0.670           | 0.539  | 0.133  | .     |
| 50     | C                | SR        | 0.581           | 1.105  | 0.064  | .     |
| 51     | C                | SR        | 1.144           | 1.050  | 0.287  | .     |
| 52     | C                | SR        | 0.969           | 0.660  | 0.239  | .     |
| 53     | C                | SR        | 1.537           | 0.763  | 0.261  | .     |
| 54     | C                | SR        | 1.319           | 0.593  | 0.381  | .     |
| 55A    | U                | CR        | 1.535           | -0.841 | .      | .     |
| 55B    | U                | CR        | 1.183           | -1.697 | -0.443 | .     |
| 56     | U                | SPR       | 1.052           | 1.048  | 0.085  | .     |
| 57     | C                | SPR       | 2.015           | -0.106 | .      | .     |
| 58A    | U                | CR        | 0.415           | 3.164  | 0.200  | .     |
| 58B    | U                | CR        | 1.554           | 0.907  | 0.112  | .     |



Table E32 (cont.)  
Item Parameters for Mathematics Grade 8 Form D

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 59     | C                | SR        | 1.370           | 1.283  | 0.107  | .     |
| 60     | U                | SR        | 1.331           | -0.133 | .      | .     |
| 61     | U                | SR        | 0.669           | -0.156 | 0.089  | .     |
| 62     | U                | SR        | 0.731           | -0.064 | 0.218  | .     |
| 64     | U                | SR        | 0.853           | 1.882  | 0.335  | .     |
| 65A    | C                | CR        | 2.264           | 0.394  | .      | .     |
| 65B    | C                | CR        | 1.740           | -2.235 | 0.368  | .     |
| 66     | U                | SR        | 2.599           | 3.041  | .      | .     |
| 67     | U                | SR        | 1.603           | 1.382  | 2.037  | 3.246 |
| 68     | U                | SR        | 1.624           | 1.833  | .      | .     |
| 69     | U                | SR        | 1.723           | 0.736  | .      | .     |
| 70A    | C                | CR        | 3.136           | 3.166  | .      | .     |
| 70B    | C                | CR        | 2.218           | 1.099  | 2.073  | .     |
| 71     | U                | SPR       | 2.892           | 3.408  | .      | .     |
| 72     | C                | SPR       | 1.854           | 0.409  | .      | .     |
| 73     | C                | SPR       | 1.560           | -0.567 | .      | .     |
| 74     | U                | SPR       | 1.853           | 1.545  | 2.761  | .     |
| 75     | U                | SPR       | 1.451           | -0.046 | 0.127  | .     |
| 76A    | U                | CR        | 1.246           | 1.255  | 0.241  | .     |
| 76B    | U                | CR        | 1.803           | 0.948  | 0.141  | .     |
| 77     | U                | SPR       | 1.899           | 1.544  | .      | .     |
| 78     | U                | SPR       | 2.313           | 2.039  | .      | .     |
| 79     | U                | SPR       | 1.620           | 2.232  | .      | .     |
| 80     | U                | SPR       | 1.396           | 0.106  | .      | .     |
| 81A    | U                | CR        | 2.283           | 1.596  | .      | .     |
| 81B    | U                | CR        | 1.048           | 0.090  | 0.634  | .     |
| 82     | U                | SR        | 0.941           | 0.539  | 0.372  | .     |
| 83     | U                | SR        | 2.000           | 1.325  | 0.453  | .     |
| 84     | U                | SR        | 0.909           | 0.701  | 0.214  | .     |
| 85A    | U                | CR        | 2.164           | 4.358  | .      | .     |
| 85B    | U                | CR        | 1.523           | 1.212  | 2.979  | .     |
| 86     | U                | SR        | 0.615           | 1.592  | 0.224  | .     |
| 87     | U                | SR        | 0.753           | 0.375  | 0.151  | .     |
| 88A    | U                | CR        | 1.445           | 0.478  | .      | .     |
| 88B    | U                | CR        | 0.719           | 0.726  | -0.007 | 0.071 |

Table E33  
Item Parameters for Mathematics Grade 8 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 6      | C                | SR        | 1.416           | 0.362  | 0.354  | .     |
| 7      | C                | SR        | 0.986           | -0.002 | 0.308  | .     |
| 13     | C                | SR        | 0.605           | -2.208 | 0.200  | .     |
| 16     | C                | SR        | 1.106           | -1.410 | 0.177  | .     |
| 20     | C                | SR        | 0.951           | 1.000  | 0.171  | .     |
| 26     | C                | SR        | 0.665           | 1.263  | 0.235  | .     |
| 27     | C                | SR        | 0.995           | 0.180  | 0.147  | .     |
| 29     | C                | SR        | 0.684           | 0.600  | 0.273  | .     |
| 32     | C                | SR        | 0.723           | -0.716 | 0.172  | .     |
| 33     | C                | SR        | 0.788           | 1.461  | 0.063  | .     |
| 34     | C                | SR        | 1.039           | 1.031  | 0.165  | .     |
| 35     | C                | SR        | 1.434           | 0.931  | 0.284  | .     |
| 36     | C                | SR        | 0.671           | 0.123  | 0.132  | .     |
| 37A    | C                | CR        | 2.478           | -0.608 | .      | .     |
| 37B    | C                | CR        | 1.313           | 0.048  | -1.080 | 1.602 |
| 38     | C                | SR        | 0.943           | 0.573  | 0.254  | .     |
| 39     | C                | SR        | 0.622           | -0.185 | 0.104  | .     |
| 40     | C                | SR        | 1.064           | 0.186  | 0.284  | .     |
| 41     | C                | SR        | 0.968           | 2.316  | 0.200  | .     |
| 42A    | C                | CR        | 1.719           | 0.225  | .      | .     |
| 42B    | C                | CR        | 1.384           | -0.074 | 1.661  | .     |
| 43     | U                | SPR       | 1.771           | -2.218 | .      | .     |
| 44     | U                | SPR       | 1.060           | 0.603  | .      | .     |
| 45     | U                | SPR       | 1.039           | -0.053 | .      | .     |
| 46     | C                | SPR       | 1.583           | 0.205  | .      | .     |
| 47A    | U                | CR        | 0.815           | 0.059  | .      | .     |
| 47B    | U                | CR        | 1.119           | -0.352 | 0.895  | .     |
| 48     | C                | SR        | 0.670           | 0.539  | 0.133  | .     |
| 49     | C                | SR        | 0.581           | 1.105  | 0.064  | .     |
| 50     | C                | SR        | 1.144           | 1.050  | 0.287  | .     |
| 51     | C                | SR        | 0.969           | 0.660  | 0.239  | .     |
| 52     | C                | SR        | 1.537           | 0.763  | 0.261  | .     |
| 53     | C                | SR        | 1.319           | 0.593  | 0.381  | .     |
| 54A    | U                | CR        | 2.071           | -0.576 | .      | .     |
| 54B    | U                | CR        | 1.737           | -0.875 | 1.870  | 2.210 |
| 55     | U                | SPR       | 1.213           | 1.661  | .      | .     |
| 56     | U                | SPR       | 1.205           | 2.112  | .      | .     |
| 57     | C                | SPR       | 2.015           | -0.106 | .      | .     |
| 58     | U                | SPR       | 1.308           | -0.015 | .      | .     |
| 59     | C                | SR        | 1.370           | 1.283  | 0.107  | .     |

Table E33 (cont.)  
Item Parameters for Mathematics Grade 8 Form E

| Item # | Item Designation | Item Type | Item Parameters |        |        |   |
|--------|------------------|-----------|-----------------|--------|--------|---|
|        |                  |           | a               | b      | c      | d |
| 60     | U                | SR        | 1.043           | 1.787  | 0.206  | . |
| 61     | U                | SR        | 0.882           | -0.085 | 0.334  | . |
| 62     | U                | SR        | 1.669           | 2.131  | 0.221  | . |
| 63     | U                | SR        | 2.000           | 1.058  | 0.280  | . |
| 64A    | C                | CR        | 2.264           | 0.394  | .      | . |
| 64B    | C                | CR        | 1.740           | -2.235 | 0.368  | . |
| 65A    | U                | CR        | 2.426           | 0.890  | .      | . |
| 65B    | U                | CR        | 1.667           | 0.224  | -0.322 | . |
| 66     | U                | SR        | 0.695           | 0.424  | 0.223  | . |
| 67     | U                | SR        | 1.029           | 0.835  | 0.114  | . |
| 68     | U                | SR        | 0.984           | 1.113  | 0.207  | . |
| 69     | U                | SR        | 0.226           | -0.119 | 0.200  | . |
| 70     | U                | SR        | 0.620           | -0.373 | 0.221  | . |
| 71A    | C                | CR        | 3.136           | 3.166  | .      | . |
| 71B    | C                | CR        | 2.218           | 1.099  | 2.073  | . |
| 72     | C                | SPR       | 1.854           | 0.409  | .      | . |
| 73     | C                | SPR       | 1.560           | -0.567 | .      | . |
| 75     | U                | SPR       | 2.090           | 1.528  | .      | . |
| 76A    | U                | CR        | 2.244           | 1.554  | .      | . |
| 76B    | U                | CR        | 1.779           | -1.487 | 1.369  | . |
| 77     | U                | SR        | 1.351           | 0.974  | 0.161  | . |
| 78     | U                | SR        | 0.873           | 0.421  | 0.128  | . |
| 79     | U                | SR        | 1.461           | 0.946  | 0.314  | . |
| 80     | U                | SR        | 1.250           | -0.041 | 0.191  | . |
| 81A    | U                | CR        | 1.520           | 0.621  | .      | . |
| 81B    | U                | CR        | 0.841           | 0.265  | -0.077 | . |
| 82     | U                | SPR       | 2.214           | 1.901  | .      | . |
| 83     | U                | SPR       | 1.340           | 0.454  | .      | . |
| 84     | U                | SPR       | 1.372           | 0.498  | .      | . |
| 85     | U                | SPR       | 1.642           | 1.188  | .      | . |
| 87     | U                | SR        | 0.937           | 0.283  | 0.197  | . |
| 88     | U                | SR        | 1.131           | -0.368 | 0.260  | . |
| 89     | U                | SR        | 1.949           | 1.739  | 0.251  | . |
| 90     | U                | SR        | 0.551           | 2.184  | 0.151  | . |
| 91     | U                | SR        | 0.917           | 0.000  | 0.070  | . |
| 92     | U                | SR        | 1.322           | -0.567 | 0.269  | . |
| 93     | U                | SR        | 0.632           | -0.139 | 0.097  | . |
| 94     | U                | SPR       | 2.201           | 0.746  | .      | . |

Table E34  
Item Parameters for Reading Grade 10 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 1      | C                | SR        | 0.665           | -0.635 | 0.320  | .     |
| 2      | C                | SR        | 0.955           | 0.247  | 0.299  | .     |
| 3      | C                | SR        | 0.592           | -1.544 | 0.171  | .     |
| 4      | C                | SR        | 0.858           | -2.024 | 0.081  | .     |
| 5      | C                | SR        | 0.982           | 0.587  | 0.190  | .     |
| 6      | C                | SR        | 0.597           | -1.371 | 0.171  | .     |
| 13     | C                | SR        | 1.091           | -0.940 | 0.325  | .     |
| 14     | C                | SR        | 0.901           | -0.663 | 0.130  | .     |
| 15     | C                | SR        | 0.592           | 0.211  | 0.191  | .     |
| 16     | C                | SR        | 0.507           | 1.468  | 0.264  | .     |
| 17     | C                | SR        | 1.574           | -0.159 | 0.147  | .     |
| 22     | C                | SR        | 0.302           | 0.086  | 0.200  | .     |
| 23     | C                | SR        | 1.204           | -0.913 | 0.146  | .     |
| 24     | C                | SR        | 0.562           | -0.616 | 0.041  | .     |
| 25     | C                | SR        | 0.982           | -0.138 | 0.172  | .     |
| 26     | C                | SR        | 1.711           | -0.722 | 0.302  | .     |
| 27     | C                | SR        | 0.934           | 0.067  | 0.230  | .     |
| 32     | C                | SR        | 0.801           | 0.883  | 0.388  | .     |
| 33     | C                | SR        | 0.731           | 0.448  | 0.288  | .     |
| 34     | C                | SR        | 0.757           | 0.199  | 0.237  | .     |
| 35     | C                | SR        | 1.331           | -0.763 | 0.216  | .     |
| 36     | C                | SR        | 0.773           | -0.677 | 0.247  | .     |
| 37     | C                | SR        | 0.531           | -0.634 | 0.104  | .     |
| 38     | C                | SR        | 0.540           | -0.915 | 0.053  | .     |
| 43     | C                | SR        | 1.635           | -0.854 | 0.309  | .     |
| 44     | C                | SR        | 0.808           | -1.120 | 0.176  | .     |
| 45     | C                | SR        | 1.260           | -1.097 | 0.228  | .     |
| 46     | C                | SR        | 0.857           | 0.784  | 0.218  | .     |
| 47     | C                | SR        | 1.083           | -0.667 | 0.280  | .     |
| 48     | C                | SR        | 1.124           | -0.372 | 0.159  | .     |
| 51     | C                | SR        | 0.751           | -1.037 | 0.112  | .     |
| 52     | C                | SR        | 0.666           | -0.210 | 0.185  | .     |
| 53     | C                | SR        | 0.603           | 0.969  | 0.220  | .     |
| 54     | C                | SR        | 0.441           | -0.244 | 0.171  | .     |
| 61     | U                | SR        | 1.017           | 0.331  | 0.254  | .     |
| 62     | U                | SR        | 0.766           | -0.742 | 0.320  | .     |
| 63     | U                | CR        | 1.227           | -3.217 | -0.771 | 1.782 |
| 64     | U                | SR        | 0.324           | -0.085 | 0.200  | .     |
| 65     | U                | SR        | 1.206           | -0.250 | 0.159  | .     |
| 66     | U                | SR        | 1.188           | -0.801 | 0.226  | .     |

Table E34 (cont.)  
Item Parameters for Reading Grade 10 Form A

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 67     | U                | SR        | 0.365           | -0.130 | 0.200  | .     |
| 68     | U                | SR        | 0.559           | 0.461  | 0.169  | .     |
| 69     | U                | CR        | 1.046           | -0.645 | -0.390 | 1.854 |
| 70     | U                | SR        | 0.487           | -0.717 | 0.200  | .     |
| 71     | U                | SR        | 0.604           | -0.832 | 0.171  | .     |
| 72     | U                | SR        | 0.782           | -1.474 | 0.061  | .     |
| 73     | U                | SR        | 1.334           | -1.476 | 0.123  | .     |
| 74     | U                | SR        | 0.896           | -0.534 | 0.187  | .     |
| 75     | U                | CR        | 1.238           | -2.932 | -0.926 | 1.562 |
| 76     | U                | SR        | 0.443           | -0.851 | 0.111  | .     |
| 77     | U                | SR        | 0.818           | -0.110 | 0.175  | .     |
| 78     | U                | SR        | 0.626           | -0.989 | 0.055  | .     |
| 79     | U                | CR        | 1.226           | -2.684 | -1.274 | 1.800 |
| 80     | U                | SR        | 0.640           | -0.685 | 0.194  | .     |
| 81     | U                | SR        | 1.447           | 0.269  | 0.253  | .     |
| 82     | U                | SR        | 1.411           | -3.274 | -1.870 | 1.572 |
| 83     | U                | SR        | 1.001           | -1.990 | 0.171  | .     |
| 84     | U                | CR        | 0.432           | -1.047 | 0.118  | .     |
| 85     | U                | SR        | 0.952           | -1.298 | 0.176  | .     |
| 86     | U                | SR        | 0.935           | -1.004 | 0.112  | .     |
| 87     | U                | SR        | 0.548           | -0.746 | 0.171  | .     |
| 88     | U                | SR        | 1.457           | -3.386 | -1.472 | 1.777 |
| 89     | U                | SR        | 1.030           | 1.228  | 0.201  | .     |
| 90     | U                | SR        | 0.680           | -1.162 | 0.082  | .     |
| 91     | U                | CR        | 1.043           | -1.346 | 0.200  | .     |

Table E35  
Item Parameters for Reading Grade 10 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 1      | C                | SR        | 0.665           | -0.635 | 0.320  | .     |
| 2      | C                | SR        | 0.955           | 0.247  | 0.299  | .     |
| 3      | C                | SR        | 0.592           | -1.544 | 0.171  | .     |
| 4      | C                | SR        | 0.858           | -2.024 | 0.081  | .     |
| 5      | C                | SR        | 0.982           | 0.587  | 0.190  | .     |
| 6      | C                | SR        | 0.597           | -1.371 | 0.171  | .     |
| 13     | C                | SR        | 1.091           | -0.940 | 0.325  | .     |
| 14     | C                | SR        | 0.901           | -0.663 | 0.130  | .     |
| 15     | C                | SR        | 0.592           | 0.211  | 0.191  | .     |
| 16     | C                | SR        | 0.507           | 1.468  | 0.264  | .     |
| 17     | C                | SR        | 1.574           | -0.159 | 0.147  | .     |
| 22     | C                | SR        | 0.302           | 0.086  | 0.200  | .     |
| 23     | C                | SR        | 1.204           | -0.913 | 0.146  | .     |
| 24     | C                | SR        | 0.562           | -0.616 | 0.041  | .     |
| 25     | C                | SR        | 0.982           | -0.138 | 0.172  | .     |
| 26     | C                | SR        | 1.711           | -0.722 | 0.302  | .     |
| 27     | C                | SR        | 0.934           | 0.067  | 0.230  | .     |
| 32     | C                | SR        | 0.801           | 0.883  | 0.388  | .     |
| 33     | C                | SR        | 0.731           | 0.448  | 0.288  | .     |
| 34     | C                | SR        | 0.757           | 0.199  | 0.237  | .     |
| 35     | C                | SR        | 1.331           | -0.763 | 0.216  | .     |
| 36     | C                | SR        | 0.773           | -0.677 | 0.247  | .     |
| 37     | C                | SR        | 0.531           | -0.634 | 0.104  | .     |
| 38     | C                | SR        | 0.540           | -0.915 | 0.053  | .     |
| 43     | C                | SR        | 1.635           | -0.854 | 0.309  | .     |
| 44     | C                | SR        | 0.808           | -1.120 | 0.176  | .     |
| 45     | C                | SR        | 1.260           | -1.097 | 0.228  | .     |
| 46     | C                | SR        | 0.857           | 0.784  | 0.218  | .     |
| 47     | C                | SR        | 1.083           | -0.667 | 0.280  | .     |
| 48     | C                | SR        | 1.124           | -0.372 | 0.159  | .     |
| 51     | C                | SR        | 0.751           | -1.037 | 0.112  | .     |
| 52     | C                | SR        | 0.666           | -0.210 | 0.185  | .     |
| 53     | C                | SR        | 0.603           | 0.969  | 0.220  | .     |
| 54     | C                | SR        | 0.441           | -0.244 | 0.171  | .     |
| 61     | U                | SR        | 1.257           | -0.920 | 0.243  | .     |
| 62     | U                | SR        | 1.213           | -0.380 | 0.229  | .     |
| 63     | U                | CR        | 1.562           | 0.915  | 0.200  | .     |
| 64     | U                | SR        | 0.689           | 0.413  | 0.183  | .     |
| 65     | U                | SR        | 0.936           | -1.373 | 0.122  | .     |
| 66     | U                | SR        | 1.098           | -3.089 | -1.391 | 1.903 |

Table E35 (cont.)  
Item Parameters for Reading Grade 10 Form B

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 67     | U                | SR        | 1.138           | -1.867 | -1.216 | 1.714 |
| 68     | U                | SR        | 0.650           | -1.363 | 0.200  | .     |
| 69     | U                | CR        | 1.630           | -0.742 | 0.333  | .     |
| 70     | U                | SR        | 0.971           | -0.810 | 0.202  | .     |
| 71     | U                | SR        | 0.927           | -0.817 | 0.158  | .     |
| 72     | U                | SR        | 1.320           | -2.404 | 0.675  | 4.523 |
| 73     | U                | SR        | 0.953           | -1.394 | 0.180  | .     |
| 74     | U                | SR        | 0.542           | -0.429 | 0.200  | .     |
| 75     | U                | SR        | 0.369           | 2.238  | 0.217  | .     |
| 76     | U                | SR        | 0.480           | 1.148  | 0.133  | .     |
| 77     | U                | SR        | 0.485           | 0.800  | 0.200  | .     |
| 78     | U                | CR        | 0.863           | -0.212 | 0.201  | .     |
| 79     | U                | CR        | 1.213           | -2.399 | 0.675  | 4.103 |
| 80     | U                | SR        | 0.869           | -1.243 | 0.179  | .     |
| 81     | U                | SR        | 0.609           | 0.084  | 0.064  | .     |
| 82     | U                | SR        | 0.621           | -1.042 | 0.179  | .     |
| 83     | U                | SR        | 0.731           | -1.180 | 0.094  | .     |
| 84     | U                | SR        | 1.041           | -0.971 | 0.177  | .     |
| 85     | U                | SR        | 1.544           | -1.545 | 0.183  | .     |
| 86     | U                | SR        | 1.060           | -0.737 | 0.155  | .     |
| 87     | U                | CR        | 1.401           | -2.682 | 1.145  | 4.259 |
| 88     | U                | SR        | 0.433           | -1.308 | 0.200  | .     |
| 89     | U                | SR        | 0.747           | -1.253 | 0.200  | .     |
| 90     | U                | CR        | 1.340           | -2.959 | 1.268  | 4.434 |

Table E36  
Item Parameters for Reading Grade 10 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 1      | C                | SR        | 0.665           | -0.635 | 0.320  | .     |
| 2      | C                | SR        | 0.955           | 0.247  | 0.299  | .     |
| 3      | C                | SR        | 0.592           | -1.544 | 0.171  | .     |
| 4      | C                | SR        | 0.858           | -2.024 | 0.081  | .     |
| 5      | C                | SR        | 0.982           | 0.587  | 0.190  | .     |
| 6      | C                | SR        | 0.597           | -1.371 | 0.171  | .     |
| 13     | C                | SR        | 1.091           | -0.940 | 0.325  | .     |
| 14     | C                | SR        | 0.901           | -0.663 | 0.130  | .     |
| 15     | C                | SR        | 0.592           | 0.211  | 0.191  | .     |
| 16     | C                | SR        | 0.507           | 1.468  | 0.264  | .     |
| 17     | C                | SR        | 1.574           | -0.159 | 0.147  | .     |
| 22     | C                | SR        | 0.302           | 0.086  | 0.200  | .     |
| 23     | C                | SR        | 1.204           | -0.913 | 0.146  | .     |
| 24     | C                | SR        | 0.562           | -0.616 | 0.041  | .     |
| 25     | C                | SR        | 0.982           | -0.138 | 0.172  | .     |
| 26     | C                | SR        | 1.711           | -0.722 | 0.302  | .     |
| 27     | C                | SR        | 0.934           | 0.067  | 0.230  | .     |
| 32     | C                | SR        | 0.801           | 0.883  | 0.388  | .     |
| 33     | C                | SR        | 0.731           | 0.448  | 0.288  | .     |
| 34     | C                | SR        | 0.757           | 0.199  | 0.237  | .     |
| 35     | C                | SR        | 1.331           | -0.763 | 0.216  | .     |
| 36     | C                | SR        | 0.773           | -0.677 | 0.247  | .     |
| 37     | C                | SR        | 0.531           | -0.634 | 0.104  | .     |
| 38     | C                | SR        | 0.540           | -0.915 | 0.053  | .     |
| 43     | C                | SR        | 1.635           | -0.854 | 0.309  | .     |
| 44     | C                | SR        | 0.808           | -1.120 | 0.176  | .     |
| 45     | C                | SR        | 1.260           | -1.097 | 0.228  | .     |
| 46     | C                | SR        | 0.857           | 0.784  | 0.218  | .     |
| 47     | C                | SR        | 1.083           | -0.667 | 0.280  | .     |
| 48     | C                | SR        | 1.124           | -0.372 | 0.159  | .     |
| 51     | C                | SR        | 0.751           | -1.037 | 0.112  | .     |
| 52     | C                | SR        | 0.666           | -0.210 | 0.185  | .     |
| 53     | C                | SR        | 0.603           | 0.969  | 0.220  | .     |
| 54     | C                | SR        | 0.441           | -0.244 | 0.171  | .     |
| 61     | U                | SR        | 1.017           | 0.331  | 0.254  | .     |
| 62     | U                | SR        | 0.766           | -0.742 | 0.320  | .     |
| 63     | U                | CR        | 1.227           | -3.217 | -0.771 | 1.782 |
| 64     | U                | SR        | 0.324           | -0.085 | 0.200  | .     |
| 65     | U                | SR        | 1.206           | -0.250 | 0.159  | .     |
| 66     | U                | SR        | 1.188           | -0.801 | 0.226  | .     |



Table E36 (cont.)  
Item Parameters for Reading Grade 10 Form C

| Item # | Item Designation | Item Type | Item Parameters |        |        |       |
|--------|------------------|-----------|-----------------|--------|--------|-------|
|        |                  |           | a               | b      | c      | d     |
| 67     | U                | SR        | 0.365           | -0.130 | 0.200  | .     |
| 68     | U                | SR        | 0.559           | 0.461  | 0.169  | .     |
| 69     | U                | CR        | 1.046           | -0.645 | -0.390 | 1.854 |
| 70     | U                | SR        | 0.487           | -0.717 | 0.200  | .     |
| 71     | U                | SR        | 0.604           | -0.832 | 0.171  | .     |
| 72     | U                | SR        | 0.782           | -1.474 | 0.061  | .     |
| 73     | U                | SR        | 1.334           | -1.476 | 0.123  | .     |
| 74     | U                | SR        | 0.896           | -0.534 | 0.187  | .     |
| 75     | U                | CR        | 1.238           | -2.932 | -0.926 | 1.562 |
| 76     | U                | SR        | 0.443           | -0.851 | 0.111  | .     |
| 77     | U                | SR        | 0.818           | -0.110 | 0.175  | .     |
| 78     | U                | SR        | 0.626           | -0.989 | 0.055  | .     |
| 79     | U                | CR        | 1.226           | -2.684 | -1.274 | 1.800 |
| 80     | U                | SR        | 1.000           | 2.500  | 0.200  | .     |
| 81     | U                | SR        | 0.963           | 0.247  | 0.206  | .     |
| 82     | U                | SR        | 1.037           | 0.691  | 0.178  | .     |
| 83     | U                | SR        | 1.661           | -0.058 | 0.264  | .     |
| 84     | U                | SR        | 0.802           | -1.307 | 0.179  | .     |
| 85     | U                | CR        | 1.322           | -3.199 | 0.808  | 5.589 |
| 86     | U                | SR        | 0.614           | 0.302  | 0.140  | .     |
| 87     | U                | SR        | 1.222           | 1.218  | 0.132  | .     |
| 88     | U                | SR        | 0.527           | 0.946  | 0.319  | .     |
| 89     | U                | SR        | 0.502           | 0.491  | 0.200  | .     |
| 90     | U                | SR        | 0.561           | 0.053  | 0.200  | .     |
| 91     | U                | CR        | 1.257           | -1.666 | 1.501  | 5.083 |

**Appendix F**  
**Common Item and Anchor Item Check**

## Figures List

|   |      |
|---|------|
| Figure F1 'A' and 'B' Parameters for Grade 3 Form 1 and Form 2 Common Items .....   | F-3  |
| Figure F2 'A' and 'B' Parameters for Grade 4 Form C and Form A Common Items .....   | F-4  |
| Figure F3 'A' and 'B' Parameters for Grade 4 Form C and Form B Common Items .....   | F-5  |
| Figure F4 'A' and 'B' Parameters for Grade 4 Form C and Form D Common Items .....   | F-6  |
| Figure F5 'A' and 'B' Parameters for Grade 4 Form C and Form E Common Items .....   | F-7  |
| Figure F6 'A' and 'B' Parameters for Grade 4 Form C and Form F Common Items .....   | F-8  |
| Figure F7 'A' and 'B' Parameters for Grade 5 Form 1 and Form 2 Common Items .....   | F-9  |
| Figure F8 'A' and 'B' Parameters for Grade 6 Form C and Form A Common Items .....   | F-10 |
| Figure F9 'A' and 'B' Parameters for Grade 6 Form C and Form B Common Items .....   | F-11 |
| Figure F10 'A' and 'B' Parameters for Grade 6 Form C and Form D Common Items .....  | F-12 |
| Figure F11 'A' and 'B' Parameters for Grade 6 Form C and Form E Common Items .....  | F-13 |
| Figure F12 'A' and 'B' Parameters for Grade 6 Form C and Form F Common Items .....  | F-14 |
| Figure F13 'A' and 'B' Parameters for Grade 7 Form A and Form B Common Items .....  | F-15 |
| Figure F14 'A' and 'B' Parameters for Grade 7 Form A and Form C Common Items .....  | F-16 |
| Figure F15 'A' and 'B' Parameters for Grade 7 Form A and Form D Common Items .....  | F-17 |
| Figure F16 'A' and 'B' Parameters for Grade 7 Form A and Form E Common Items .....  | F-18 |
| Figure F17 'A' and 'B' Parameters for Grade 7 Form A and Form F Common Items .....  | F-19 |
| Figure F18 'A' and 'B' Parameters for Grade 8 Form 1 and Form 2 Common Items .....  | F-20 |
| Figure F19 'A' and 'B' Parameters for Grade 10 Form 1 and Form 2 Common Items ..... | F-21 |
| Figure F20 'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 3 .....      | F-22 |
| Figure F21 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 3 .....      | F-23 |
| Figure F22 P-values of 2003 and 2004 Anchor Items for Grade 3 .....                 | F-24 |
| Figure F23 'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 5 .....      | F-25 |
| Figure F24 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 5 .....      | F-26 |
| Figure F25 P-values of 2003 and 2004 Anchor Items for Grade 5 .....                 | F-27 |
| Figure F26 'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 8 .....      | F-28 |
| Figure F27 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 8 .....      | F-29 |
| Figure F28 P-values of 2003 and 2004 Anchor Items for Grade 8 .....                 | F-30 |
| Figure F29 'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 10 .....     | F-31 |
| Figure F30 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 10 .....     | F-32 |
| Figure F31 P-values of 2003 and 2004 Anchor Items for Grade 10 .....                | F-33 |
| Figure F32 Final TCC and SEM Curves for Grade 3 .....                               | F-34 |
| Figure F33 Final TCC and SEM Curves for Grade 4 .....                               | F-35 |
| Figure F34 Final TCC and SEM Curves for Grade 5 .....                               | F-36 |
| Figure F35 Final TCC and SEM Curves for Grade 6 .....                               | F-37 |
| Figure F36 Final TCC and SEM Curves for Grade 7 .....                               | F-38 |
| Figure F37 Final TCC and SEM Curves for Grade 8 .....                               | F-39 |
| Figure F38 Final TCC and SEM Curves for Grade 10 .....                              | F-40 |

Figure F1  
 'A' and 'B' Parameters for Grade 3 Form 1 and Form 2 Common Items

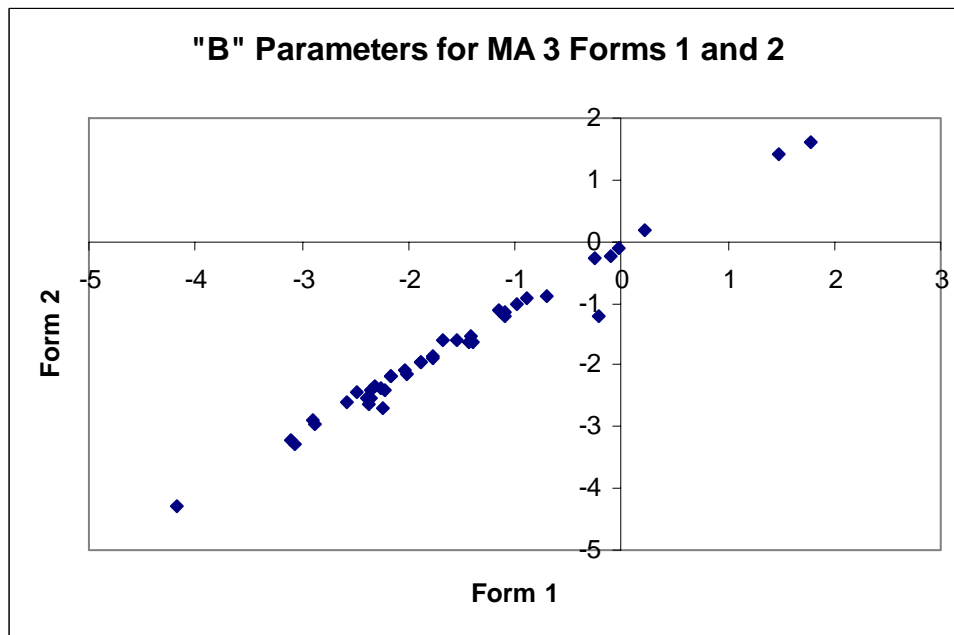
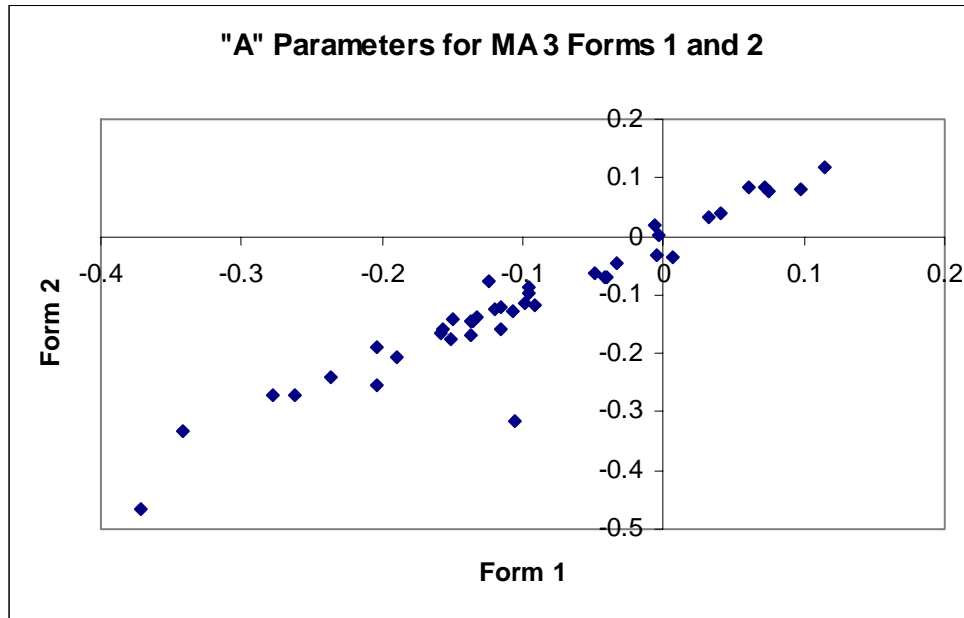


Figure F2  
 'A' and 'B' Parameters for Grade 4 Form C and Form A Common Items

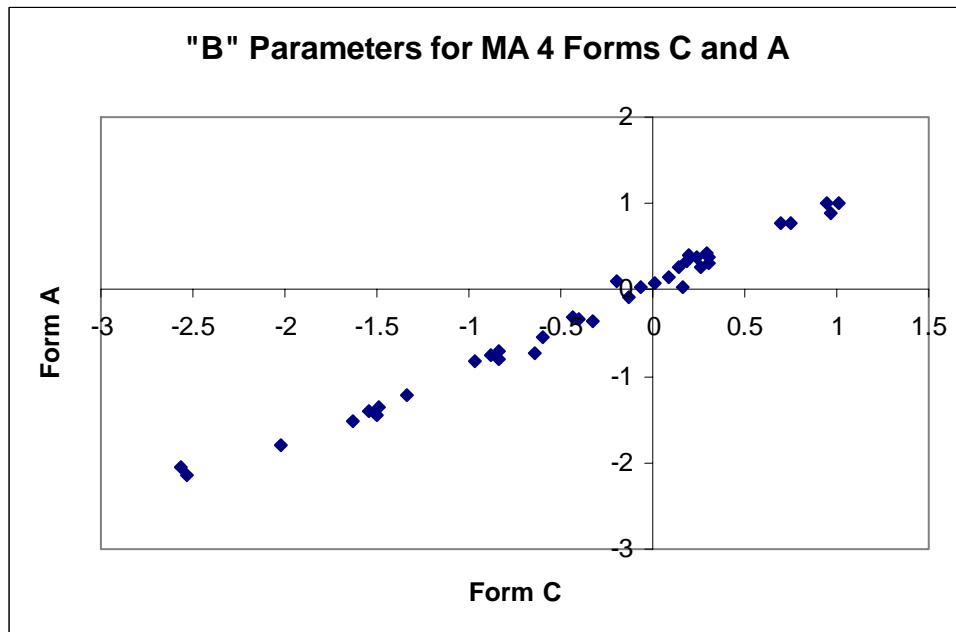
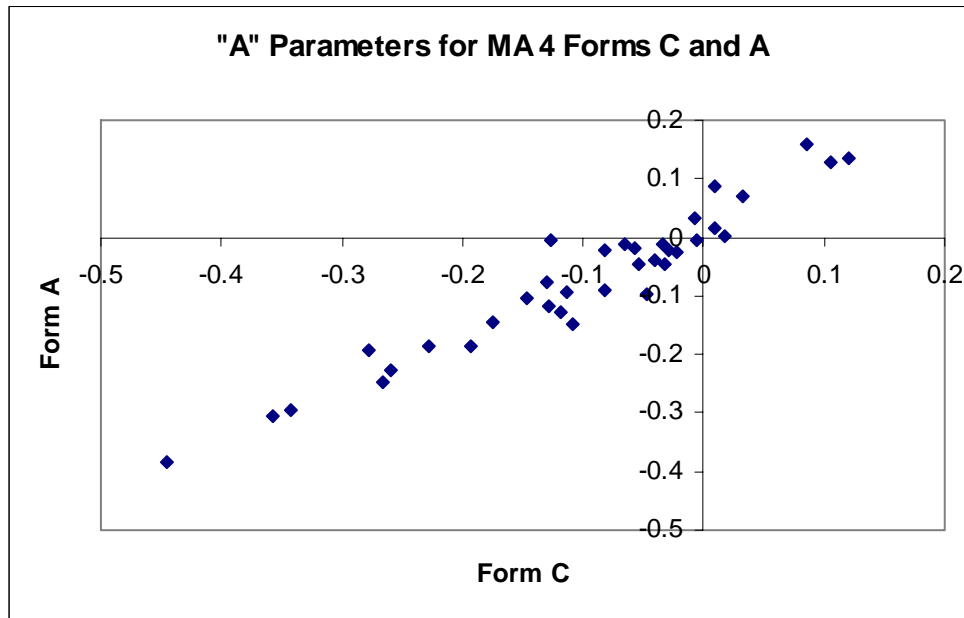


Figure F3  
 'A' and 'B' Parameters for Grade 4 Form C and Form B Common Items

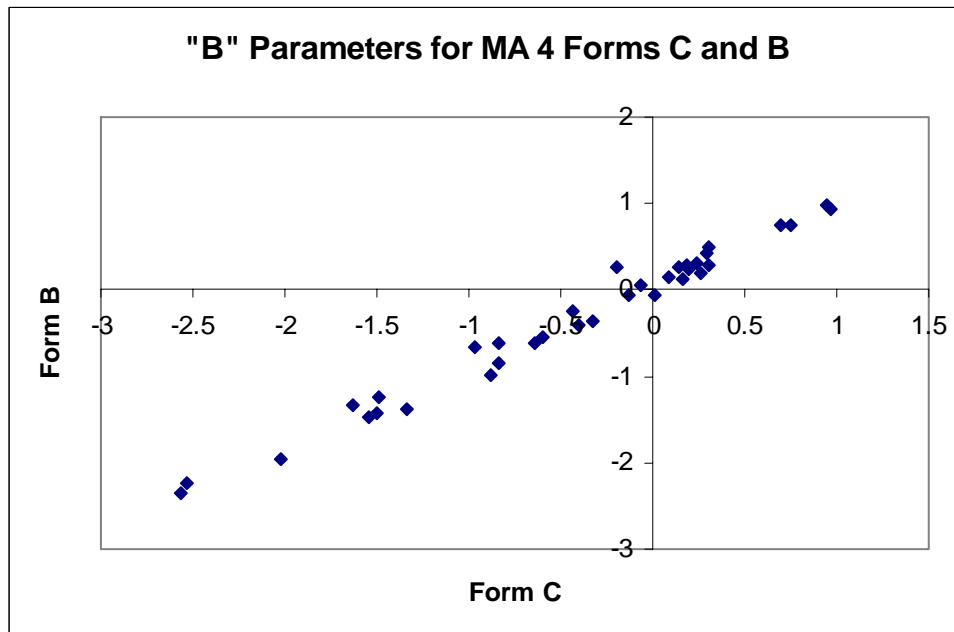
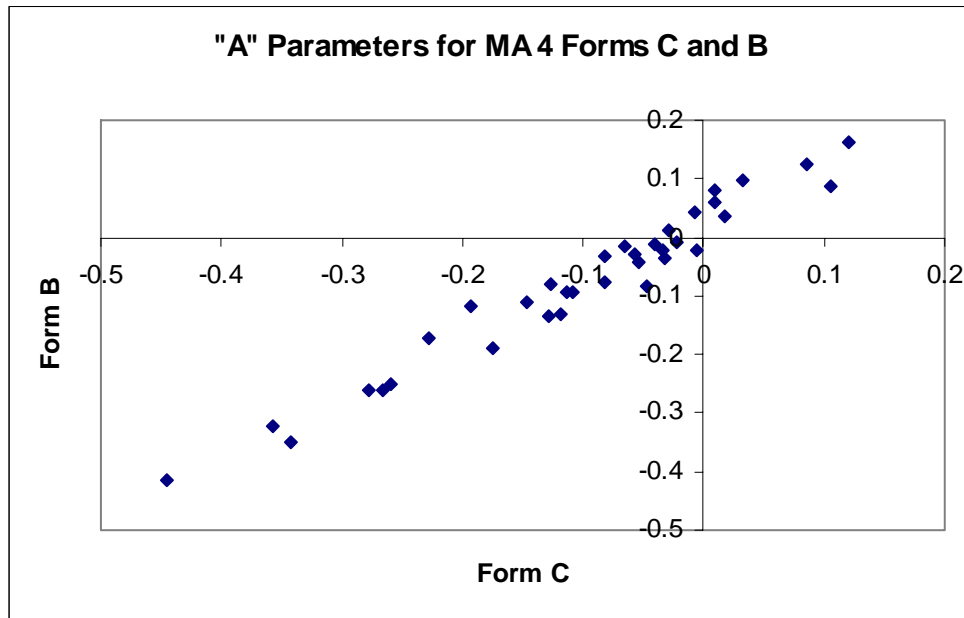


Figure F4  
 'A' and 'B' Parameters for Grade 4 Form C and Form D Common Items

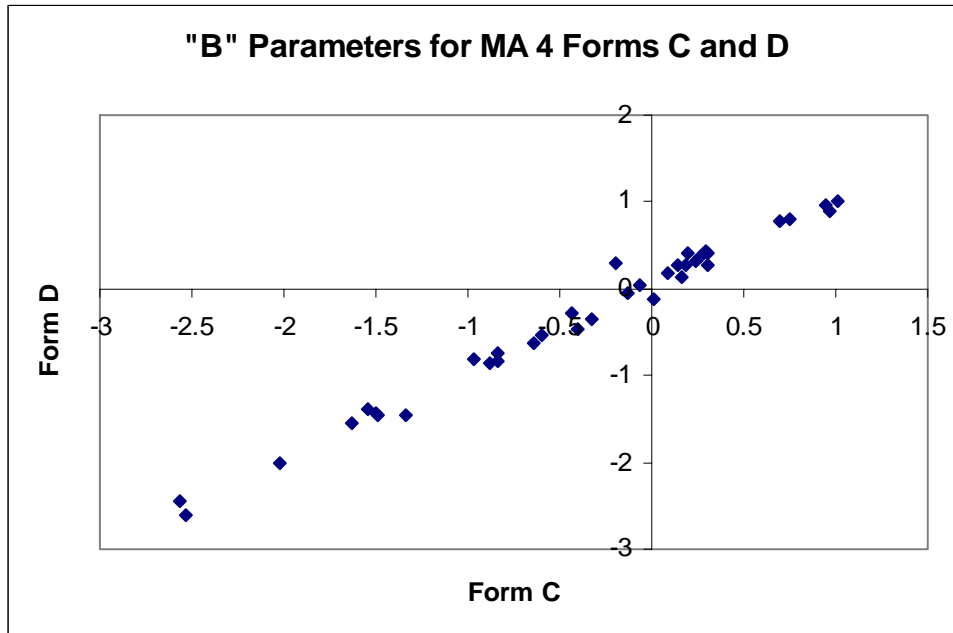
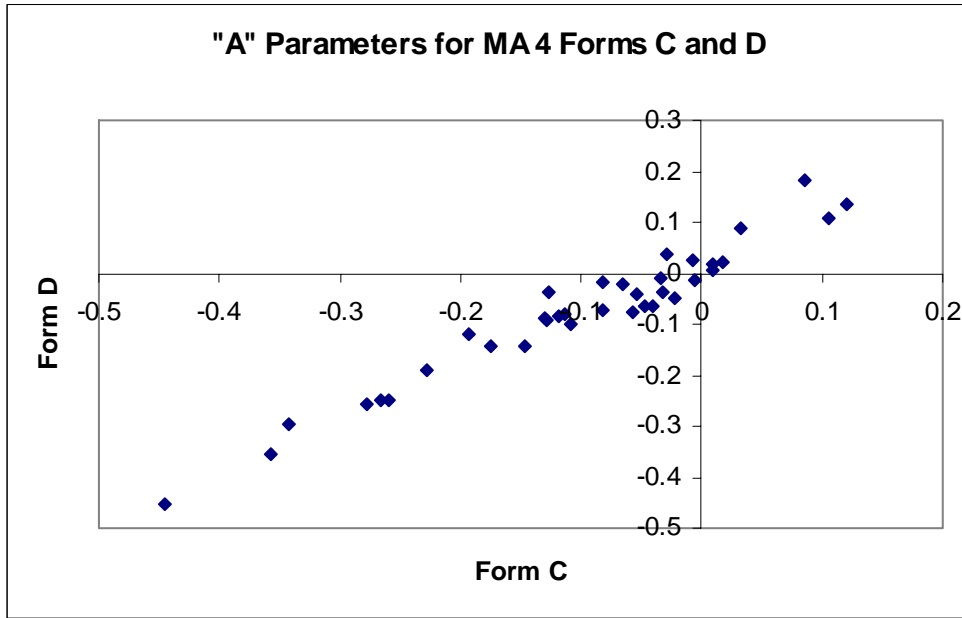


Figure F5  
 'A' and 'B' Parameters for Grade 4 Form C and Form E Common Items

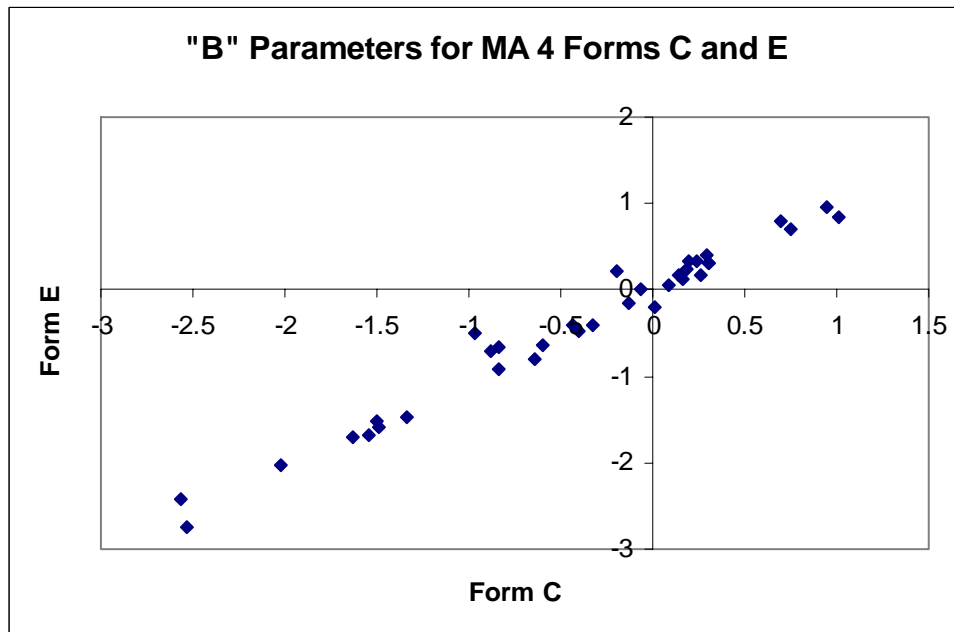
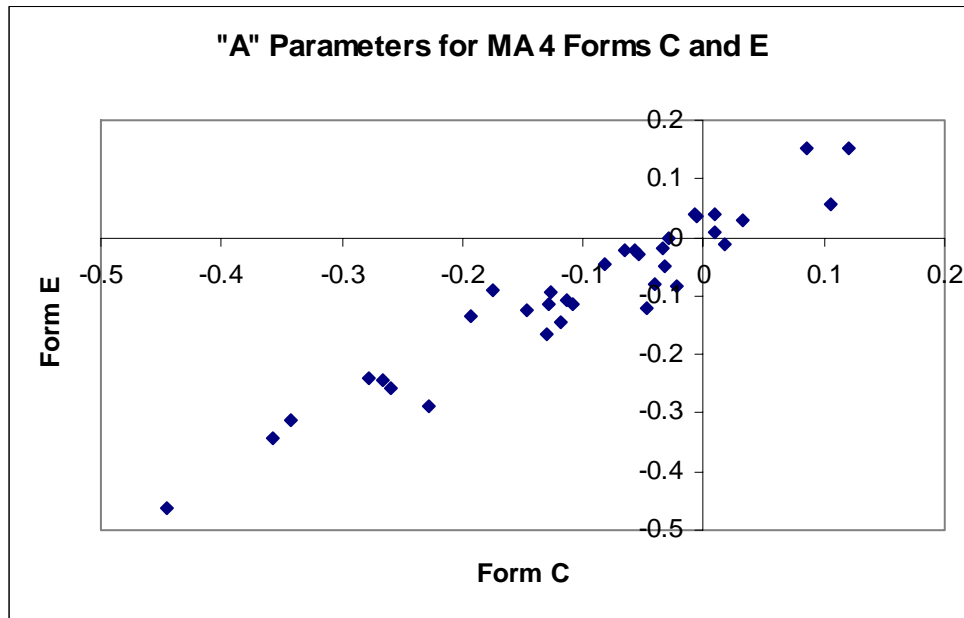




Figure F6  
 'A' and 'B' Parameters for Grade 4 Form C and Form F Common Items

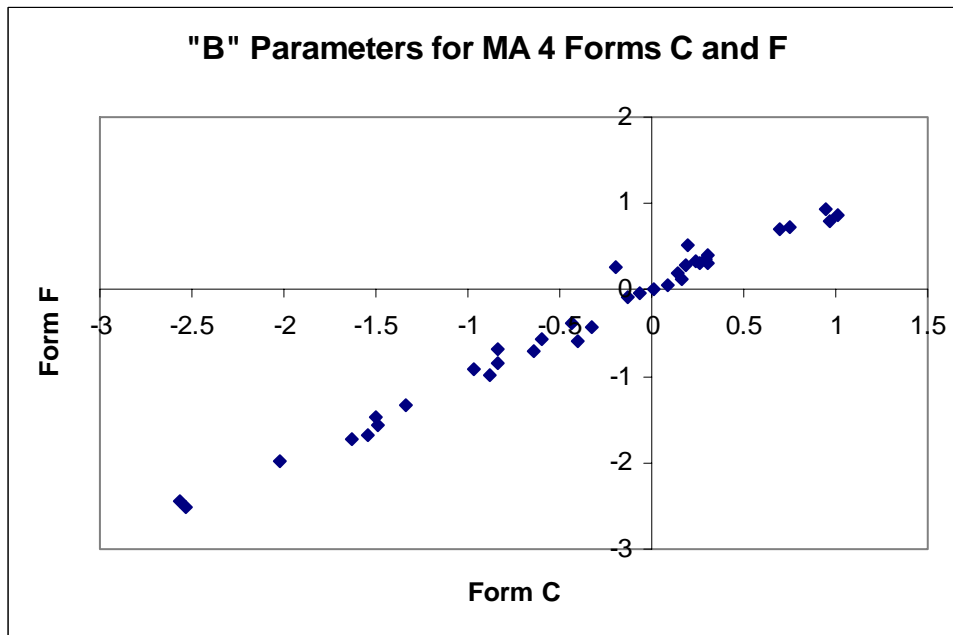
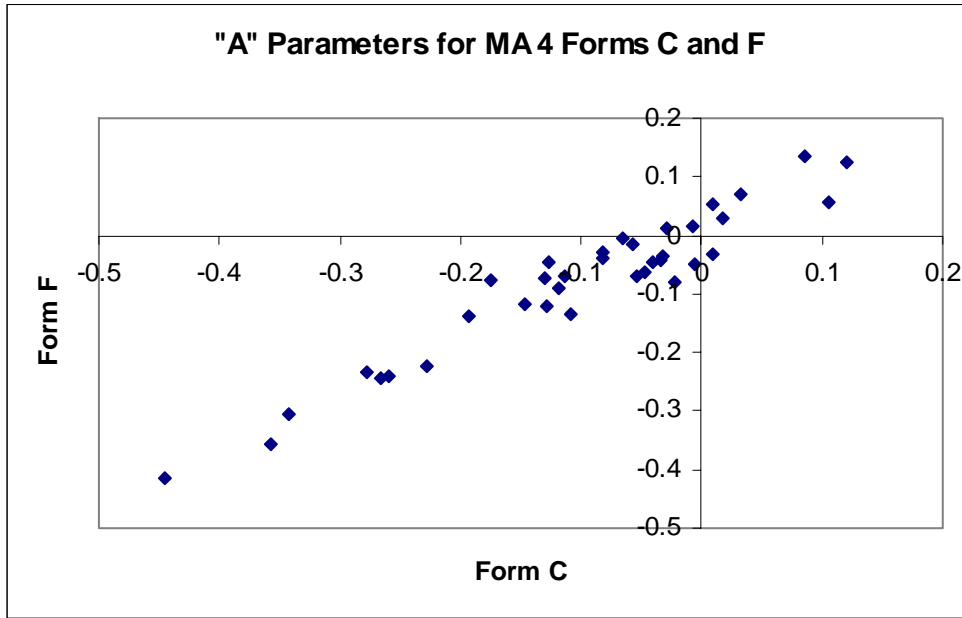


Figure F7  
 'A' and 'B' Parameters for Grade 5 Form 1 and Form 2 Common Items

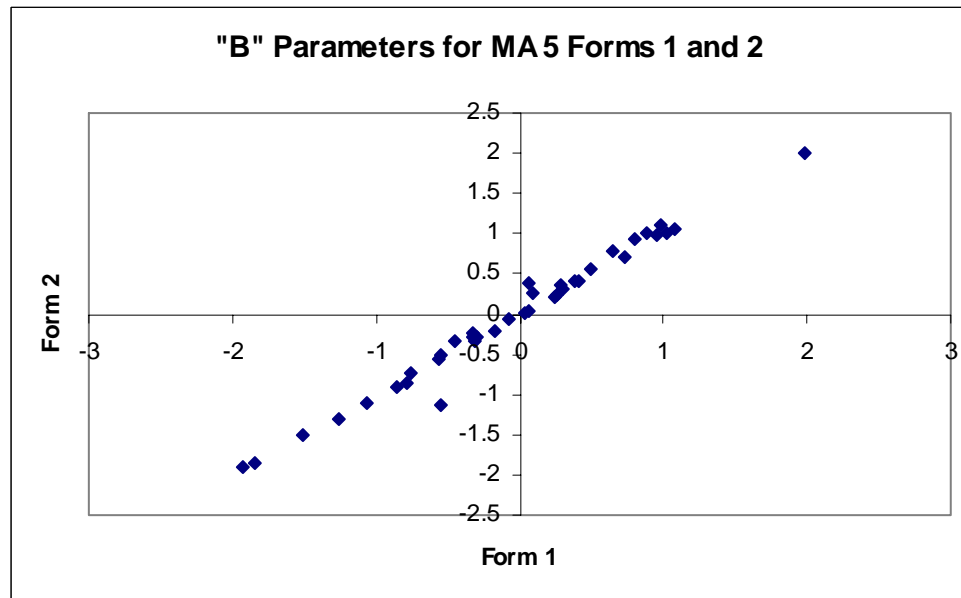
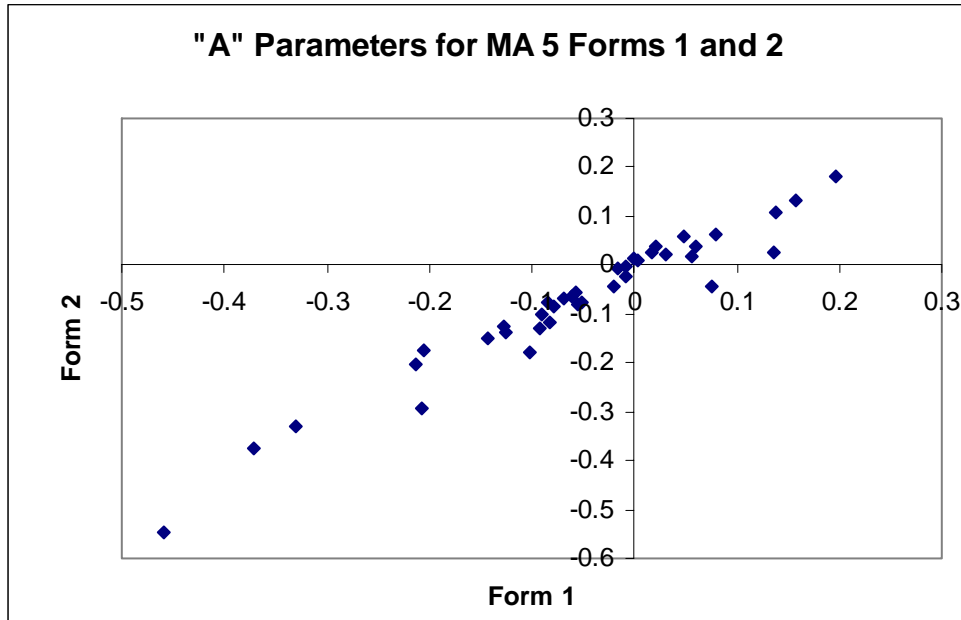


Figure F8  
 'A' and 'B' Parameters for Grade 6 Form C and Form A Common Items

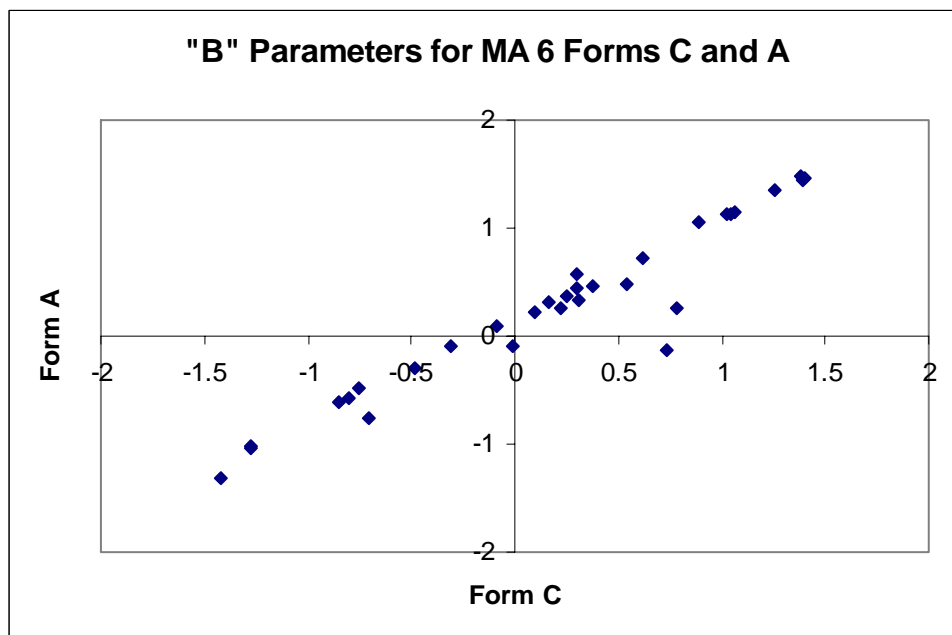
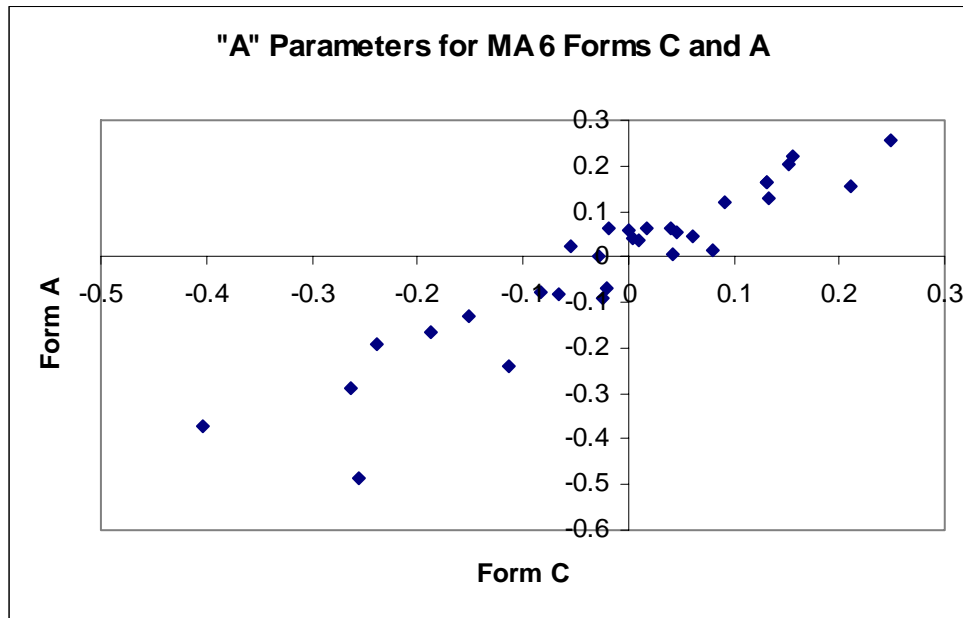


Figure F9  
 'A' and 'B' Parameters for Grade 6 Form C and Form B Common Items

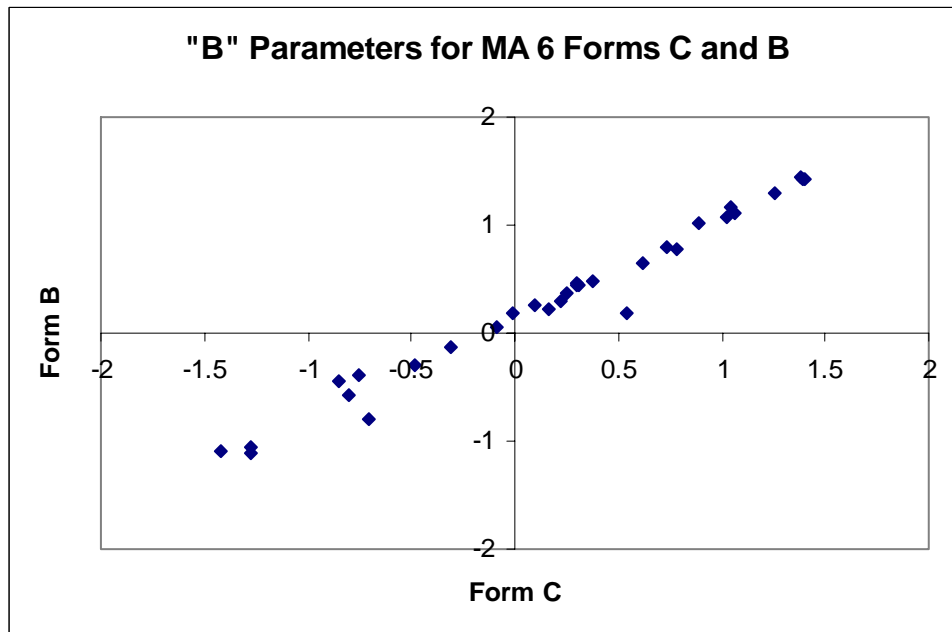
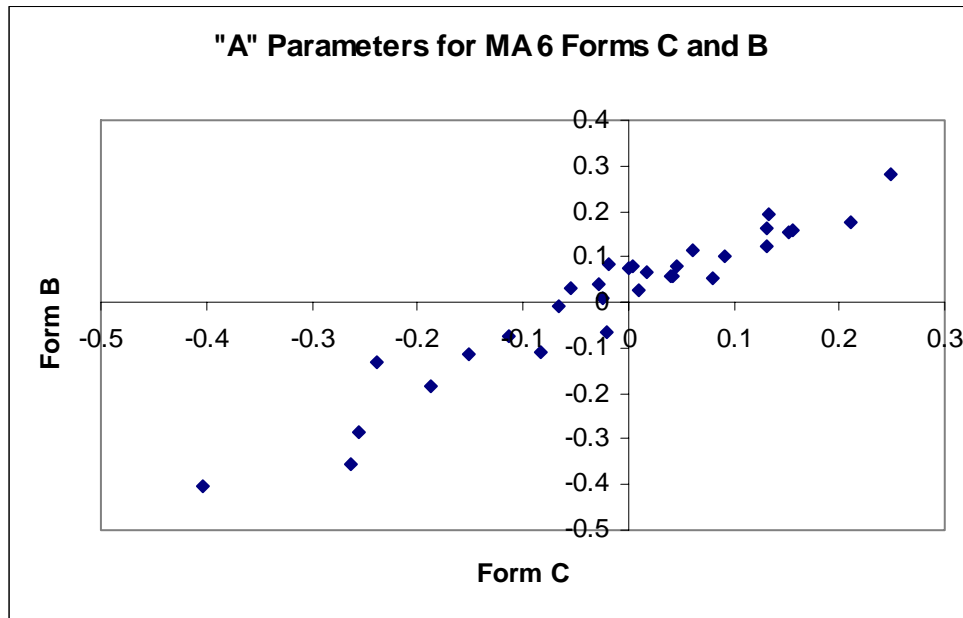


Figure F10  
 'A' and 'B' Parameters for Grade 6 Form C and Form D Common Items

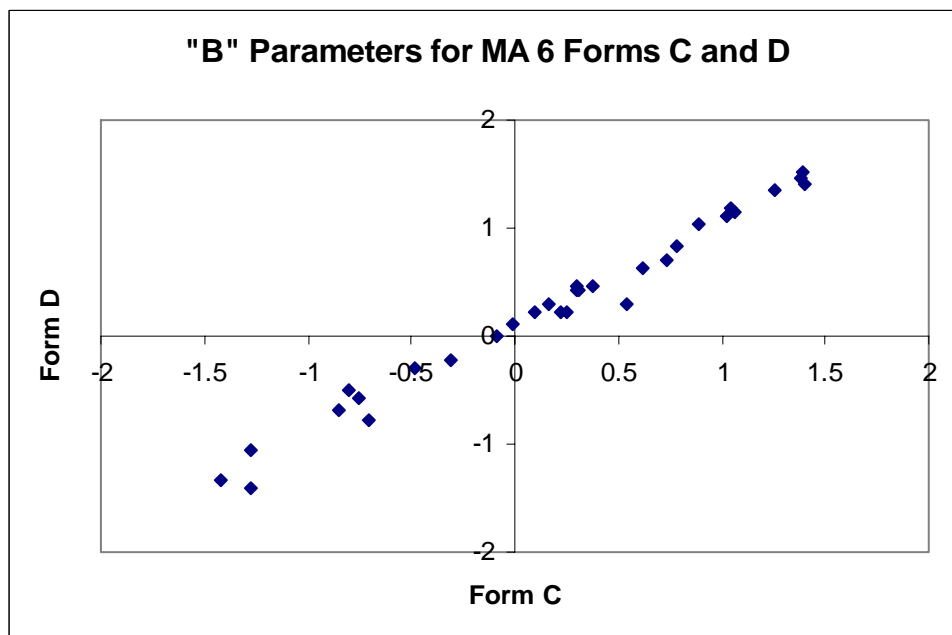
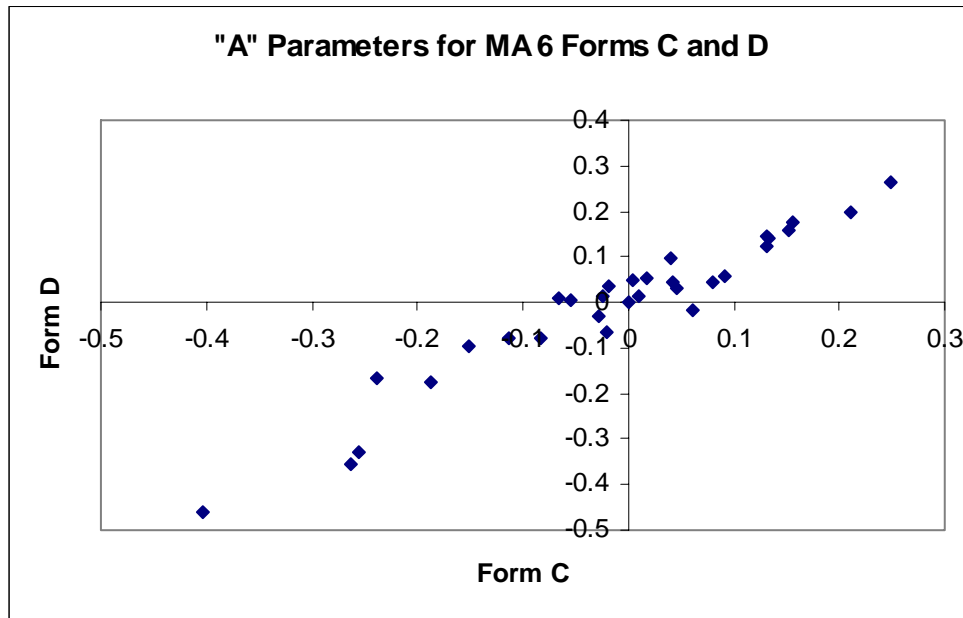


Figure F11  
 'A' and 'B' Parameters for Grade 6 Form C and Form E Common Items

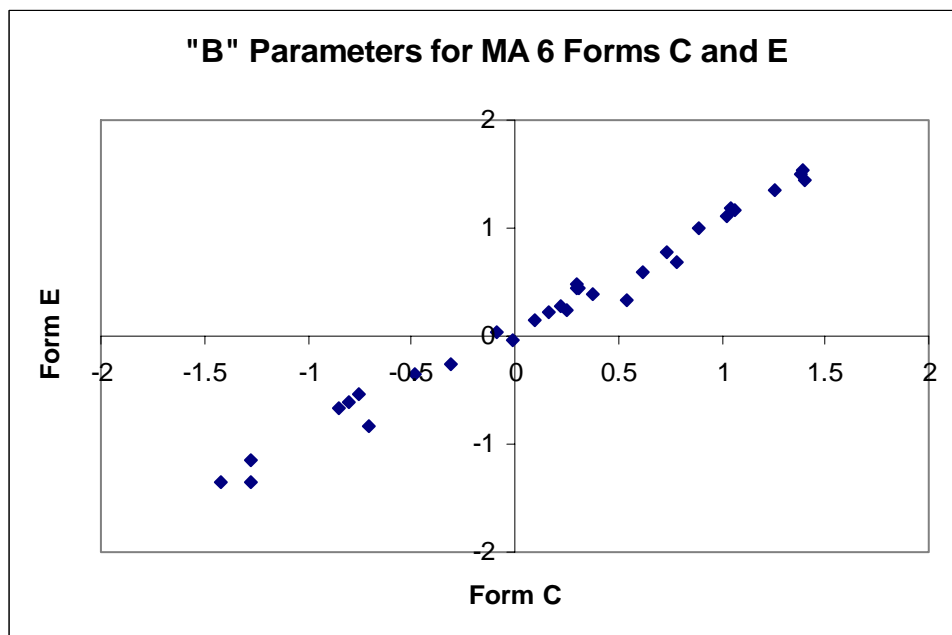
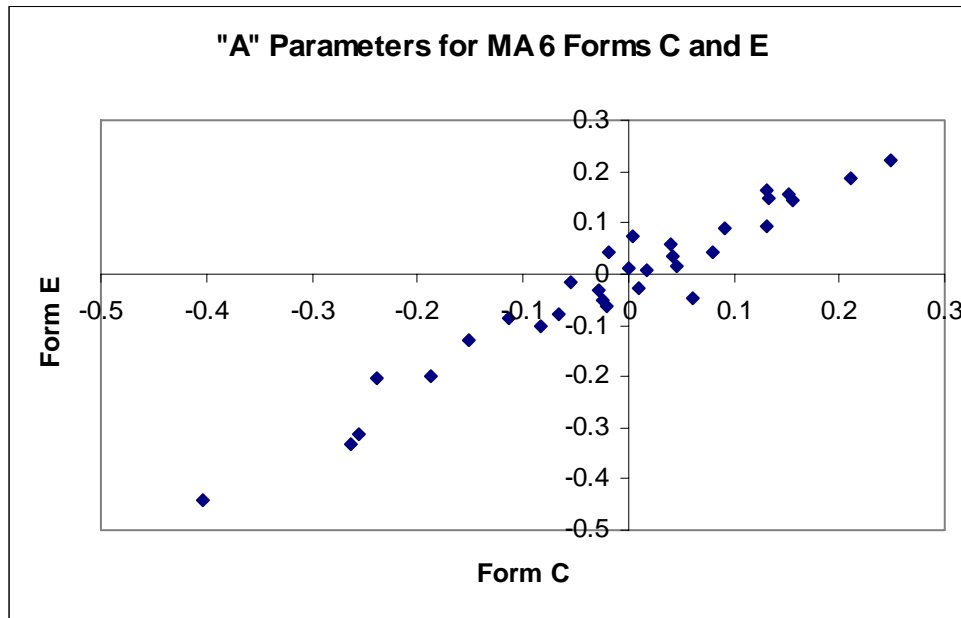


Figure F12  
 'A' and 'B' Parameters for Grade 6 Form C and Form F Common Items

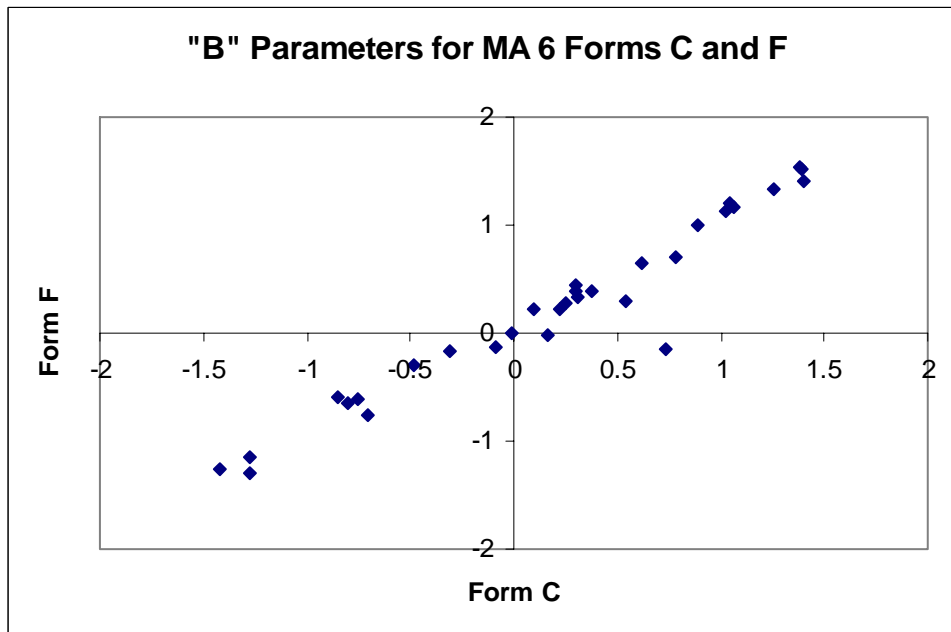
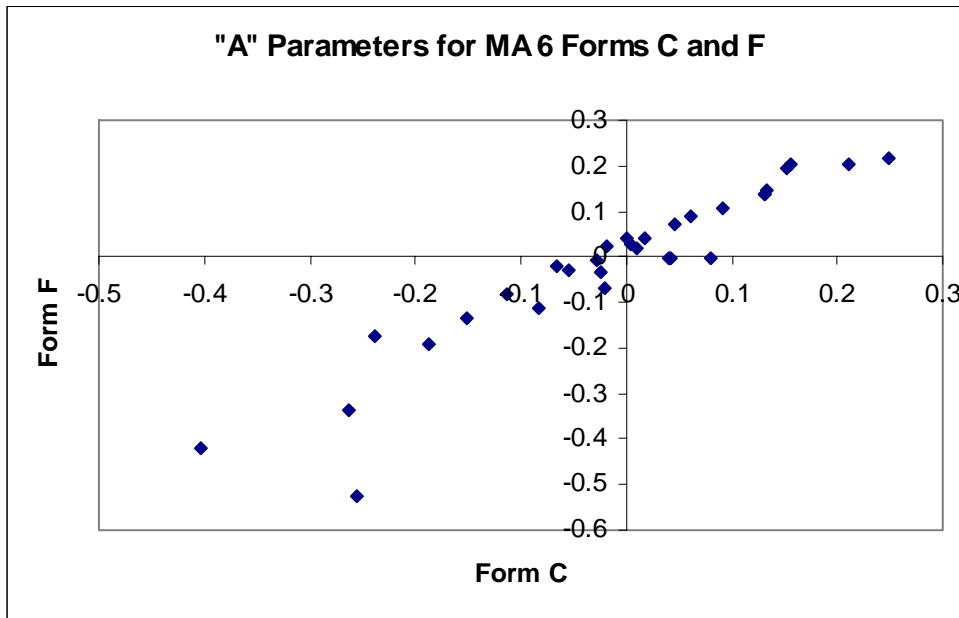


Figure F13  
 'A' and 'B' Parameters for Grade 7 Form A and Form B Common Items

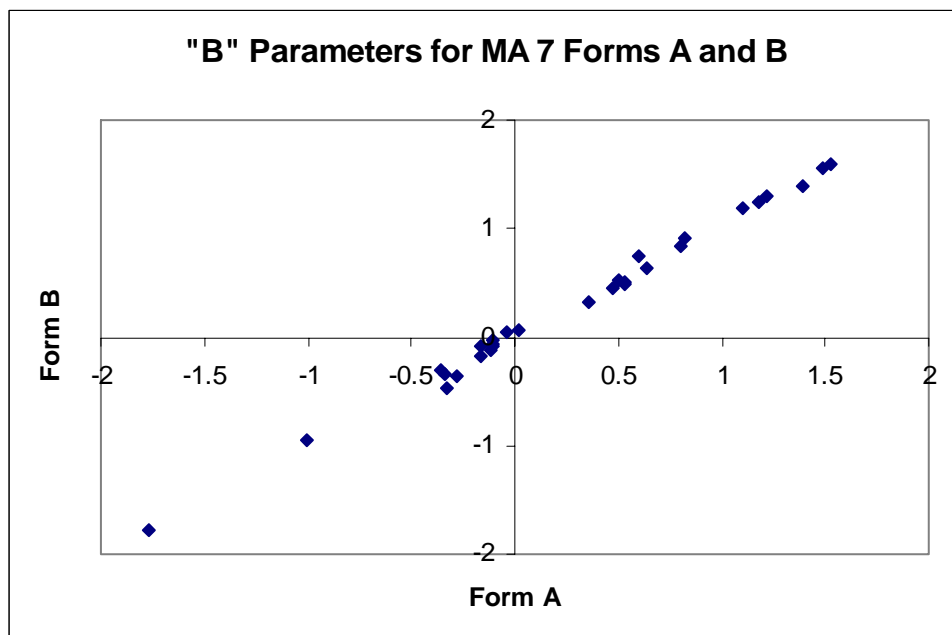
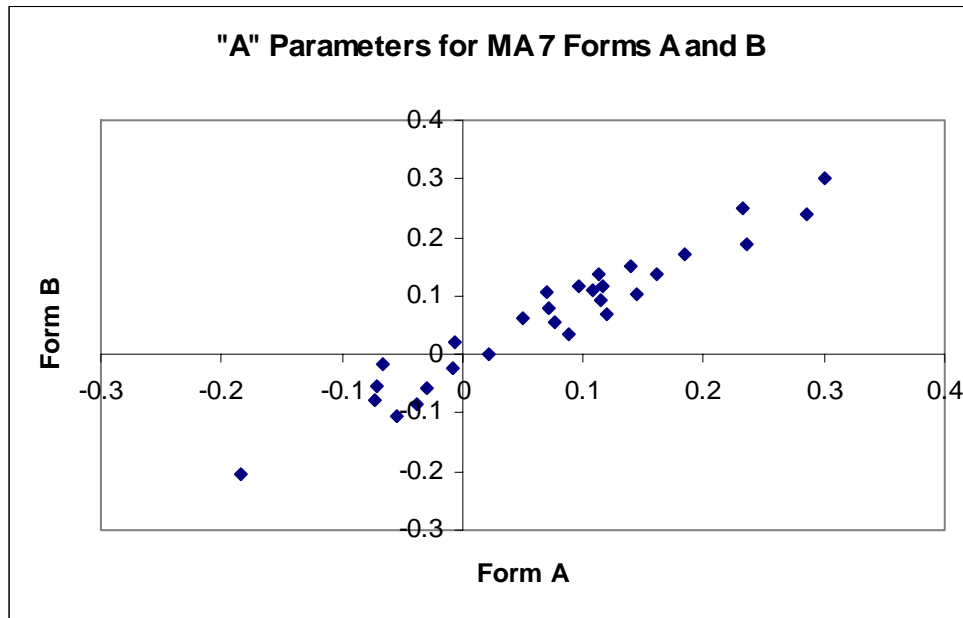




Figure F14  
 'A' and 'B' Parameters for Grade 7 Form A and Form C Common Items

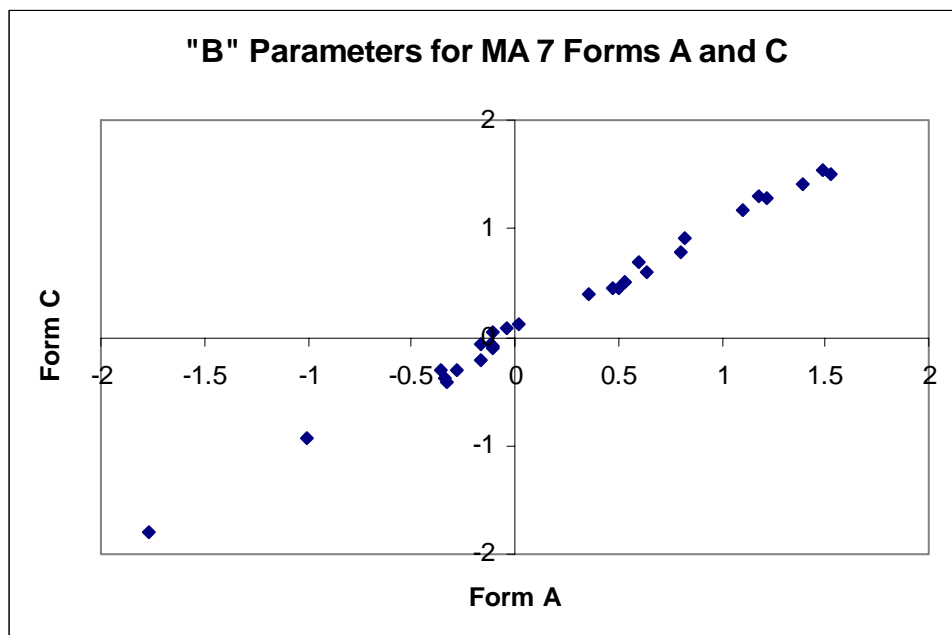
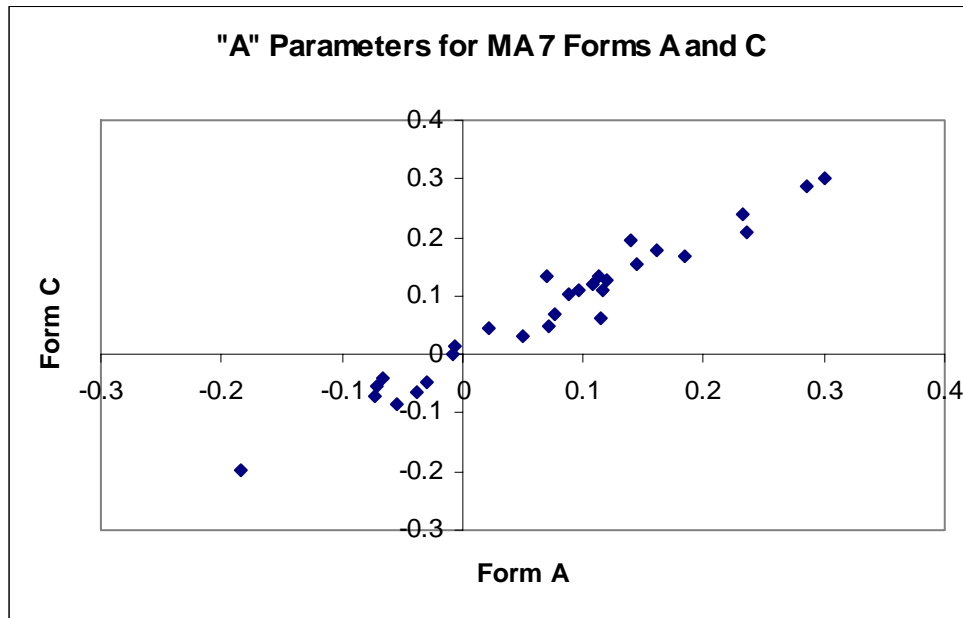


Figure F15  
 'A' and 'B' Parameters for Grade 7 Form A and Form D Common Items

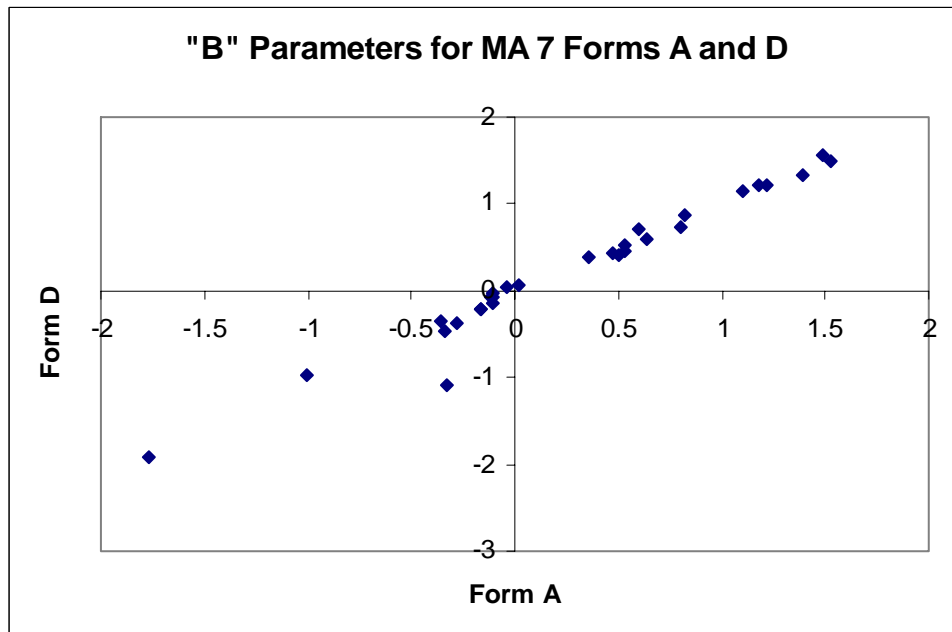
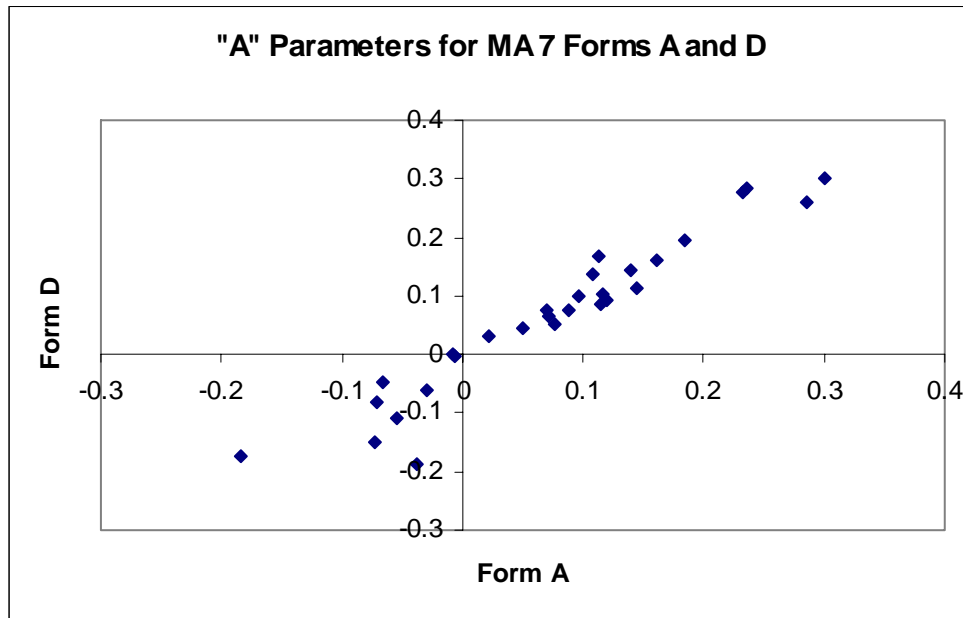


Figure F16  
 'A' and 'B' Parameters for Grade 7 Form A and Form E Common Items

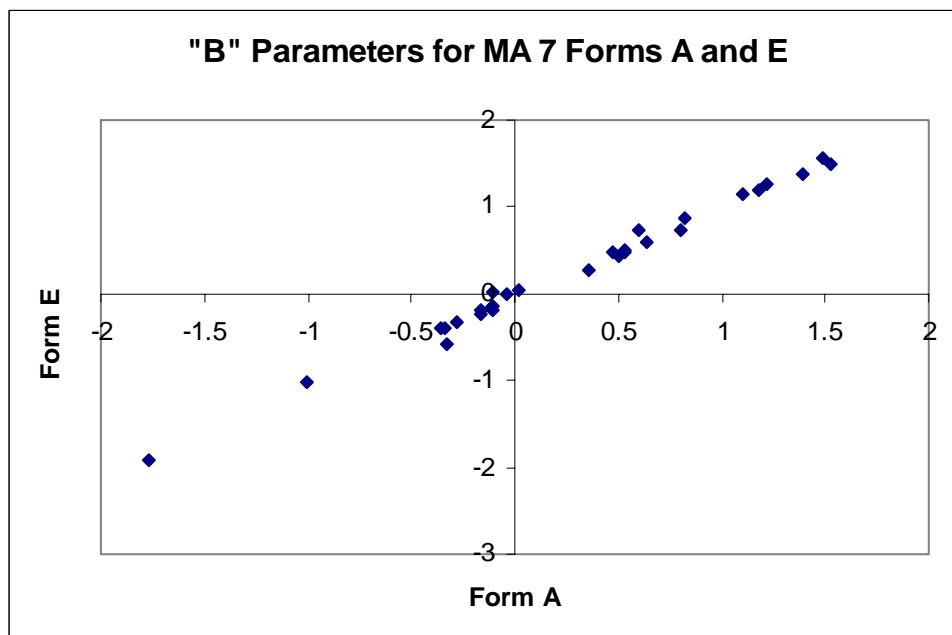
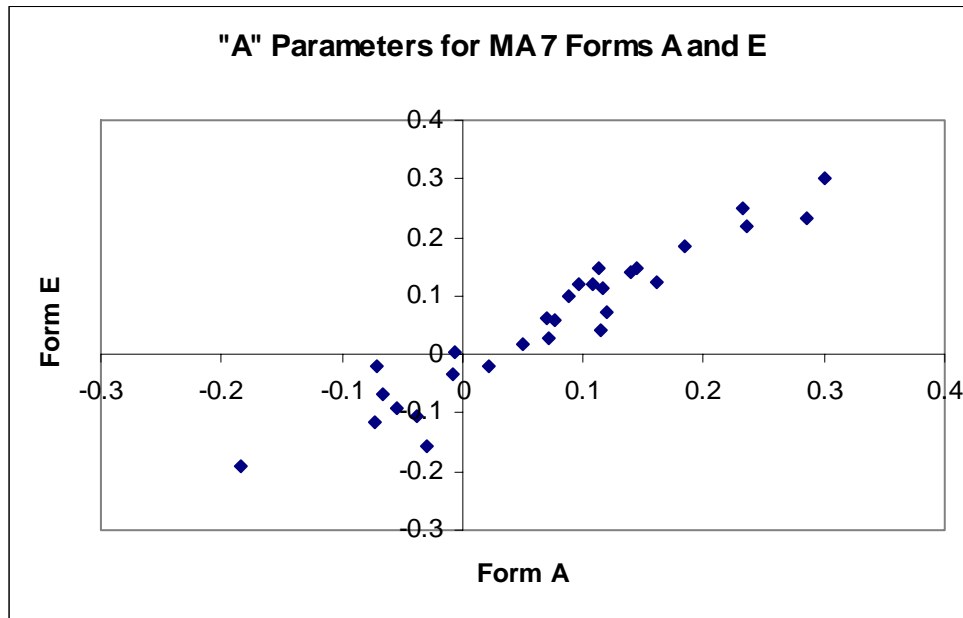


Figure F17  
 'A' and 'B' Parameters for Grade 7 Form A and Form F Common Items

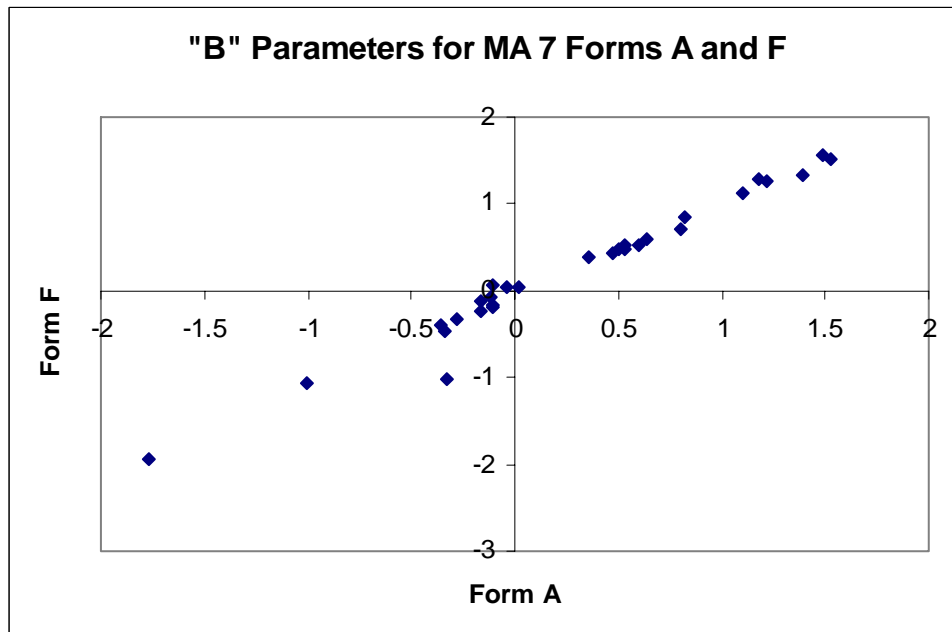
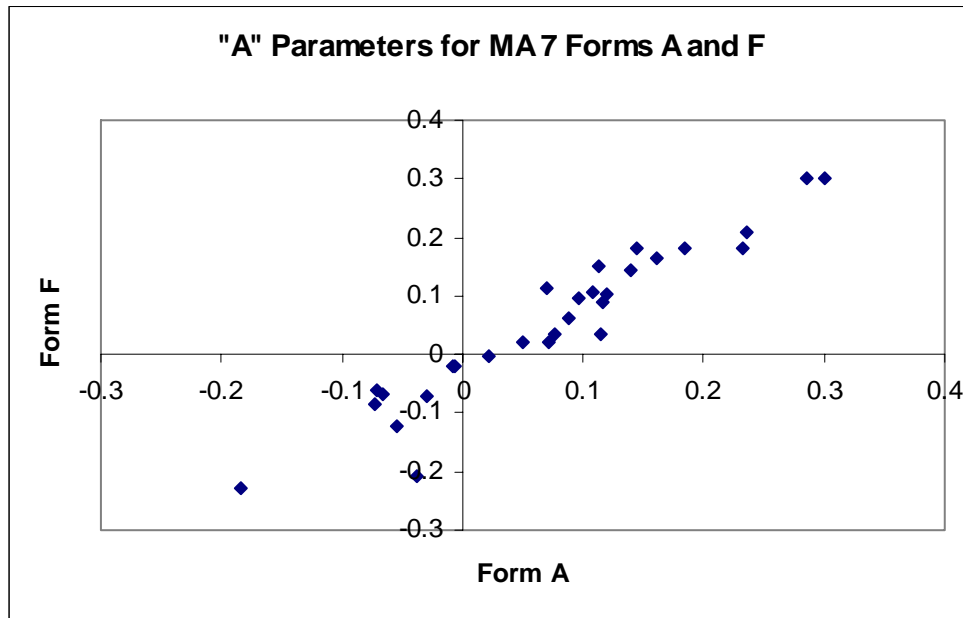


Figure F18  
 'A' and 'B' Parameters for Grade 8 Form 1 and Form 2 Common Items

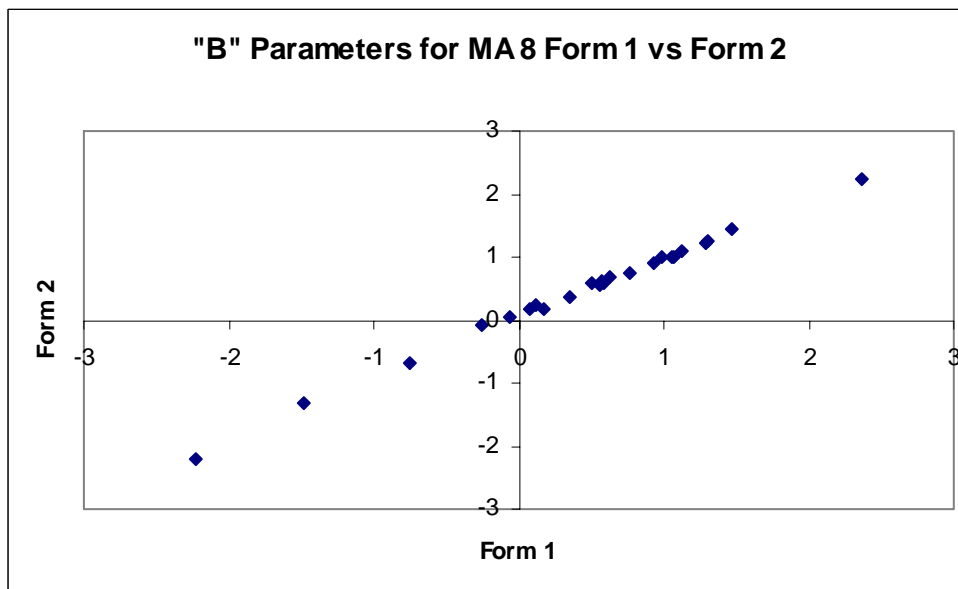
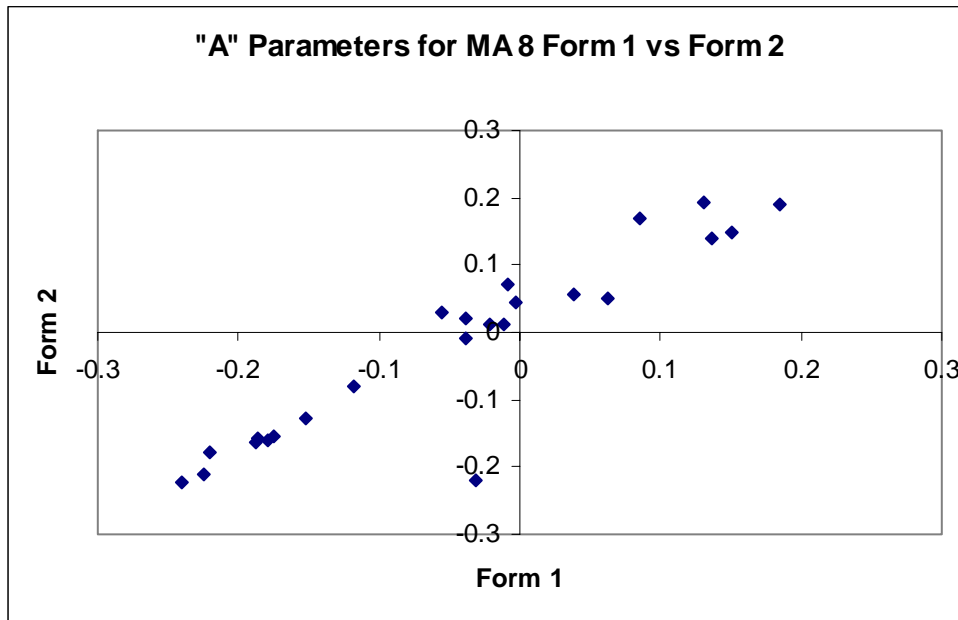


Figure F19  
 'A' and 'B' Parameters for Grade 10 Form 1 and Form 2 Common Items

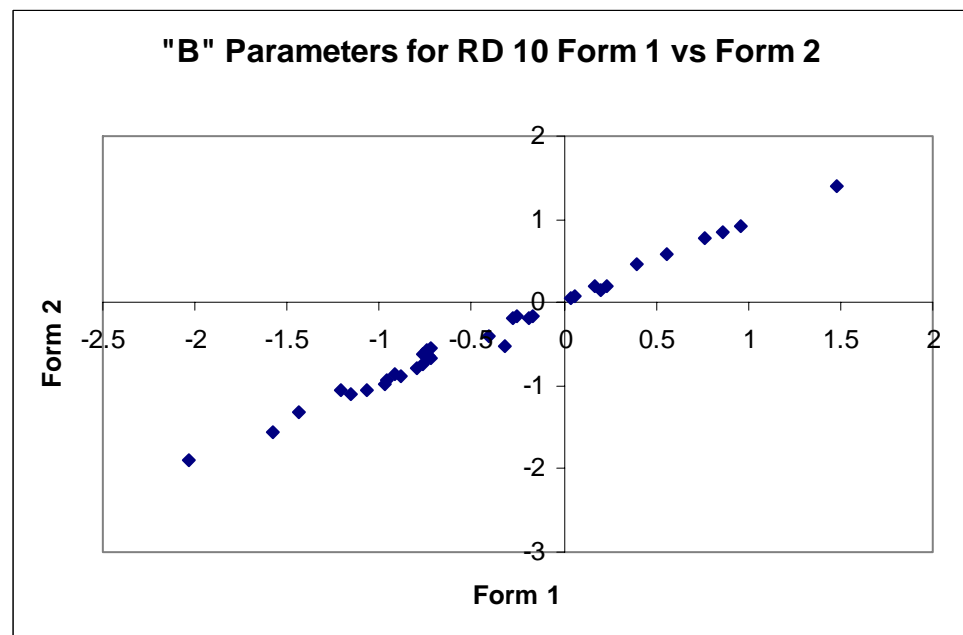
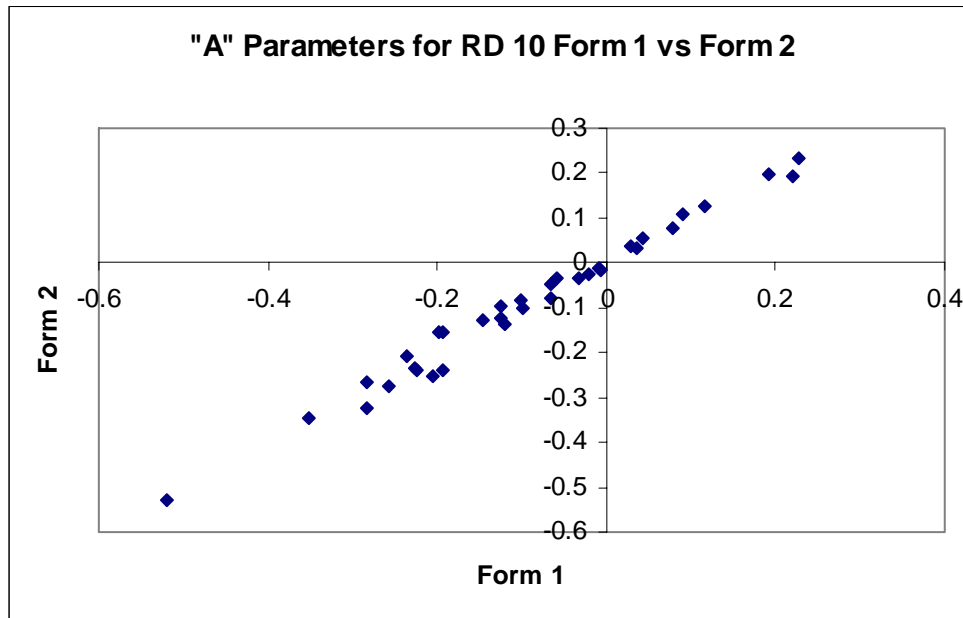


Figure F20  
 'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 3

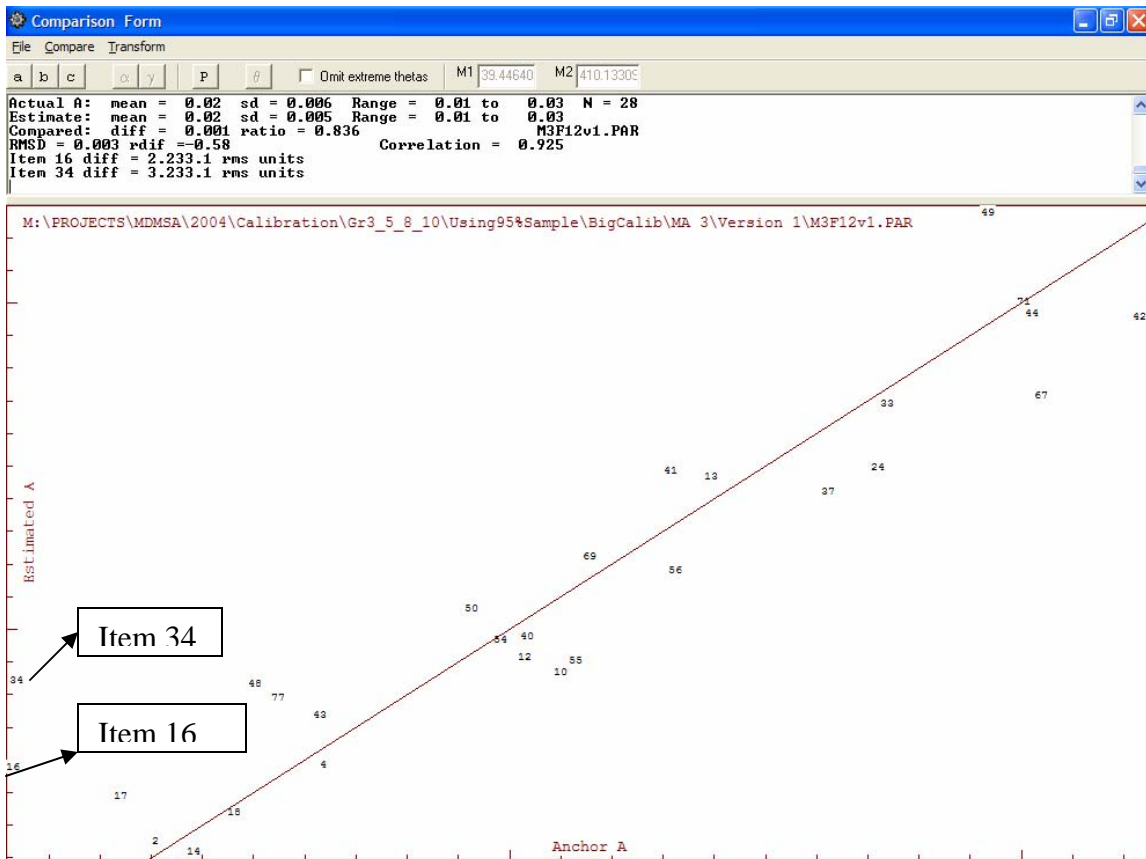


Figure F21  
 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 3

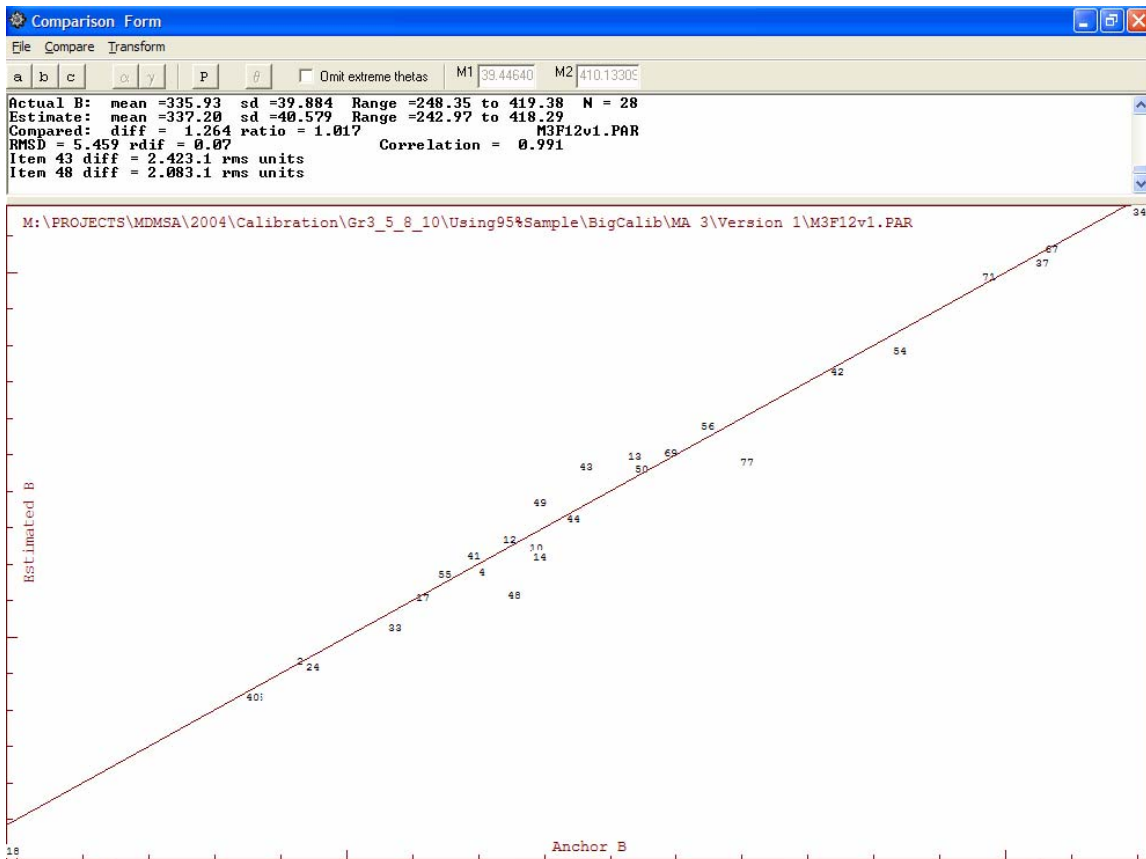




Figure F22  
P-values of 2003 and 2004 Anchor Items for Grade 3

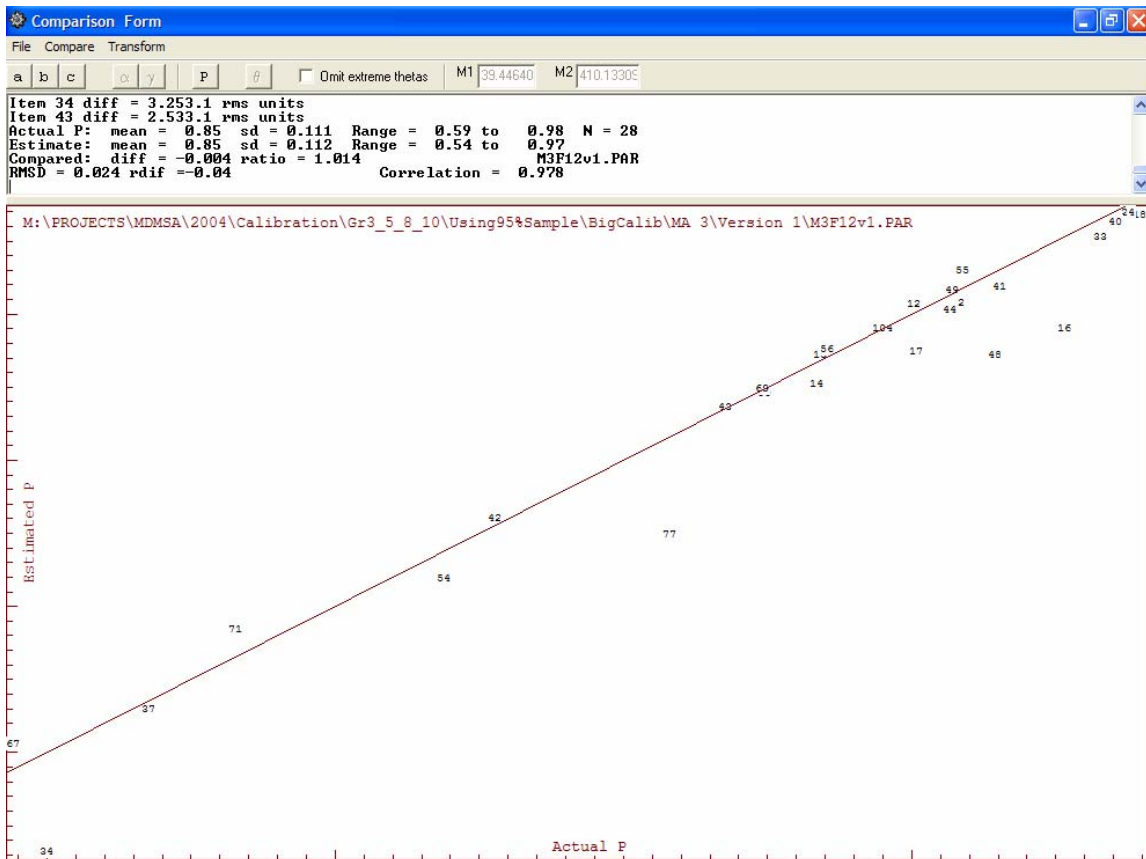


Figure F23  
'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 5

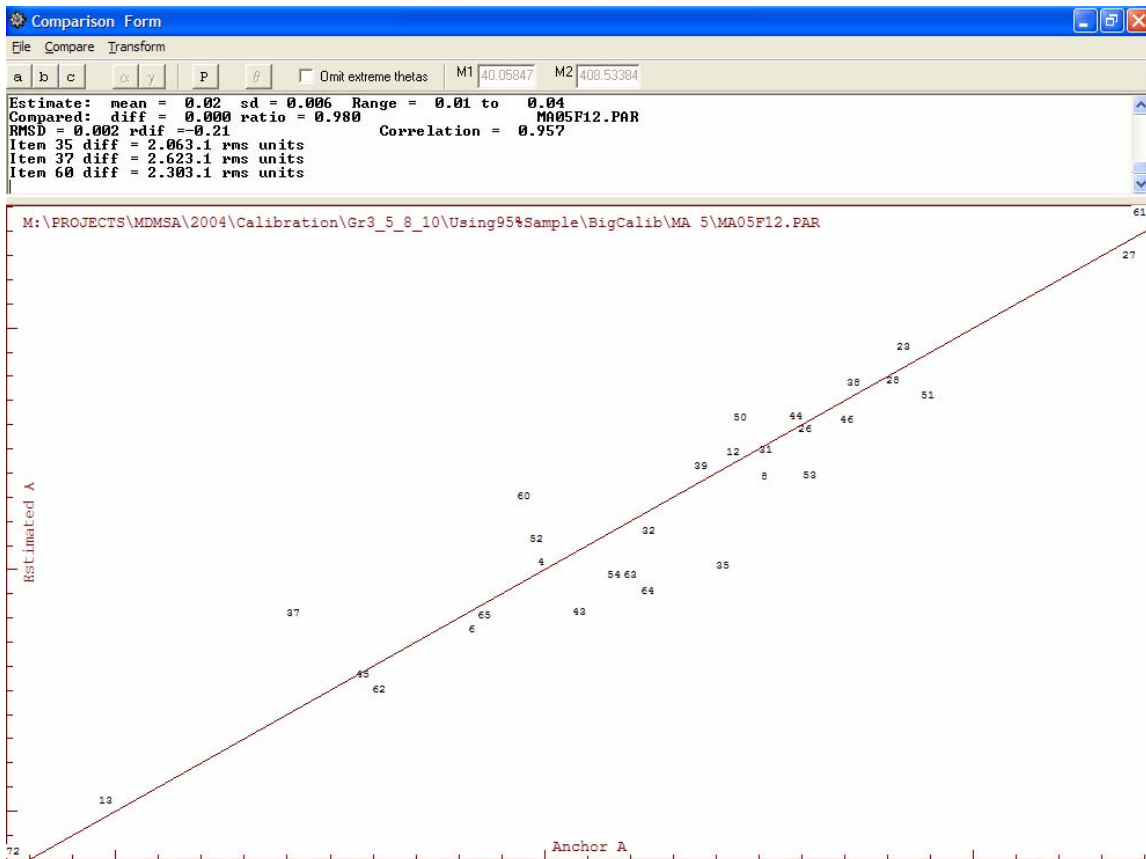


Figure F24  
 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 5

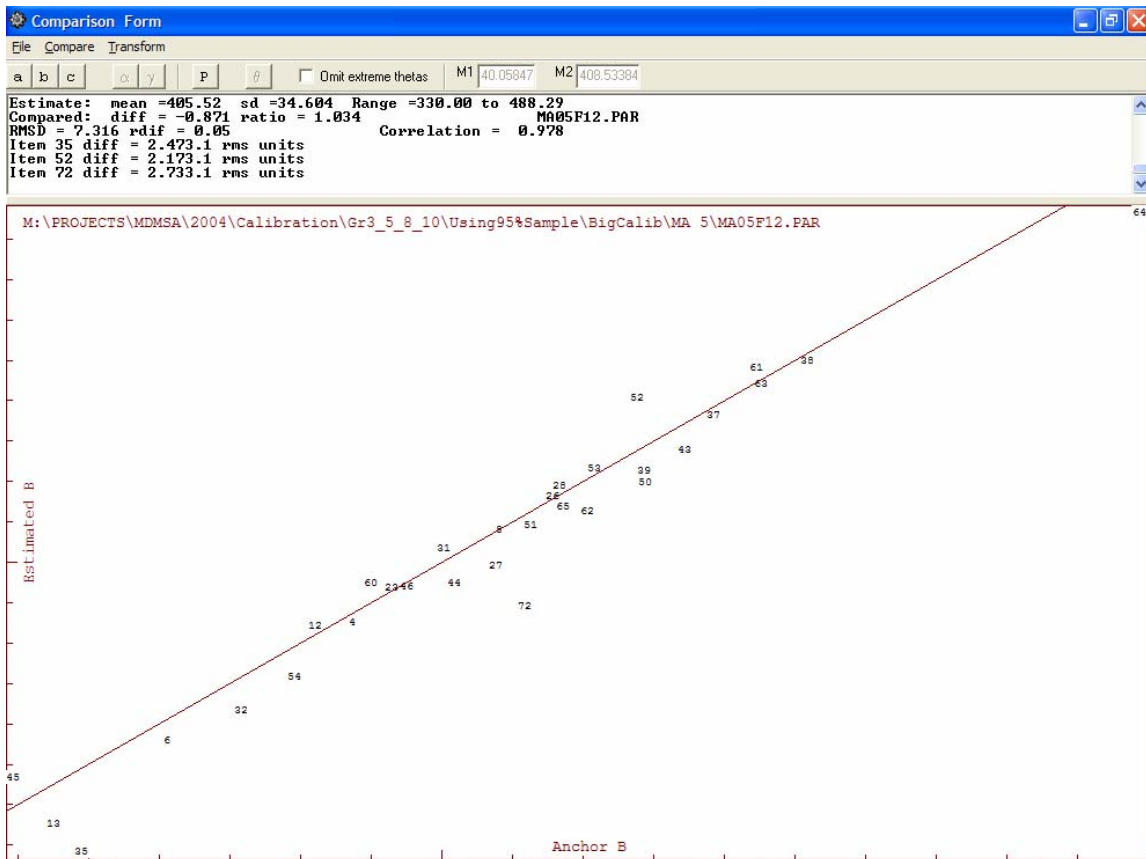


Figure F25  
P-values of 2003 and 2004 Anchor Items for Grade 5

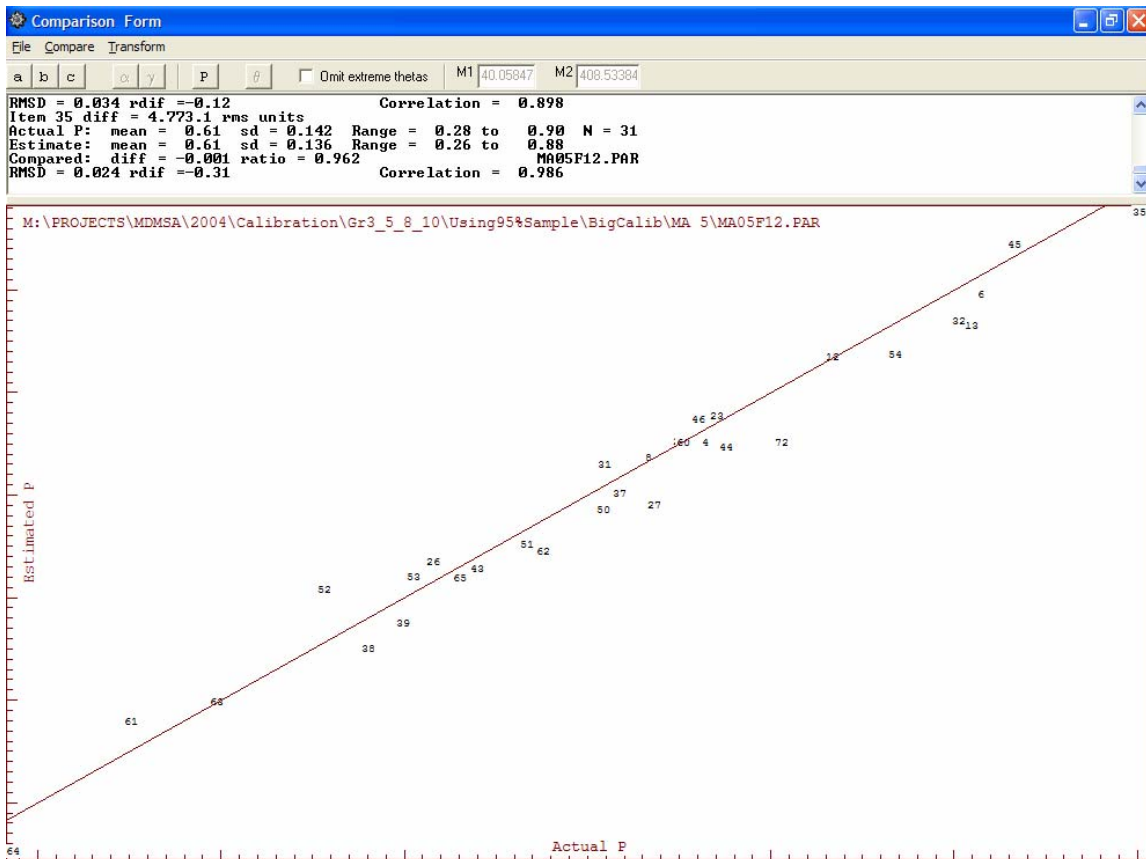


Figure F26  
 'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 8

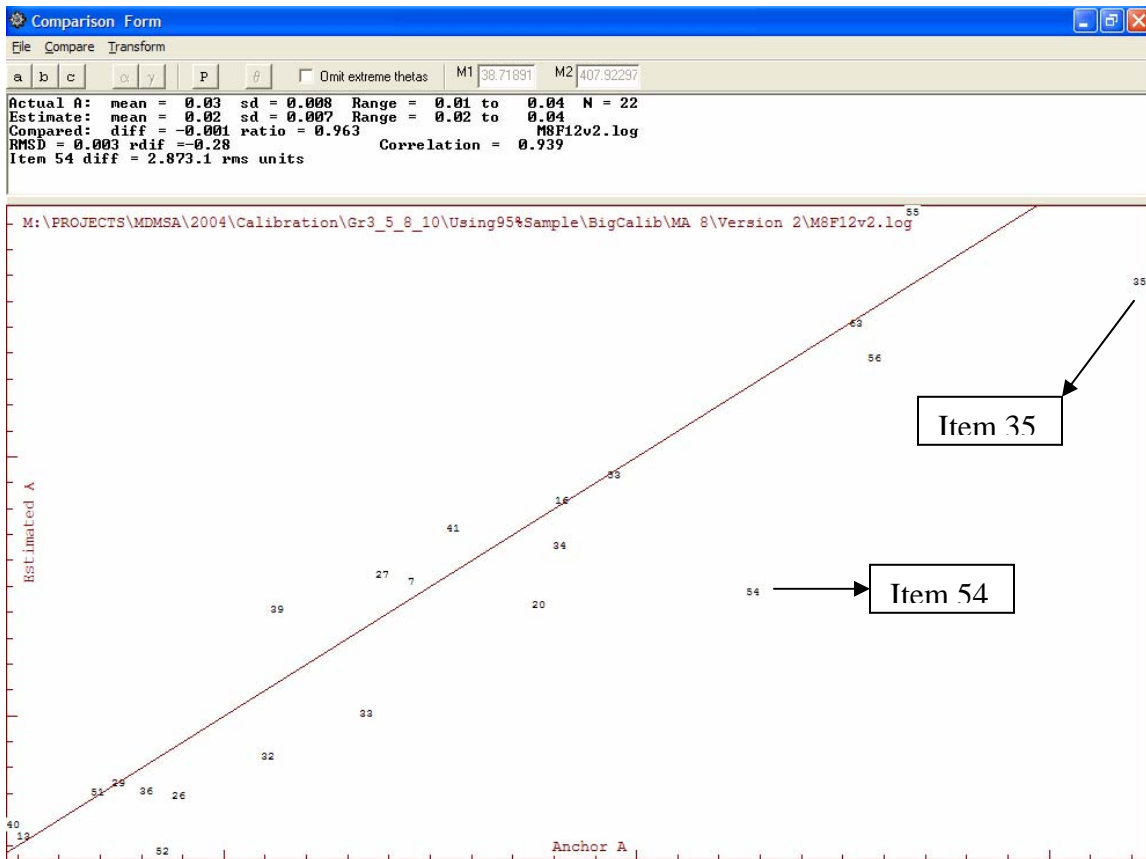


Figure F27  
 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 8

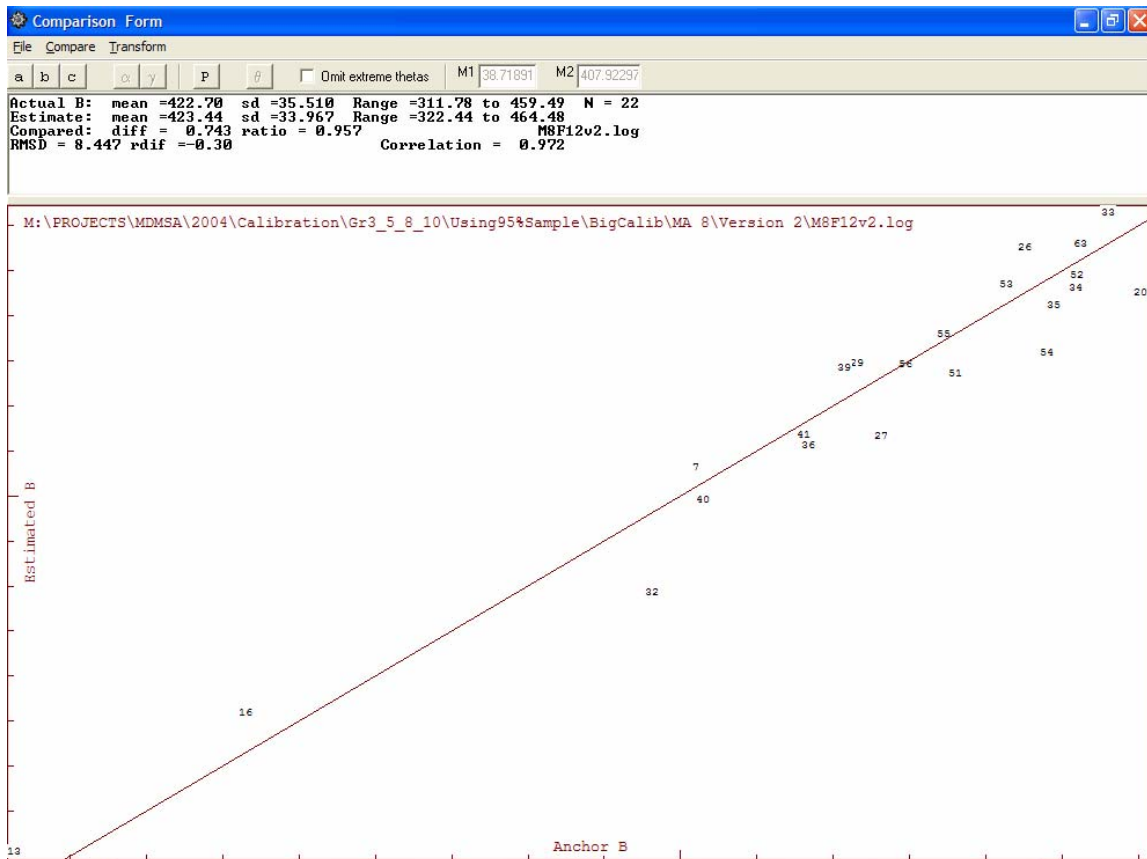


Figure F28  
P-values of 2003 and 2004 Anchor Items for Grade 8

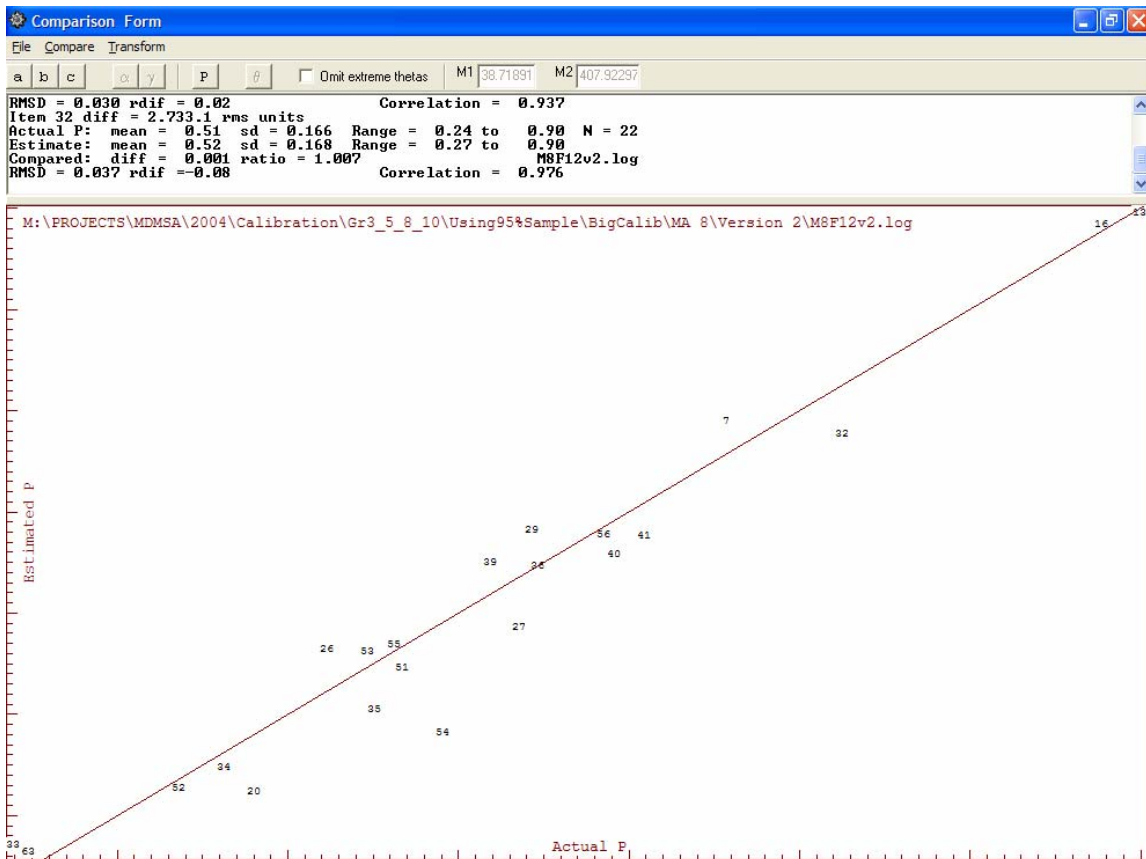


Figure F29  
 'A' Item Parameters of 2003 and 2004 Anchor Items for Grade 10

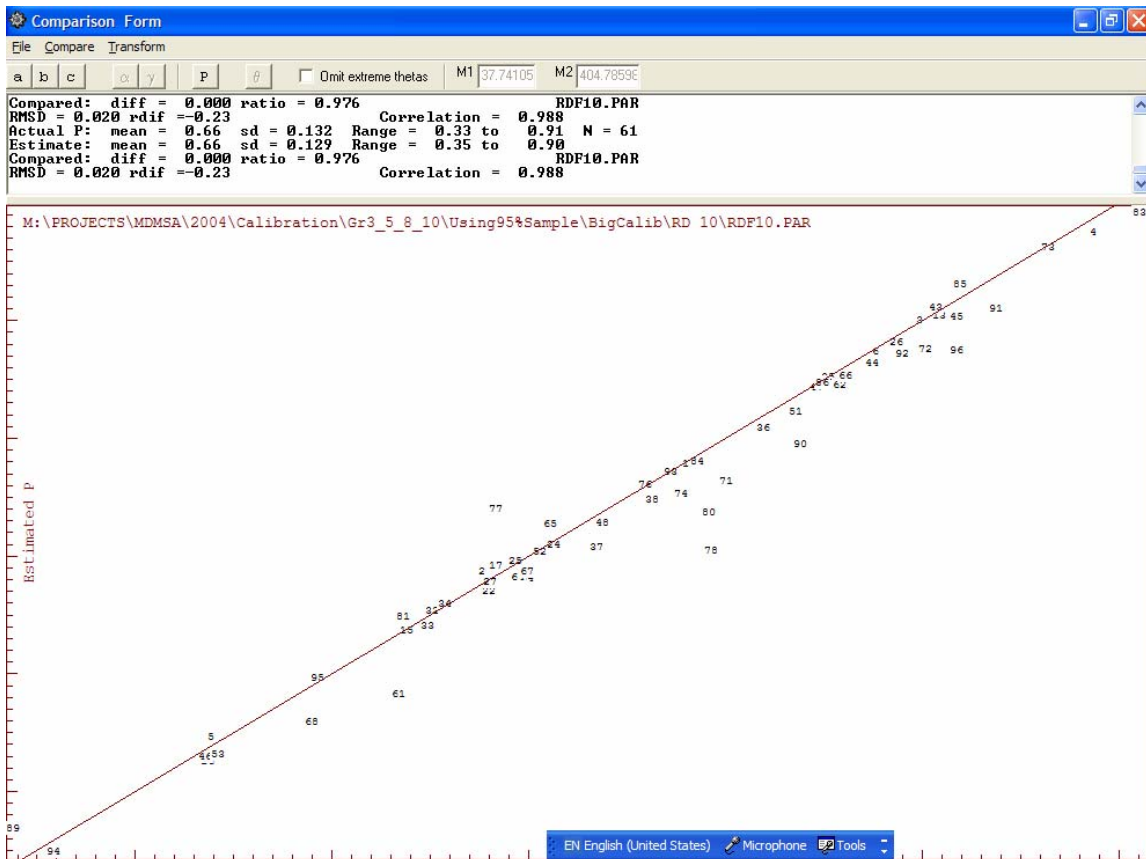




Figure F30  
 'B' Item Parameters of 2003 and 2004 Anchor Items for Grade 10

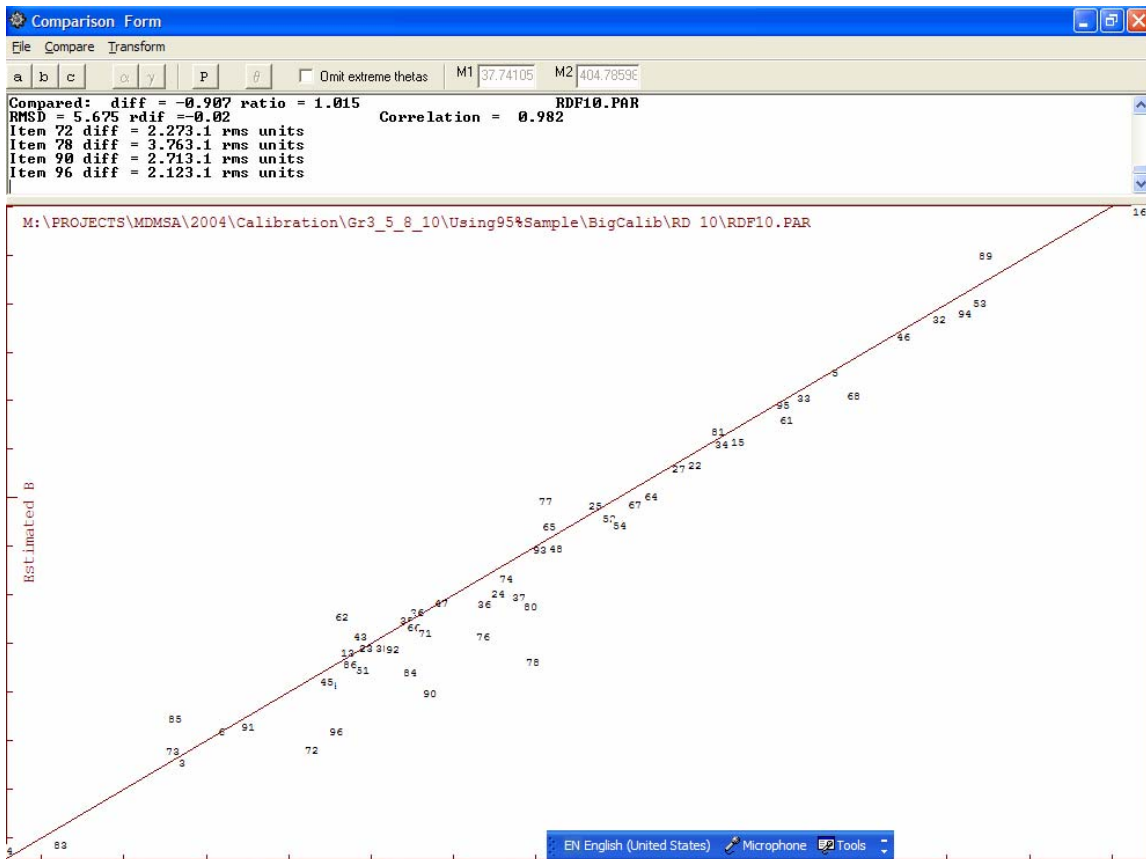


Figure F31  
 P-values of 2003 and 2004 Anchor Items for Grade 10

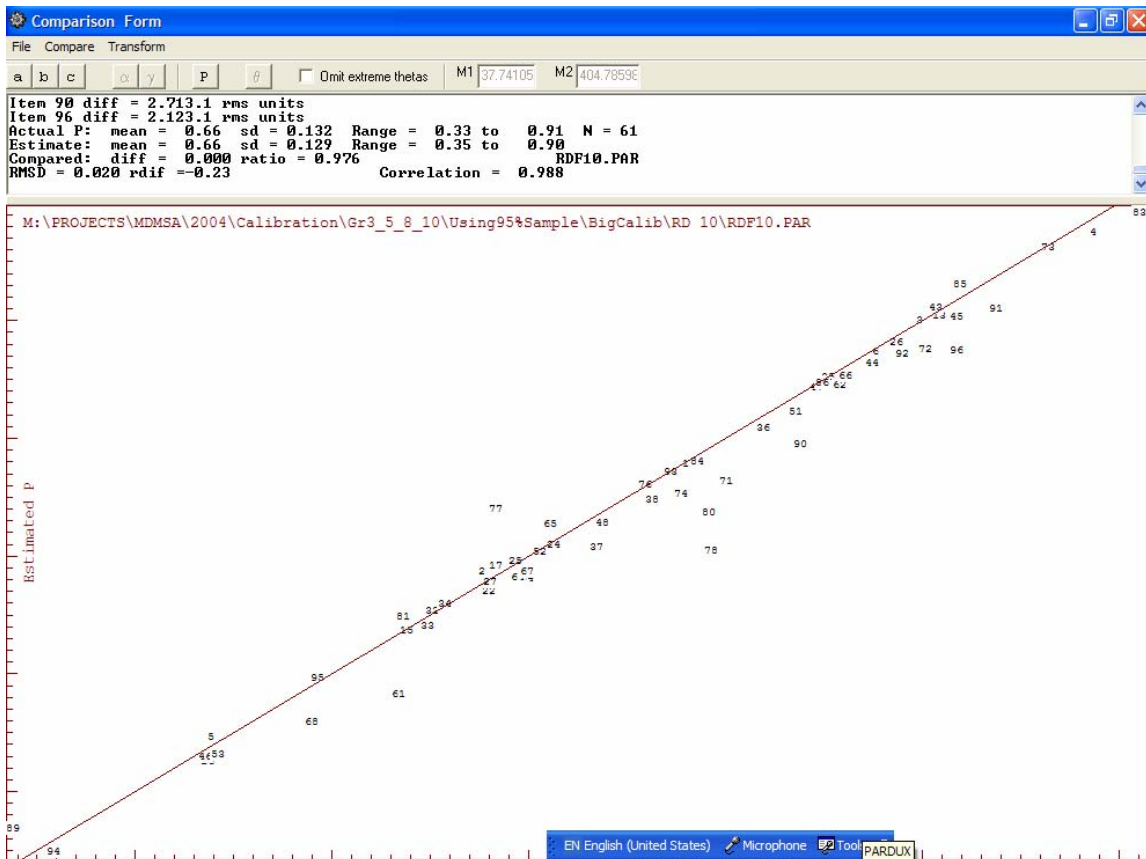


Figure F32  
Final TCC and SEM Curves for Grade 3

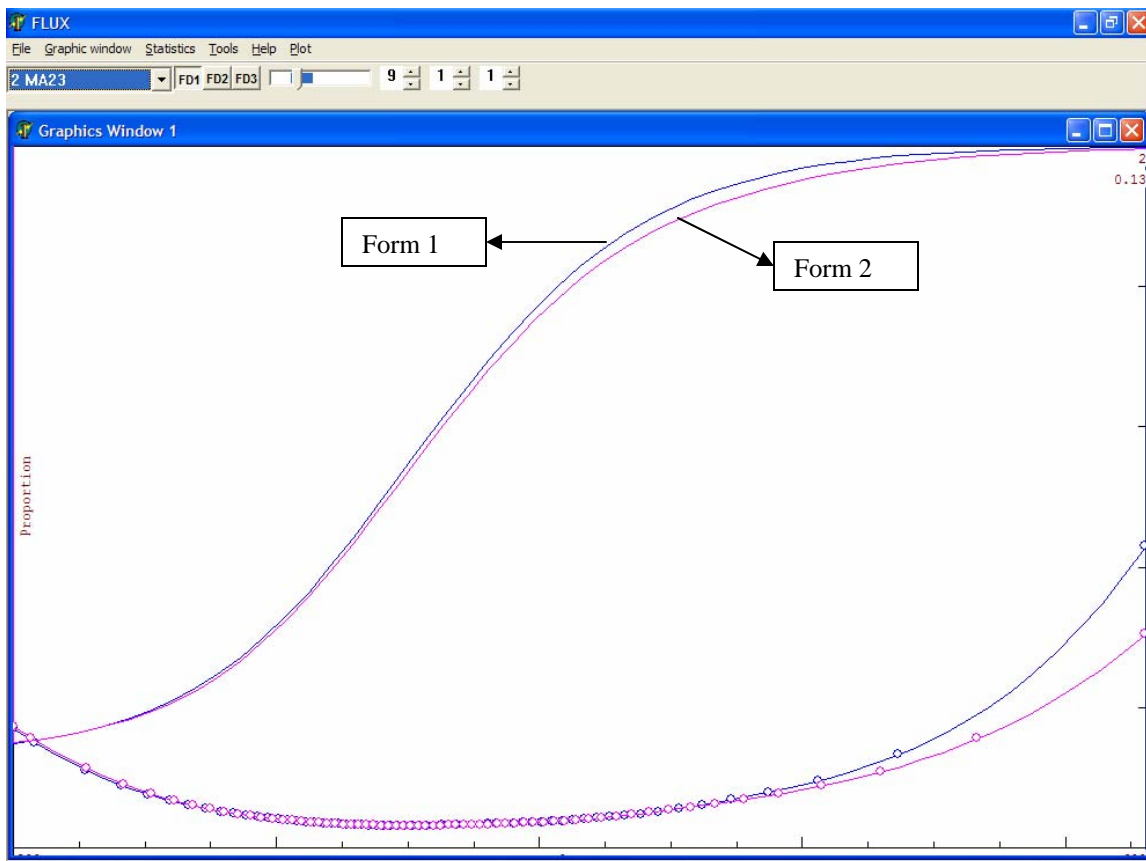


Figure F33  
Final TCC and SEM Curves for Grade 4

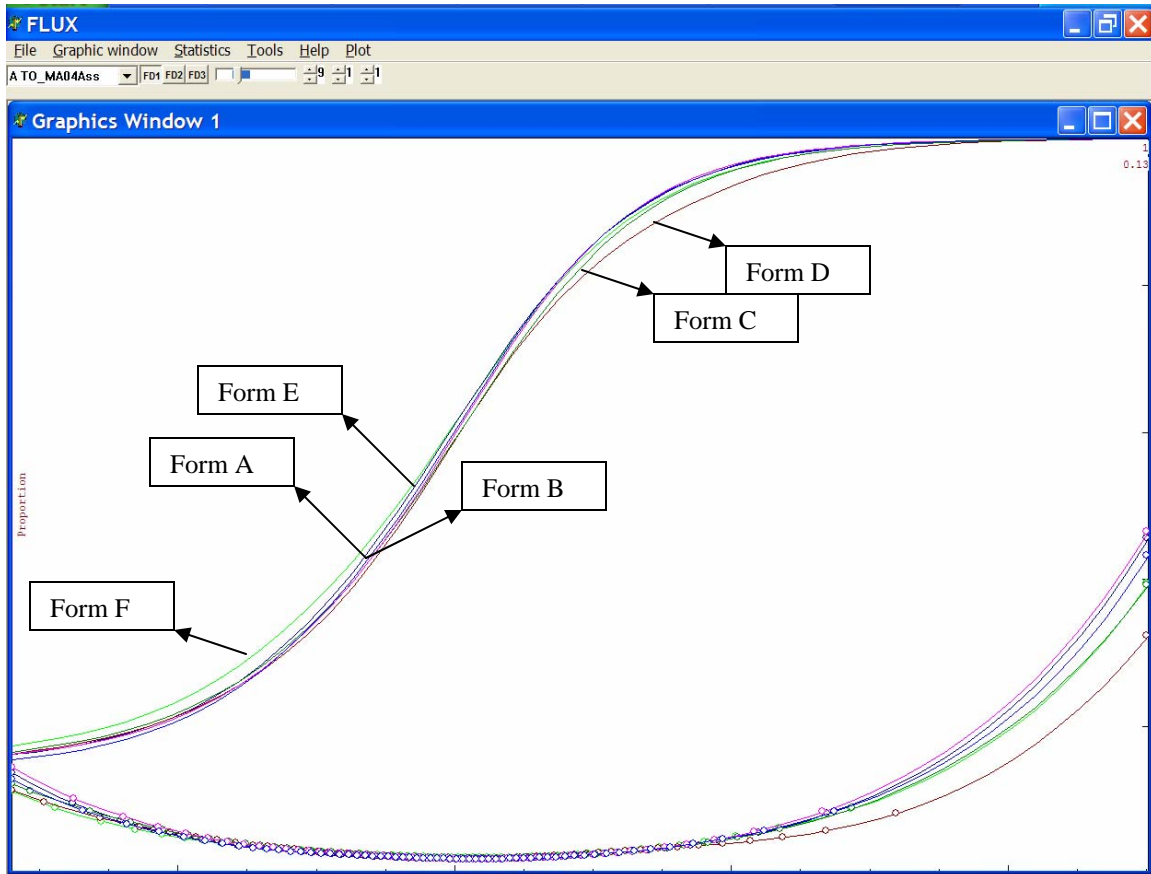


Figure F34  
Final TCC and SEM Curves for Grade 5

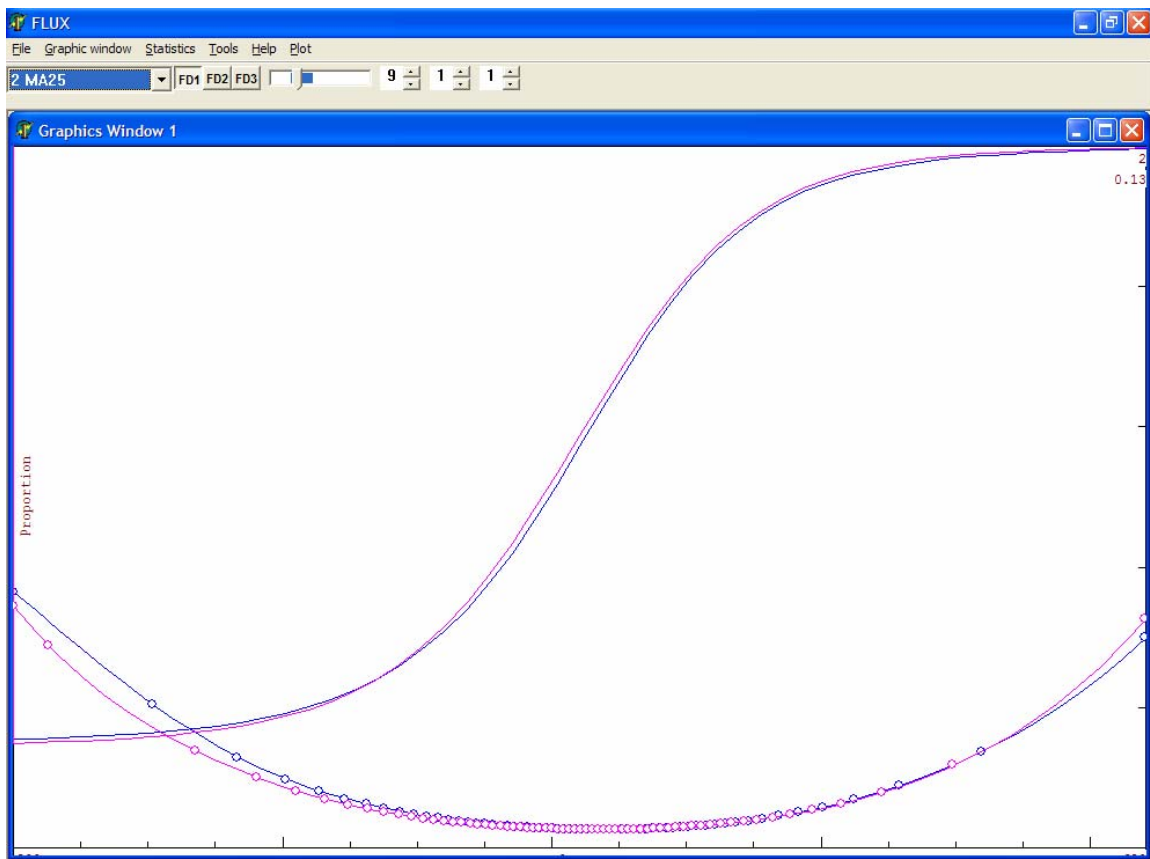


Figure F35  
Final TCC and SEM Curves for Grade 6

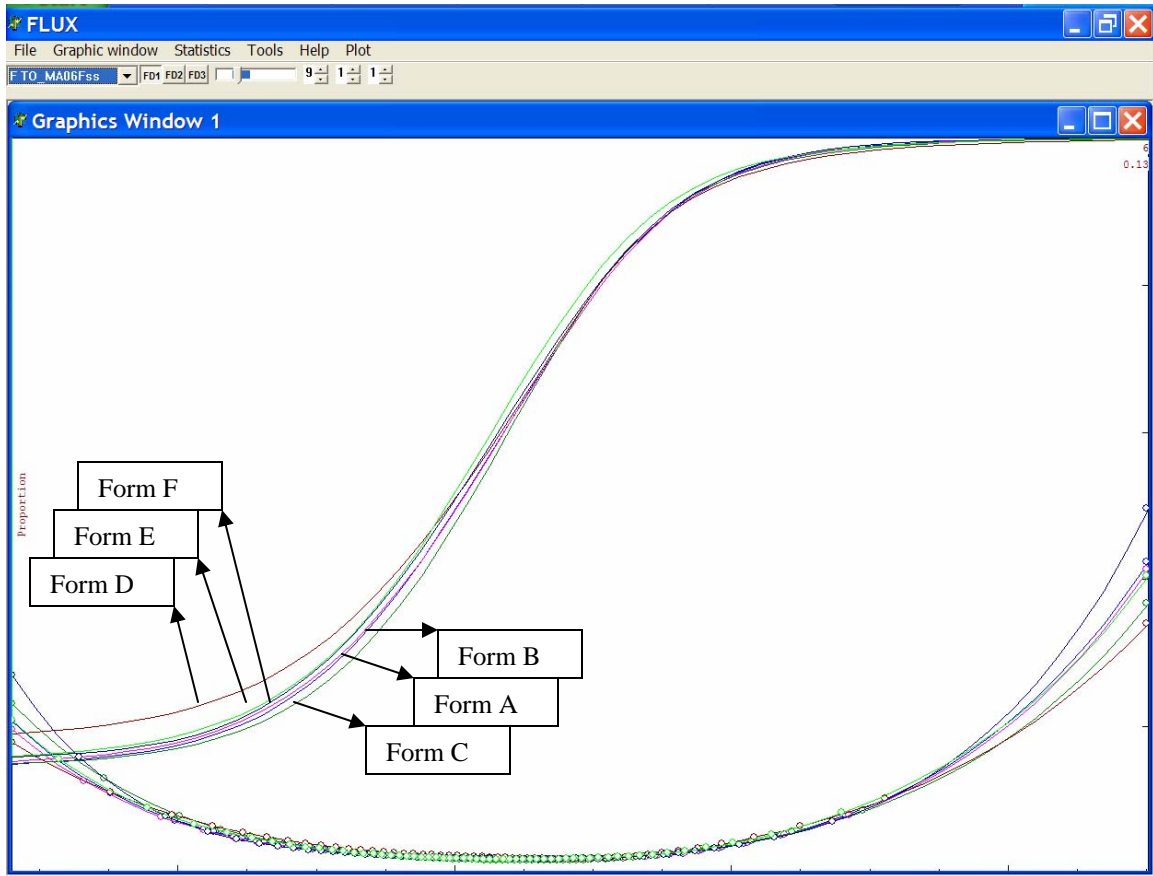


Figure F36  
Final TCC and SEM Curves for Grade 7

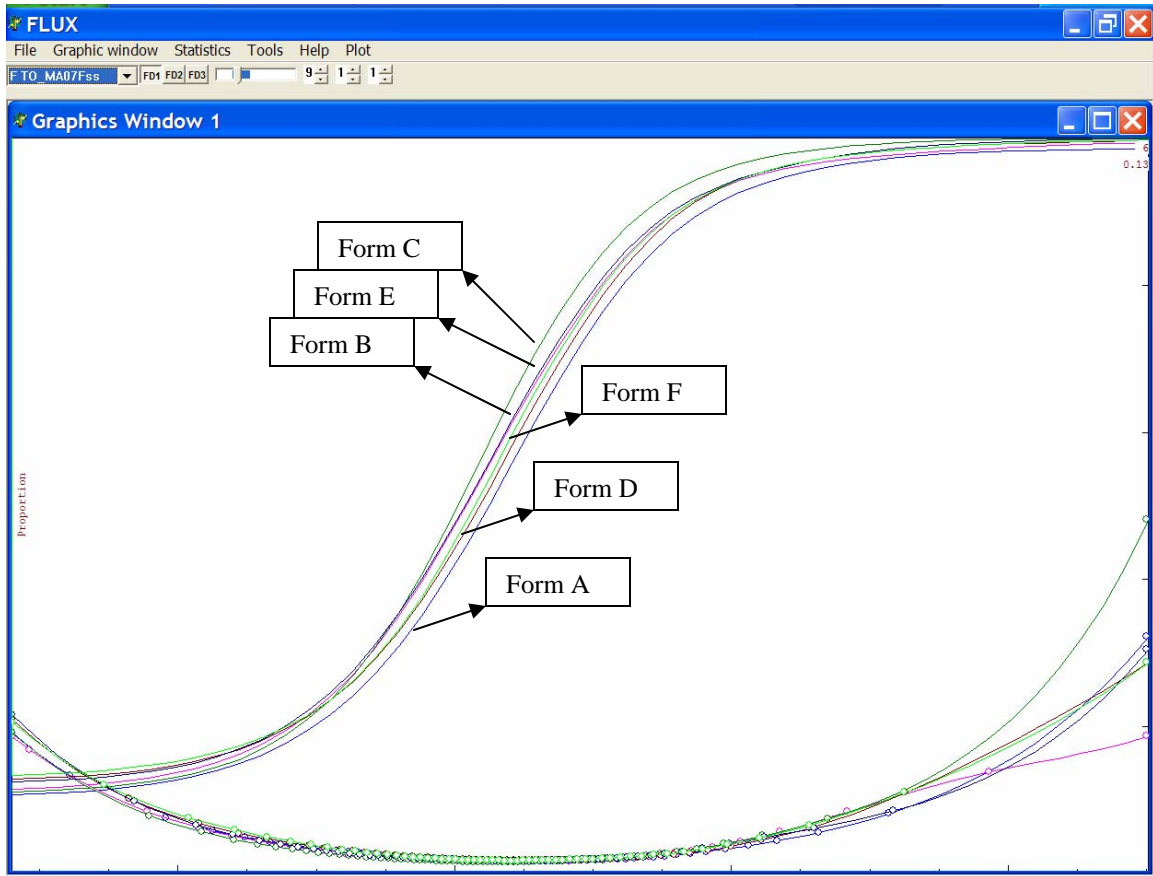


Figure F37  
Final TCC and SEM Curves for Grade 8

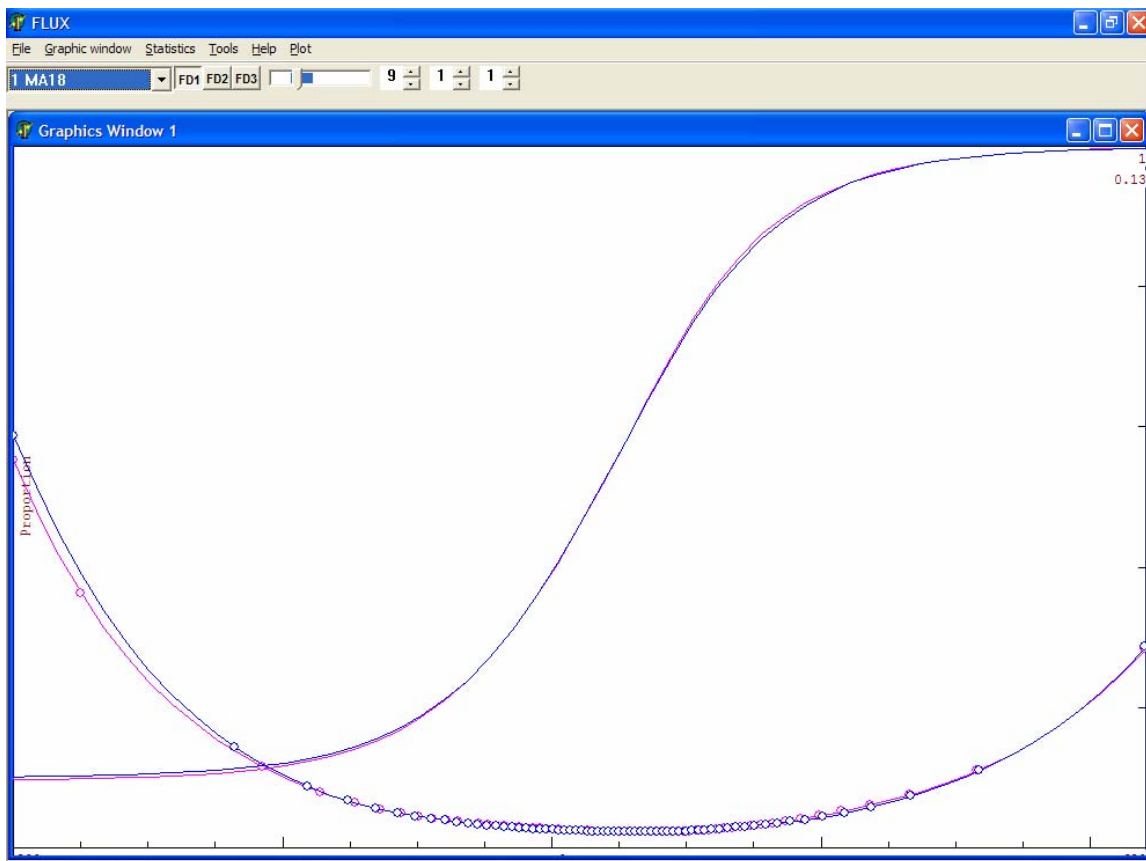
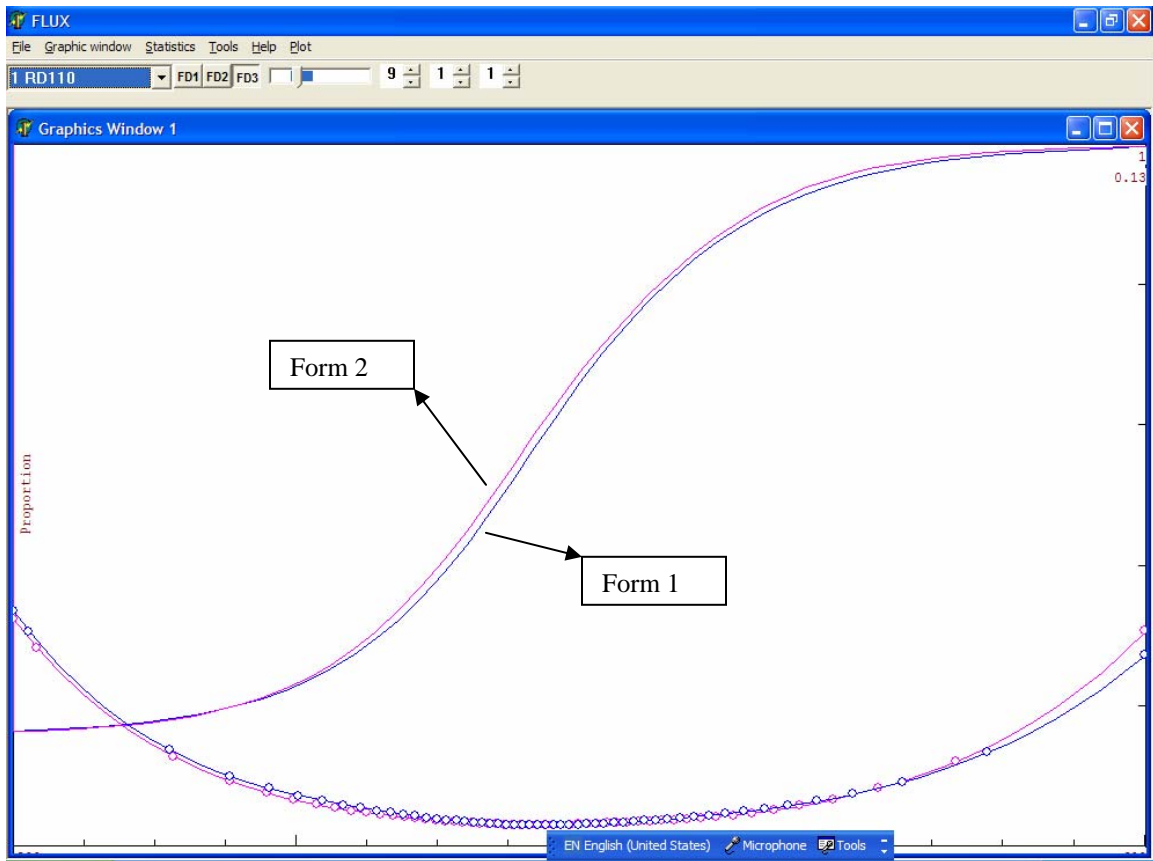




Figure F38  
Final TCC and SEM Curves for Grade 10



**Appendix G**  
**Figures of Scale Score Distributions**

## Figures List

|   |      |
|---|------|
| Figure G1 Scale Score Distribution for Grade 3 Mathematics .....              | G-3  |
| Figure G2 Scale Score Distribution for Grade 3 Mathematics by Gender .....    | G-4  |
| Figure G3 Scale Score Distribution for Grade 3 Mathematics by Ethnicity.....  | G-5  |
| Figure G4 Scale Score Distribution for Grade 4 Mathematics .....              | G-7  |
| Figure G5 Scale Score Distribution for Grade 4 Mathematics by Gender .....    | G-8  |
| Figure G6 Scale Score Distribution for Grade 4 Mathematics by Ethnicity.....  | G-9  |
| Figure G7 Scale Score Distribution for Grade 5 Mathematics .....              | G-11 |
| Figure G8 Scale Score Distribution for Grade 5 Mathematics by Gender .....    | G-12 |
| Figure G9 Scale Score Distribution for Grade 5 Mathematics by Ethnicity.....  | G-13 |
| Figure G10 Scale Score Distribution for Grade 6 Mathematics .....             | G-15 |
| Figure G11 Scale Score Distribution for Grade 6 Mathematics by Gender .....   | G-16 |
| Figure G12 Scale Score Distribution for Grade 6 Mathematics by Ethnicity..... | G-17 |
| Figure G13 Scale Score Distribution for Grade 7 Mathematics .....             | G-19 |
| Figure G14 Scale Score Distribution for Grade 7 Mathematics by Gender .....   | G-20 |
| Figure G15 Scale Score Distribution for Grade 7 Mathematics by Ethnicity..... | G-21 |
| Figure G16 Scale Score Distribution for Grade 8 Mathematics .....             | G-23 |
| Figure G17 Scale Score Distribution for Grade 8 Mathematics by Gender .....   | G-24 |
| Figure G18 Scale Score Distribution for Grade 8 Mathematics by Ethnicity..... | G-25 |
| Figure G19 Scale Score Distribution for Grade 10 Reading .....                | G-27 |
| Figure G20 Scale Score Distribution for Grade 10 Reading by Gender.....       | G-28 |
| Figure G21 Scale Score Distribution for Grade 10 Reading by Ethnicity.....    | G-29 |

Figure G1  
Scale Score Distribution for Grade 3 Mathematics

Mean = 404, SD = 47, N = 62961

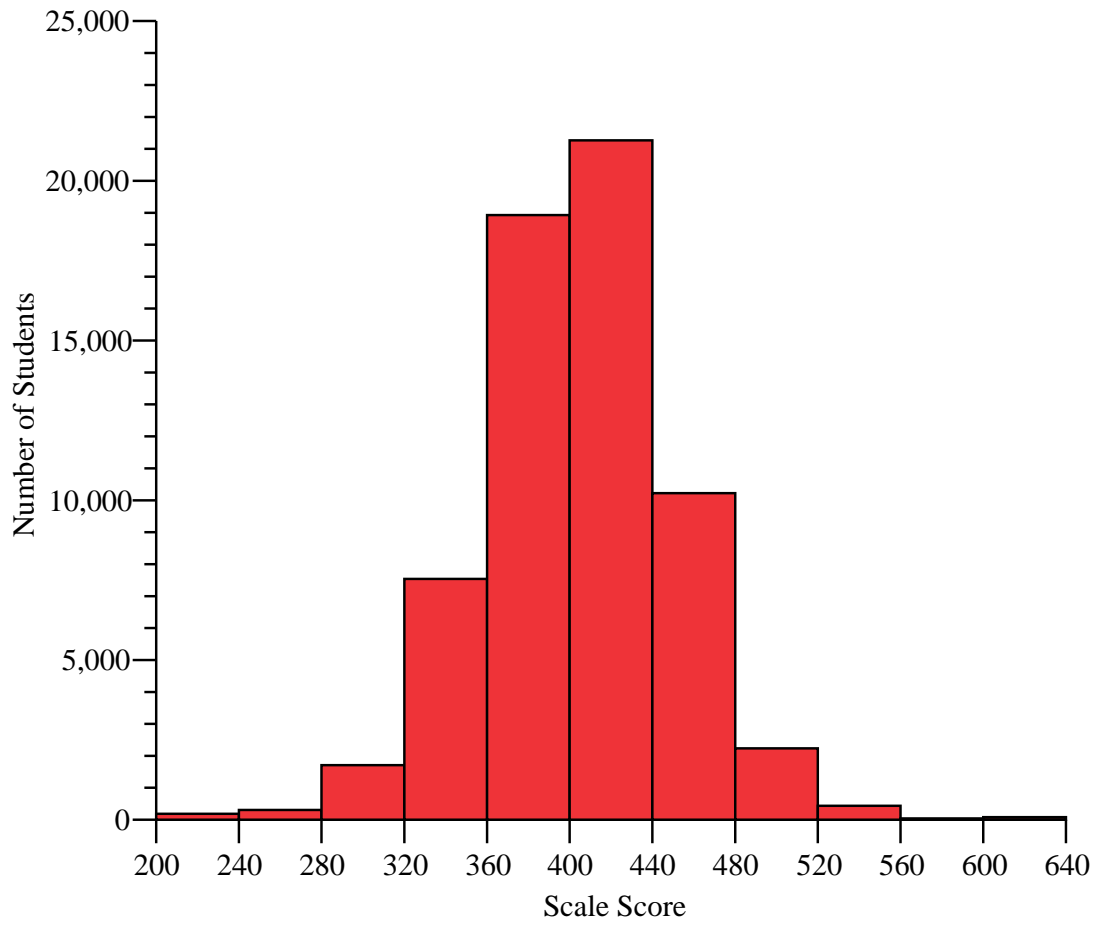


Figure G2  
Scale Score Distribution for Grade 3 Mathematics by Gender

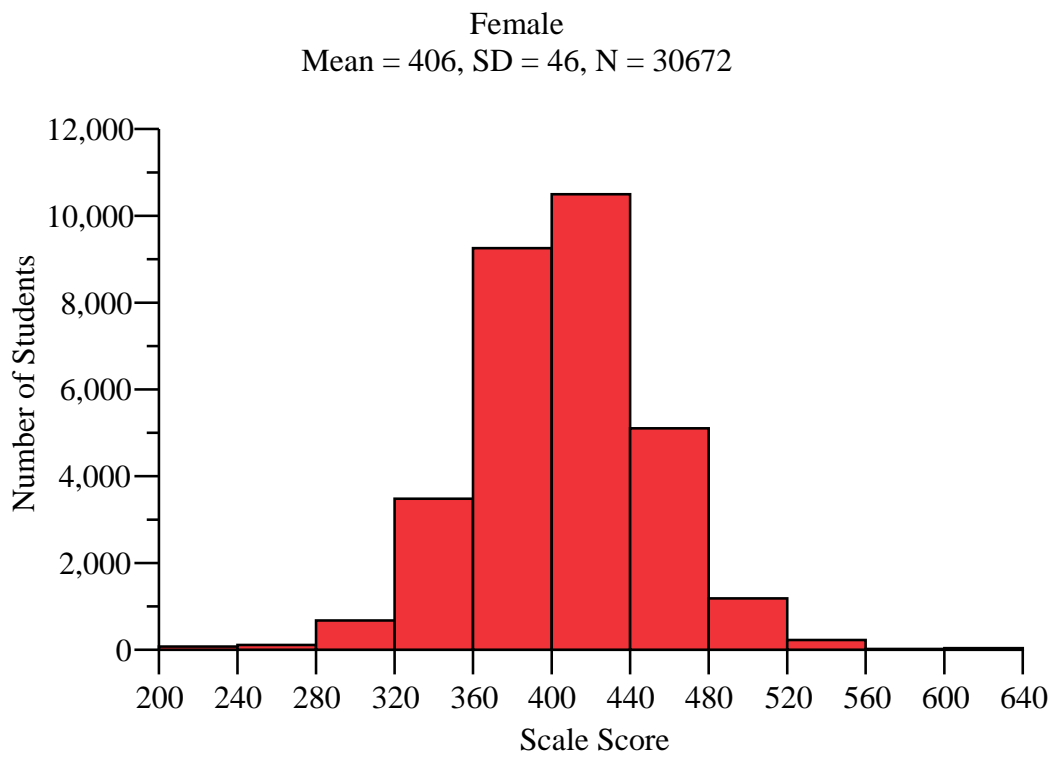
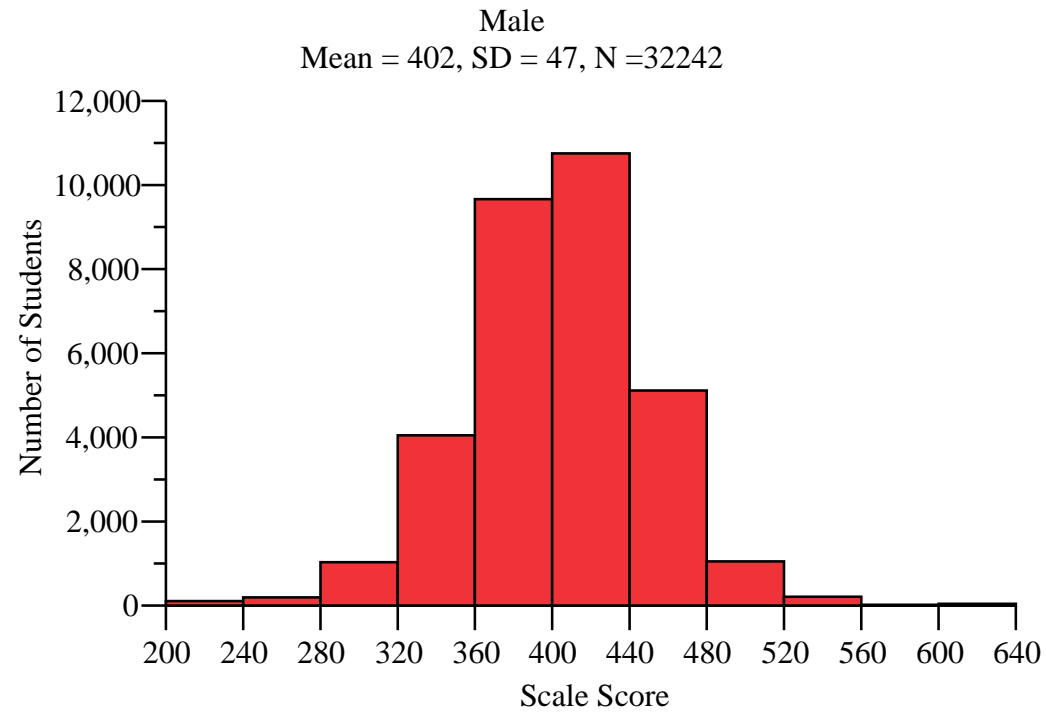


Figure G3  
Scale Score Distribution for Grade 3 Mathematics by Ethnicity

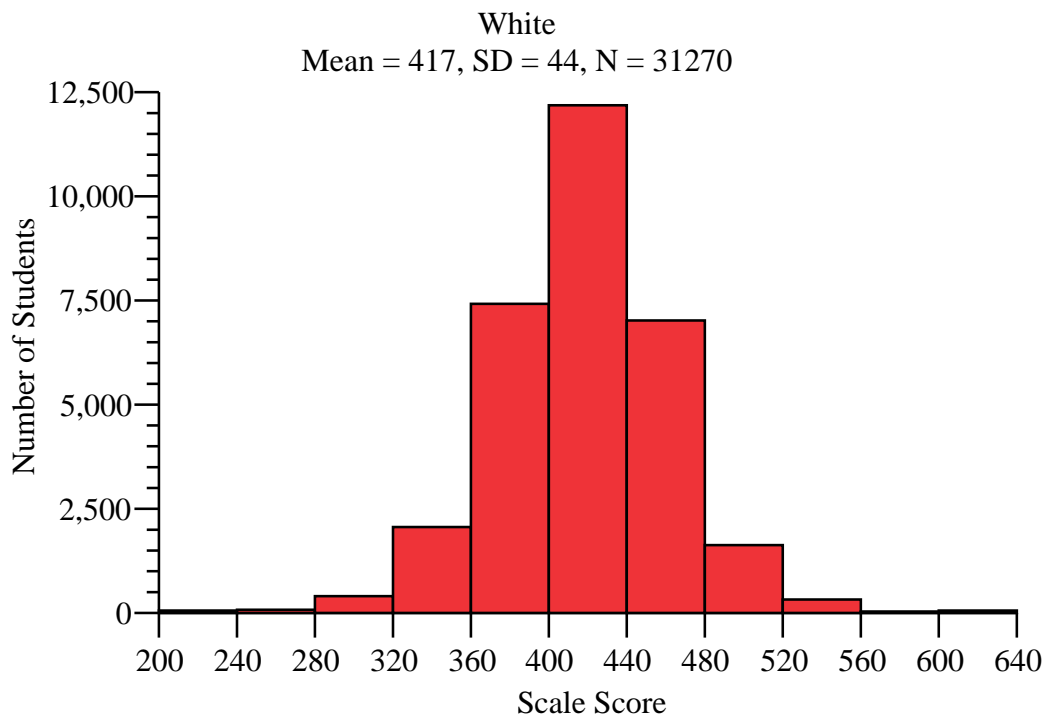
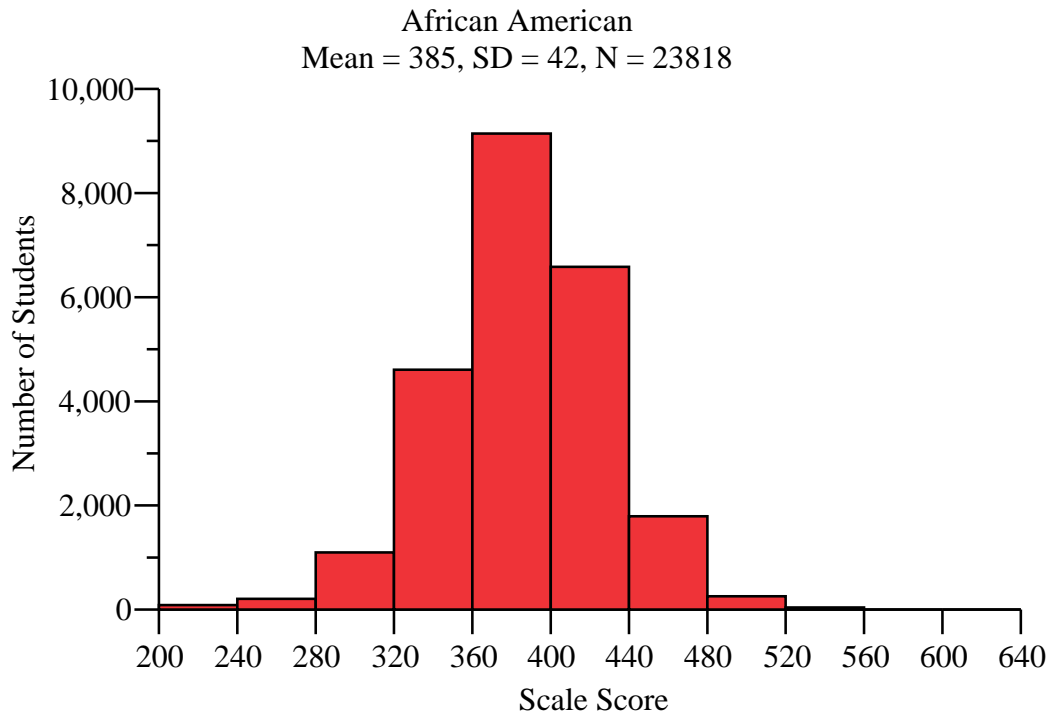


Figure G3 (cont.)  
Scale Score Distribution for Grade 3 Mathematics by Ethnicity

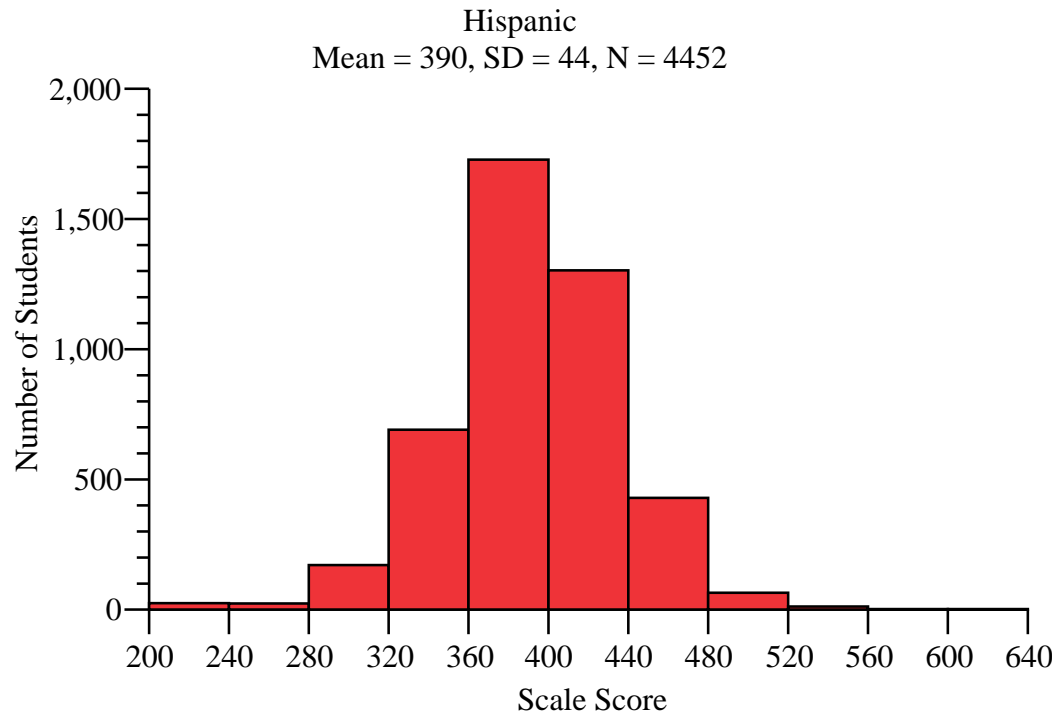


Figure G4  
Scale Score Distribution for Grade 4 Mathematics

Mean = 395, SD = 46, N = 65013

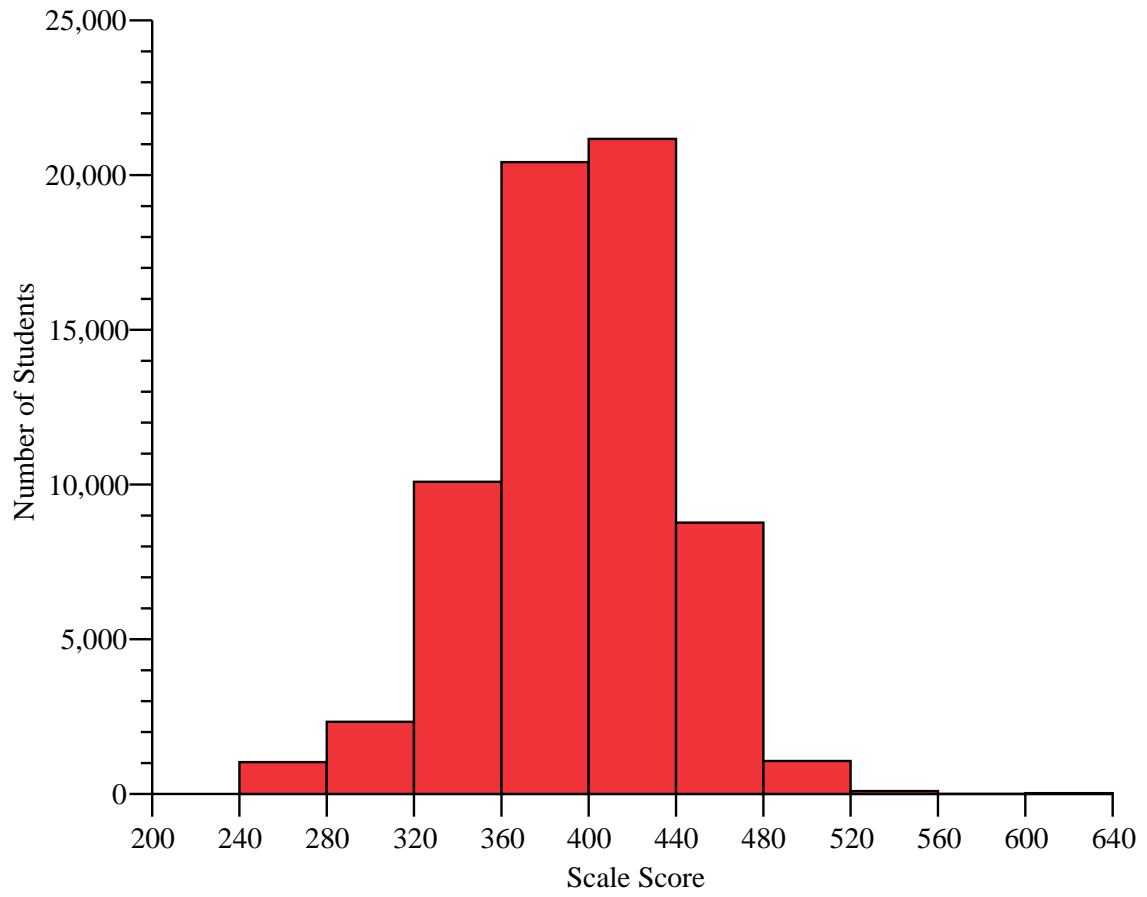




Figure G5  
Scale Score Distribution for Grade 4 Mathematics by Gender

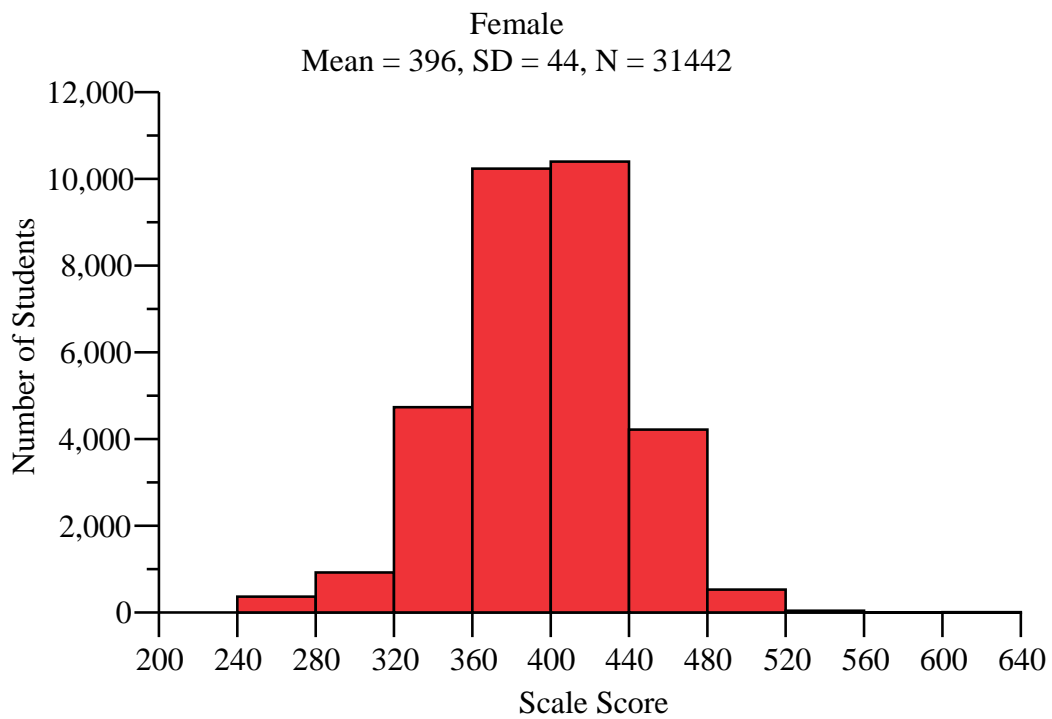
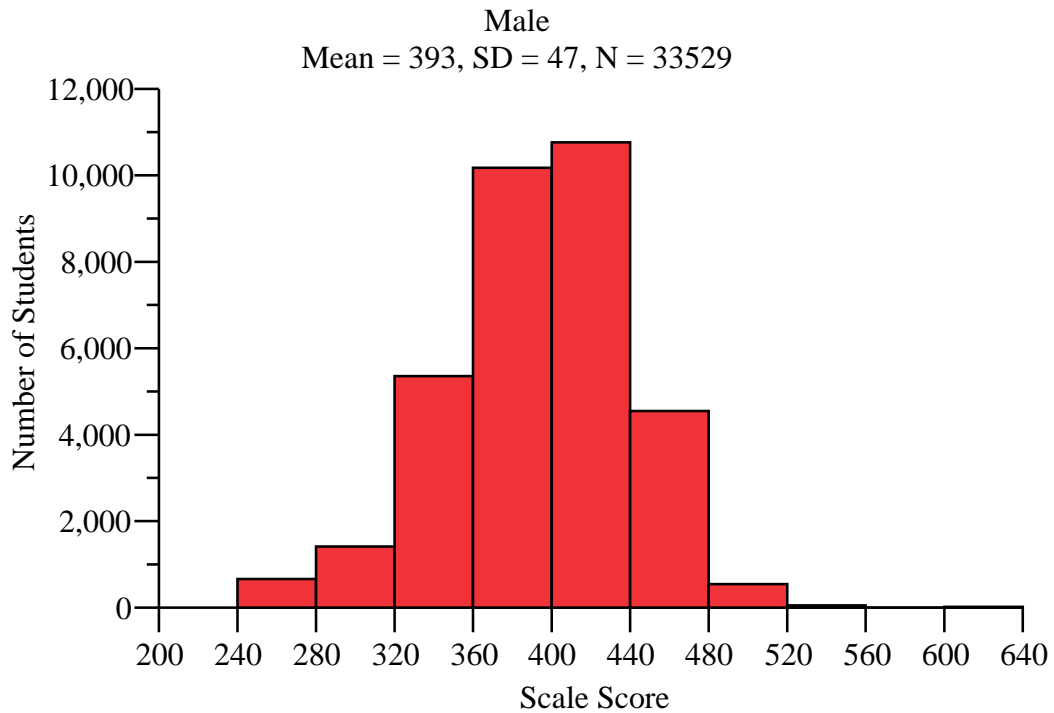


Figure G6  
Scale Score Distribution for Grade 4 Mathematics by Ethnicity

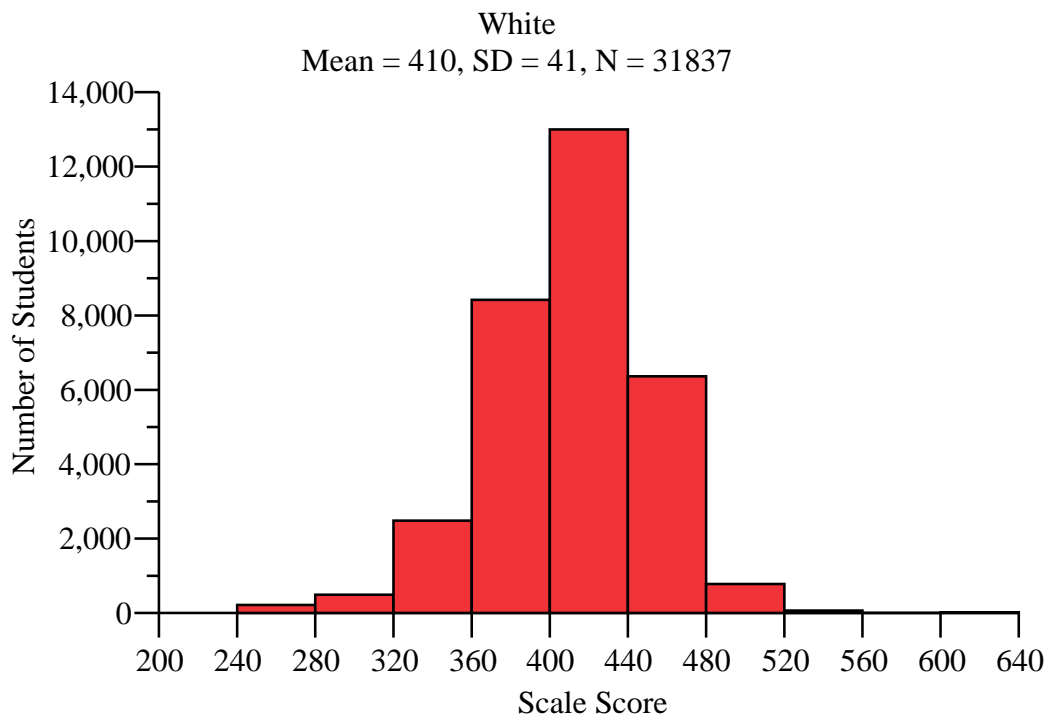
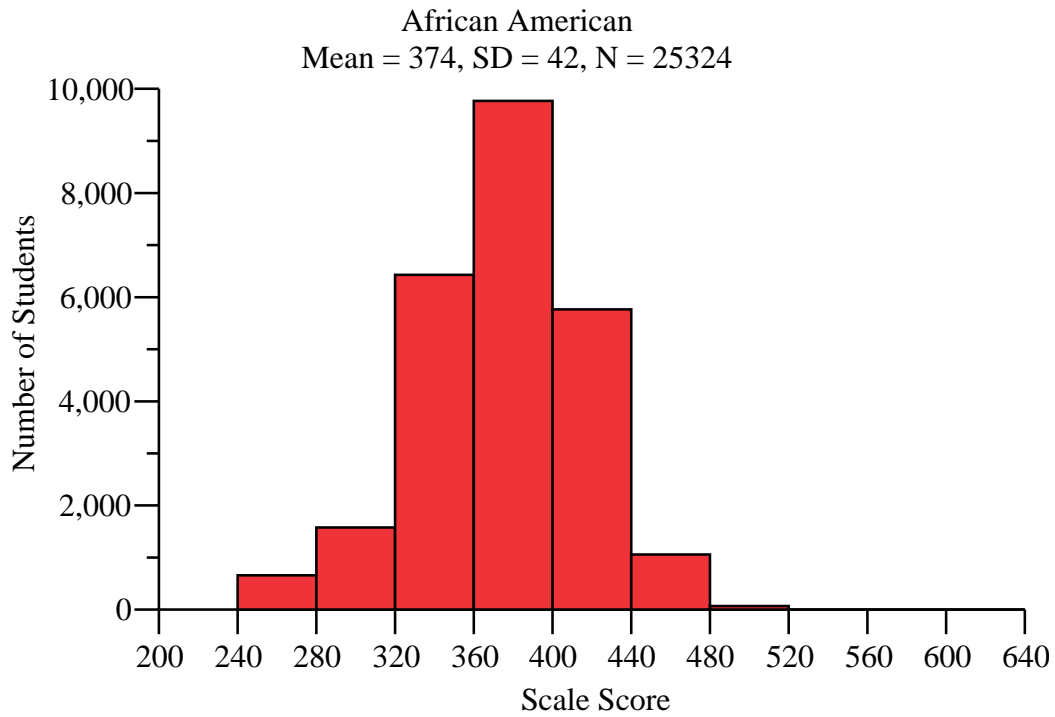


Figure G6 (cont.)  
Scale Score Distribution for Grade 4 Mathematics by Ethnicity

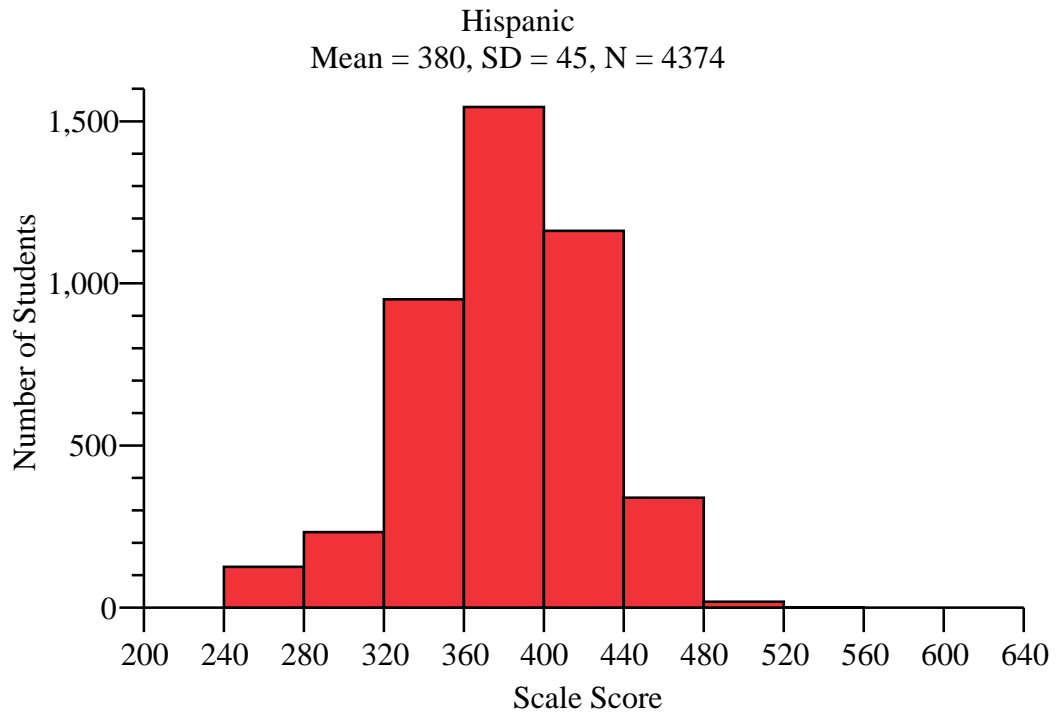


Figure G7  
Scale Score Distribution for Grade 5 Mathematics

Mean = 402, SD = 50, N = 66176

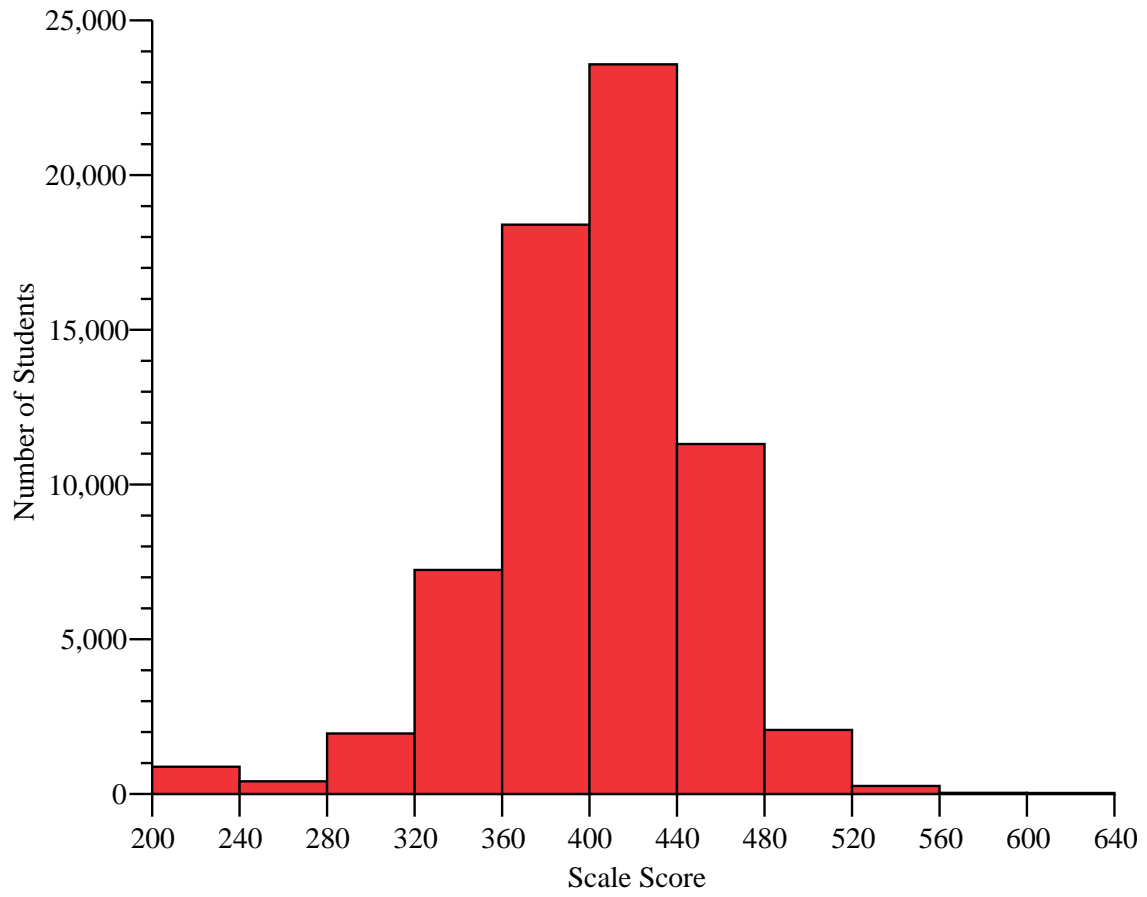


Figure G8  
Scale Score Distribution for Grade 5 Mathematics by Gender

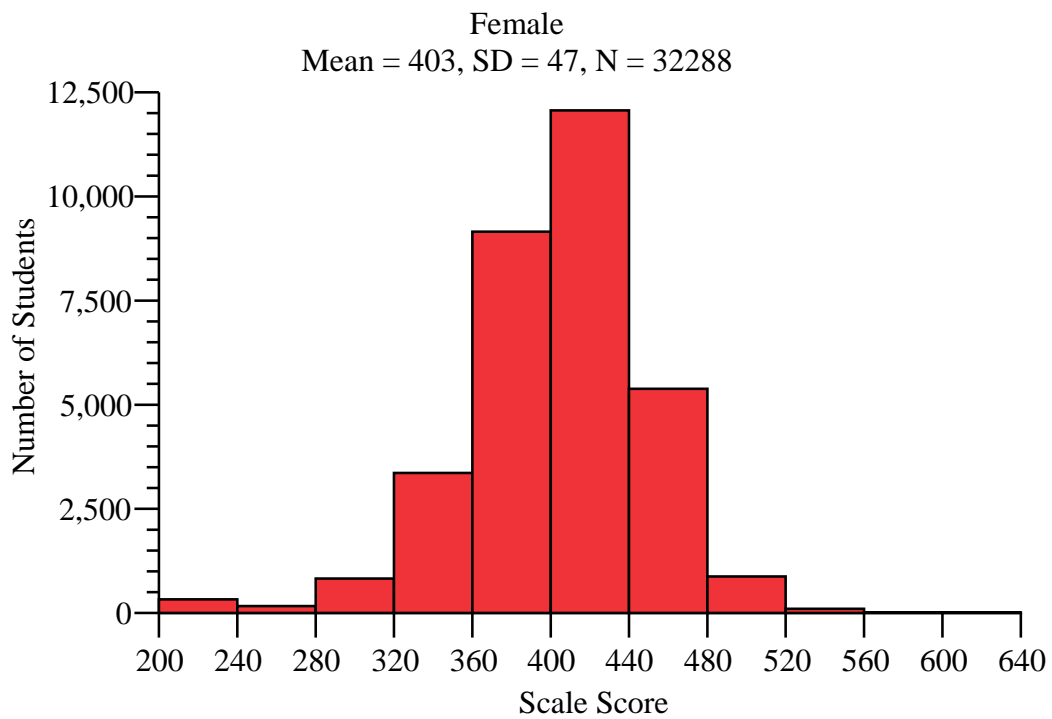
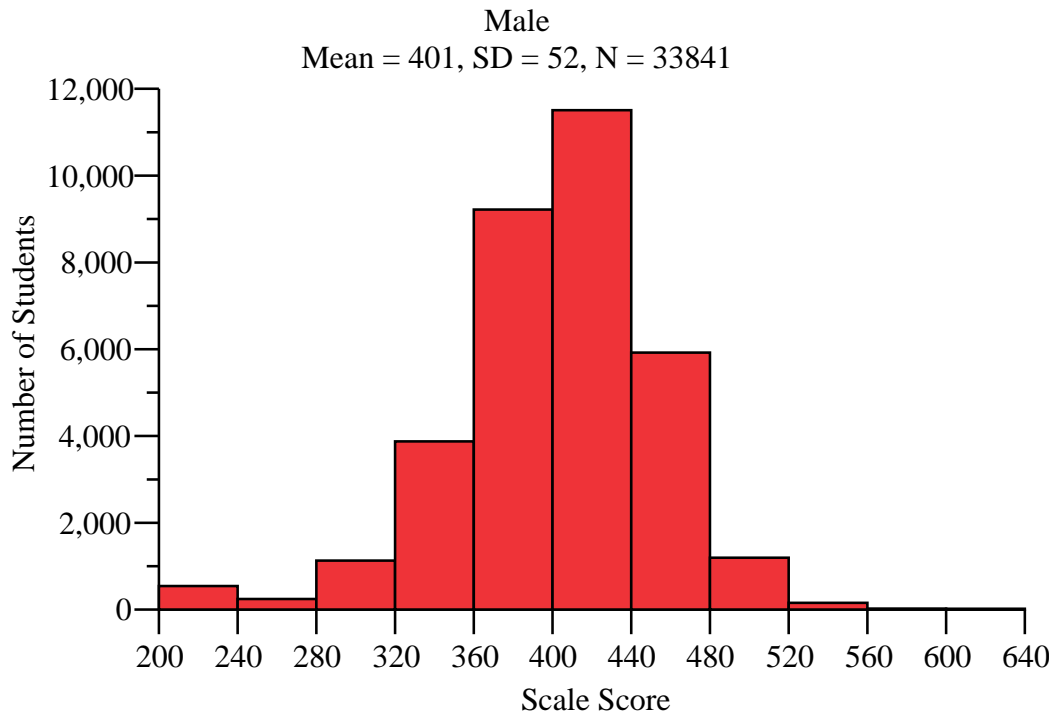


Figure G9  
Scale Score Distribution for Grade 5 Mathematics by Ethnicity

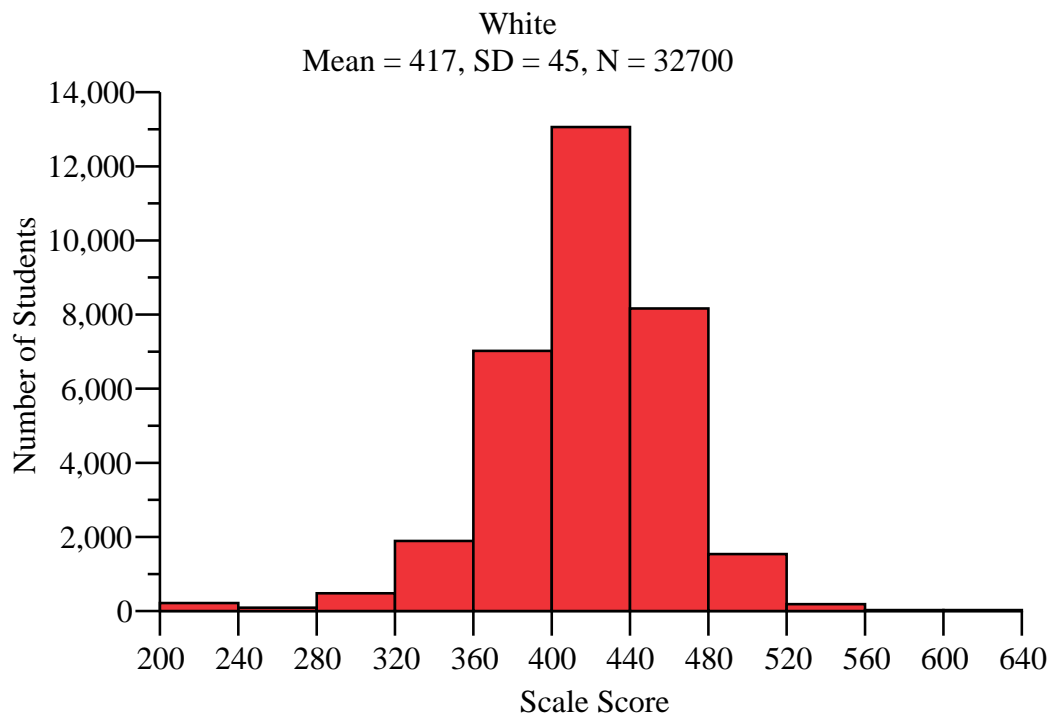
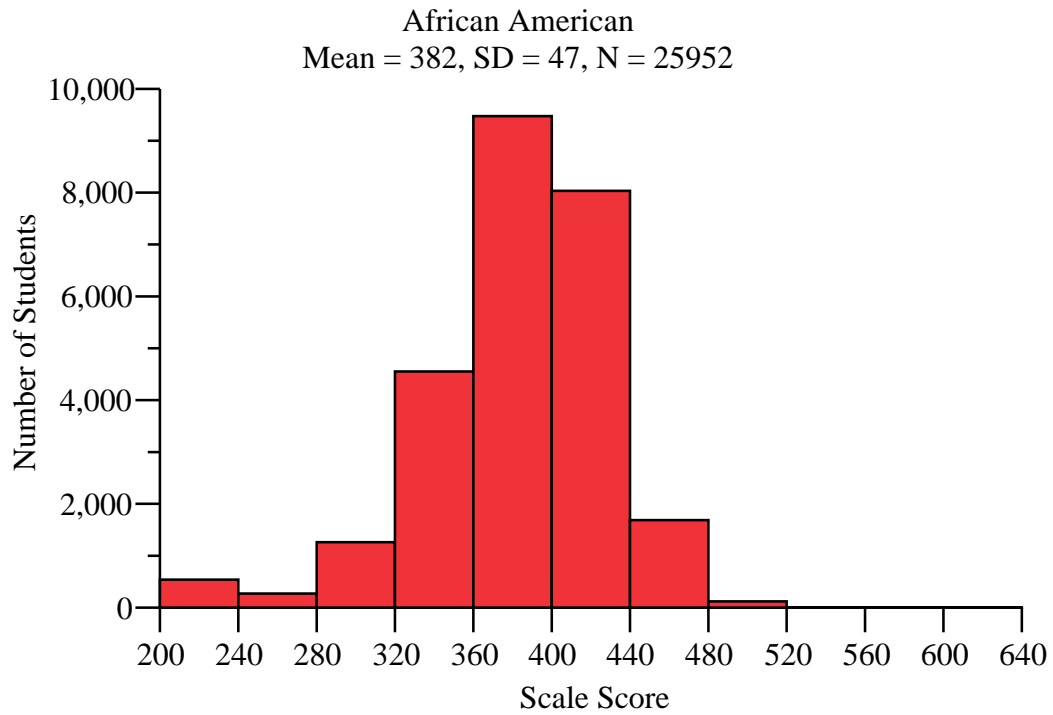


Figure G9 (cont.)  
Scale Score Distribution for Grade 5 Mathematics by Ethnicity

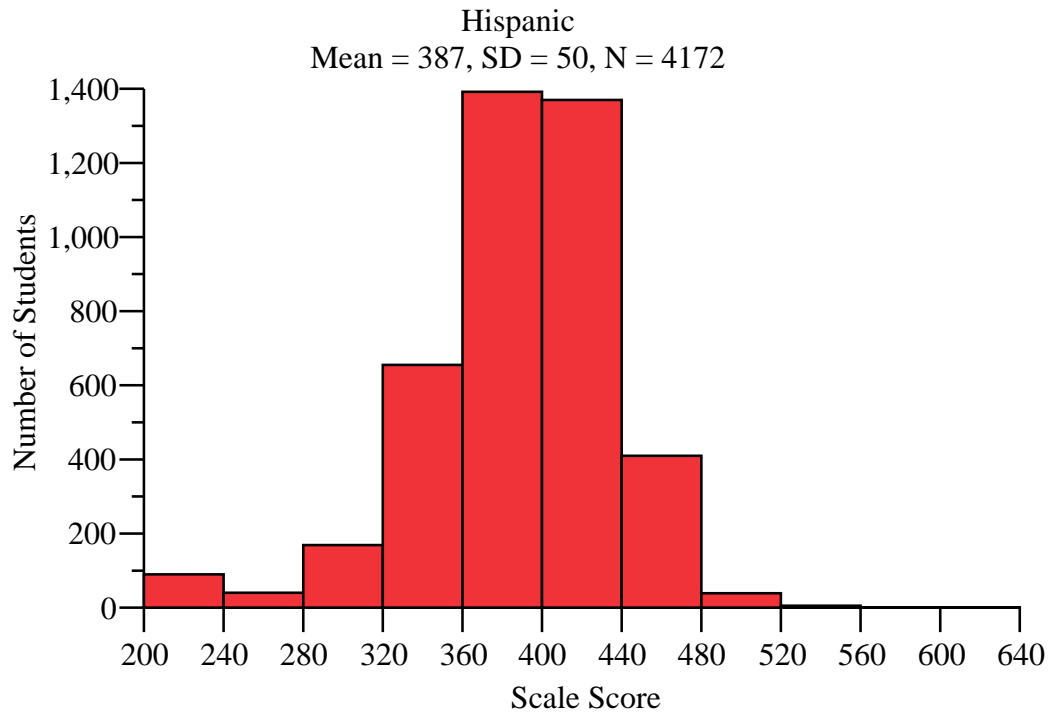


Figure G10  
Scale Score Distribution for Grade 6 Mathematics

Mean = 391, SD = 51, N = 68229

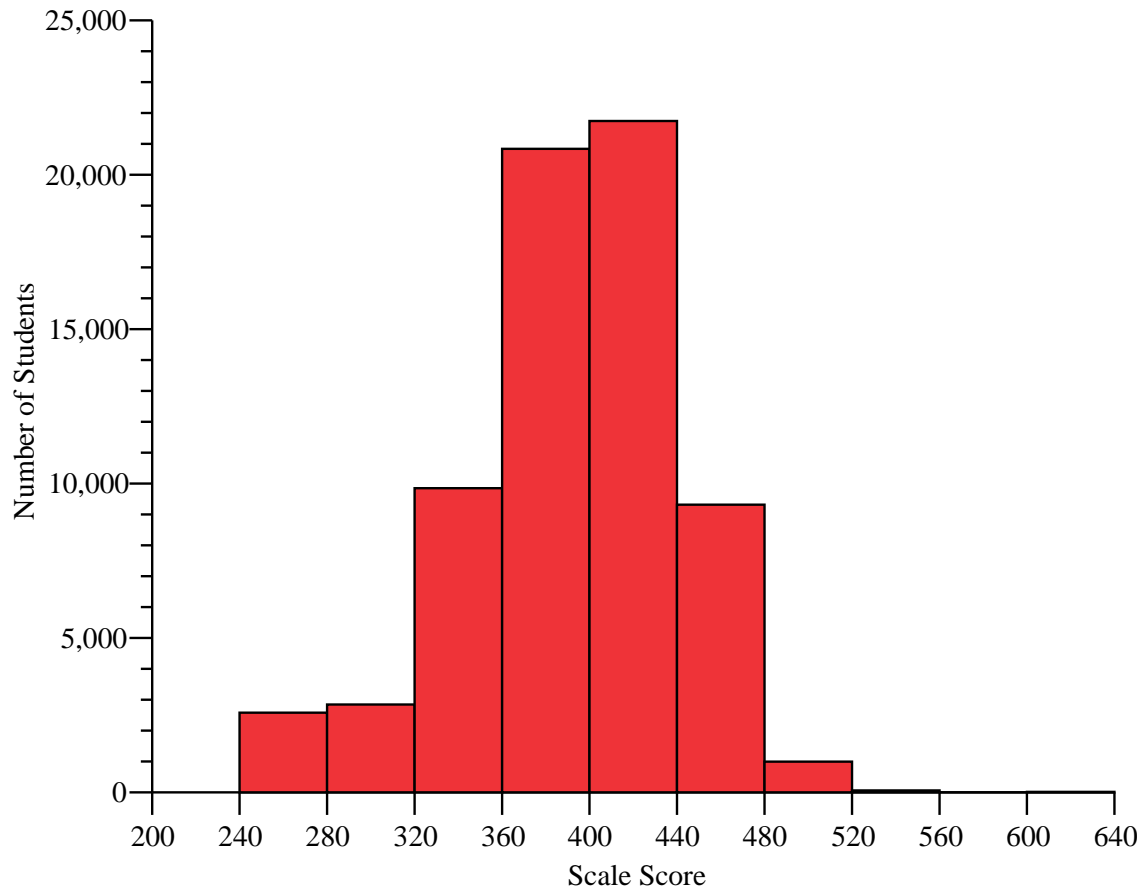




Figure G11  
Scale Score Distribution for Grade 6 Mathematics by Gender

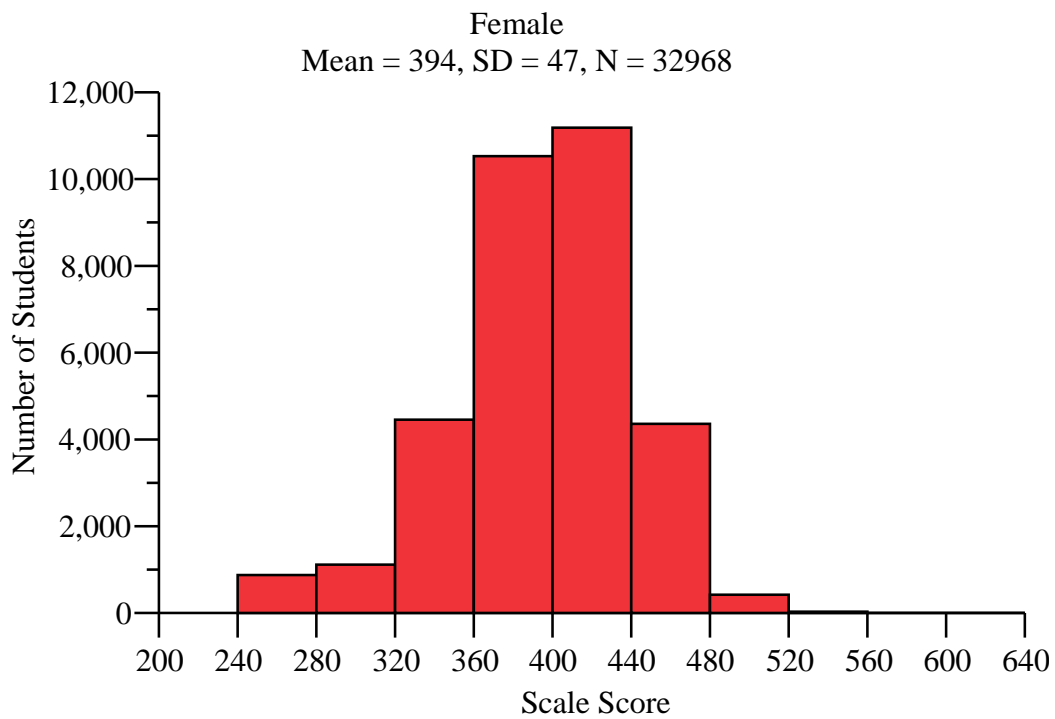
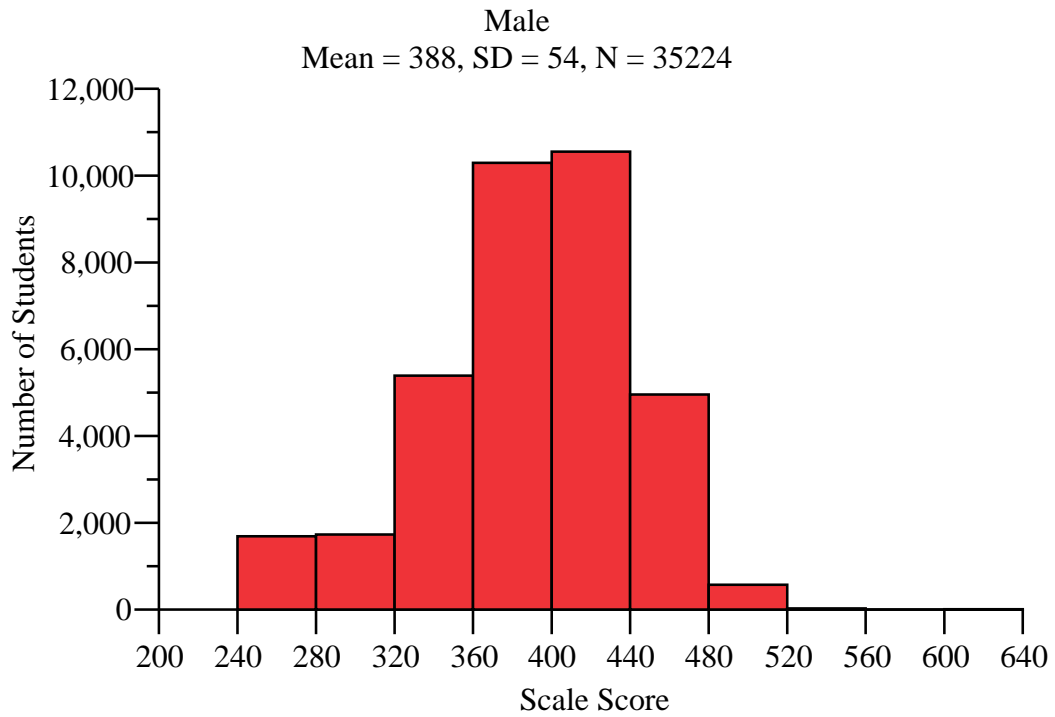


Figure G12  
Scale Score Distribution for Grade 6 Mathematics by Ethnicity

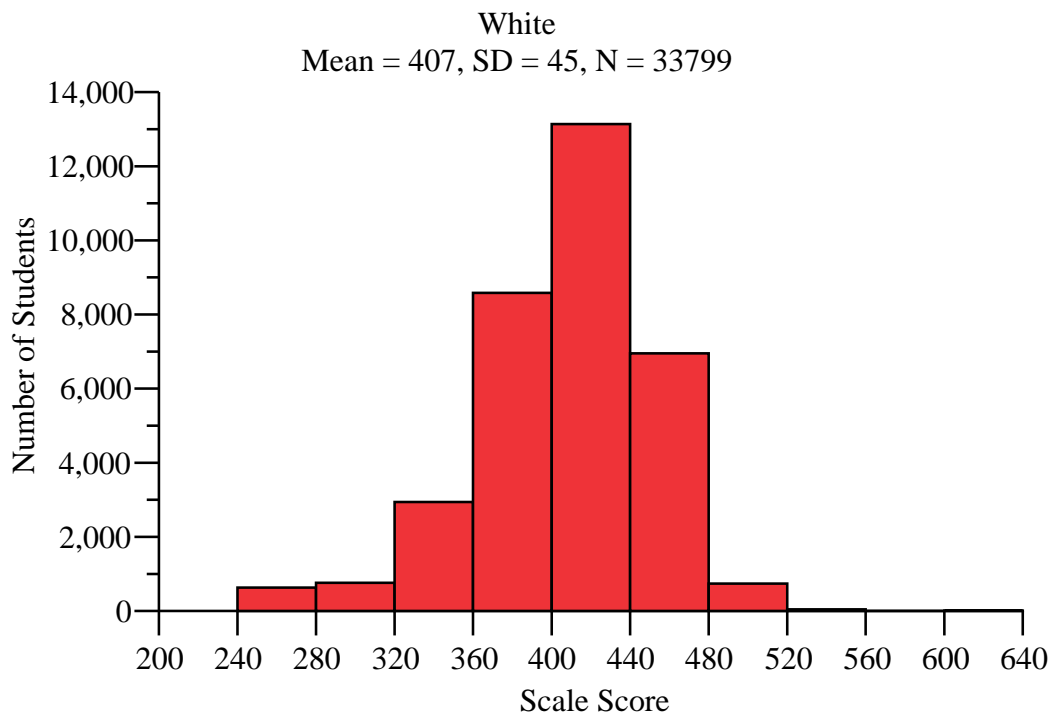
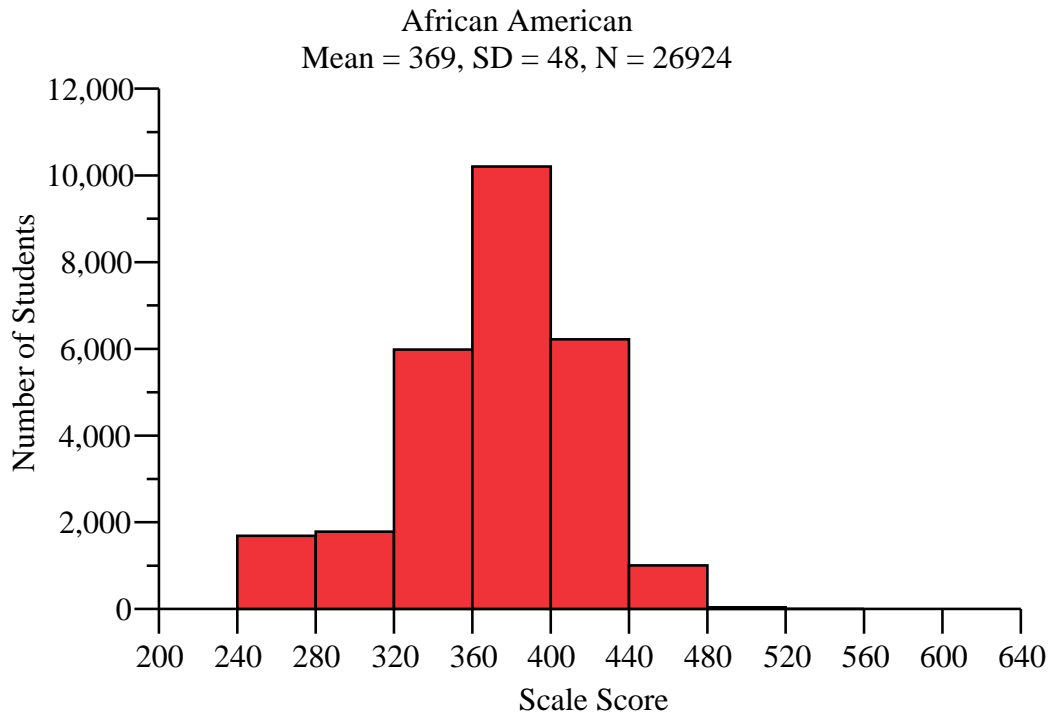


Figure G12 (cont.)  
Scale Score Distribution for Grade 6 Mathematics by Ethnicity

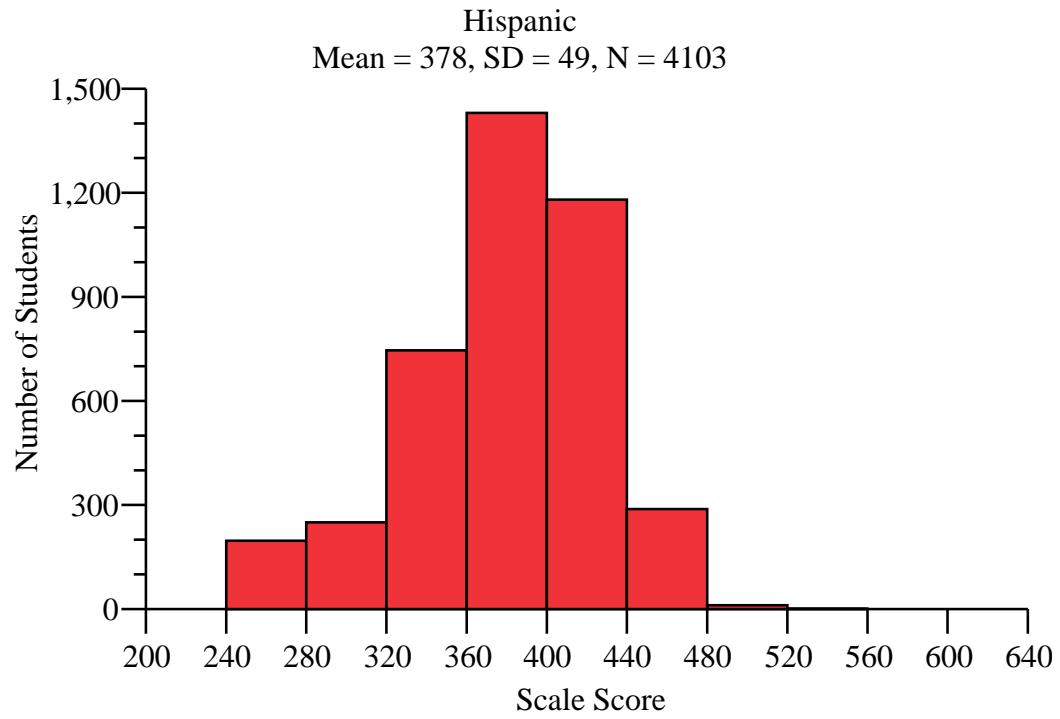


Figure G13  
Scale Score Distribution for Grade 7 Mathematics

Mean = 391, SD = 52, N = 69327

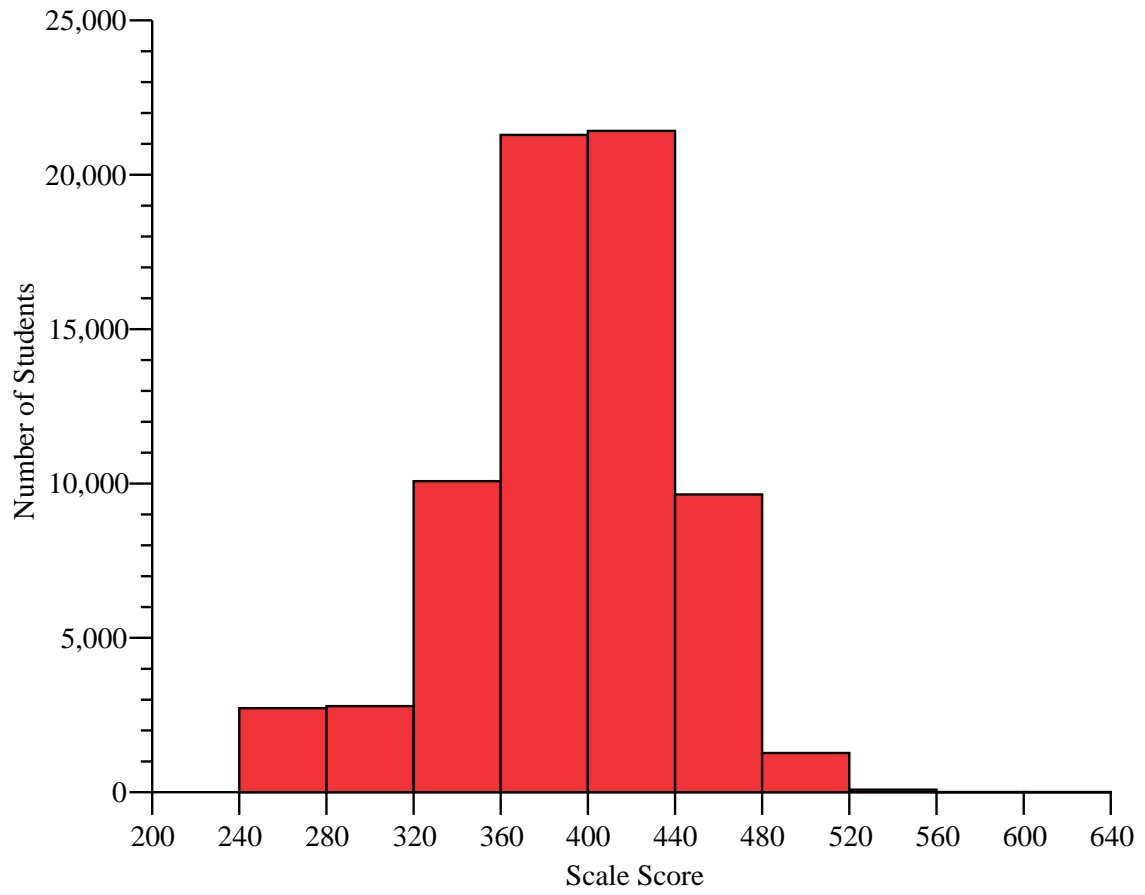


Figure G14  
Scale Score Distribution for Grade 7 Mathematics by Gender

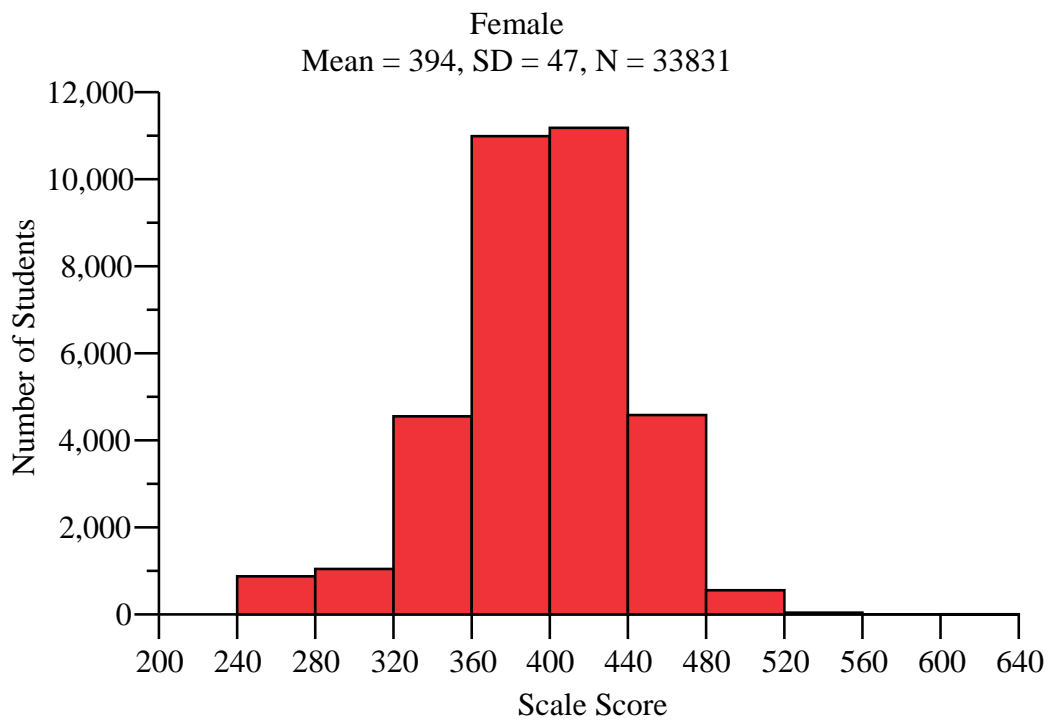
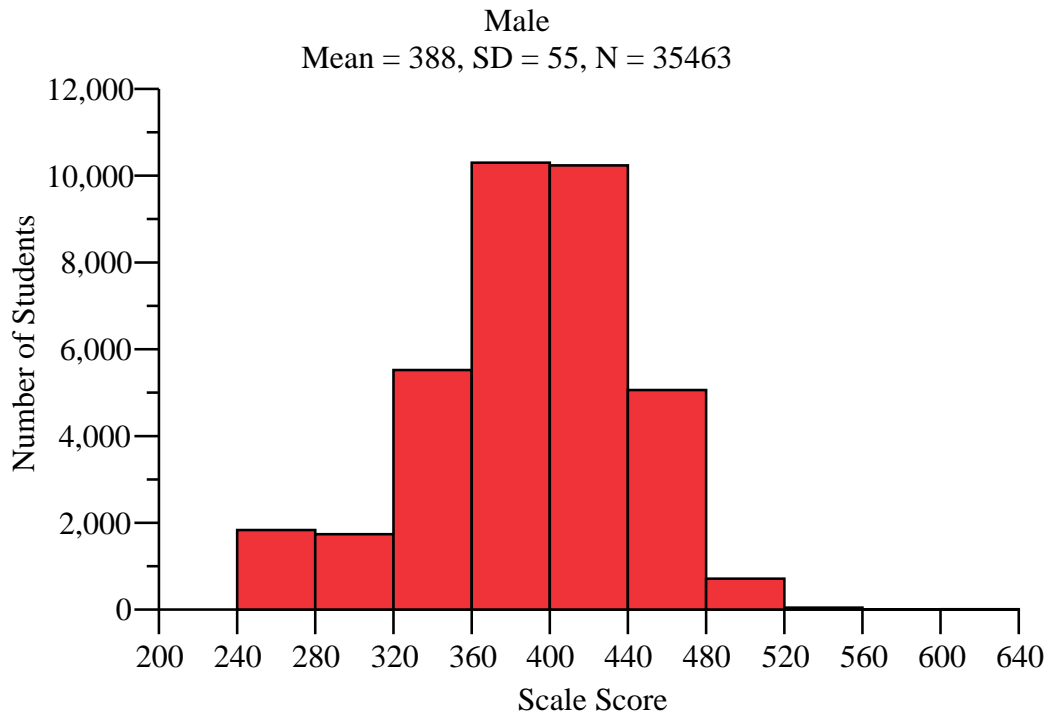


Figure G15  
Scale Score Distribution for Grade 7 Mathematics by Ethnicity

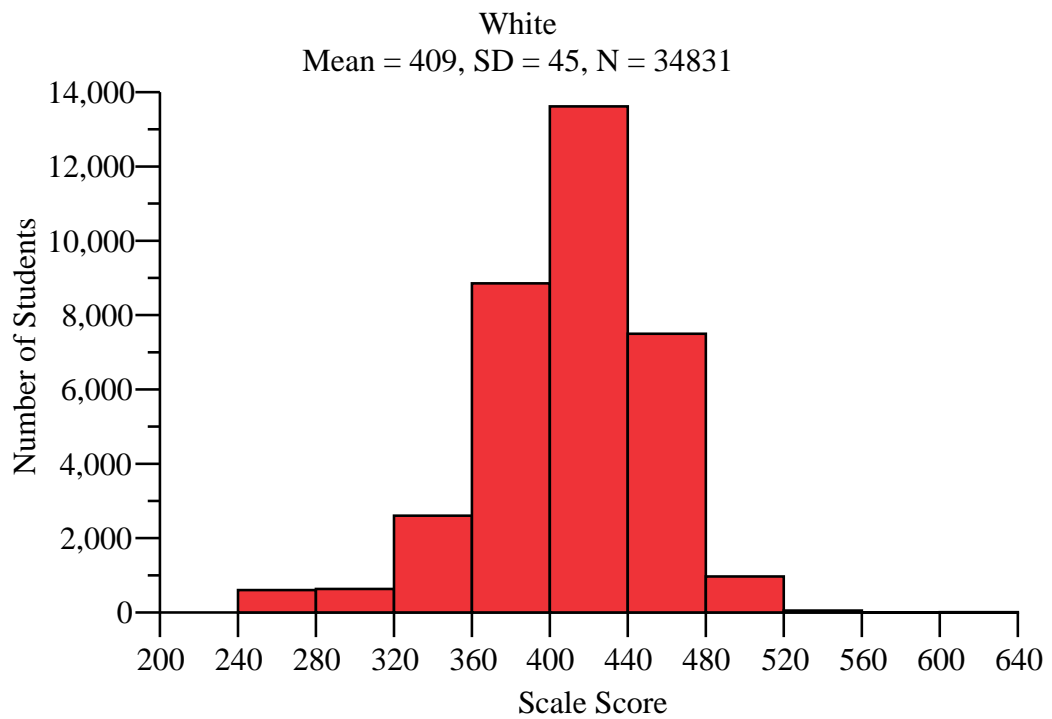
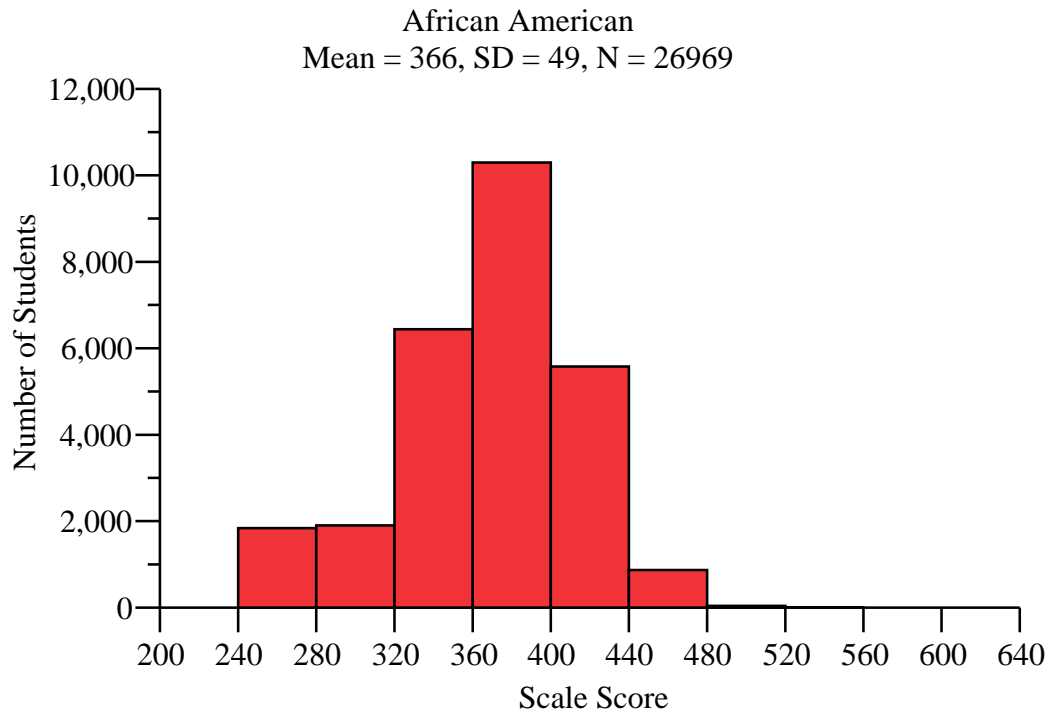


Figure G15 (cont.)  
Scale Score Distribution for Grade 7 Mathematics by Ethnicity

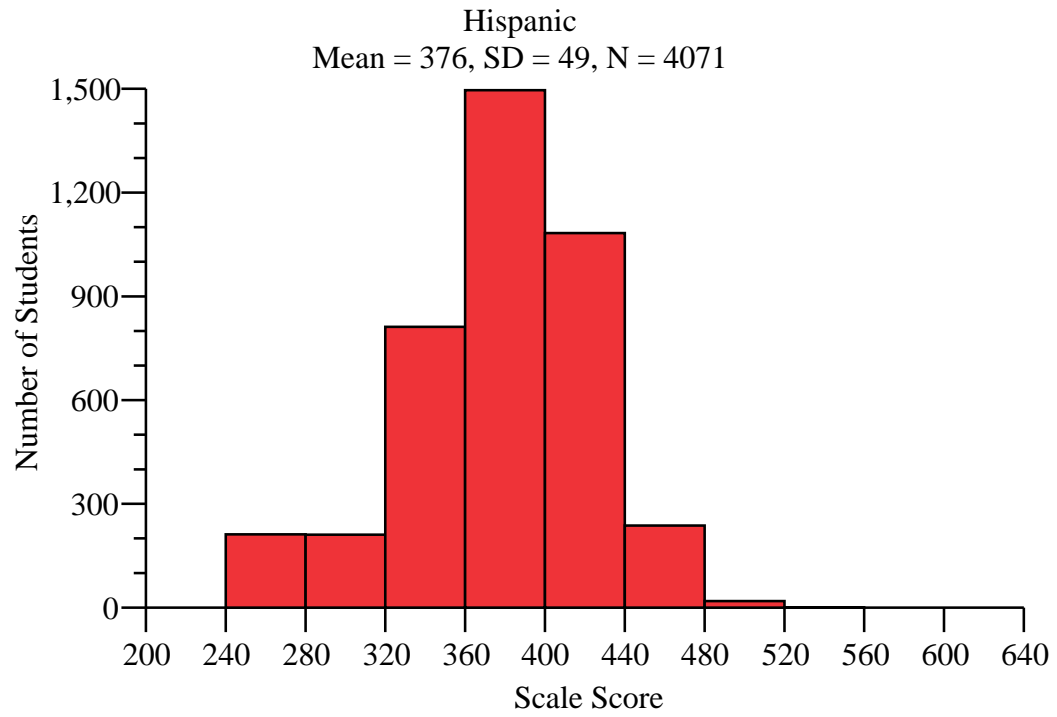


Figure G16  
Scale Score Distribution for Grade 8 Mathematics

Mean = 397, SD = 53, N = 68659

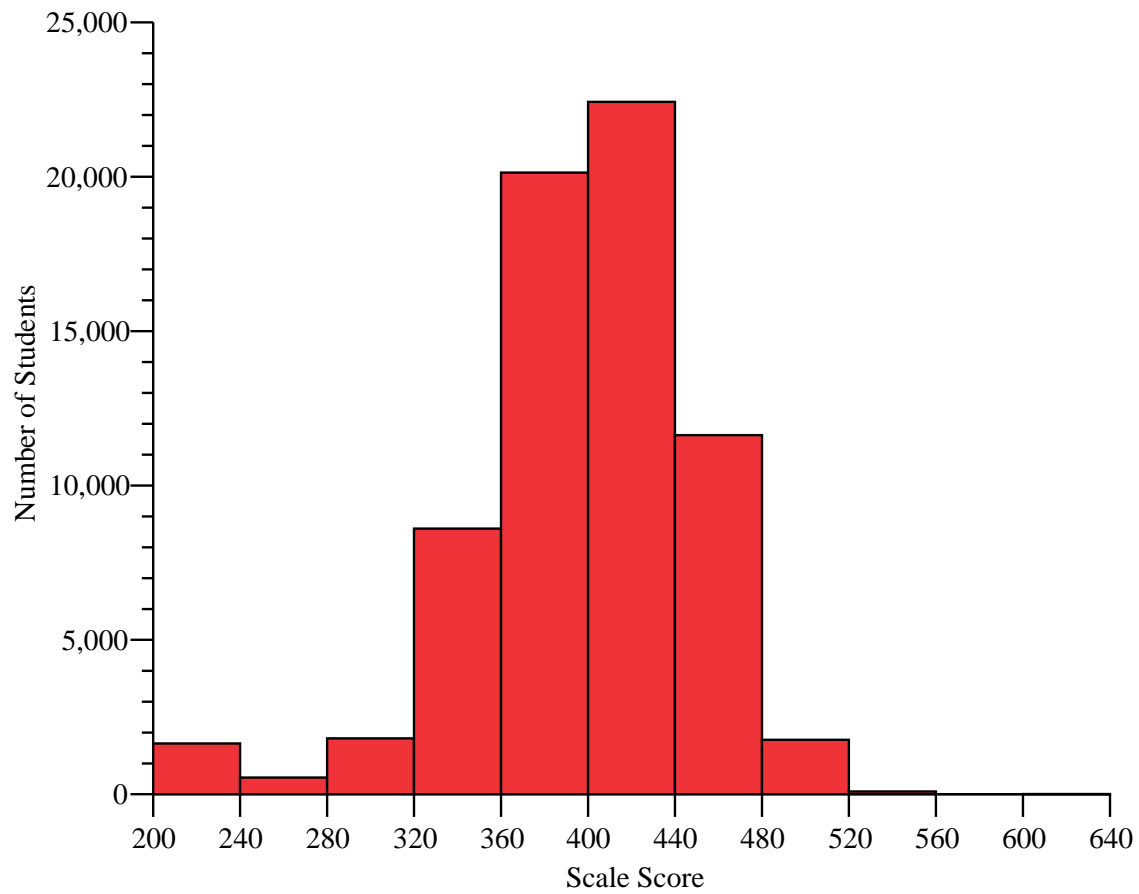




Figure G17  
Scale Score Distribution for Grade 8 Mathematics by Gender

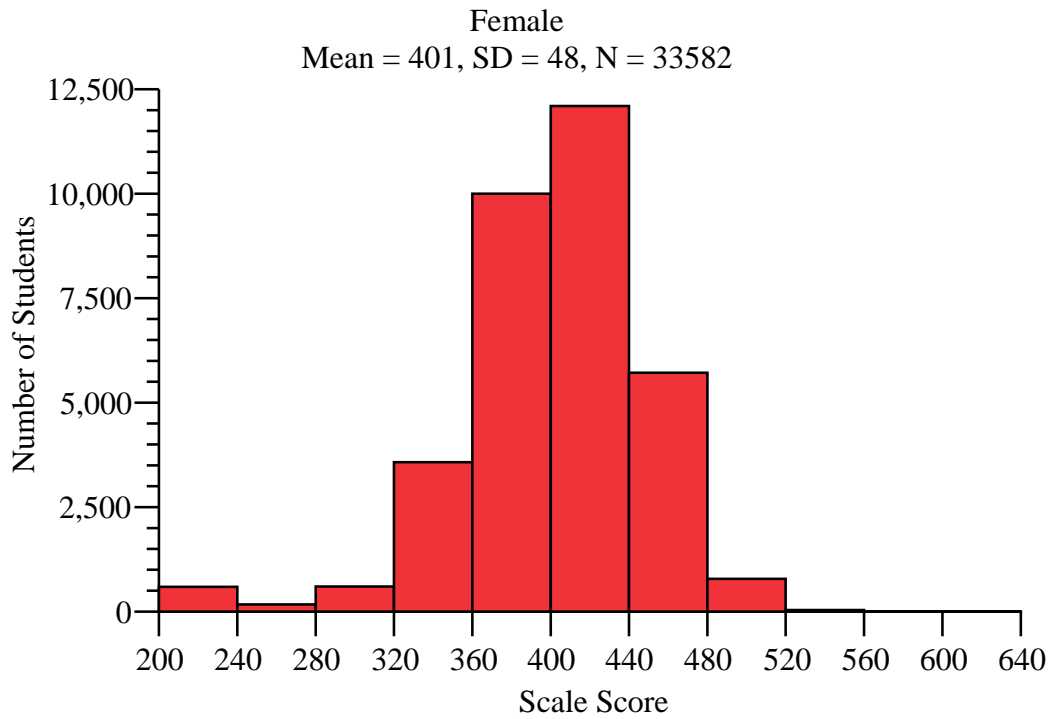
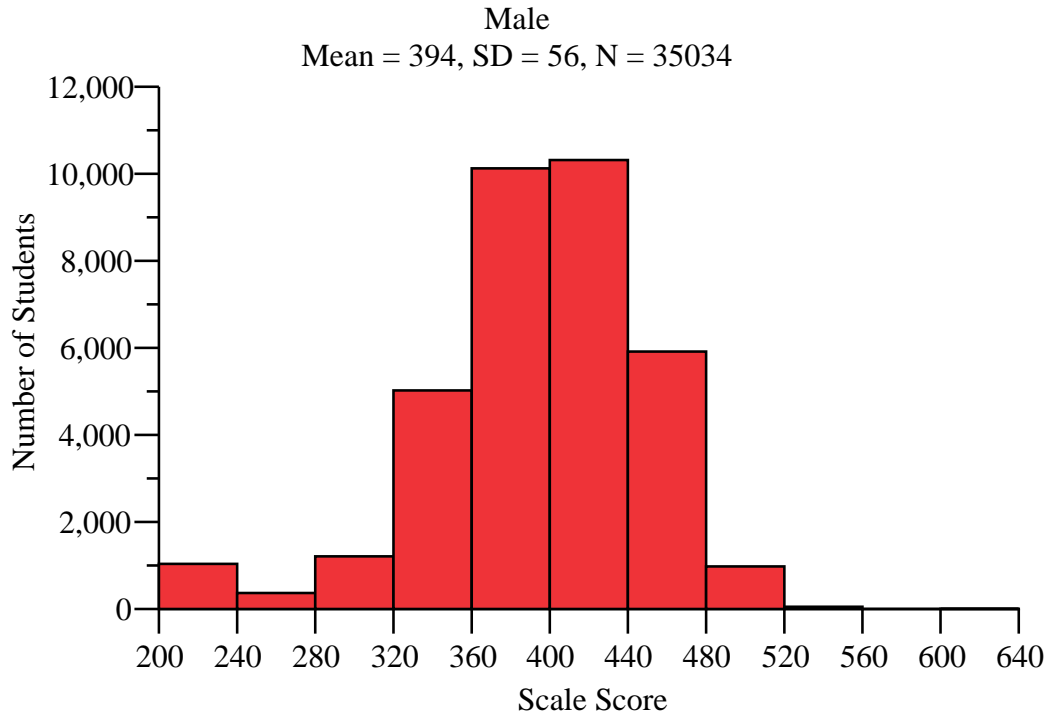


Figure G18  
Scale Score Distribution for Grade 8 Mathematics by Ethnicity

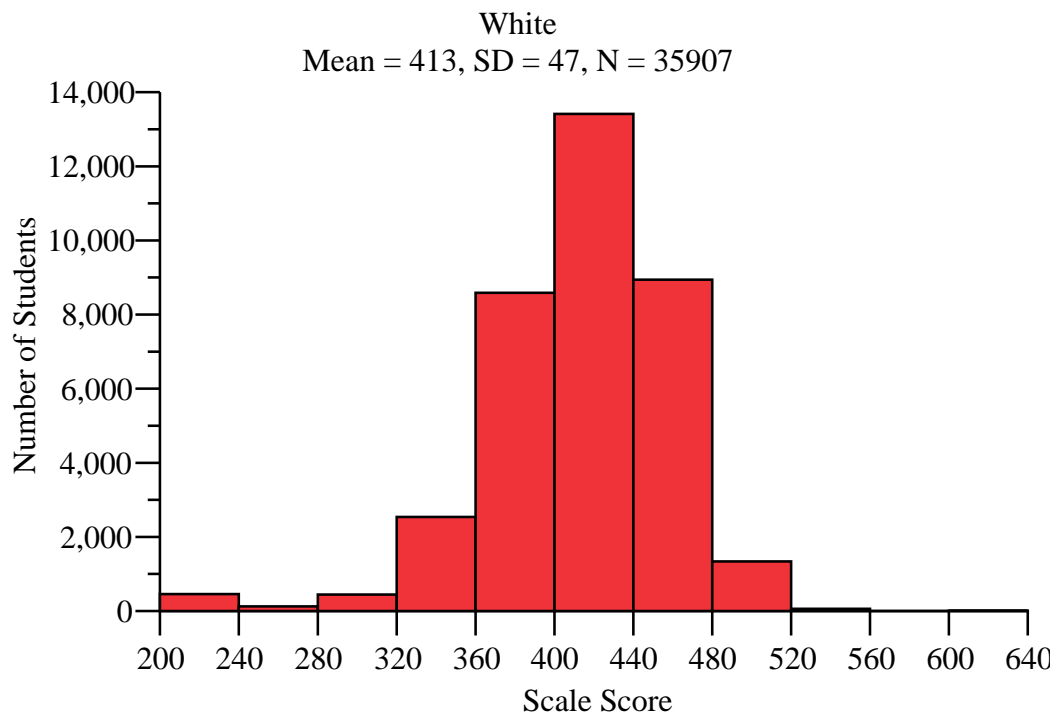
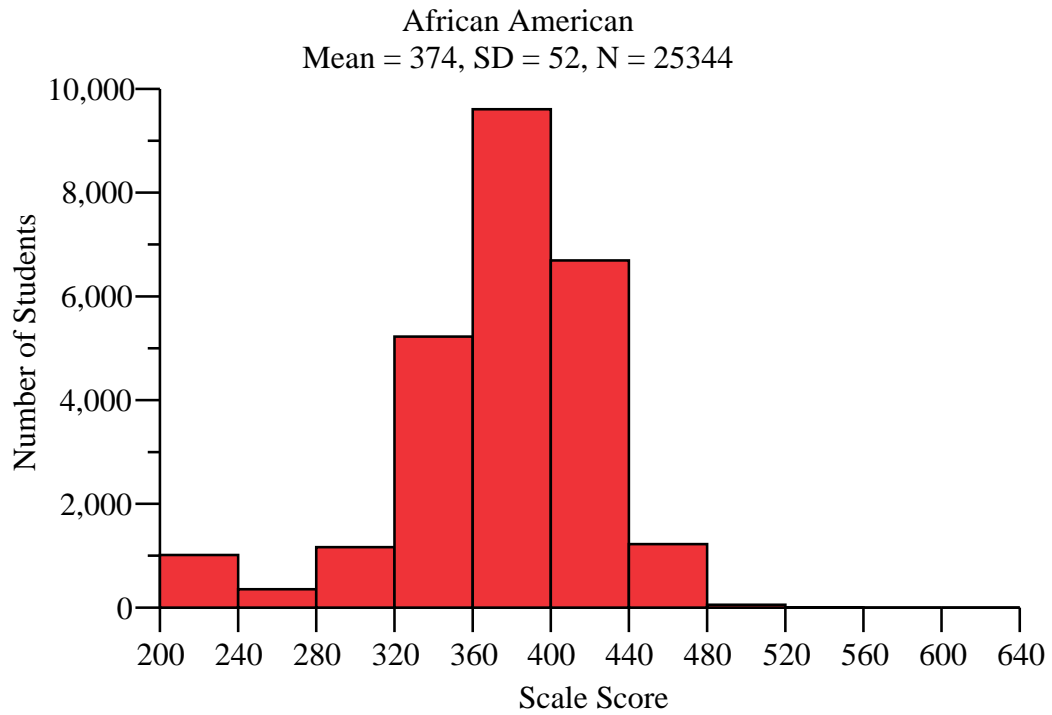


Figure G18 (cont.)  
Scale Score Distribution for Grade 8 Mathematics by Ethnicity

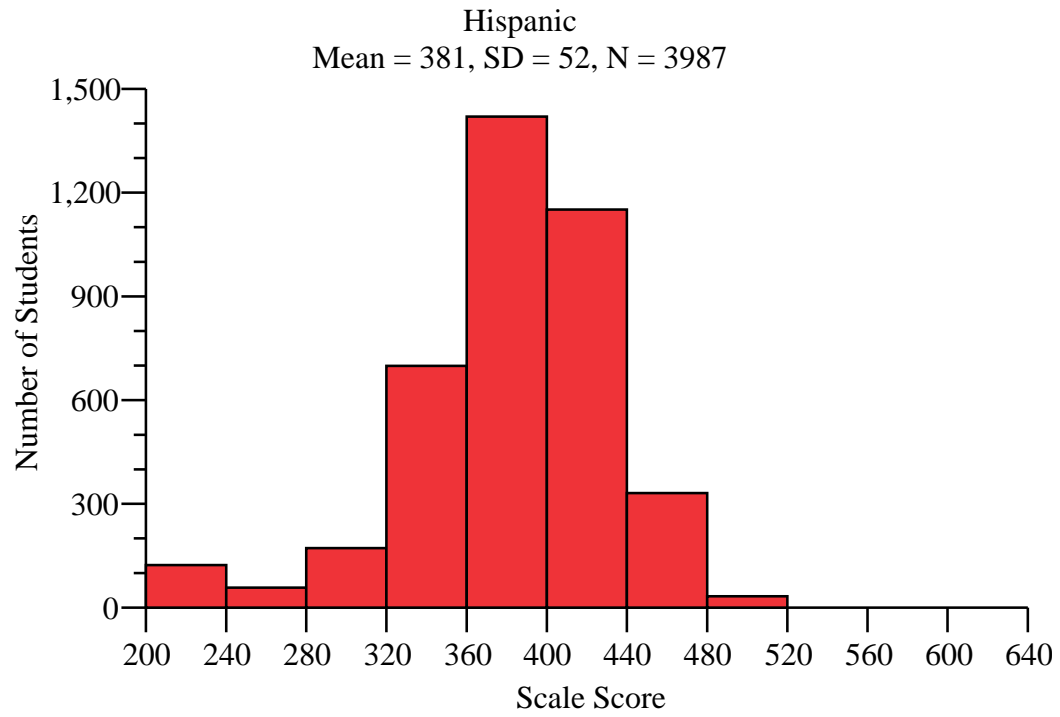


Figure G19  
Scale Score Distribution for Grade 10 Reading

Mean = 390, SD = 55, N = 62958

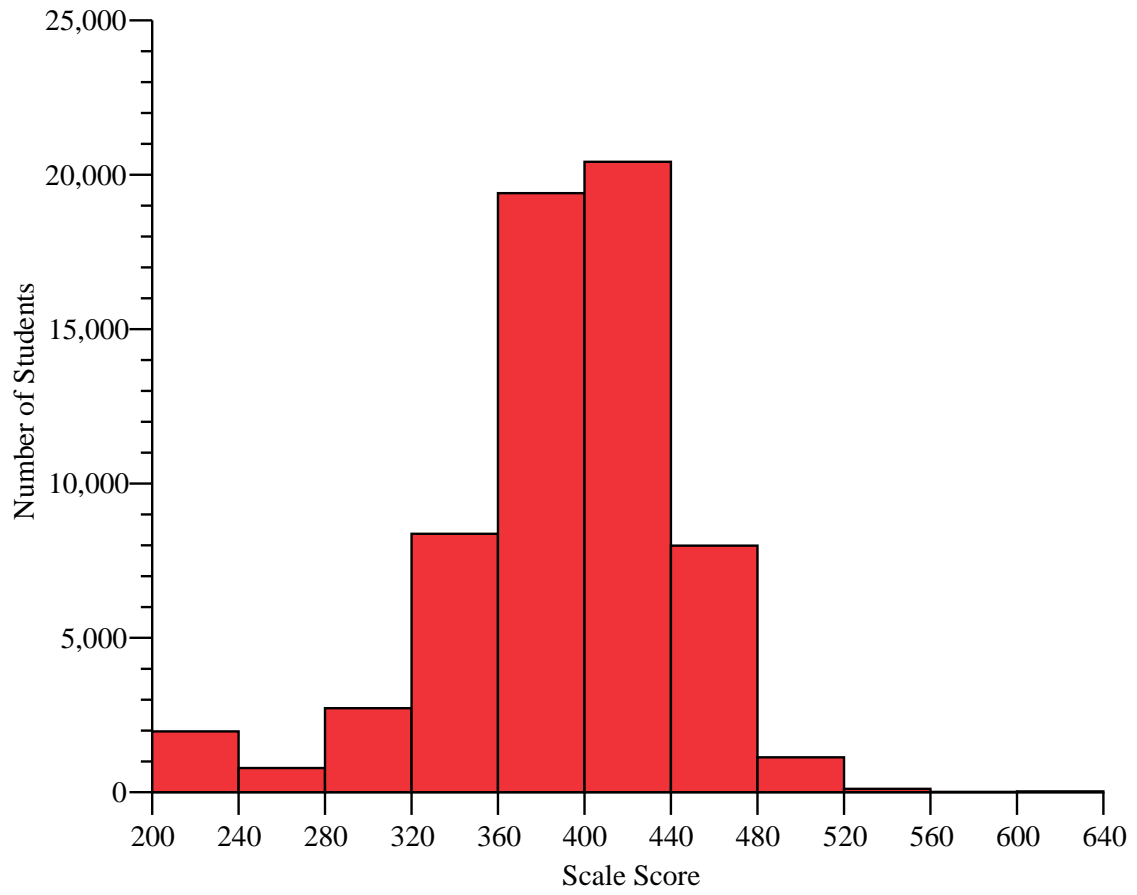


Figure G20  
Scale Score Distribution for Grade 10 Reading by Gender

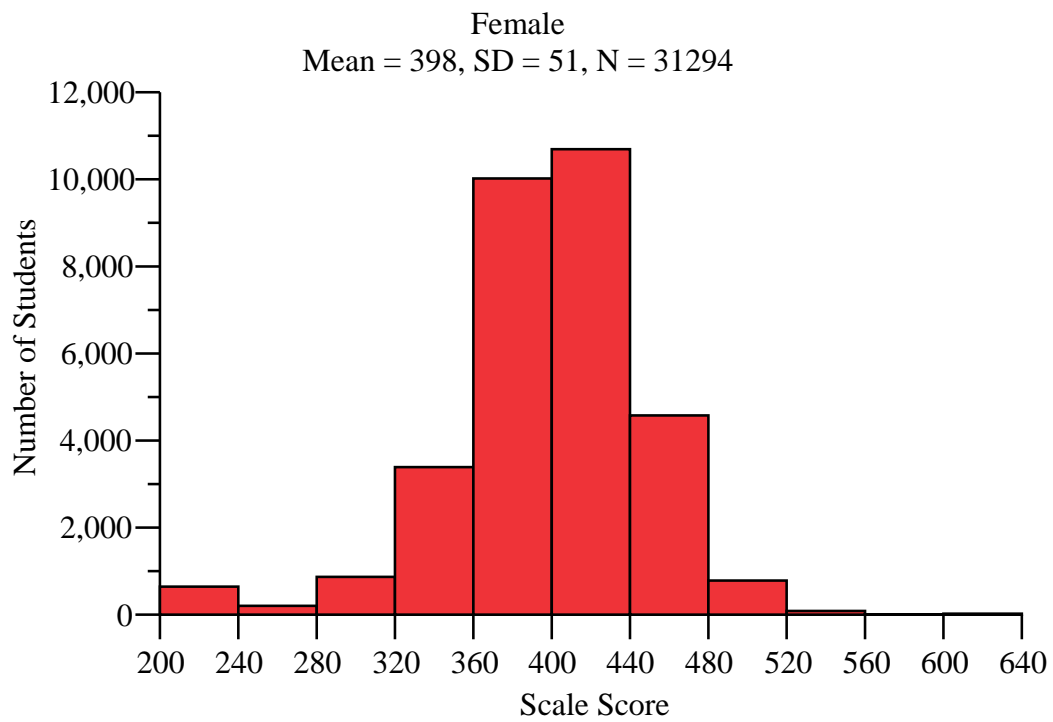
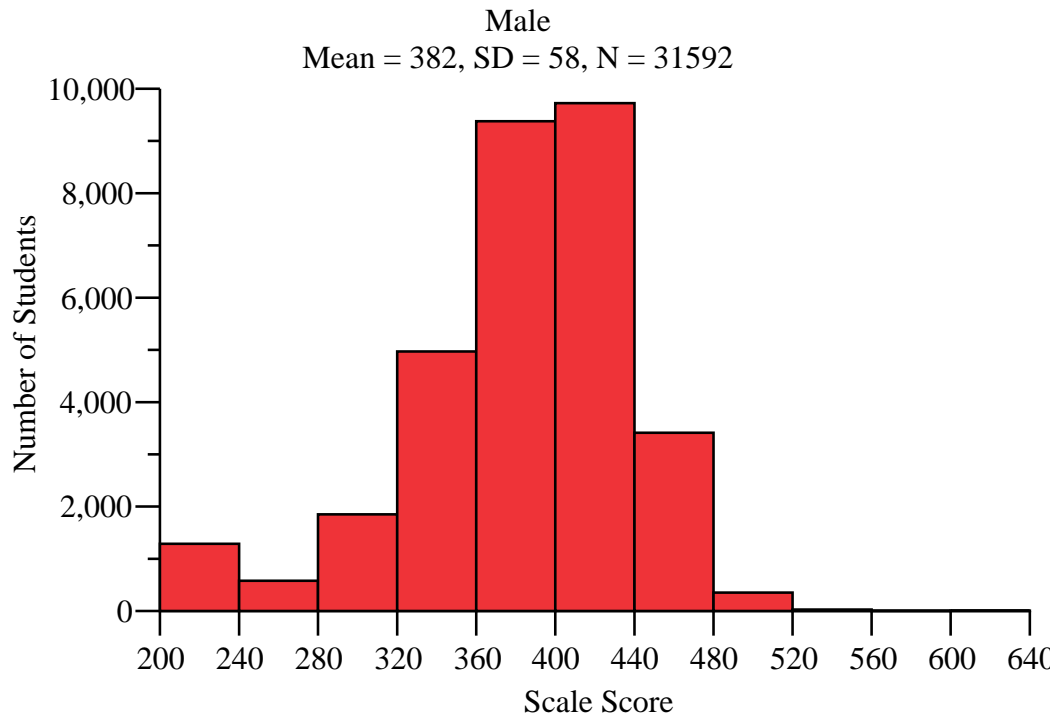


Figure G21  
Scale Score Distribution for Grade 10 Reading by Ethnicity

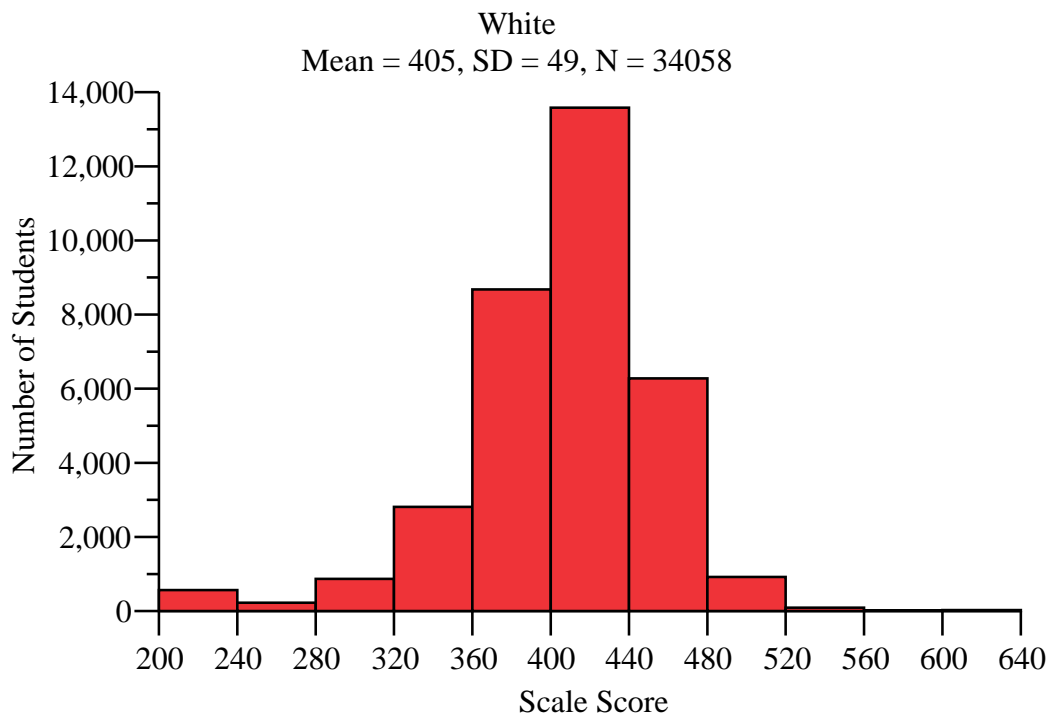
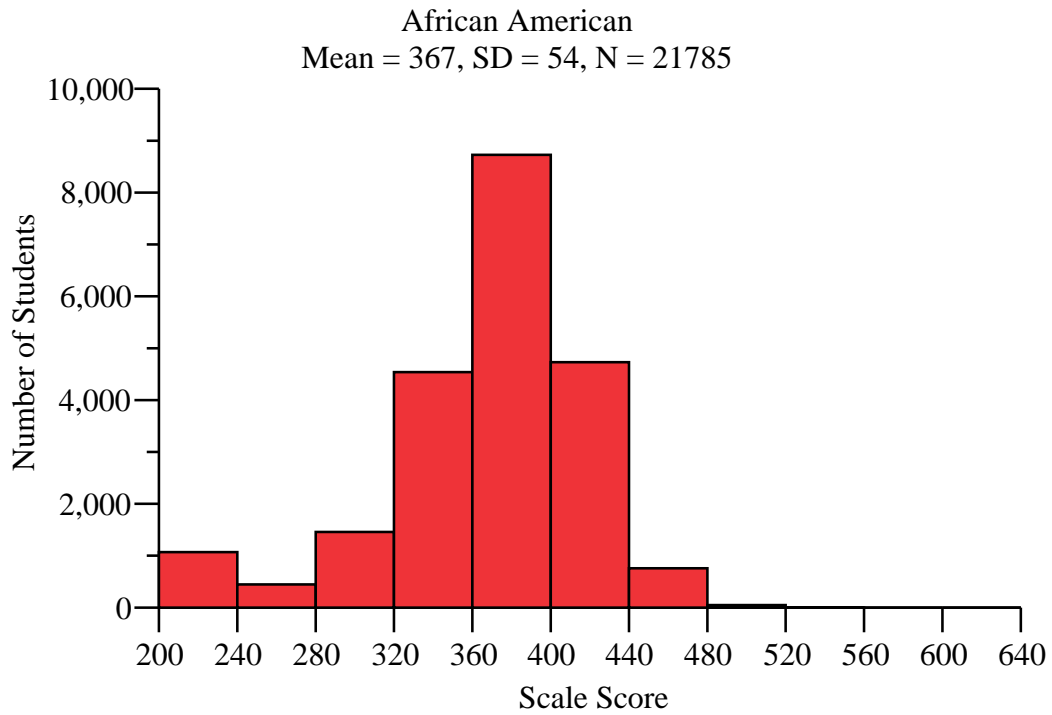
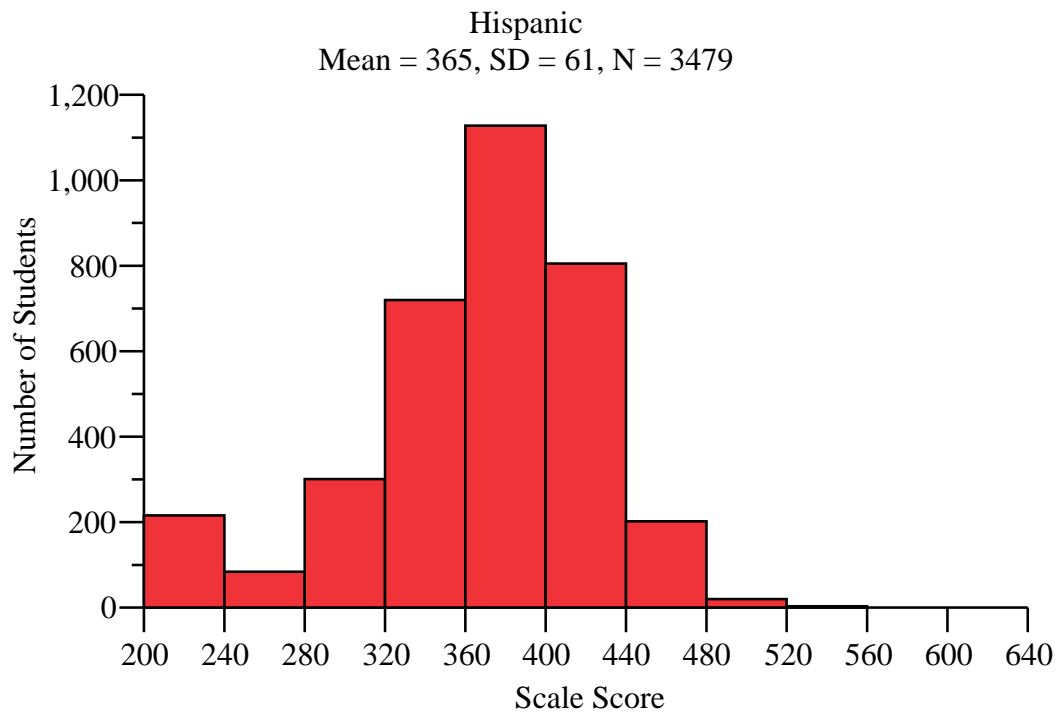


Figure G21 (cont.)  
Scale Score Distribution for Grade 10 Reading by Ethnicity



**Appendix H**  
**Factor Analysis**



## Tables List

|  |      |
|--|------|
| Table H1 Eigenvalues for Grade 3 Mathematics Form 1 (Item Level) .....                           | H-5  |
| Table H2 Factor Patterns for Grade 3 Mathematics Form 1 (Item Level).....                        | H-6  |
| Table H3 Eigenvalues and Factor Patterns for Grade 3 Mathematics Form 1 (Objective Level) .....  | H-7  |
| Table H4 Eigenvalues for Grade 3 Mathematics Form 2 (Item Level) .....                           | H-9  |
| Table H5 Factor Patterns for Grade 3 Mathematics Form 2 (Item Level).....                        | H-10 |
| Table H6 Eigenvalues and factor patterns for Grade 3 Mathematics Form 2 (Objective Level).....   | H-11 |
| Table H7 Eigenvalues for Grade 4 Mathematics Form A (Item Level) .....                           | H-13 |
| Table H8 Factor Patterns for Grade 4 Mathematics Form A (Item Level).....                        | H-14 |
| Table H9 Eigenvalues and factor patterns for Grade 4 Mathematics Form A (Objective Level).....   | H-15 |
| Table H10 Eigenvalues for Grade 4 Mathematics Form B (Item Level).....                           | H-17 |
| Table H11 Factor Patterns for Grade 4 Mathematics Form B (Item Level) .....                      | H-18 |
| Table H12 Eigenvalues and factor patterns for Grade 4 Mathematics Form B (Objective Level).....  | H-19 |
| Table H13 Eigenvalues for Grade 4 Mathematics Form C (Item Level).....                           | H-21 |
| Table H14 Factor Patterns for Grade 4 Mathematics Form C (Item Level) .....                      | H-22 |
| Table H15 Eigenvalues and factor patterns for Grade 4 Mathematics Form C (Objective Level).....  | H-23 |
| Table H16 Eigenvalues for Grade 4 Mathematics Form D (Item Level) .....                          | H-25 |
| Table H17 Factor Patterns for Grade 4 Mathematics Form D (Item Level).....                       | H-26 |
| Table H18 Eigenvalues and factor patterns for Grade 4 Mathematics Form D (Objective Level).....  | H-27 |
| Table H19 Eigenvalues for Grade 4 Mathematics Form E (Item Level).....                           | H-29 |
| Table H20 Factor Patterns for Grade 4 Mathematics Form E (Item Level) .....                      | H-30 |
| Table H21 Eigenvalues and factor patterns for Grade 4 Mathematics Form E (Objective Level) ..... | H-31 |
| Table H22 Eigenvalues for Grade 4 Mathematics Form F (Item Level) .....                          | H-33 |
| Table H23 Factor Patterns for Grade 4 Mathematics Form F (Item Level).....                       | H-34 |
| Table H24 Eigenvalues and factor patterns for Grade 4 Mathematics Form F (Objective Level) ..... | H-35 |
| Table H25 Eigenvalues for Grade 5 Mathematics Form 1 (Item Level) .....                          | H-37 |
| Table H26 Factor Patterns for Grade 5 Mathematics Form 1 (Item Level).....                       | H-38 |
| Table H27 Eigenvalues and Factor Patterns for Grade 5 Mathematics Form 1 (Objective Level).....  | H-39 |
| Table H28 Eigenvalues for Grade 5 Mathematics Form 2 (Item Level) .....                          | H-41 |
| Table H29 Factor Patterns for Grade 5 Mathematics Form 2 (Item Level).....                       | H-42 |
| Table H30 Eigenvalues and factor patterns for Grade 5 Mathematics Form 2 (Objective Level).....  | H-43 |
| Table H31 Eigenvalues for Grade 6 Mathematics Form A (Item Level) .....                          | H-45 |
| Table H32 Factor Patterns for Grade 6 Mathematics Form A (Item Level).....                       | H-46 |
| Table H33 Eigenvalues and factor patterns for Grade 6 Mathematics Form A (Objective Level).....  | H-47 |
| Table H34 Eigenvalues for Grade 6 Mathematics Form B (Item Level).....                           | H-49 |
| Table H35 Factor Patterns for Grade 6 Mathematics Form B (Item Level) .....                      | H-50 |
| Table H36 Eigenvalues and factor patterns for Grade 6 Mathematics Form B (Objective Level).....  | H-52 |
| Table H37 Eigenvalues for Grade 6 Mathematics Form C (Item Level).....                           | H-54 |
| Table H38 Factor Patterns for Grade 6 Mathematics Form C (Item Level) .....                      | H-55 |
| Table H39 Eigenvalues and factor patterns for Grade 6 Mathematics Form C (Objective Level).....  | H-57 |
| Table H40 Eigenvalues for Grade 6 Mathematics Form D (Item Level) .....                          | H-59 |
| Table H41 Factor Patterns for Grade 6 Mathematics Form D (Item Level).....                       | H-60 |
| Table H42 Eigenvalues and factor patterns for Grade 6 Mathematics Form D (Objective Level).....  | H-61 |
| Table H43 Eigenvalues for Grade 6 Mathematics Form E (Item Level).....                           | H-63 |
| Table H44 Factor Patterns for Grade 6 Mathematics Form E (Item Level) .....                      | H-64 |
| Table H45 Eigenvalues and factor patterns for Grade 6 Mathematics Form E (Objective Level) ..... | H-66 |
| Table H46 Eigenvalues for Grade 6 Mathematics Form F (Item Level) .....                          | H-68 |
| Table H47 Factor Patterns for Grade 6 Mathematics Form F (Item Level).....                       | H-69 |
| Table H48 Eigenvalues and factor patterns for Grade 6 Mathematics Form F (Objective Level) ..... | H-71 |
| Table H49 Eigenvalues for Grade 7 Mathematics Form A (Item Level) .....                          | H-73 |
| Table H50 Factor Patterns for Grade 7 Mathematics Form A (Item Level).....                       | H-74 |
| Table H51 Eigenvalues and factor patterns for Grade 7 Mathematics Form A (Objective Level).....  | H-76 |
| Table H52 Eigenvalues for Grade 7 Mathematics Form B (Item Level).....                           | H-78 |
| Table H53 Factor Patterns for Grade 7 Mathematics Form B (Item Level) .....                      | H-79 |

|   |       |
|---|-------|
| Table H54 Eigenvalues and factor patterns for Grade 7 Mathematics Form B (Objective Level)..... | H-81  |
| Table H55 Eigenvalues for Grade 7 Mathematics Form C (Item Level).....                          | H-83  |
| Table H56 Factor Patterns for Grade 7 Mathematics Form C (Item Level).....                      | H-84  |
| Table H57 Eigenvalues and factor patterns for Grade 7 Mathematics Form C (Objective Level)..... | H-86  |
| Table H58 Eigenvalues for Grade 7 Mathematics Form D (Item Level).....                          | H-88  |
| Table H59 Factor Patterns for Grade 7 Mathematics Form D (Item Level).....                      | H-89  |
| Table H60 Eigenvalues and factor patterns for Grade 7 Mathematics Form D (Objective Level)..... | H-91  |
| Table H61 Eigenvalues for Grade 7 Mathematics Form E (Item Level).....                          | H-93  |
| Table H62 Factor Patterns for Grade 7 Mathematics Form E (Item Level).....                      | H-94  |
| Table H63 Eigenvalues and factor patterns for Grade 7 Mathematics Form E (Objective Level)..... | H-96  |
| Table H64 Eigenvalues for Grade 7 Mathematics Form F (Item Level).....                          | H-98  |
| Table H65 Factor Patterns for Grade 7 Mathematics Form F (Item Level).....                      | H-99  |
| Table H66 Eigenvalues and factor patterns for Grade 7 Mathematics Form F (Objective Level)..... | H-101 |
| Table H67 Eigenvalues for Grade 8 Mathematics Form 1 (Item Level).....                          | H-103 |
| Table H68 Factor Patterns for Grade 8 Mathematics Form 1 (Item Level).....                      | H-104 |
| Table H69 Eigenvalues and Factor Patterns for Grade 8 Mathematics Form 1 (Objective Level)..... | H-106 |
| Table H70 Eigenvalues for Grade 8 Mathematics Form 2 (Item Level).....                          | H-108 |
| Table H71 Factor Patterns for Grade 8 Mathematics Form 2 (Item Level).....                      | H-109 |
| Table H72 Eigenvalues and factor patterns for Grade 8 Mathematics Form 2 (Objective Level)..... | H-111 |
| Table H73 Eigenvalues for Grade 10 Reading Form 1 (Item Level).....                             | H-113 |
| Table H74 Factor Patterns for Grade 10 Reading Form 1 (Item Level).....                         | H-114 |
| Table H75 Eigenvalues and Factor Patterns for Grade 10 Reading Form 1 (Objective Level).....    | H-115 |
| Table H76 Eigenvalues for Grade 10 Reading Form 2 (Item Level).....                             | H-117 |
| Table H77 Factor Patterns for Grade 10 Reading Form 2 (Item Level).....                         | H-118 |
| Table H78 Eigenvalues and factor patterns for Grade 10 Reading Form 2 (Objective Level).....    | H-119 |

## Figures List

|   |       |
|---|-------|
| Figure H1 Scree Plot of Eigenvalues for Grade 3 Mathematics Form 1 .....  | H-8   |
| Figure H2 Scree Plot of Eigenvalues for Grade 3 Mathematics Form 2 .....  | H-12  |
| Figure H3 Scree Plot of Eigenvalues for Grade 4 Mathematics Form A.....   | H-16  |
| Figure H4 Scree Plot of Eigenvalues for Grade 4 Mathematics Form B.....   | H-20  |
| Figure H5 Scree Plot of Eigenvalues for Grade 4 Mathematics Form C.....   | H-24  |
| Figure H6 Scree Plot of Eigenvalues for Grade 4 Mathematics Form D.....   | H-28  |
| Figure H7 Scree Plot of Eigenvalues for Grade 4 Mathematics Form E.....   | H-32  |
| Figure H8 Scree Plot of Eigenvalues for Grade 4 Mathematics Form F .....  | H-36  |
| Figure H9 Scree Plot of Eigenvalues for Grade 5 Mathematics Form 1 .....  | H-40  |
| Figure H10 Scree Plot of Eigenvalues for Grade 5 Mathematics Form 2 ..... | H-44  |
| Figure H11 Scree Plot of Eigenvalues for Grade 6 Mathematics Form A.....  | H-48  |
| Figure H12 Scree Plot of Eigenvalues for Grade 6 Mathematics Form B.....  | H-53  |
| Figure H13 Scree Plot of Eigenvalues for Grade 6 Mathematics Form C.....  | H-58  |
| Figure H14 Scree Plot of Eigenvalues for Grade 6 Mathematics Form D.....  | H-62  |
| Figure H15 Scree Plot of Eigenvalues for Grade 6 Mathematics Form E.....  | H-67  |
| Figure H16 Scree Plot of Eigenvalues for Grade 6 Mathematics Form F ..... | H-72  |
| Figure H17 Scree Plot of Eigenvalues for Grade 7 Mathematics Form A.....  | H-77  |
| Figure H18 Scree Plot of Eigenvalues for Grade 7 Mathematics Form B.....  | H-82  |
| Figure H19 Scree Plot of Eigenvalues for Grade 7 Mathematics Form C.....  | H-87  |
| Figure H20 Scree Plot of Eigenvalues for Grade 7 Mathematics Form D.....  | H-92  |
| Figure H21 Scree Plot of Eigenvalues for Grade 7 Mathematics Form E.....  | H-97  |
| Figure H22 Scree Plot of Eigenvalues for Grade 7 Mathematics Form F ..... | H-102 |
| Figure H23 Scree Plot of Eigenvalues for Grade 8 Mathematics Form 1 ..... | H-107 |
| Figure H24 Scree Plot of Eigenvalues for Grade 8 Mathematics Form 2 ..... | H-112 |
| Figure H25 Scree Plot of Eigenvalues for Grade 10 Reading Form 1.....     | H-116 |
| Figure H26 Scree Plot of Eigenvalues for Grade 10 Reading Form 2.....     | H-120 |

**Table H1**  
**Eigenvalues for Grade 3 Mathematics Form 1 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 22.596       | 21.183      | 0.729       | 0.729      |
| 2             | 1.412        | 0.249       | 0.046       | 0.775      |
| 3             | 1.164        | 0.061       | 0.038       | 0.813      |
| 4             | 1.102        | 0.156       | 0.036       | 0.848      |
| 5             | 0.946        | 0.123       | 0.031       | 0.879      |
| 6             | 0.823        | 0.003       | 0.027       | 0.905      |
| 7             | 0.820        | 0.077       | 0.027       | 0.932      |
| 8             | 0.742        | 0.134       | 0.024       | 0.956      |
| 9             | 0.608        | 0.070       | 0.020       | 0.975      |
| 10            | 0.538        | 0.091       | 0.017       | 0.993      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion

**Table H2**  
**Factor Patterns for Grade 3 Mathematics Form 1 (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Factor4 | Item | Factor1 | Factor2 | Factor3 | Factor4 |
|------|---------|---------|---------|---------|------|---------|---------|---------|---------|
| 1    | 0.425   | 0.007   | 0.038   | -0.121  | 34   | 0.579   | -0.022  | -0.023  | 0.012   |
| 2    | 0.483   | -0.067  | 0.003   | -0.156  | 35   | 0.536   | 0.131   | 0.058   | -0.024  |
| 3    | 0.516   | 0.059   | -0.027  | -0.130  | 36   | 0.602   | -0.107  | -0.005  | -0.070  |
| 4    | 0.612   | 0.008   | 0.031   | -0.125  | 37   | 0.555   | 0.114   | 0.016   | -0.055  |
| 5    | 0.593   | 0.057   | 0.043   | -0.174  | 38   | 0.499   | -0.007  | 0.215   | 0.043   |
| 6    | 0.661   | 0.082   | 0.083   | -0.116  | 39   | 0.420   | 0.100   | -0.018  | -0.032  |
| 7    | 0.464   | -0.063  | 0.256   | 0.004   | 40   | 0.669   | 0.028   | -0.183  | 0.041   |
| 8    | 0.513   | -0.295  | 0.295   | 0.172   | 41   | 0.632   | 0.090   | -0.172  | 0.098   |
| 9    | 0.536   | -0.169  | 0.218   | 0.051   | 42   | 0.614   | -0.124  | 0.132   | 0.110   |
| 10   | 0.487   | -0.297  | 0.059   | -0.053  | 43   | 0.548   | 0.183   | 0.046   | -0.064  |
| 11   | 0.691   | -0.329  | -0.065  | -0.039  | 44   | 0.665   | -0.045  | -0.088  | -0.057  |
| 12   | 0.697   | 0.064   | 0.015   | -0.061  | 45   | 0.758   | -0.024  | -0.114  | -0.057  |
| 13   | 0.585   | 0.125   | 0.000   | 0.041   | 46   | 0.618   | 0.017   | -0.142  | 0.035   |
| 14   | 0.733   | -0.202  | -0.002  | -0.129  | 47   | 0.577   | 0.052   | -0.154  | 0.105   |
| 15   | 0.411   | 0.139   | 0.103   | 0.035   | 48   | 0.565   | 0.249   | 0.118   | 0.015   |
| 16   | 0.542   | 0.092   | 0.054   | -0.110  | 49   | 0.546   | 0.022   | -0.090  | -0.025  |
| 17   | 0.386   | -0.129  | 0.279   | 0.210   | 50   | 0.639   | 0.061   | -0.057  | -0.085  |
| 18   | 0.523   | 0.233   | 0.090   | -0.015  | 51   | 0.607   | 0.201   | 0.144   | 0.084   |
| 19   | 0.543   | -0.109  | 0.319   | 0.337   | 52   | 0.586   | 0.231   | 0.092   | -0.002  |
| 20   | 0.595   | 0.002   | 0.164   | 0.325   | 53   | 0.635   | 0.168   | 0.053   | -0.136  |
| 21   | 0.625   | -0.346  | -0.019  | -0.126  | 54   | 0.571   | -0.250  | -0.189  | -0.049  |
| 22   | 0.703   | -0.176  | 0.008   | -0.073  | 55   | 0.669   | 0.084   | -0.249  | 0.248   |
| 23   | 0.723   | 0.137   | 0.032   | -0.045  | 56   | 0.644   | 0.134   | -0.200  | 0.280   |
| 24   | 0.564   | -0.062  | 0.013   | -0.053  | 57   | 0.501   | 0.355   | 0.116   | 0.076   |
| 25   | 0.768   | -0.121  | -0.088  | -0.091  | 58   | 0.590   | 0.011   | 0.055   | 0.068   |
| 26   | 0.585   | 0.108   | 0.058   | -0.158  | 59   | 0.580   | -0.034  | -0.101  | -0.063  |
| 27   | 0.621   | 0.099   | 0.014   | 0.012   | 60   | 0.567   | -0.167  | -0.124  | -0.031  |
| 28   | 0.670   | 0.131   | -0.037  | 0.025   | 61   | 0.405   | -0.066  | -0.304  | 0.338   |
| 29   | 0.597   | -0.247  | 0.203   | 0.127   | 62   | 0.468   | -0.023  | -0.299  | 0.401   |
| 30   | 0.753   | -0.131  | -0.082  | -0.105  | 63   | 0.346   | 0.180   | 0.103   | 0.022   |
| 31   | 0.654   | -0.085  | -0.083  | -0.044  | 64   | 0.660   | 0.087   | -0.042  | -0.079  |
| 32   | 0.686   | 0.030   | -0.007  | -0.111  | 65   | 0.728   | -0.013  | -0.129  | -0.089  |
| 33   | 0.176   | 0.064   | 0.013   | 0.100   |      |         |         |         |         |

**Table H3**  
**Eigenvalues and Factor Patterns for Grade 3 Mathematics Form 1 (Objective Level)**

**Eigenvalues**

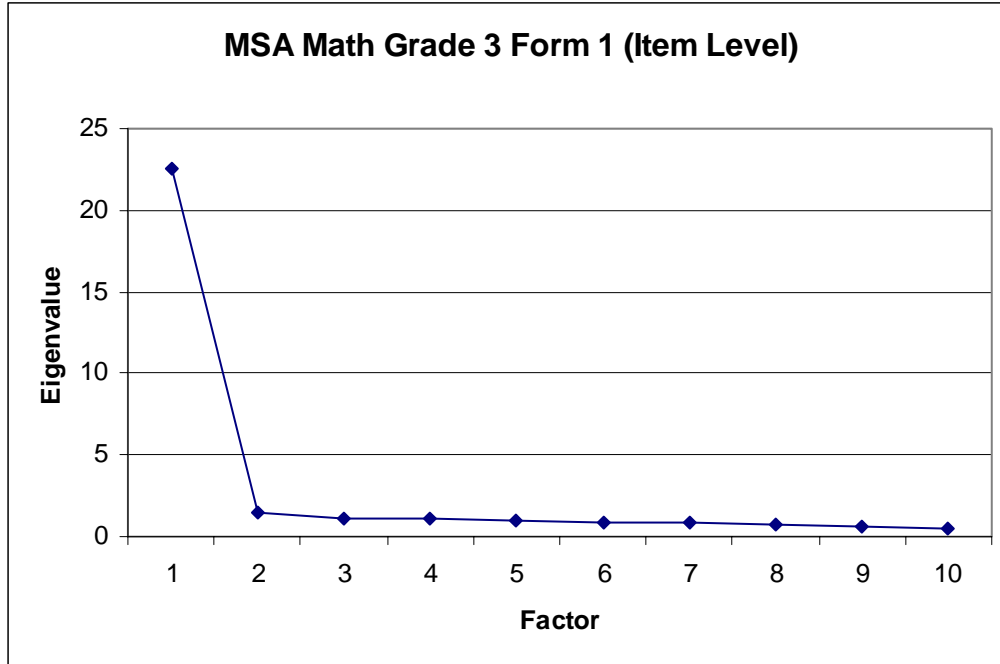
| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 3.333        | 3.366       | 1.089       | 1.089      |
| 2             | -0.033       | 0.036       | -0.011      | 1.078      |
| 3             | -0.069       | 0.010       | -0.023      | 1.055      |
| 4             | -0.079       | 0.012       | -0.026      | 1.030      |
| 5             | -0.091       |             | -0.030      | 1.000      |

**Factor Pattern**

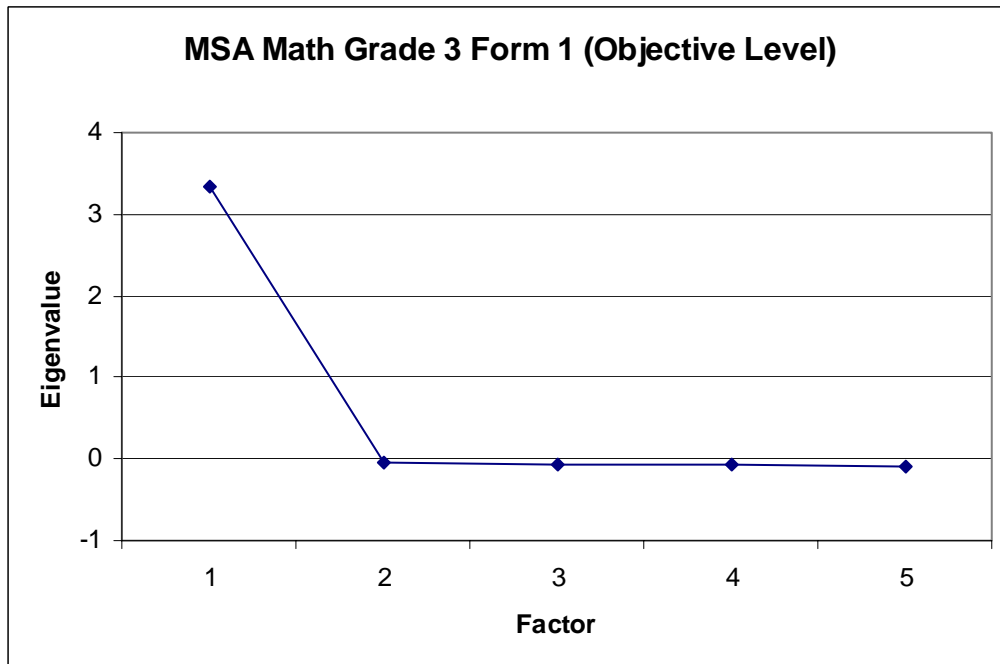
| <b>Objective</b> | <b>Factor1</b> |
|------------------|----------------|
| 1                | 0.822          |
| 2                | 0.798          |
| 3                | 0.830          |
| 4                | 0.860          |
| 5                | 0.768          |

**Figure H1**  
**Scree Plot of Eigenvalues for Grade 3 Mathematics Form 1**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H4**  
**Eigenvalues for Grade 3 Mathematics Form 2 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 22.109       | 20.581      | 0.760       | 0.760      |
| 2             | 1.528        | 0.332       | 0.053       | 0.812      |
| 3             | 1.196        | 0.358       | 0.041       | 0.853      |
| 4             | 0.838        | 0.024       | 0.029       | 0.882      |
| 5             | 0.814        | 0.134       | 0.028       | 0.910      |
| 6             | 0.680        | 0.094       | 0.023       | 0.933      |
| 7             | 0.586        | 0.066       | 0.020       | 0.954      |
| 8             | 0.519        | 0.038       | 0.018       | 0.971      |
| 9             | 0.482        | 0.019       | 0.017       | 0.988      |
| 10            | 0.463        | 0.052       | 0.016       | 1.004      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion



**Table H5**  
**Factor Patterns for Grade 3 Mathematics Form 2 (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> |
|-------------|----------------|----------------|----------------|-------------|----------------|----------------|----------------|
| 1           | 0.434          | -0.011         | -0.099         | 34          | 0.626          | -0.054         | -0.064         |
| 2           | 0.477          | -0.074         | -0.126         | 35          | 0.551          | 0.136          | -0.060         |
| 3           | 0.505          | -0.025         | -0.115         | 36          | 0.595          | -0.065         | -0.076         |
| 4           | 0.606          | -0.041         | -0.166         | 37          | 0.541          | 0.097          | -0.051         |
| 5           | 0.593          | -0.033         | -0.172         | 38          | 0.572          | -0.046         | -0.106         |
| 6           | 0.646          | 0.004          | -0.105         | 39          | 0.396          | 0.095          | -0.014         |
| 7           | 0.470          | -0.075         | -0.069         | 40          | 0.549          | 0.232          | 0.146          |
| 8           | 0.525          | -0.394         | 0.368          | 41          | 0.672          | 0.240          | 0.185          |
| 9           | 0.495          | -0.121         | -0.046         | 42          | 0.615          | -0.222         | 0.148          |
| 10          | 0.483          | -0.329         | -0.109         | 43          | 0.581          | -0.034         | -0.181         |
| 11          | 0.700          | -0.265         | -0.036         | 44          | 0.643          | -0.046         | -0.133         |
| 12          | 0.614          | 0.148          | 0.077          | 45          | 0.663          | -0.135         | -0.142         |
| 13          | 0.596          | 0.157          | 0.179          | 46          | 0.607          | 0.051          | -0.024         |
| 14          | 0.725          | -0.177         | -0.133         | 47          | 0.497          | 0.094          | 0.124          |
| 15          | 0.398          | 0.129          | 0.083          | 48          | 0.563          | 0.263          | 0.034          |
| 16          | 0.533          | 0.031          | -0.117         | 49          | 0.497          | 0.142          | 0.096          |
| 17          | 0.330          | -0.079         | 0.043          | 50          | 0.620          | 0.071          | -0.073         |
| 18          | 0.532          | 0.176          | 0.018          | 51          | 0.375          | 0.036          | 0.072          |
| 19          | 0.614          | -0.298         | 0.344          | 52          | 0.579          | 0.230          | 0.036          |
| 20          | 0.570          | -0.148         | 0.404          | 53          | 0.682          | 0.061          | -0.091         |
| 21          | 0.597          | -0.316         | -0.097         | 54          | 0.650          | 0.225          | -0.059         |
| 22          | 0.693          | -0.145         | -0.047         | 55          | 0.704          | 0.133          | 0.148          |
| 23          | 0.732          | 0.156          | -0.051         | 56          | 0.608          | 0.171          | 0.218          |
| 24          | 0.571          | -0.048         | -0.038         | 57          | 0.614          | 0.239          | 0.090          |
| 25          | 0.775          | -0.088         | -0.097         | 58          | 0.609          | -0.024         | 0.000          |
| 26          | 0.573          | 0.024          | -0.130         | 59          | 0.681          | -0.017         | -0.154         |
| 27          | 0.456          | 0.002          | -0.004         | 60          | 0.624          | 0.093          | -0.025         |
| 28          | 0.669          | 0.111          | 0.065          | 61          | 0.312          | 0.008          | 0.138          |
| 29          | 0.593          | -0.356         | 0.296          | 62          | 0.501          | 0.095          | 0.215          |
| 30          | 0.758          | -0.104         | -0.066         | 63          | 0.338          | 0.152          | 0.028          |
| 31          | 0.650          | -0.061         | 0.002          | 64          | 0.643          | 0.080          | -0.044         |
| 32          | 0.670          | 0.042          | -0.068         | 65          | 0.710          | -0.010         | -0.131         |
| 33          | 0.210          | 0.117          | 0.133          |             |                |                |                |

**Table H6**  
**Eigenvalues and factor patterns for Grade 3 Mathematics Form 2 (Objective Level)**

## Eigenvalues

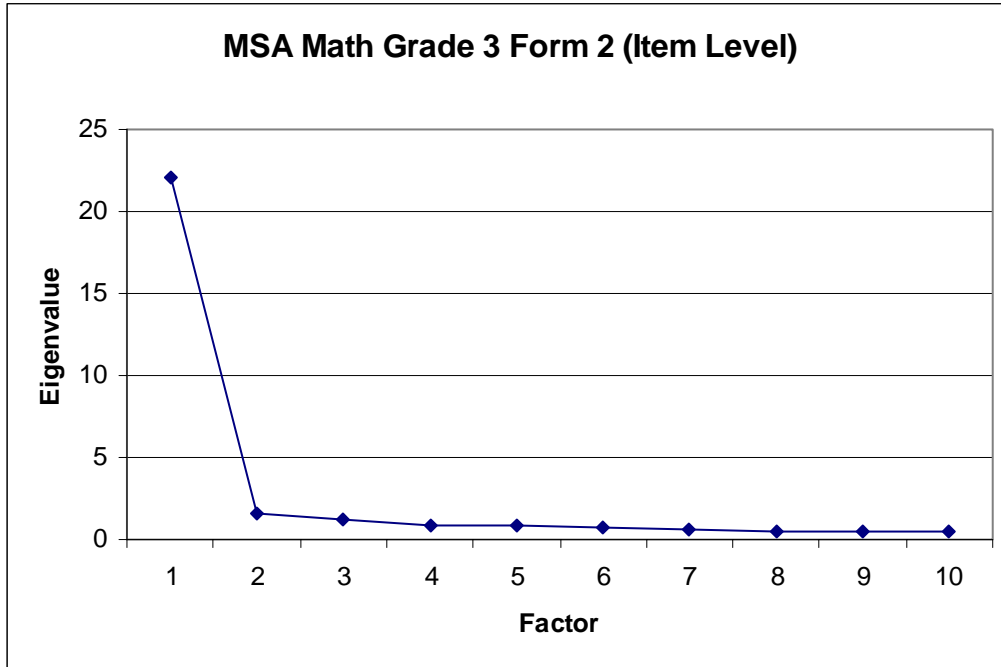
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.261  | 3.272 | 1.088  | 1.088 |
| 2      | -0.011 | 0.047 | -0.004 | 1.085 |
| 3      | -0.058 | 0.032 | -0.019 | 1.065 |
| 4      | -0.090 | 0.015 | -0.030 | 1.035 |
| 5      | -0.105 |       | -0.035 | 1.000 |

## Factor Pattern

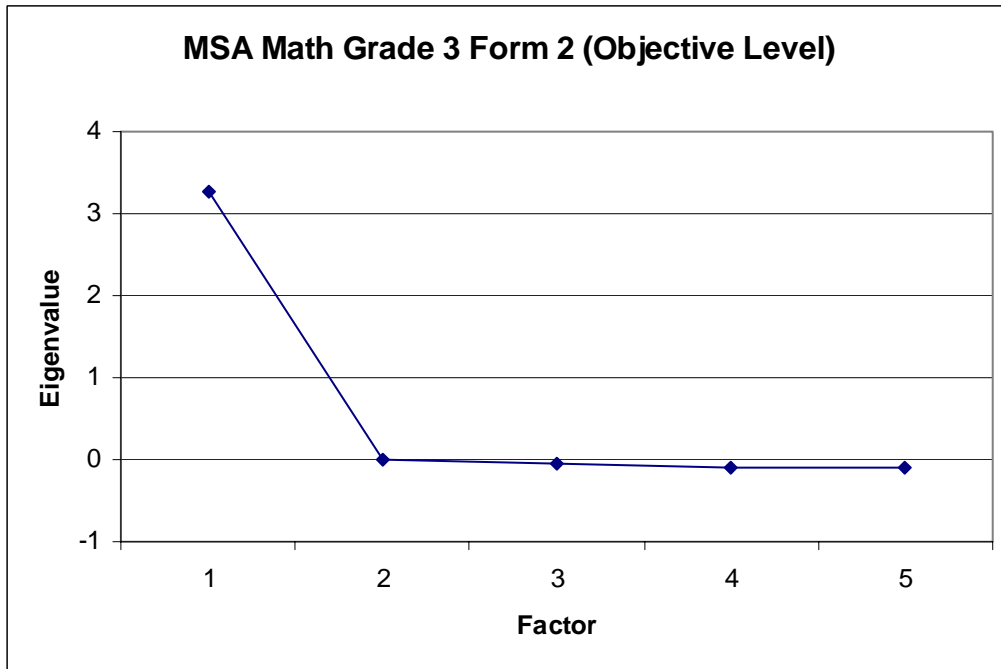
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.810   |
| 2         | 0.767   |
| 3         | 0.842   |
| 4         | 0.861   |
| 5         | 0.754   |

**Figure H2**  
**Scree Plot of Eigenvalues for Grade 3 Mathematics Form 2**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H7**  
**Eigenvalues for Grade 4 Mathematics Form A (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 22.538       | 21.209      | 0.760       | 0.760      |
| 2             | 1.330        | 0.157       | 0.045       | 0.805      |
| 3             | 1.173        | 0.069       | 0.040       | 0.844      |
| 4             | 1.104        | 0.213       | 0.037       | 0.881      |
| 5             | 0.891        | 0.254       | 0.030       | 0.911      |
| 6             | 0.637        | 0.031       | 0.022       | 0.933      |
| 7             | 0.605        | 0.072       | 0.020       | 0.953      |
| 8             | 0.533        | 0.076       | 0.018       | 0.971      |
| 9             | 0.457        | 0.038       | 0.015       | 0.987      |
| 10            | 0.419        | 0.117       | 0.014       | 1.001      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H8**  
**Factor Patterns for Grade 4 Mathematics Form A (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Factor4 | Item | Factor1 | Factor2 | Factor3 | Factor4 |
|------|---------|---------|---------|---------|------|---------|---------|---------|---------|
| 1    | 0.463   | -0.009  | -0.108  | 0.154   | 33   | 0.549   | -0.062  | 0.009   | 0.079   |
| 2    | 0.477   | 0.035   | -0.055  | 0.068   | 34   | 0.568   | 0.102   | 0.026   | -0.237  |
| 3    | 0.551   | -0.038  | -0.104  | -0.001  | 35   | 0.389   | 0.007   | -0.028  | 0.024   |
| 4    | 0.501   | 0.104   | -0.069  | 0.052   | 36   | 0.601   | 0.022   | 0.012   | -0.198  |
| 5    | 0.463   | 0.154   | -0.083  | -0.051  | 37   | 0.648   | 0.014   | 0.024   | -0.008  |
| 6    | 0.689   | -0.172  | -0.110  | 0.178   | 38   | 0.705   | 0.011   | -0.016  | -0.216  |
| 7    | 0.500   | 0.078   | -0.084  | 0.046   | 39   | 0.545   | -0.280  | -0.024  | 0.267   |
| 8    | 0.563   | -0.052  | -0.011  | -0.001  | 40   | 0.594   | -0.101  | 0.014   | 0.094   |
| 9    | 0.512   | 0.059   | -0.075  | 0.093   | 41   | 0.508   | -0.158  | 0.269   | -0.236  |
| 10   | 0.564   | 0.095   | -0.096  | -0.055  | 42   | 0.736   | -0.197  | 0.221   | -0.184  |
| 11   | 0.593   | -0.077  | -0.078  | 0.043   | 43   | 0.771   | 0.058   | 0.103   | -0.257  |
| 12   | 0.413   | 0.033   | 0.143   | 0.184   | 44   | 0.752   | -0.018  | 0.118   | -0.185  |
| 13   | 0.639   | -0.219  | -0.031  | 0.197   | 45   | 0.774   | 0.113   | -0.187  | 0.056   |
| 14   | 0.485   | -0.148  | 0.030   | 0.266   | 46   | 0.702   | 0.026   | -0.140  | 0.147   |
| 15   | 0.615   | -0.195  | 0.013   | 0.140   | 47   | 0.756   | 0.064   | -0.132  | 0.001   |
| 16   | 0.537   | 0.336   | 0.212   | 0.126   | 48   | 0.783   | 0.016   | -0.045  | 0.009   |
| 17   | 0.602   | 0.055   | -0.092  | -0.039  | 49   | 0.616   | 0.059   | -0.045  | -0.074  |
| 18   | 0.457   | 0.115   | -0.073  | -0.015  | 50   | 0.542   | 0.064   | -0.002  | -0.156  |
| 19   | 0.418   | 0.241   | 0.154   | 0.123   | 51   | 0.619   | -0.044  | -0.026  | -0.105  |
| 20   | 0.681   | 0.081   | -0.065  | -0.035  | 52   | 0.504   | 0.178   | -0.020  | -0.076  |
| 21   | 0.597   | 0.121   | -0.060  | -0.133  | 53   | 0.827   | 0.042   | -0.253  | -0.012  |
| 22   | 0.576   | -0.280  | 0.285   | -0.100  | 54   | 0.788   | -0.024  | -0.171  | 0.061   |
| 23   | 0.467   | -0.044  | 0.040   | -0.111  | 55   | 0.674   | 0.409   | 0.391   | 0.203   |
| 24   | 0.531   | -0.236  | 0.132   | -0.006  | 56   | 0.636   | 0.353   | 0.430   | 0.301   |
| 25   | 0.555   | -0.324  | 0.259   | 0.033   | 57   | 0.604   | -0.163  | -0.023  | 0.163   |
| 26   | 0.568   | -0.159  | 0.266   | -0.199  | 58   | 0.621   | -0.034  | 0.009   | -0.003  |
| 27   | 0.579   | 0.028   | -0.160  | 0.067   | 59   | 0.480   | 0.121   | -0.049  | -0.086  |
| 28   | 0.526   | 0.078   | -0.108  | -0.071  | 60   | 0.548   | 0.105   | -0.073  | 0.016   |
| 29   | 0.554   | -0.128  | 0.019   | -0.002  | 61   | 0.572   | -0.033  | -0.069  | 0.001   |
| 30   | 0.358   | -0.137  | 0.079   | 0.129   | 62   | 0.514   | 0.028   | -0.106  | -0.055  |
| 31   | 0.637   | -0.034  | -0.104  | 0.003   | 63   | 0.691   | -0.138  | -0.046  | 0.071   |
| 32   | 0.408   | 0.078   | 0.057   | -0.024  | 64   | 0.680   | 0.070   | -0.061  | -0.223  |

**Table H9**  
**Eigenvalues and factor patterns for Grade 4 Mathematics Form A (Objective Level)**

## Eigenvalues

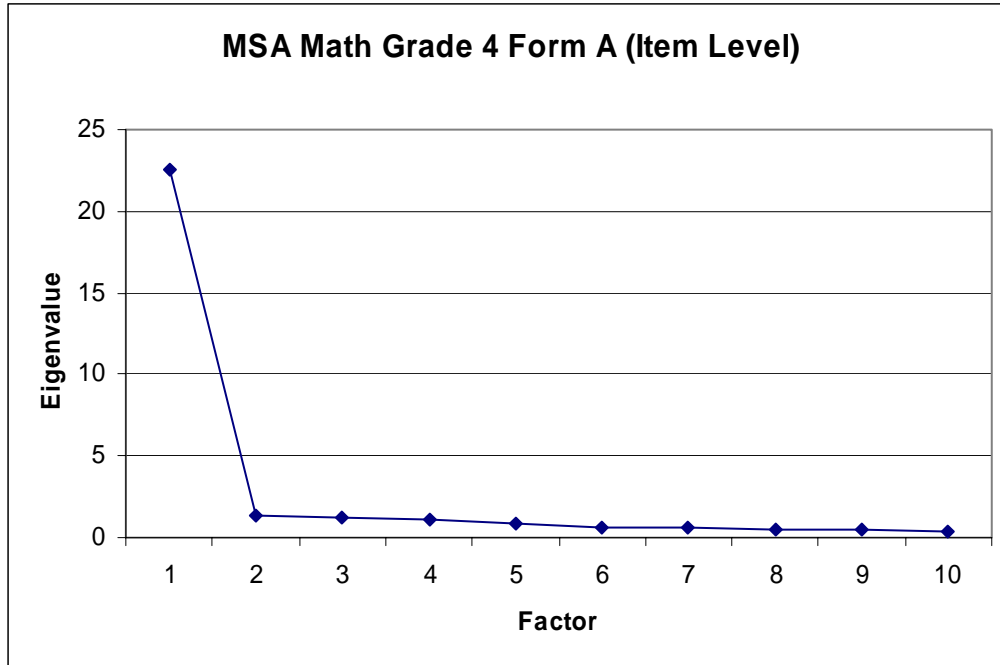
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.647  | 3.666 | 1.066  | 1.066 |
| 2      | -0.019 | 0.036 | -0.006 | 1.060 |
| 3      | -0.055 | 0.012 | -0.016 | 1.044 |
| 4      | -0.067 | 0.018 | -0.020 | 1.025 |
| 5      | -0.085 |       | -0.025 | 1.000 |

## Factor Pattern

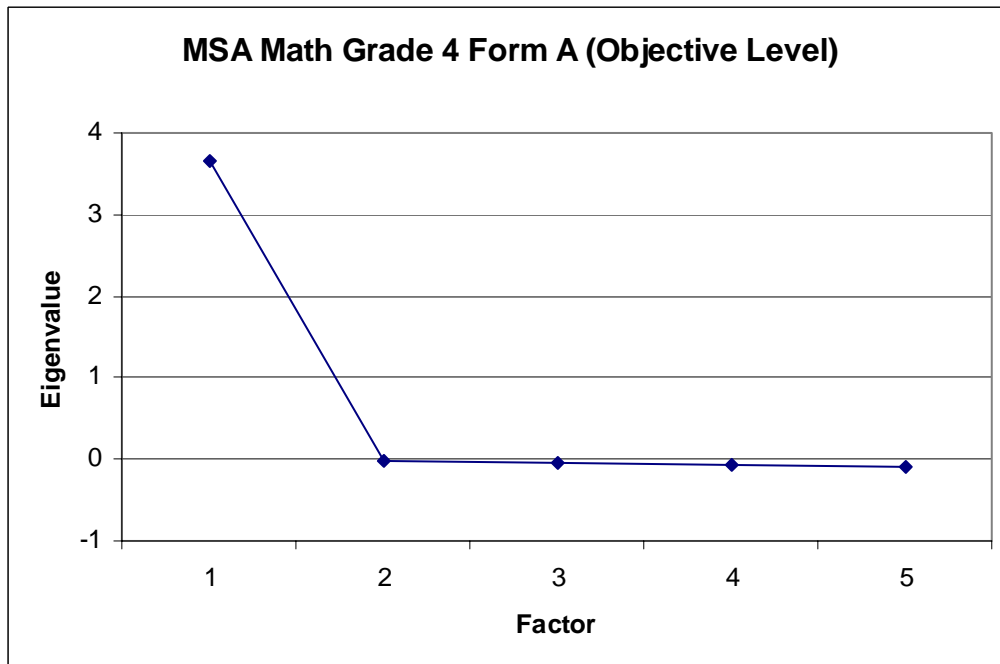
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.854   |
| 2         | 0.859   |
| 3         | 0.849   |
| 4         | 0.829   |
| 5         | 0.879   |

**Figure H3**  
**Scree Plot of Eigenvalues for Grade 4 Mathematics Form A**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H10**  
**Eigenvalues for Grade 4 Mathematics Form B (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 21.454       | 20.154      | 0.756       | 0.756      |
| 2             | 1.300        | 0.114       | 0.046       | 0.802      |
| 3             | 1.187        | 0.210       | 0.042       | 0.843      |
| 4             | 0.977        | 0.077       | 0.034       | 0.878      |
| 5             | 0.900        | 0.178       | 0.032       | 0.909      |
| 6             | 0.722        | 0.047       | 0.025       | 0.935      |
| 7             | 0.675        | 0.143       | 0.024       | 0.959      |
| 8             | 0.532        | 0.043       | 0.019       | 0.977      |
| 9             | 0.489        | 0.086       | 0.017       | 0.995      |
| 10            | 0.403        | 0.066       | 0.014       | 1.009      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion



**Table H11**  
**Factor Patterns for Grade 4 Mathematics Form B (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Item | Factor1 | Factor2 | Factor3 |
|------|---------|---------|---------|------|---------|---------|---------|
| 1    | 0.455   | 0.131   | 0.047   | 33   | 0.554   | -0.117  | -0.072  |
| 2    | 0.454   | 0.157   | 0.019   | 34   | 0.382   | 0.019   | 0.087   |
| 3    | 0.564   | -0.098  | -0.050  | 35   | 0.635   | -0.167  | 0.072   |
| 4    | 0.490   | 0.116   | -0.124  | 36   | 0.630   | 0.008   | 0.004   |
| 5    | 0.472   | -0.012  | -0.188  | 37   | 0.719   | -0.182  | -0.045  |
| 6    | 0.678   | 0.119   | 0.081   | 38   | 0.542   | -0.053  | 0.203   |
| 7    | 0.512   | 0.081   | -0.018  | 39   | 0.580   | -0.013  | 0.187   |
| 8    | 0.555   | -0.094  | 0.081   | 40   | 0.594   | -0.155  | 0.251   |
| 9    | 0.512   | 0.107   | -0.076  | 41   | 0.679   | -0.084  | 0.237   |
| 10   | 0.569   | -0.052  | -0.113  | 42   | 0.728   | -0.163  | -0.295  |
| 11   | 0.606   | -0.053  | 0.049   | 43   | 0.778   | -0.138  | -0.179  |
| 12   | 0.387   | 0.263   | 0.052   | 44   | 0.808   | -0.036  | -0.219  |
| 13   | 0.658   | 0.106   | 0.154   | 45   | 0.785   | -0.015  | -0.193  |
| 14   | 0.429   | 0.147   | 0.172   | 46   | 0.686   | -0.169  | -0.036  |
| 15   | 0.615   | -0.008  | 0.139   | 47   | 0.484   | 0.005   | 0.023   |
| 16   | 0.504   | 0.233   | -0.123  | 48   | 0.674   | -0.123  | 0.005   |
| 17   | 0.596   | -0.021  | -0.057  | 49   | 0.458   | -0.021  | 0.024   |
| 18   | 0.436   | -0.008  | -0.176  | 50   | 0.747   | -0.037  | -0.208  |
| 19   | 0.688   | 0.010   | -0.080  | 51   | 0.734   | 0.013   | -0.087  |
| 20   | 0.592   | -0.088  | -0.115  | 52   | 0.626   | 0.605   | -0.072  |
| 21   | 0.555   | -0.108  | 0.286   | 53   | 0.611   | 0.579   | -0.061  |
| 22   | 0.476   | -0.135  | 0.005   | 54   | 0.688   | 0.030   | 0.101   |
| 23   | 0.524   | -0.071  | 0.187   | 55   | 0.582   | -0.009  | -0.042  |
| 24   | 0.550   | -0.045  | 0.288   | 56   | 0.326   | 0.135   | 0.164   |
| 25   | 0.506   | -0.146  | 0.138   | 57   | 0.598   | 0.067   | 0.152   |
| 26   | 0.610   | 0.039   | 0.006   | 58   | 0.656   | 0.011   | -0.131  |
| 27   | 0.527   | -0.073  | -0.099  | 59   | 0.483   | -0.018  | -0.085  |
| 28   | 0.544   | -0.022  | 0.189   | 60   | 0.656   | 0.066   | 0.096   |
| 29   | 0.329   | 0.078   | 0.159   | 61   | 0.596   | -0.039  | 0.039   |
| 30   | 0.662   | -0.005  | 0.027   | 62   | 0.700   | -0.120  | -0.263  |
| 31   | 0.386   | -0.062  | -0.035  | 63   | 0.379   | -0.004  | -0.056  |
| 32   | 0.541   | 0.026   | 0.095   |      |         |         |         |

**Table H12**  
**Eigenvalues and factor patterns for Grade 4 Mathematics Form B (Objective Level)**

## Eigenvalues

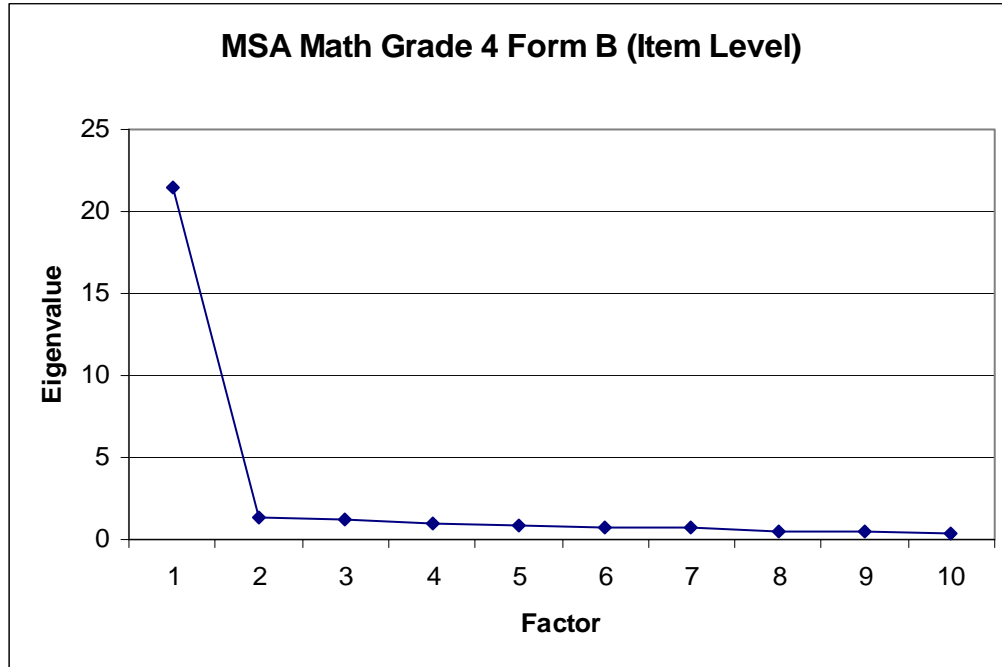
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.587  | 3.586 | 1.067  | 1.067 |
| 2      | 0.001  | 0.056 | 0.000  | 1.067 |
| 3      | -0.055 | 0.026 | -0.017 | 1.051 |
| 4      | -0.082 | 0.007 | -0.024 | 1.026 |
| 5      | -0.088 |       | -0.026 | 1.000 |

## Factor Pattern

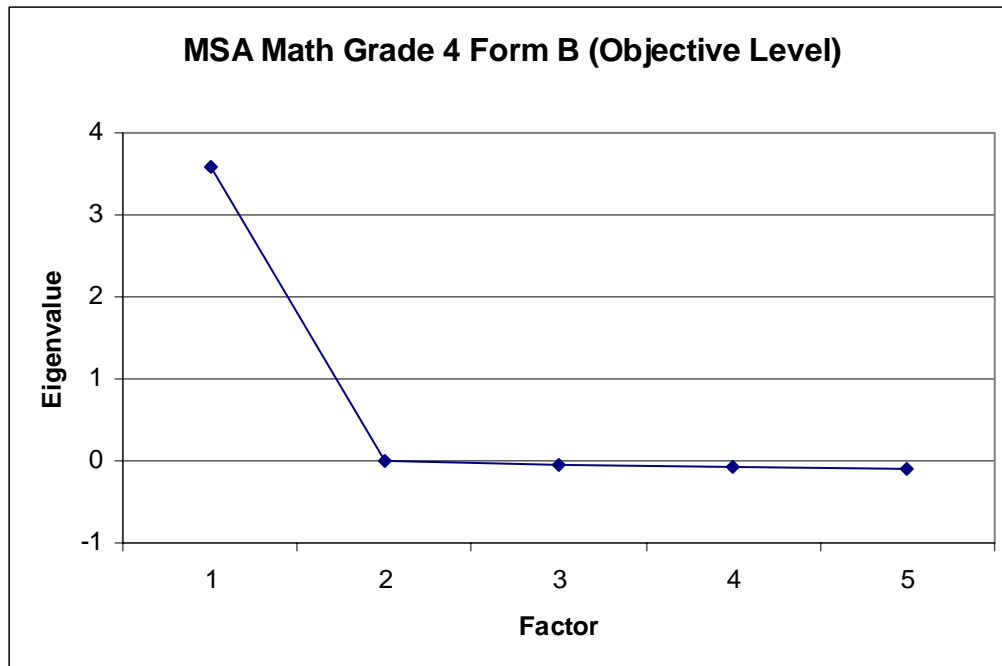
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.864   |
| 2         | 0.841   |
| 3         | 0.858   |
| 4         | 0.815   |
| 5         | 0.855   |

**Figure H4**  
**Scree Plot of Eigenvalues for Grade 4 Mathematics Form B**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H13**  
**Eigenvalues for Grade 4 Mathematics Form C (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 19.957       | 18.694      | 0.745       | 0.745      |
| 2             | 1.263        | 0.059       | 0.047       | 0.792      |
| 3             | 1.204        | 0.282       | 0.045       | 0.837      |
| 4             | 0.922        | 0.094       | 0.034       | 0.871      |
| 5             | 0.828        | 0.113       | 0.031       | 0.902      |
| 6             | 0.715        | 0.058       | 0.027       | 0.929      |
| 7             | 0.658        | 0.075       | 0.025       | 0.954      |
| 8             | 0.582        | 0.080       | 0.022       | 0.975      |
| 9             | 0.502        | 0.040       | 0.019       | 0.994      |
| 10            | 0.462        | 0.060       | 0.017       | 1.011      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H14**  
**Factor Patterns for Grade 4 Mathematics Form C (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> |
|-------------|----------------|----------------|----------------|-------------|----------------|----------------|----------------|
| 1           | 0.452          | 0.019          | 0.204          | 33          | 0.387          | 0.002          | 0.065          |
| 2           | 0.453          | 0.034          | 0.127          | 34          | 0.601          | -0.005         | -0.138         |
| 3           | 0.558          | -0.036         | 0.028          | 35          | 0.618          | 0.001          | 0.007          |
| 4           | 0.474          | -0.045         | 0.071          | 36          | 0.701          | -0.088         | -0.090         |
| 5           | 0.461          | -0.120         | -0.012         | 37          | 0.409          | 0.145          | 0.110          |
| 6           | 0.682          | 0.083          | 0.213          | 38          | 0.557          | 0.075          | 0.053          |
| 7           | 0.495          | -0.060         | 0.076          | 39          | 0.558          | 0.453          | -0.456         |
| 8           | 0.566          | 0.037          | -0.021         | 40          | 0.684          | 0.325          | -0.350         |
| 9           | 0.502          | -0.053         | 0.106          | 41          | 0.603          | -0.058         | -0.116         |
| 10          | 0.570          | -0.114         | -0.004         | 42          | 0.740          | -0.005         | -0.086         |
| 11          | 0.582          | 0.024          | 0.032          | 43          | 0.688          | -0.236         | -0.099         |
| 12          | 0.366          | 0.037          | 0.125          | 44          | 0.739          | -0.189         | -0.079         |
| 13          | 0.627          | 0.156          | 0.216          | 45          | 0.654          | 0.065          | 0.122          |
| 14          | 0.417          | 0.218          | 0.314          | 46          | 0.702          | 0.081          | 0.087          |
| 15          | 0.619          | 0.129          | 0.145          | 47          | 0.492          | 0.052          | 0.109          |
| 16          | 0.492          | -0.099         | -0.008         | 48          | 0.679          | -0.092         | -0.107         |
| 17          | 0.577          | -0.096         | 0.042          | 49          | 0.525          | -0.061         | -0.015         |
| 18          | 0.422          | -0.165         | -0.048         | 50          | 0.550          | -0.230         | -0.137         |
| 19          | 0.390          | -0.065         | 0.055          | 51          | 0.658          | -0.060         | -0.071         |
| 20          | 0.695          | -0.048         | 0.044          | 52          | 0.589          | -0.029         | -0.034         |
| 21          | 0.622          | -0.064         | -0.041         | 53          | 0.710          | -0.222         | -0.081         |
| 22          | 0.481          | 0.020          | -0.133         | 54          | 0.660          | -0.113         | -0.051         |
| 23          | 0.494          | 0.175          | 0.020          | 55          | 0.439          | 0.127          | 0.229          |
| 24          | 0.521          | 0.316          | 0.068          | 56          | 0.706          | -0.081         | 0.027          |
| 25          | 0.567          | 0.410          | -0.337         | 57          | 0.476          | -0.012         | 0.023          |
| 26          | 0.595          | -0.029         | 0.136          | 58          | 0.580          | 0.016          | 0.180          |
| 27          | 0.541          | -0.129         | -0.035         | 59          | 0.402          | 0.162          | 0.207          |
| 28          | 0.544          | 0.066          | 0.044          | 60          | 0.424          | 0.065          | -0.151         |
| 29          | 0.317          | 0.147          | 0.082          | 61          | 0.305          | 0.074          | 0.172          |
| 30          | 0.645          | -0.018         | 0.082          | 62          | 0.605          | -0.150         | -0.076         |
| 31          | 0.401          | -0.012         | -0.080         | 63          | 0.506          | -0.209         | -0.120         |
| 32          | 0.580          | -0.100         | -0.098         | 64          | 0.404          | -0.073         | -0.036         |

**Table H15**  
**Eigenvalues and factor patterns for Grade 4 Mathematics Form C (Objective Level)**

## Eigenvalues

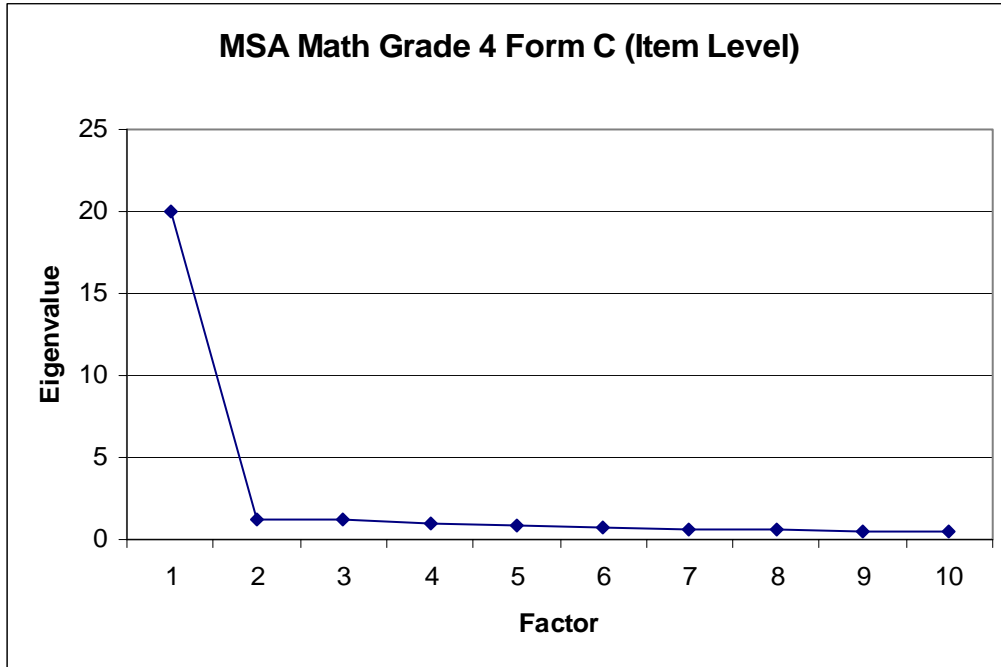
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.447  | 3.462 | 1.080  | 1.080 |
| 2      | -0.014 | 0.057 | -0.005 | 1.076 |
| 3      | -0.071 | 0.005 | -0.022 | 1.053 |
| 4      | -0.077 | 0.017 | -0.024 | 1.029 |
| 5      | -0.093 |       | -0.029 | 1.000 |

## Factor Pattern

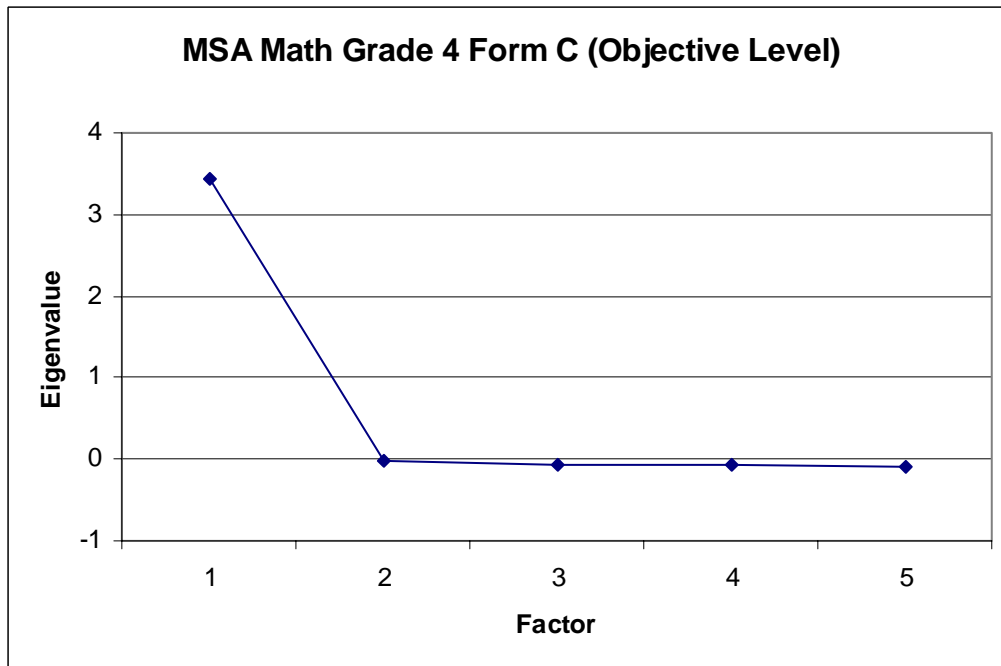
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.834   |
| 2         | 0.827   |
| 3         | 0.842   |
| 4         | 0.818   |
| 5         | 0.831   |

**Figure H5**  
**Scree Plot of Eigenvalues for Grade 4 Mathematics Form C**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H16**  
**Eigenvalues for Grade 4 Mathematics Form D (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 21.044       | 19.770      | 0.756       | 0.756      |
| 2             | 1.274        | 0.169       | 0.046       | 0.801      |
| 3             | 1.105        | 0.081       | 0.040       | 0.841      |
| 4             | 1.024        | 0.236       | 0.037       | 0.878      |
| 5             | 0.788        | 0.125       | 0.028       | 0.906      |
| 6             | 0.662        | 0.031       | 0.024       | 0.930      |
| 7             | 0.632        | 0.053       | 0.023       | 0.952      |
| 8             | 0.579        | 0.017       | 0.021       | 0.973      |
| 9             | 0.562        | 0.089       | 0.020       | 0.993      |
| 10            | 0.474        | 0.044       | 0.017       | 1.010      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion



**Table H17**  
**Factor Patterns for Grade 4 Mathematics Form D (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Factor4 | Item | Factor1 | Factor2 | Factor3 | Factor4 |
|------|---------|---------|---------|---------|------|---------|---------|---------|---------|
| 1    | 0.464   | 0.243   | -0.031  | 0.047   | 33   | 0.568   | -0.252  | -0.020  | 0.074   |
| 2    | 0.458   | 0.172   | 0.005   | 0.070   | 34   | 0.372   | 0.013   | -0.006  | 0.041   |
| 3    | 0.558   | 0.024   | -0.009  | 0.003   | 35   | 0.652   | -0.280  | 0.026   | -0.014  |
| 4    | 0.476   | 0.182   | 0.088   | 0.141   | 36   | 0.615   | -0.020  | -0.033  | 0.041   |
| 5    | 0.466   | 0.040   | 0.096   | 0.146   | 37   | 0.711   | -0.288  | -0.023  | 0.027   |
| 6    | 0.676   | 0.157   | -0.134  | -0.114  | 38   | 0.437   | 0.153   | -0.099  | -0.254  |
| 7    | 0.491   | 0.104   | -0.027  | 0.137   | 39   | 0.567   | 0.034   | -0.023  | -0.086  |
| 8    | 0.562   | -0.010  | -0.010  | -0.063  | 40   | 0.586   | -0.124  | 0.183   | -0.079  |
| 9    | 0.505   | 0.169   | -0.001  | 0.134   | 41   | 0.646   | -0.061  | 0.102   | -0.074  |
| 10   | 0.549   | -0.022  | 0.009   | 0.118   | 42   | 0.697   | -0.291  | 0.094   | -0.079  |
| 11   | 0.581   | 0.050   | -0.037  | -0.053  | 43   | 0.722   | -0.249  | 0.092   | -0.092  |
| 12   | 0.366   | 0.109   | 0.009   | 0.048   | 44   | 0.603   | -0.087  | -0.164  | -0.021  |
| 13   | 0.642   | 0.232   | -0.013  | -0.097  | 45   | 0.607   | 0.045   | -0.144  | -0.112  |
| 14   | 0.437   | 0.298   | 0.038   | -0.073  | 46   | 0.601   | 0.201   | 0.176   | 0.257   |
| 15   | 0.611   | 0.107   | -0.010  | -0.129  | 47   | 0.720   | 0.251   | 0.145   | 0.211   |
| 16   | 0.497   | 0.017   | 0.063   | 0.179   | 48   | 0.682   | -0.335  | -0.075  | 0.030   |
| 17   | 0.582   | 0.040   | -0.002  | 0.143   | 49   | 0.760   | -0.237  | -0.059  | 0.000   |
| 18   | 0.452   | -0.031  | 0.025   | 0.147   | 50   | 0.766   | -0.262  | -0.080  | 0.031   |
| 19   | 0.394   | 0.031   | 0.074   | 0.173   | 51   | 0.359   | -0.041  | 0.016   | 0.021   |
| 20   | 0.676   | 0.039   | 0.046   | 0.129   | 52   | 0.711   | 0.073   | -0.396  | -0.245  |
| 21   | 0.605   | -0.088  | 0.064   | 0.130   | 53   | 0.742   | 0.085   | -0.361  | -0.177  |
| 22   | 0.551   | 0.047   | 0.367   | -0.299  | 54   | 0.753   | -0.023  | -0.178  | 0.002   |
| 23   | 0.488   | -0.034  | 0.207   | -0.016  | 55   | 0.737   | 0.041   | -0.165  | -0.064  |
| 24   | 0.521   | 0.067   | 0.248   | -0.238  | 56   | 0.670   | -0.019  | -0.004  | 0.139   |
| 25   | 0.526   | 0.086   | 0.341   | -0.335  | 57   | 0.235   | -0.049  | -0.013  | 0.022   |
| 26   | 0.516   | -0.042  | 0.333   | -0.135  | 58   | 0.608   | 0.120   | -0.025  | 0.139   |
| 27   | 0.589   | 0.111   | -0.117  | 0.042   | 59   | 0.342   | 0.091   | -0.050  | -0.041  |
| 28   | 0.546   | -0.084  | -0.074  | 0.086   | 60   | 0.591   | -0.117  | 0.005   | 0.165   |
| 29   | 0.572   | -0.055  | -0.045  | -0.156  | 61   | 0.476   | 0.020   | 0.077   | 0.091   |
| 30   | 0.304   | 0.055   | 0.002   | -0.108  | 62   | 0.551   | 0.166   | -0.039  | -0.006  |
| 31   | 0.645   | 0.058   | -0.077  | 0.046   | 63   | 0.630   | 0.031   | -0.006  | 0.030   |
| 32   | 0.401   | -0.084  | 0.036   | 0.049   | 64   | 0.478   | 0.020   | 0.083   | 0.024   |

**Table H18**  
**Eigenvalues and factor patterns for Grade 4 Mathematics Form D (Objective Level)**

## Eigenvalues

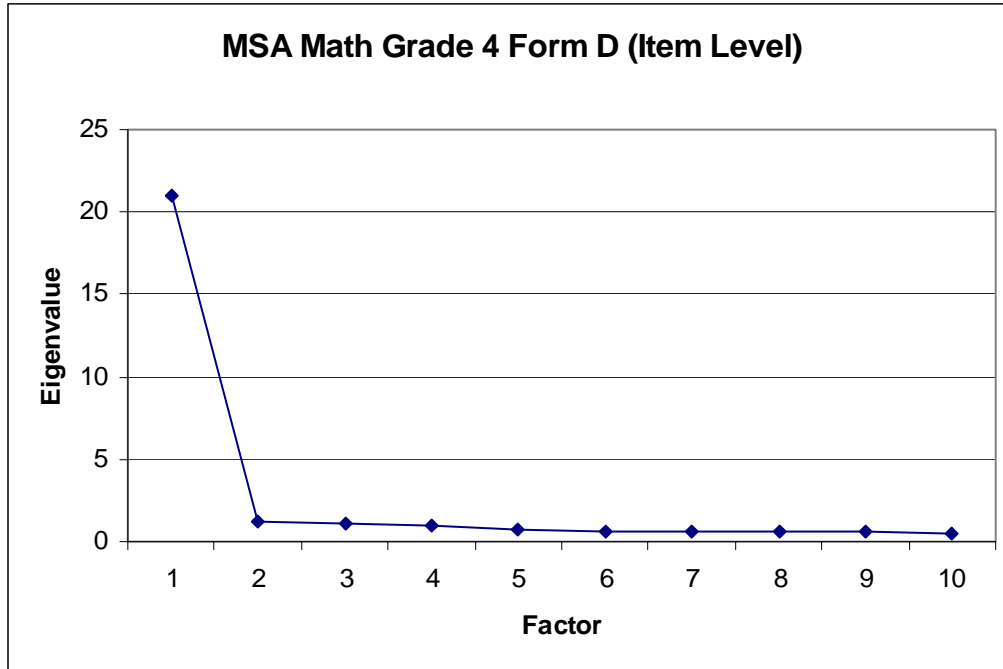
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.490  | 3.515 | 1.078  | 1.078 |
| 2      | -0.025 | 0.036 | -0.008 | 1.070 |
| 3      | -0.061 | 0.019 | -0.019 | 1.051 |
| 4      | -0.080 | 0.006 | -0.025 | 1.027 |
| 5      | -0.086 |       | -0.027 | 1.000 |

## Factor Pattern

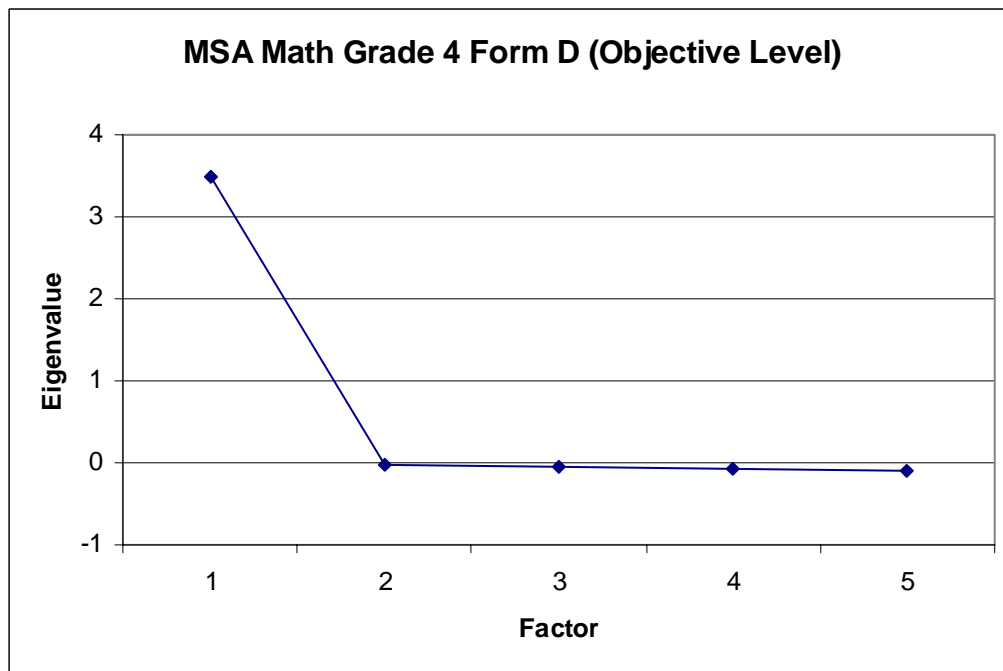
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.841   |
| 2         | 0.840   |
| 3         | 0.851   |
| 4         | 0.805   |
| 5         | 0.840   |

**Figure H6**  
**Scree Plot of Eigenvalues for Grade 4 Mathematics Form D**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H19**  
**Eigenvalues for Grade 4 Mathematics Form E (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 21.224       | 19.523      | 0.713       | 0.713      |
| 2             | 1.701        | 0.495       | 0.057       | 0.770      |
| 3             | 1.206        | 0.252       | 0.041       | 0.811      |
| 4             | 0.954        | 0.016       | 0.032       | 0.843      |
| 5             | 0.938        | 0.048       | 0.032       | 0.874      |
| 6             | 0.890        | 0.255       | 0.030       | 0.904      |
| 7             | 0.635        | 0.042       | 0.021       | 0.926      |
| 8             | 0.592        | 0.042       | 0.020       | 0.945      |
| 9             | 0.551        | 0.018       | 0.019       | 0.964      |
| 10            | 0.533        | 0.062       | 0.018       | 0.982      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H20**  
**Factor Patterns for Grade 4 Mathematics Form E (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> |
|-------------|----------------|----------------|----------------|-------------|----------------|----------------|----------------|
| 1           | 0.480          | 0.096          | 0.143          | 33          | 0.535          | 0.078          | -0.027         |
| 2           | 0.457          | 0.004          | 0.108          | 34          | 0.563          | -0.100         | -0.191         |
| 3           | 0.559          | -0.039         | -0.008         | 35          | 0.380          | 0.064          | 0.024          |
| 4           | 0.484          | -0.059         | 0.175          | 36          | 0.637          | -0.043         | -0.227         |
| 5           | 0.454          | -0.106         | 0.109          | 37          | 0.647          | 0.031          | -0.035         |
| 6           | 0.682          | 0.163          | 0.075          | 38          | 0.698          | -0.058         | -0.230         |
| 7           | 0.496          | -0.060         | 0.099          | 39          | 0.738          | 0.033          | -0.331         |
| 8           | 0.546          | -0.010         | -0.093         | 40          | 0.649          | 0.066          | -0.292         |
| 9           | 0.497          | -0.007         | 0.159          | 41          | 0.508          | -0.048         | -0.197         |
| 10          | 0.556          | -0.114         | 0.060          | 42          | 0.624          | -0.016         | -0.156         |
| 11          | 0.579          | -0.017         | 0.029          | 43          | 0.684          | -0.056         | -0.186         |
| 12          | 0.383          | 0.065          | 0.056          | 44          | 0.756          | -0.051         | -0.181         |
| 13          | 0.649          | 0.220          | 0.098          | 45          | 0.638          | 0.453          | 0.167          |
| 14          | 0.457          | 0.183          | 0.121          | 46          | 0.669          | 0.334          | 0.111          |
| 15          | 0.582          | 0.089          | 0.003          | 47          | 0.661          | -0.055         | -0.183         |
| 16          | 0.504          | -0.100         | 0.071          | 48          | 0.741          | -0.009         | -0.213         |
| 17          | 0.593          | -0.058         | 0.066          | 49          | 0.552          | -0.209         | -0.055         |
| 18          | 0.423          | -0.040         | 0.155          | 50          | 0.669          | 0.074          | 0.022          |
| 19          | 0.679          | -0.060         | 0.072          | 51          | 0.736          | -0.429         | 0.246          |
| 20          | 0.617          | -0.124         | -0.007         | 52          | 0.774          | -0.366         | 0.225          |
| 21          | 0.572          | 0.162          | -0.166         | 53          | 0.807          | -0.072         | 0.108          |
| 22          | 0.475          | -0.075         | -0.101         | 54          | 0.743          | -0.032         | 0.107          |
| 23          | 0.446          | 0.095          | -0.109         | 55          | 0.675          | -0.072         | 0.085          |
| 24          | 0.553          | 0.295          | -0.121         | 56          | 0.411          | 0.273          | 0.202          |
| 25          | 0.518          | -0.012         | -0.152         | 57          | 0.508          | 0.324          | 0.133          |
| 26          | 0.590          | -0.032         | 0.099          | 58          | 0.643          | 0.289          | 0.134          |
| 27          | 0.528          | -0.110         | 0.016          | 59          | 0.678          | 0.055          | -0.022         |
| 28          | 0.563          | 0.101          | -0.162         | 60          | 0.623          | -0.156         | 0.139          |
| 29          | 0.301          | 0.116          | 0.006          | 61          | 0.495          | -0.135         | 0.021          |
| 30          | 0.630          | -0.014         | 0.029          | 62          | 0.368          | 0.227          | 0.180          |
| 31          | 0.342          | -0.370         | 0.049          | 63          | 0.435          | -0.298         | 0.150          |
| 32          | 0.393          | -0.120         | -0.021         |             |                |                |                |

**Table H21**  
**Eigenvalues and factor patterns for Grade 4 Mathematics Form E (Objective Level)**

## Eigenvalues

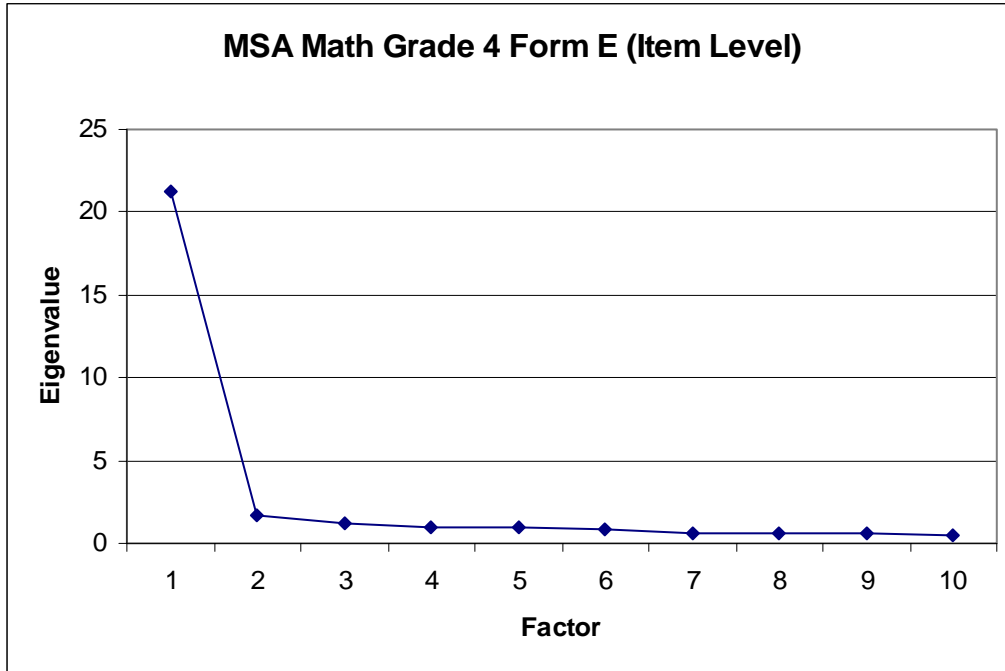
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.481  | 3.491 | 1.076  | 1.076 |
| 2      | -0.010 | 0.054 | -0.003 | 1.073 |
| 3      | -0.064 | 0.021 | -0.020 | 1.053 |
| 4      | -0.085 | 0.001 | -0.026 | 1.027 |
| 5      | -0.086 |       | -0.027 | 1.000 |

## Factor Pattern

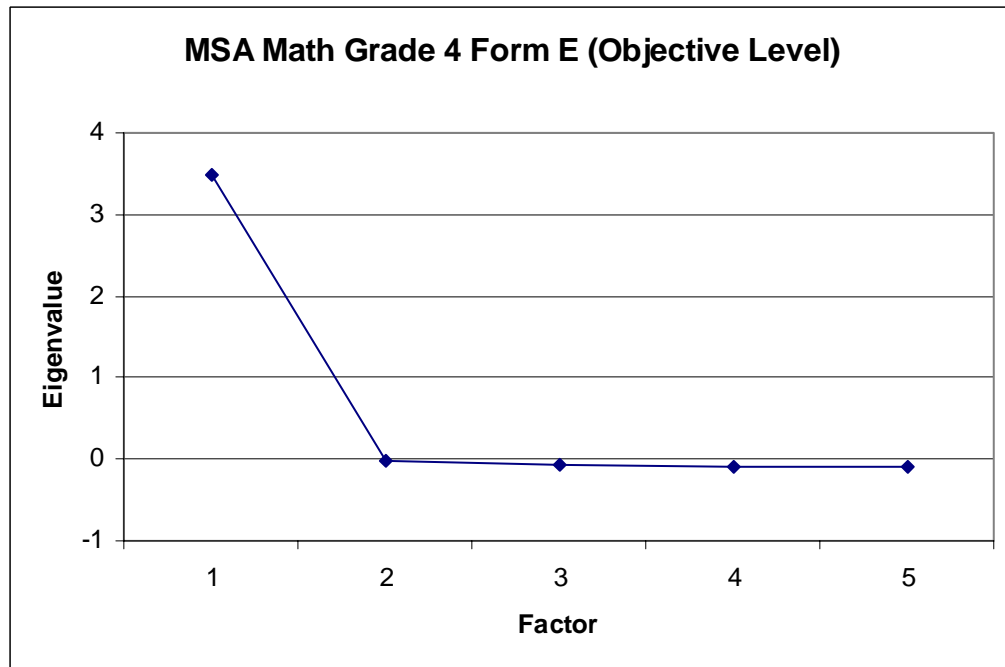
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.810   |
| 2         | 0.817   |
| 3         | 0.867   |
| 4         | 0.827   |
| 5         | 0.850   |

**Figure H7**  
**Scree Plot of Eigenvalues for Grade 4 Mathematics Form E**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H22**  
**Eigenvalues for Grade 4 Mathematics Form F (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 20.024       | 18.782      | 0.790       | 0.790      |
| 2             | 1.242        | 0.182       | 0.049       | 0.839      |
| 3             | 1.060        | 0.320       | 0.042       | 0.880      |
| 4             | 0.741        | 0.052       | 0.029       | 0.910      |
| 5             | 0.688        | 0.106       | 0.027       | 0.937      |
| 6             | 0.582        | 0.030       | 0.023       | 0.960      |
| 7             | 0.553        | 0.062       | 0.022       | 0.982      |
| 8             | 0.490        | 0.046       | 0.019       | 1.001      |
| 9             | 0.444        | 0.078       | 0.018       | 1.018      |
| 10            | 0.366        | 0.046       | 0.014       | 1.033      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion



**Table H23**  
**Factor Patterns for Grade 4 Mathematics Form F (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> |
|-------------|----------------|----------------|----------------|-------------|----------------|----------------|----------------|
| 1           | 0.484          | 0.108          | 0.214          | 33          | 0.561          | -0.210         | -0.117         |
| 2           | 0.479          | 0.087          | 0.159          | 34          | 0.371          | 0.000          | 0.034          |
| 3           | 0.539          | -0.047         | 0.072          | 35          | 0.617          | -0.151         | -0.096         |
| 4           | 0.485          | 0.020          | 0.238          | 36          | 0.633          | 0.008          | -0.081         |
| 5           | 0.452          | -0.120         | 0.177          | 37          | 0.688          | -0.240         | -0.155         |
| 6           | 0.686          | 0.170          | 0.031          | 38          | 0.440          | 0.173          | -0.010         |
| 7           | 0.479          | -0.051         | 0.168          | 39          | 0.626          | 0.068          | -0.003         |
| 8           | 0.566          | 0.000          | -0.005         | 40          | 0.405          | 0.247          | -0.222         |
| 9           | 0.477          | 0.019          | 0.205          | 41          | 0.626          | 0.125          | -0.148         |
| 10          | 0.559          | -0.136         | 0.103          | 42          | 0.733          | -0.325         | -0.350         |
| 11          | 0.574          | -0.002         | 0.040          | 43          | 0.741          | -0.264         | -0.350         |
| 12          | 0.383          | 0.097          | -0.009         | 44          | 0.725          | -0.087         | 0.196          |
| 13          | 0.627          | 0.241          | 0.011          | 45          | 0.687          | 0.025          | 0.047          |
| 14          | 0.468          | 0.307          | 0.055          | 46          | 0.581          | 0.107          | -0.071         |
| 15          | 0.591          | 0.161          | -0.006         | 47          | 0.497          | 0.173          | 0.026          |
| 16          | 0.498          | -0.072         | 0.122          | 48          | 0.694          | -0.193         | -0.160         |
| 17          | 0.585          | -0.038         | 0.114          | 49          | 0.627          | -0.182         | -0.079         |
| 18          | 0.460          | -0.131         | 0.099          | 50          | 0.666          | -0.042         | -0.152         |
| 19          | 0.429          | -0.038         | 0.127          | 51          | 0.358          | -0.019         | 0.150          |
| 20          | 0.677          | -0.071         | 0.156          | 52          | 0.614          | 0.045          | 0.044          |
| 21          | 0.602          | -0.141         | 0.070          | 53          | 0.649          | 0.138          | -0.079         |
| 22          | 0.480          | -0.063         | 0.025          | 54          | 0.663          | 0.136          | -0.075         |
| 23          | 0.516          | 0.133          | -0.095         | 55          | 0.453          | 0.017          | 0.008          |
| 24          | 0.576          | 0.214          | -0.202         | 56          | 0.578          | -0.064         | 0.116          |
| 25          | 0.519          | -0.074         | -0.041         | 57          | 0.502          | 0.272          | -0.005         |
| 26          | 0.592          | 0.059          | 0.114          | 58          | 0.312          | -0.037         | 0.034          |
| 27          | 0.526          | -0.117         | 0.065          | 59          | 0.505          | 0.050          | -0.015         |
| 28          | 0.563          | 0.009          | -0.154         | 60          | 0.503          | -0.099         | 0.169          |
| 29          | 0.334          | 0.191          | -0.066         | 61          | 0.542          | 0.020          | 0.035          |
| 30          | 0.643          | -0.001         | 0.057          | 62          | 0.610          | -0.155         | 0.131          |
| 31          | 0.422          | -0.124         | 0.028          | 63          | 0.656          | 0.253          | -0.157         |
| 32          | 0.547          | 0.112          | -0.123         | 64          | 0.533          | -0.101         | 0.123          |

**Table H24**  
**Eigenvalues and factor patterns for Grade 4 Mathematics Form F (Objective Level)**

## Eigenvalues

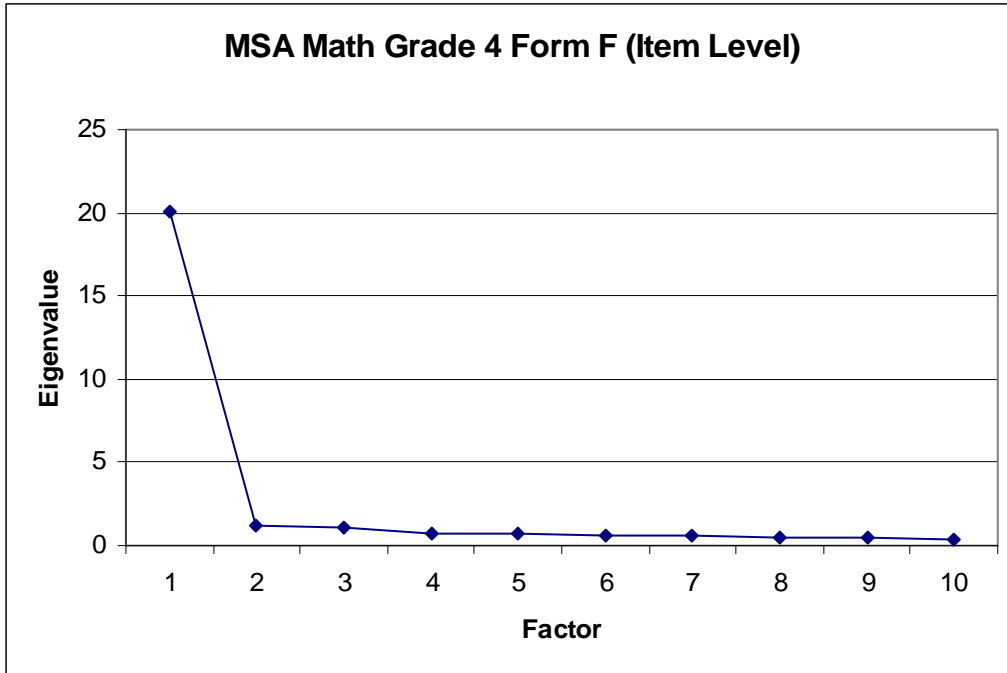
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.458  | 3.469 | 1.078  | 1.078 |
| 2      | -0.011 | 0.052 | -0.004 | 1.074 |
| 3      | -0.063 | 0.010 | -0.020 | 1.055 |
| 4      | -0.073 | 0.029 | -0.023 | 1.032 |
| 5      | -0.102 |       | -0.032 | 1.000 |

## Factor Pattern

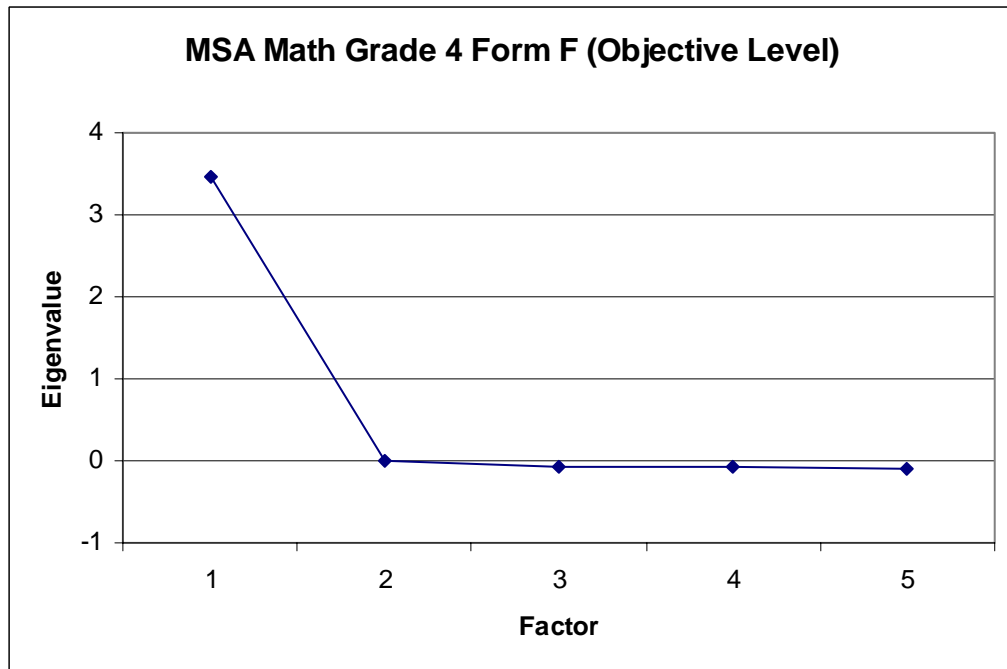
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.822   |
| 2         | 0.835   |
| 3         | 0.854   |
| 4         | 0.814   |
| 5         | 0.833   |

**Figure H8**  
**Scree Plot of Eigenvalues for Grade 4 Mathematics Form F**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H25**  
**Eigenvalues for Grade 5 Mathematics Form 1 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 21.585       | 20.124      | 0.747       | 0.747      |
| 2             | 1.461        | 0.376       | 0.051       | 0.798      |
| 3             | 1.084        | 0.097       | 0.038       | 0.835      |
| 4             | 0.987        | 0.025       | 0.034       | 0.870      |
| 5             | 0.962        | 0.138       | 0.033       | 0.903      |
| 6             | 0.824        | 0.085       | 0.029       | 0.931      |
| 7             | 0.739        | 0.094       | 0.026       | 0.957      |
| 8             | 0.645        | 0.104       | 0.022       | 0.979      |
| 9             | 0.541        | 0.053       | 0.019       | 0.998      |
| 10            | 0.488        | 0.091       | 0.017       | 1.015      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion

**Table H26**  
**Factor Patterns for Grade 5 Mathematics Form 1 (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Item | Factor1 | Factor2 | Factor3 |
|------|---------|---------|---------|------|---------|---------|---------|
| 1    | 0.637   | -0.130  | -0.115  | 33   | 0.548   | 0.106   | -0.045  |
| 2    | 0.623   | -0.083  | -0.121  | 34   | 0.571   | -0.061  | -0.033  |
| 3    | 0.557   | -0.167  | -0.068  | 35   | 0.560   | -0.012  | -0.083  |
| 4    | 0.570   | 0.024   | -0.067  | 36   | 0.804   | -0.361  | 0.035   |
| 5    | 0.628   | 0.013   | -0.083  | 37   | 0.697   | -0.437  | 0.044   |
| 6    | 0.376   | -0.065  | 0.031   | 38   | 0.380   | 0.061   | 0.602   |
| 7    | 0.169   | 0.098   | 0.057   | 39   | 0.666   | 0.013   | 0.500   |
| 8    | 0.687   | 0.010   | -0.107  | 40   | 0.629   | -0.024  | -0.004  |
| 9    | 0.622   | 0.119   | -0.067  | 41   | 0.510   | 0.292   | 0.013   |
| 10   | 0.710   | -0.036  | -0.096  | 42   | 0.442   | 0.035   | -0.042  |
| 11   | 0.488   | 0.082   | -0.024  | 43   | 0.448   | 0.136   | -0.008  |
| 12   | 0.632   | 0.019   | -0.094  | 44   | 0.246   | 0.175   | 0.065   |
| 13   | 0.621   | -0.086  | 0.004   | 45   | 0.560   | 0.006   | -0.087  |
| 14   | 0.692   | -0.226  | 0.019   | 46   | 0.514   | 0.196   | -0.024  |
| 15   | 0.595   | -0.279  | 0.011   | 47   | 0.617   | -0.064  | -0.052  |
| 16   | 0.592   | -0.179  | -0.065  | 48   | 0.612   | 0.016   | -0.097  |
| 17   | 0.599   | 0.224   | -0.090  | 49   | 0.598   | -0.155  | -0.015  |
| 18   | 0.337   | 0.076   | 0.027   | 50   | 0.537   | -0.022  | -0.019  |
| 19   | 0.344   | 0.136   | 0.059   | 51   | 0.603   | 0.327   | 0.031   |
| 20   | 0.567   | 0.063   | -0.073  | 52   | 0.277   | -0.004  | 0.016   |
| 21   | 0.782   | -0.112  | -0.065  | 53   | 0.342   | -0.007  | 0.064   |
| 22   | 0.827   | -0.112  | -0.055  | 54   | 0.655   | 0.129   | -0.065  |
| 23   | 0.448   | 0.092   | -0.043  | 55   | 0.545   | 0.052   | -0.008  |
| 24   | 0.663   | -0.086  | -0.046  | 56   | 0.249   | -0.068  | 0.227   |
| 25   | 0.501   | -0.152  | 0.009   | 57   | 0.507   | -0.127  | 0.167   |
| 26   | 0.662   | -0.039  | -0.065  | 58   | 0.756   | 0.351   | -0.073  |
| 27   | 0.627   | 0.062   | 0.295   | 59   | 0.778   | 0.330   | -0.058  |
| 28   | 0.606   | 0.027   | 0.318   | 60   | 0.484   | 0.164   | 0.028   |
| 29   | 0.487   | 0.030   | 0.006   | 61   | 0.417   | 0.049   | 0.087   |
| 30   | 0.493   | 0.068   | -0.017  | 62   | 0.705   | -0.256  | -0.009  |
| 31   | 0.644   | 0.071   | -0.105  | 63   | 0.776   | 0.078   | 0.022   |
| 32   | 0.446   | 0.144   | -0.041  | 64   | 0.769   | 0.031   | 0.043   |

**Table H27**  
**Eigenvalues and Factor Patterns for Grade 5 Mathematics Form 1 (Objective Level)**

**Eigenvalues**

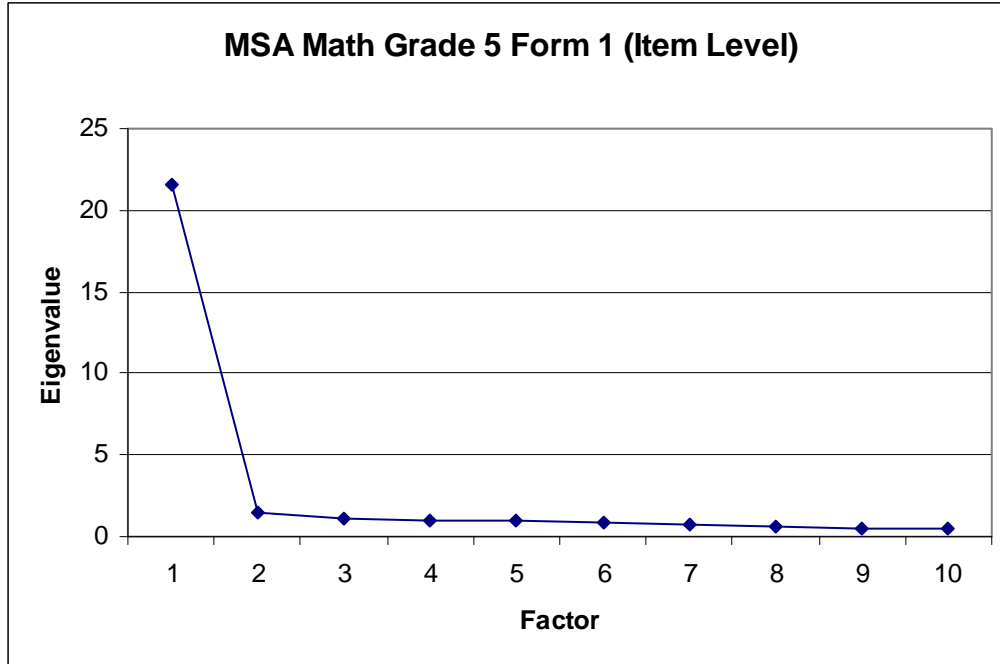
| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 3.631        | 3.648       | 1.063       | 1.063      |
| 2             | -0.017       | 0.033       | -0.005      | 1.058      |
| 3             | -0.049       | 0.009       | -0.014      | 1.044      |
| 4             | -0.058       | 0.032       | -0.017      | 1.026      |
| 5             | -0.090       |             | -0.026      | 1.000      |

**Factor Pattern**

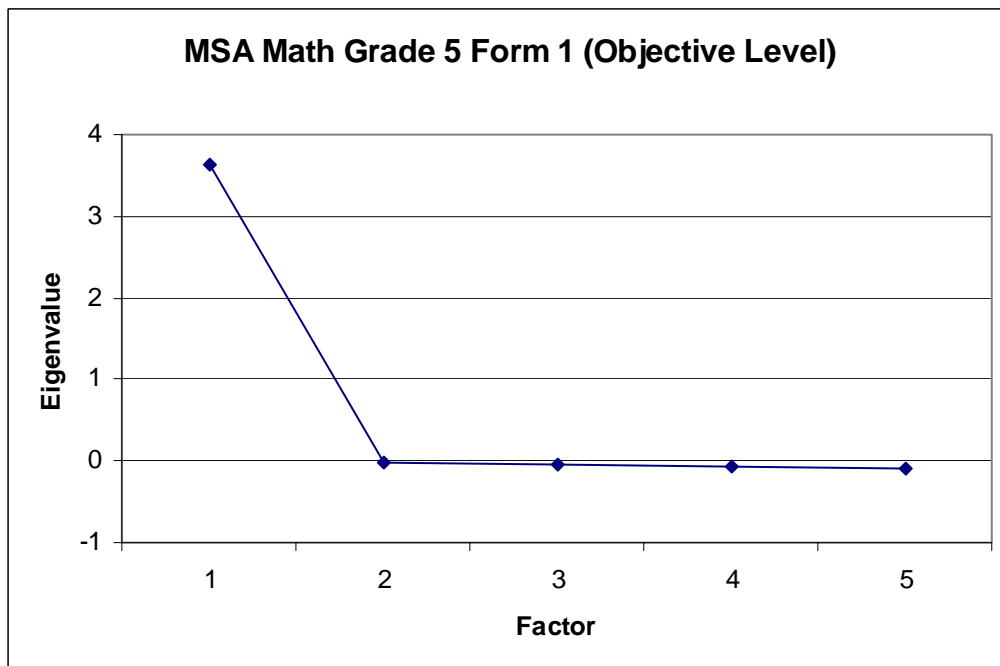
| <b>Objective</b> | <b>Factor1</b> |
|------------------|----------------|
| 1                | 0.874          |
| 2                | 0.776          |
| 3                | 0.851          |
| 4                | 0.867          |
| 5                | 0.889          |

**Figure H9**  
**Scree Plot of Eigenvalues for Grade 5 Mathematics Form 1**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H28**  
**Eigenvalues for Grade 5 Mathematics Form 2 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 21.106       | 19.250      | 0.741       | 0.741      |
| 2             | 1.856        | 0.767       | 0.065       | 0.806      |
| 3             | 1.089        | 0.047       | 0.038       | 0.844      |
| 4             | 1.042        | 0.304       | 0.037       | 0.880      |
| 5             | 0.738        | 0.036       | 0.026       | 0.906      |
| 6             | 0.702        | 0.043       | 0.025       | 0.931      |
| 7             | 0.659        | 0.023       | 0.023       | 0.954      |
| 8             | 0.637        | 0.066       | 0.022       | 0.976      |
| 9             | 0.571        | 0.101       | 0.020       | 0.996      |
| 10            | 0.470        | 0.134       | 0.017       | 1.013      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion



**Table H29**  
**Factor Patterns for Grade 5 Mathematics Form 2 (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Factor4 | Item | Factor1 | Factor2 | Factor3 | Factor4 |
|------|---------|---------|---------|---------|------|---------|---------|---------|---------|
| 1    | 0.640   | -0.142  | -0.163  | -0.098  | 33   | 0.552   | 0.053   | 0.107   | -0.024  |
| 2    | 0.621   | -0.078  | -0.082  | -0.094  | 34   | 0.568   | -0.124  | 0.072   | 0.068   |
| 3    | 0.548   | -0.142  | -0.172  | -0.046  | 35   | 0.525   | -0.013  | -0.060  | -0.077  |
| 4    | 0.578   | 0.043   | -0.066  | -0.053  | 36   | 0.779   | 0.062   | 0.160   | -0.177  |
| 5    | 0.625   | -0.078  | 0.082   | -0.110  | 37   | 0.767   | -0.019  | 0.104   | -0.121  |
| 6    | 0.360   | -0.097  | 0.047   | 0.060   | 38   | 0.598   | 0.602   | -0.243  | 0.326   |
| 7    | 0.163   | 0.119   | 0.015   | 0.035   | 39   | 0.544   | 0.495   | -0.428  | 0.369   |
| 8    | 0.670   | -0.064  | 0.052   | -0.172  | 40   | 0.604   | -0.004  | 0.109   | 0.015   |
| 9    | 0.630   | 0.036   | 0.107   | -0.083  | 41   | 0.470   | 0.270   | 0.203   | -0.026  |
| 10   | 0.700   | -0.053  | -0.043  | -0.084  | 42   | 0.411   | 0.143   | -0.029  | -0.005  |
| 11   | 0.489   | 0.068   | 0.010   | -0.031  | 43   | 0.419   | 0.183   | 0.100   | -0.010  |
| 12   | 0.624   | -0.028  | 0.004   | -0.110  | 44   | 0.214   | 0.352   | 0.174   | 0.054   |
| 13   | 0.614   | -0.162  | 0.049   | 0.049   | 45   | 0.361   | 0.239   | 0.146   | 0.093   |
| 14   | 0.593   | -0.081  | -0.039  | -0.024  | 46   | 0.554   | -0.028  | 0.064   | 0.040   |
| 15   | 0.627   | -0.156  | -0.029  | 0.038   | 47   | 0.502   | 0.119   | 0.104   | -0.120  |
| 16   | 0.563   | -0.182  | -0.224  | -0.043  | 48   | 0.624   | -0.006  | -0.107  | -0.040  |
| 17   | 0.606   | 0.126   | 0.043   | -0.125  | 49   | 0.765   | 0.096   | 0.060   | -0.081  |
| 18   | 0.327   | 0.027   | 0.069   | 0.013   | 50   | 0.497   | 0.043   | -0.096  | -0.048  |
| 19   | 0.355   | 0.146   | 0.038   | 0.034   | 51   | 0.558   | -0.259  | 0.186   | 0.498   |
| 20   | 0.563   | 0.061   | 0.002   | -0.072  | 52   | 0.527   | -0.206  | 0.199   | 0.462   |
| 21   | 0.713   | -0.240  | -0.352  | -0.052  | 53   | 0.573   | -0.125  | -0.184  | 0.007   |
| 22   | 0.745   | -0.182  | -0.308  | 0.006   | 54   | 0.265   | -0.013  | 0.000   | 0.047   |
| 23   | 0.431   | 0.069   | -0.003  | -0.076  | 55   | 0.615   | 0.230   | 0.084   | -0.057  |
| 24   | 0.594   | -0.021  | -0.102  | -0.044  | 56   | 0.473   | -0.001  | 0.159   | 0.075   |
| 25   | 0.518   | -0.097  | -0.121  | 0.012   | 57   | 0.555   | -0.035  | 0.097   | 0.040   |
| 26   | 0.657   | -0.044  | -0.030  | -0.022  | 58   | 0.693   | -0.065  | 0.147   | -0.019  |
| 27   | 0.710   | 0.279   | 0.015   | -0.065  | 59   | 0.794   | -0.058  | 0.120   | -0.010  |
| 28   | 0.783   | 0.155   | -0.022  | -0.017  | 60   | 0.480   | 0.091   | 0.104   | -0.025  |
| 29   | 0.248   | 0.119   | 0.051   | -0.020  | 61   | 0.373   | -0.001  | 0.042   | 0.017   |
| 30   | 0.502   | 0.105   | -0.003  | -0.016  | 62   | 0.644   | -0.129  | -0.106  | -0.005  |
| 31   | 0.643   | 0.048   | -0.008  | -0.076  | 63   | 0.744   | -0.299  | 0.091   | 0.190   |
| 32   | 0.419   | 0.105   | 0.099   | -0.053  | 64   | 0.710   | -0.345  | 0.073   | 0.205   |

**Table H30**  
**Eigenvalues and factor patterns for Grade 5 Mathematics Form 2 (Objective Level)**

## Eigenvalues

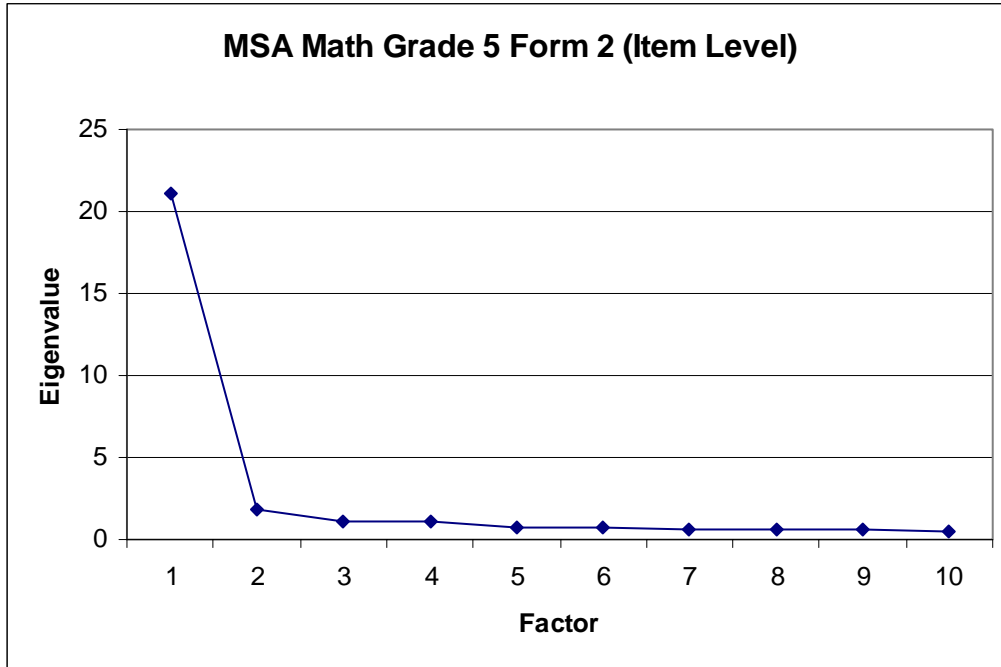
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.590  | 3.630 | 1.068  | 1.068 |
| 2      | -0.040 | 0.005 | -0.012 | 1.057 |
| 3      | -0.045 | 0.023 | -0.013 | 1.043 |
| 4      | -0.067 | 0.011 | -0.020 | 1.023 |
| 5      | -0.078 |       | -0.023 | 1.000 |

## Factor Pattern

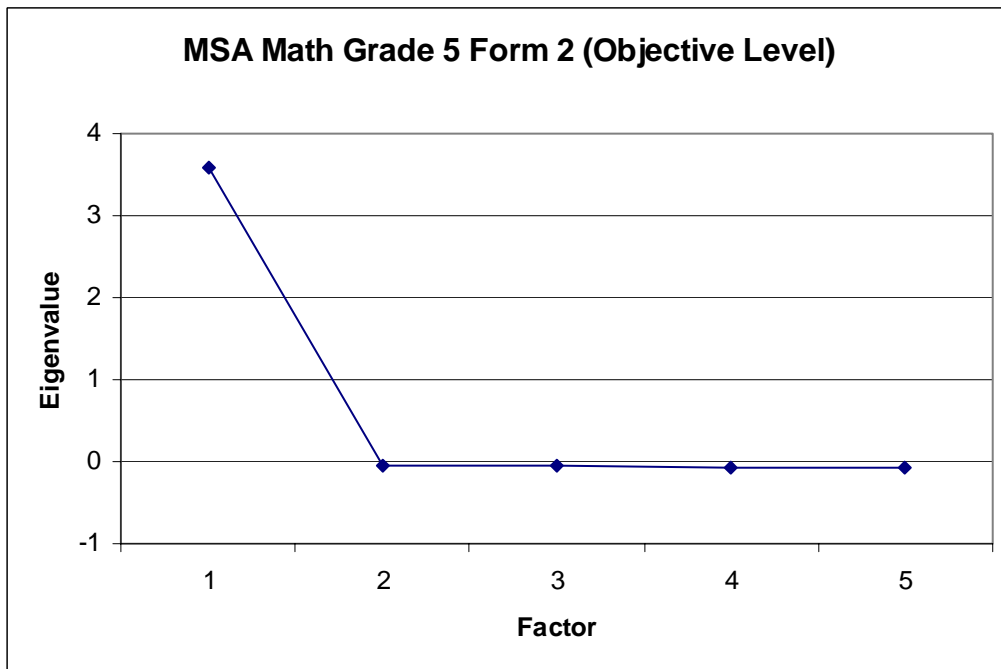
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.856   |
| 2         | 0.784   |
| 3         | 0.833   |
| 4         | 0.873   |
| 5         | 0.887   |

**Figure H10**  
**Scree Plot of Eigenvalues for Grade 5 Mathematics Form 2**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H31**  
**Eigenvalues for Grade 6 Mathematics Form A (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 19.880       | 18.231      | 0.724       | 0.724      |
| 2             | 1.648        | 0.568       | 0.060       | 0.784      |
| 3             | 1.080        | 0.221       | 0.039       | 0.824      |
| 4             | 0.859        | 0.078       | 0.031       | 0.855      |
| 5             | 0.780        | 0.114       | 0.028       | 0.883      |
| 6             | 0.667        | 0.072       | 0.024       | 0.908      |
| 7             | 0.595        | 0.105       | 0.022       | 0.929      |
| 8             | 0.490        | 0.043       | 0.018       | 0.947      |
| 9             | 0.446        | 0.056       | 0.016       | 0.963      |
| 10            | 0.390        | 0.021       | 0.014       | 0.978      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H32**  
**Factor Patterns for Grade 6 Mathematics Form A (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> |
|-------------|----------------|----------------|----------------|-------------|----------------|----------------|----------------|
| 1           | 0.628          | -0.178         | 0.054          | 32          | 0.506          | -0.052         | 0.113          |
| 2           | 0.629          | -0.102         | -0.003         | 33          | 0.672          | 0.037          | -0.154         |
| 3           | 0.548          | -0.016         | -0.147         | 34          | 0.754          | 0.026          | -0.078         |
| 4           | 0.652          | -0.130         | 0.087          | 35          | 0.797          | 0.455          | -0.019         |
| 5           | 0.710          | -0.038         | 0.081          | 36          | 0.766          | 0.304          | -0.096         |
| 6           | 0.618          | 0.065          | 0.043          | 37          | 0.585          | -0.018         | -0.592         |
| 7           | 0.335          | 0.125          | 0.046          | 38          | 0.648          | -0.092         | -0.504         |
| 8           | 0.431          | 0.200          | 0.007          | 39          | 0.711          | 0.033          | 0.038          |
| 9           | 0.578          | 0.066          | 0.003          | 40          | 0.705          | -0.089         | -0.020         |
| 10          | 0.535          | 0.023          | -0.180         | 41          | 0.715          | -0.278         | 0.200          |
| 11          | 0.288          | 0.034          | -0.058         | 42          | 0.730          | -0.293         | 0.166          |
| 12          | 0.548          | 0.118          | -0.021         | 43          | 0.582          | -0.221         | 0.010          |
| 13          | 0.679          | 0.099          | -0.074         | 44          | 0.599          | -0.019         | 0.116          |
| 14          | 0.584          | 0.397          | 0.037          | 45          | 0.573          | 0.017          | -0.129         |
| 15          | 0.359          | 0.131          | 0.025          | 46          | 0.549          | -0.051         | -0.171         |
| 16          | 0.355          | 0.105          | 0.095          | 47          | 0.718          | -0.250         | 0.086          |
| 17          | 0.372          | 0.015          | -0.011         | 48          | 0.741          | -0.277         | 0.049          |
| 18          | 0.550          | 0.031          | 0.117          | 49          | 0.666          | -0.026         | 0.058          |
| 19          | 0.627          | 0.003          | 0.040          | 50          | 0.242          | 0.232          | 0.032          |
| 20          | 0.297          | 0.240          | 0.112          | 51          | 0.635          | -0.174         | 0.139          |
| 21          | 0.411          | 0.092          | 0.009          | 52          | 0.319          | 0.054          | 0.068          |
| 22          | 0.425          | 0.267          | 0.092          | 53          | 0.461          | 0.063          | -0.054         |
| 23          | 0.443          | 0.025          | -0.044         | 54          | 0.696          | 0.016          | 0.157          |
| 24          | 0.529          | 0.179          | 0.096          | 55          | 0.783          | -0.033         | 0.135          |
| 25          | 0.572          | 0.033          | 0.044          | 56          | 0.609          | -0.103         | 0.053          |
| 26          | 0.459          | 0.062          | 0.065          | 57          | 0.418          | 0.161          | -0.032         |
| 27          | 0.524          | -0.231         | -0.005         | 58          | 0.514          | -0.169         | -0.165         |
| 28          | 0.375          | -0.208         | -0.078         | 59          | 0.202          | 0.290          | 0.054          |
| 29          | 0.662          | -0.285         | -0.028         | 60          | 0.433          | 0.120          | 0.088          |
| 30          | 0.551          | 0.041          | -0.048         | 61          | 0.354          | -0.100         | 0.067          |
| 31          | 0.705          | 0.121          | 0.082          |             |                |                |                |

**Table H33**  
**Eigenvalues and factor patterns for Grade 6 Mathematics Form A (Objective Level)**

## Eigenvalues

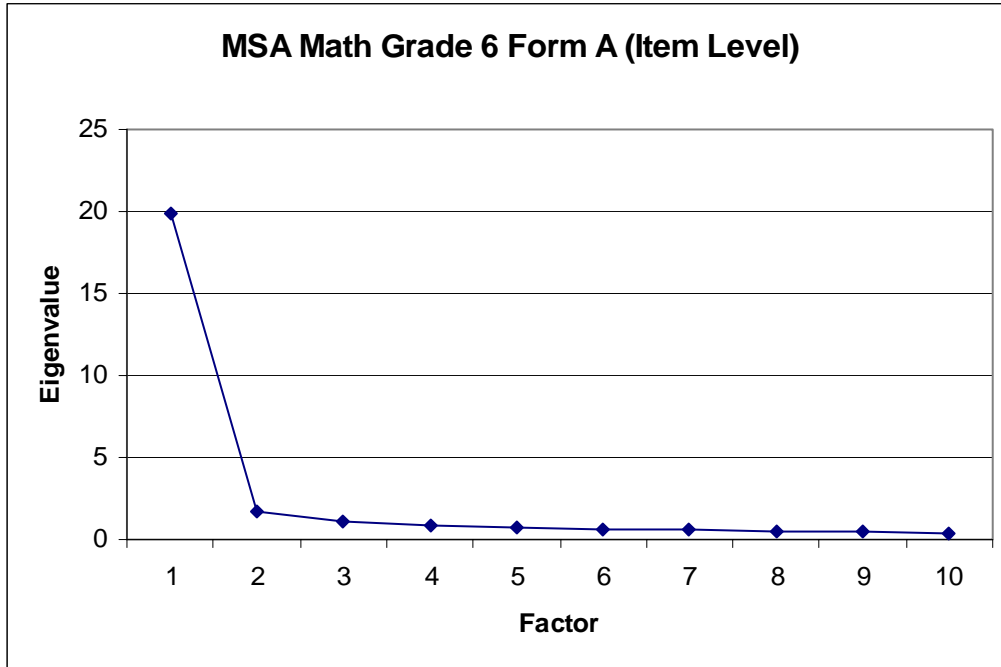
| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 3.580        | 3.607       | 1.069       | 1.069      |
| 2             | -0.027       | 0.027       | -0.008      | 1.061      |
| 3             | -0.054       | 0.015       | -0.016      | 1.044      |
| 4             | -0.069       | 0.010       | -0.021      | 1.024      |
| 5             | -0.079       |             | -0.024      | 1.000      |

## Factor Pattern

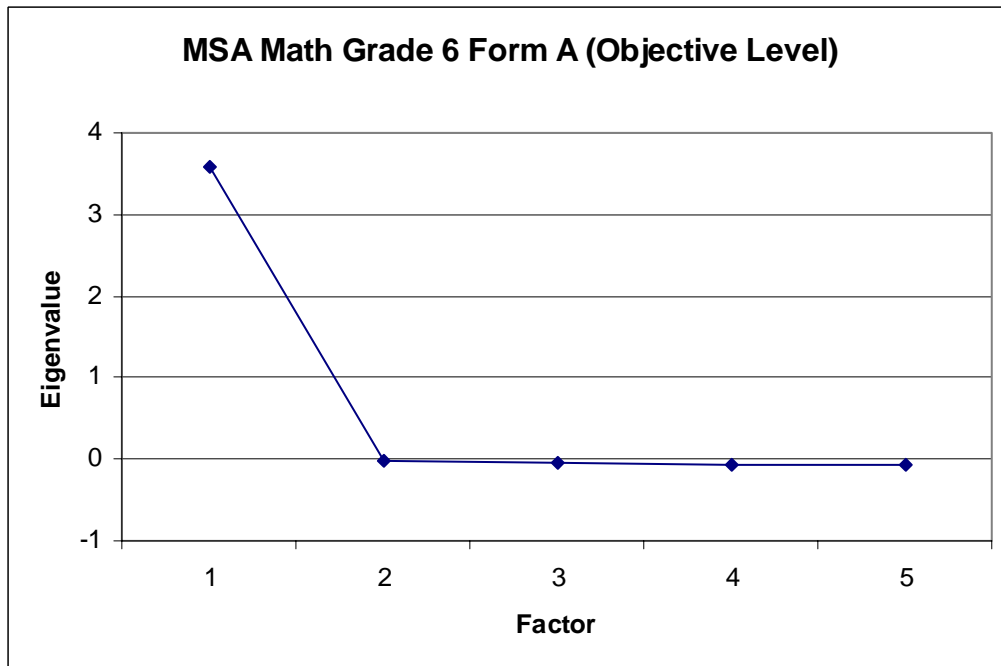
| <b>Objective</b> | <b>Factor1</b> |
|------------------|----------------|
| 1                | 0.865          |
| 2                | 0.809          |
| 3                | 0.801          |
| 4                | 0.865          |
| 5                | 0.887          |

**Figure H11**  
**Scree Plot of Eigenvalues for Grade 6 Mathematics Form A**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H34**  
**Eigenvalues for Grade 6 Mathematics Form B (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 20.716       | 18.552      | 0.340       | 0.340      |
| 2             | 2.164        | 0.689       | 0.036       | 0.375      |
| 3             | 1.475        | 0.154       | 0.024       | 0.399      |
| 4             | 1.321        | 0.075       | 0.022       | 0.421      |
| 5             | 1.246        | 0.141       | 0.020       | 0.441      |
| 6             | 1.105        | 0.035       | 0.018       | 0.460      |
| 7             | 1.071        | 0.054       | 0.018       | 0.477      |
| 8             | 1.017        | 0.027       | 0.017       | 0.494      |
| 9             | 0.990        | 0.020       | 0.016       | 0.510      |
| 10            | 0.970        | 0.033       | 0.016       | 0.526      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion



**Table H35**  
**Factor Patterns for Grade 6 Mathematics Form B (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> | <b>Factor8</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.609          | -0.190         | -0.146         | -0.074         | -0.007         | -0.058         | -0.031         | -0.069         |
| 2           | 0.634          | -0.096         | -0.014         | -0.034         | -0.009         | -0.029         | -0.047         | -0.162         |
| 3           | 0.561          | -0.063         | 0.160          | 0.029          | -0.061         | 0.029          | 0.114          | -0.202         |
| 4           | 0.638          | -0.121         | -0.121         | -0.021         | -0.105         | -0.019         | -0.071         | -0.122         |
| 5           | 0.734          | -0.037         | -0.130         | 0.068          | -0.261         | -0.001         | 0.020          | -0.116         |
| 6           | 0.643          | 0.112          | -0.098         | -0.084         | 0.005          | 0.015          | -0.073         | -0.136         |
| 7           | 0.347          | 0.193          | -0.095         | -0.104         | -0.034         | 0.074          | 0.401          | 0.068          |
| 8           | 0.442          | 0.286          | 0.097          | -0.080         | 0.096          | -0.061         | 0.024          | -0.135         |
| 9           | 0.582          | 0.065          | 0.081          | -0.073         | 0.050          | -0.020         | -0.082         | -0.094         |
| 10          | 0.532          | 0.017          | 0.301          | -0.089         | 0.074          | 0.071          | 0.160          | -0.004         |
| 11          | 0.291          | 0.014          | -0.025         | 0.026          | -0.068         | 0.102          | 0.023          | 0.189          |
| 12          | 0.575          | 0.090          | 0.075          | -0.150         | 0.159          | -0.006         | -0.063         | -0.157         |
| 13          | 0.676          | 0.074          | 0.156          | -0.064         | -0.013         | -0.005         | -0.076         | -0.128         |
| 14          | 0.603          | 0.455          | 0.132          | -0.050         | 0.009          | 0.061          | 0.029          | -0.047         |
| 15          | 0.378          | 0.179          | 0.053          | -0.103         | 0.053          | 0.197          | 0.237          | 0.353          |
| 16          | 0.361          | 0.225          | -0.097         | 0.133          | -0.167         | 0.166          | 0.156          | -0.036         |
| 17          | 0.378          | -0.105         | 0.002          | 0.197          | 0.482          | 0.312          | -0.099         | 0.020          |
| 18          | 0.575          | 0.095          | -0.109         | 0.140          | 0.047          | 0.088          | -0.119         | -0.001         |
| 19          | 0.630          | -0.021         | -0.102         | 0.188          | 0.036          | -0.013         | -0.221         | 0.040          |
| 20          | 0.308          | 0.362          | -0.083         | 0.205          | 0.015          | 0.248          | -0.114         | 0.206          |
| 21          | 0.413          | 0.158          | 0.002          | 0.598          | 0.123          | -0.400         | 0.107          | -0.002         |
| 22          | 0.432          | 0.270          | -0.091         | 0.251          | 0.111          | 0.122          | -0.282         | 0.126          |
| 23          | 0.438          | 0.094          | 0.040          | 0.273          | 0.132          | 0.088          | -0.281         | 0.047          |
| 24          | 0.575          | 0.238          | -0.080         | -0.008         | -0.211         | 0.080          | 0.002          | -0.043         |
| 25          | 0.574          | 0.066          | -0.031         | -0.049         | -0.136         | -0.032         | 0.017          | -0.072         |
| 26          | 0.508          | 0.096          | -0.161         | -0.290         | 0.258          | -0.289         | -0.053         | 0.058          |
| 27          | 0.521          | -0.298         | -0.102         | -0.090         | 0.084          | -0.039         | -0.008         | -0.069         |
| 28          | 0.368          | -0.335         | 0.093          | -0.005         | 0.090          | -0.033         | -0.050         | 0.253          |
| 29          | 0.670          | -0.289         | -0.081         | -0.022         | -0.005         | -0.067         | 0.001          | 0.110          |
| 30          | 0.546          | 0.025          | 0.034          | -0.100         | 0.180          | -0.097         | -0.148         | 0.127          |
| 31          | 0.701          | 0.141          | -0.077         | -0.162         | 0.061          | -0.081         | -0.060         | 0.007          |
| 32          | 0.746          | -0.106         | -0.018         | 0.054          | -0.121         | 0.020          | -0.023         | -0.090         |
| 33          | 0.752          | -0.095         | 0.002          | 0.009          | -0.086         | 0.008          | -0.032         | -0.046         |
| 34          | 0.802          | 0.347          | 0.212          | -0.051         | 0.111          | 0.055          | 0.139          | -0.016         |
| 35          | 0.778          | 0.182          | 0.215          | -0.048         | 0.091          | 0.012          | 0.028          | -0.014         |
| 36          | 0.617          | -0.197         | 0.462          | 0.020          | -0.168         | -0.129         | -0.198         | 0.133          |
| 37          | 0.639          | -0.170         | 0.417          | 0.007          | -0.168         | -0.083         | -0.168         | 0.139          |
| 38          | 0.499          | 0.120          | -0.312         | -0.279         | 0.180          | -0.243         | -0.077         | 0.023          |
| 39          | 0.705          | 0.087          | -0.136         | -0.068         | -0.012         | -0.057         | -0.034         | 0.049          |
| 40          | 0.773          | 0.139          | -0.220         | 0.013          | -0.266         | 0.068          | -0.075         | 0.052          |
| 41          | 0.663          | -0.016         | -0.203         | 0.003          | -0.196         | 0.035          | -0.145         | 0.108          |
| 42          | 0.539          | -0.165         | -0.097         | 0.025          | 0.112          | 0.106          | 0.079          | -0.093         |
| 43          | 0.529          | -0.294         | -0.029         | 0.060          | 0.388          | 0.184          | 0.131          | 0.048          |
| 44          | 0.617          | 0.105          | 0.281          | -0.086         | 0.012          | 0.003          | 0.139          | 0.003          |
| 45          | 0.425          | 0.152          | 0.223          | -0.104         | -0.107         | -0.083         | 0.111          | 0.061          |

**Table H35 (Cont.)**  
**Factor Patterns for Grade 6 Mathematics Form B (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> | <b>Factor8</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.781          | -0.364         | 0.055          | 0.063          | 0.076          | 0.125          | 0.173          | -0.009         |
| 47          | 0.677          | -0.369         | 0.057          | 0.056          | 0.070          | 0.150          | 0.202          | -0.029         |
| 48          | 0.687          | -0.317         | -0.006         | 0.031          | -0.046         | 0.043          | 0.064          | 0.024          |
| 49          | 0.415          | 0.099          | 0.005          | 0.489          | 0.079          | -0.484         | 0.306          | -0.057         |
| 50          | 0.606          | 0.004          | -0.089         | 0.019          | -0.113         | 0.059          | 0.035          | -0.050         |
| 51          | 0.616          | -0.216         | -0.057         | 0.039          | -0.070         | -0.038         | 0.123          | 0.150          |
| 52          | 0.643          | -0.242         | -0.045         | 0.057          | -0.020         | 0.054          | -0.003         | -0.045         |
| 53          | 0.855          | -0.003         | -0.099         | -0.002         | -0.166         | 0.013          | -0.009         | -0.094         |
| 54          | 0.803          | -0.072         | -0.066         | -0.021         | -0.131         | -0.026         | -0.047         | -0.083         |
| 55          | 0.627          | -0.086         | -0.103         | 0.016          | -0.076         | 0.006          | 0.031          | 0.026          |
| 56          | 0.181          | 0.138          | 0.170          | -0.005         | 0.218          | 0.140          | -0.069         | -0.498         |
| 57          | 0.386          | 0.059          | 0.371          | -0.083         | -0.020         | -0.126         | -0.211         | 0.187          |
| 58          | 0.435          | 0.099          | -0.001         | -0.067         | 0.019          | -0.042         | 0.177          | 0.206          |
| 59          | 0.515          | 0.140          | -0.115         | 0.081          | 0.032          | 0.069          | -0.032         | 0.079          |
| 60          | 0.487          | -0.008         | -0.221         | -0.257         | 0.264          | -0.239         | 0.009          | 0.106          |
| 61          | 0.396          | 0.214          | -0.104         | -0.035         | -0.016         | 0.107          | 0.149          | 0.140          |

**Table H36**  
**Eigenvalues and factor patterns for Grade 6 Mathematics Form B (Objective Level)**

## Eigenvalues

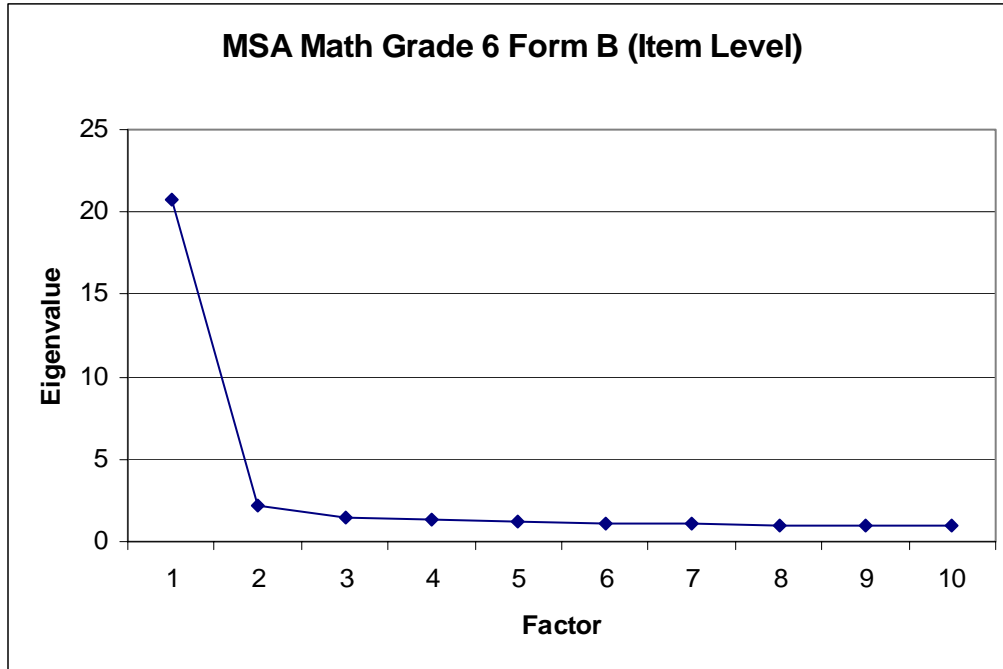
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.568  | 3.585 | 1.067  | 1.067 |
| 2      | -0.017 | 0.044 | -0.005 | 1.062 |
| 3      | -0.061 | 0.003 | -0.018 | 1.044 |
| 4      | -0.063 | 0.019 | -0.019 | 1.025 |
| 5      | -0.082 |       | -0.025 | 1.000 |

## Factor Pattern

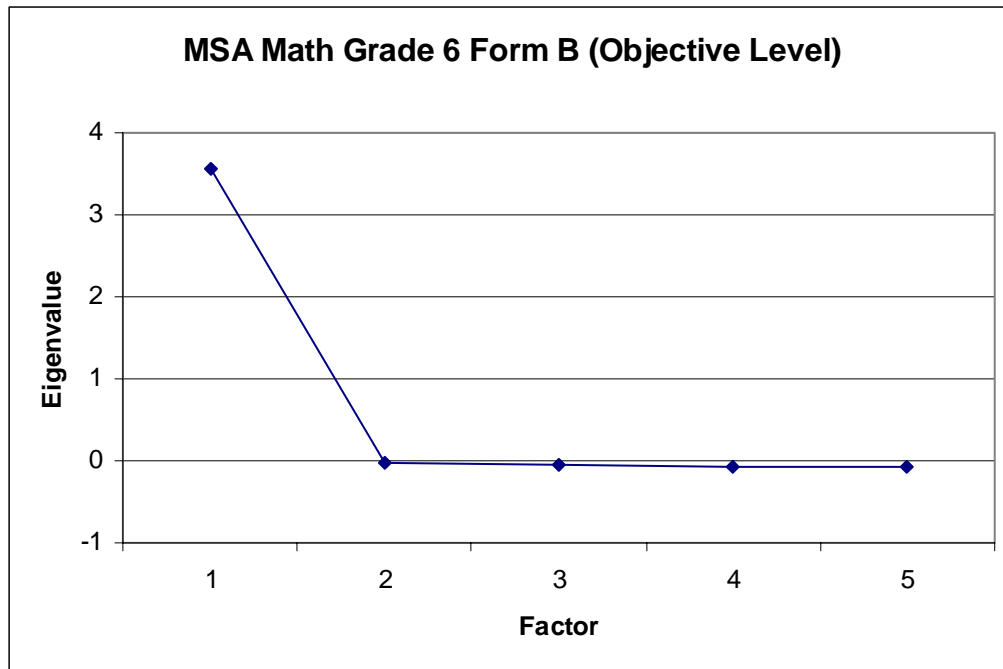
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.877   |
| 2         | 0.797   |
| 3         | 0.792   |
| 4         | 0.861   |
| 5         | 0.891   |

**Figure H12**  
**Scree Plot of Eigenvalues for Grade 6 Mathematics Form B**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H37**  
**Eigenvalues for Grade 6 Mathematics Form C (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 21.506       | 19.407      | 0.347       | 0.347      |
| 2             | 2.099        | 0.646       | 0.034       | 0.381      |
| 3             | 1.453        | 0.068       | 0.023       | 0.404      |
| 4             | 1.385        | 0.108       | 0.022       | 0.427      |
| 5             | 1.276        | 0.042       | 0.021       | 0.447      |
| 6             | 1.235        | 0.085       | 0.020       | 0.467      |
| 7             | 1.150        | 0.084       | 0.019       | 0.486      |
| 8             | 1.066        | 0.029       | 0.017       | 0.503      |
| 9             | 1.038        | 0.044       | 0.017       | 0.520      |
| 10            | 0.993        | 0.009       | 0.016       | 0.536      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H38**  
**Factor Patterns for Grade 6 Mathematics Form C (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> | <b>Factor8</b> | <b>Factor9</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.601          | -0.234         | -0.108         | -0.088         | 0.014          | 0.019          | -0.034         | -0.065         | 0.053          |
| 2           | 0.620          | -0.193         | -0.047         | -0.090         | -0.088         | 0.108          | -0.093         | -0.081         | -0.056         |
| 3           | 0.554          | -0.137         | 0.118          | 0.182          | -0.061         | 0.047          | -0.135         | 0.028          | 0.085          |
| 4           | 0.639          | -0.220         | -0.152         | 0.018          | -0.047         | 0.027          | -0.045         | 0.012          | 0.007          |
| 5           | 0.731          | -0.127         | -0.227         | 0.133          | -0.080         | -0.024         | -0.032         | -0.003         | -0.032         |
| 6           | 0.639          | 0.051          | -0.090         | -0.108         | -0.047         | -0.082         | -0.044         | 0.000          | -0.066         |
| 7           | 0.356          | 0.228          | -0.050         | -0.090         | -0.214         | 0.093          | 0.098          | 0.173          | 0.301          |
| 8           | 0.464          | 0.334          | 0.236          | -0.239         | -0.345         | 0.252          | 0.012          | -0.167         | -0.163         |
| 9           | 0.599          | 0.071          | 0.035          | -0.146         | -0.024         | 0.002          | -0.046         | -0.032         | -0.023         |
| 10          | 0.542          | -0.007         | 0.231          | 0.163          | -0.124         | 0.024          | -0.165         | 0.091          | 0.214          |
| 11          | 0.307          | 0.036          | 0.049          | 0.260          | 0.102          | 0.015          | 0.637          | 0.037          | -0.136         |
| 12          | 0.561          | 0.064          | -0.024         | -0.034         | -0.011         | -0.037         | -0.172         | -0.117         | -0.081         |
| 13          | 0.684          | 0.029          | 0.034          | 0.032          | -0.064         | -0.058         | -0.152         | -0.084         | -0.135         |
| 14          | 0.618          | 0.424          | -0.016         | 0.124          | -0.050         | -0.042         | 0.007          | 0.062          | 0.025          |
| 15          | 0.377          | 0.227          | -0.044         | 0.099          | -0.049         | -0.020         | 0.115          | 0.073          | 0.412          |
| 16          | 0.373          | 0.187          | -0.258         | 0.139          | -0.022         | 0.013          | 0.063          | -0.050         | 0.151          |
| 17          | 0.366          | 0.012          | 0.205          | -0.126         | 0.364          | 0.329          | -0.116         | 0.425          | -0.058         |
| 18          | 0.557          | 0.047          | -0.131         | 0.011          | 0.232          | 0.144          | 0.016          | -0.148         | -0.073         |
| 19          | 0.630          | -0.077         | -0.041         | 0.039          | 0.274          | 0.138          | 0.018          | -0.157         | 0.014          |
| 20          | 0.319          | 0.352          | -0.105         | 0.041          | 0.238          | 0.079          | -0.108         | -0.100         | -0.072         |
| 21          | 0.418          | 0.126          | 0.038          | 0.074          | 0.351          | 0.117          | -0.053         | -0.175         | -0.047         |
| 22          | 0.447          | 0.261          | -0.083         | 0.004          | 0.351          | 0.056          | -0.095         | -0.263         | -0.026         |
| 23          | 0.445          | 0.124          | 0.064          | 0.049          | 0.382          | 0.022          | -0.035         | -0.233         | 0.170          |
| 24          | 0.551          | 0.224          | -0.203         | 0.082          | -0.076         | 0.018          | -0.035         | 0.036          | -0.109         |
| 25          | 0.591          | -0.015         | -0.071         | 0.030          | -0.118         | 0.019          | -0.010         | -0.015         | -0.078         |
| 26          | 0.503          | -0.032         | -0.027         | -0.187         | -0.008         | -0.079         | -0.074         | 0.039          | -0.200         |
| 27          | 0.508          | -0.346         | -0.005         | -0.034         | 0.009          | 0.078          | -0.028         | -0.015         | 0.085          |
| 28          | 0.362          | -0.390         | 0.128          | 0.064          | 0.059          | 0.160          | 0.091          | -0.126         | 0.222          |
| 29          | 0.667          | -0.384         | -0.029         | 0.008          | -0.009         | -0.001         | 0.054          | -0.033         | 0.191          |
| 30          | 0.579          | 0.016          | 0.274          | -0.324         | 0.148          | -0.455         | 0.094          | 0.027          | 0.096          |
| 31          | 0.713          | 0.106          | -0.039         | -0.168         | -0.021         | -0.102         | -0.011         | 0.067          | -0.120         |
| 32          | 0.819          | 0.033          | -0.154         | 0.007          | -0.075         | 0.009          | -0.058         | -0.082         | -0.021         |
| 33          | 0.762          | 0.022          | -0.148         | -0.020         | -0.075         | -0.006         | -0.066         | -0.092         | -0.004         |
| 34          | 0.810          | 0.319          | -0.039         | 0.142          | 0.029          | -0.047         | -0.003         | 0.127          | 0.130          |
| 35          | 0.753          | 0.176          | 0.060          | 0.106          | 0.056          | -0.051         | -0.035         | 0.082          | 0.093          |
| 36          | 0.584          | -0.035         | 0.391          | 0.398          | -0.089         | -0.088         | -0.205         | -0.070         | -0.032         |
| 37          | 0.659          | -0.080         | 0.363          | 0.334          | -0.089         | -0.065         | -0.171         | -0.085         | -0.025         |
| 38          | 0.751          | -0.021         | -0.266         | 0.057          | -0.134         | -0.106         | 0.013          | 0.142          | -0.054         |
| 39          | 0.758          | -0.112         | -0.194         | 0.078          | -0.110         | -0.091         | 0.020          | 0.104          | -0.038         |
| 40          | 0.727          | 0.006          | 0.219          | -0.298         | 0.123          | -0.431         | 0.086          | 0.008          | 0.049          |
| 41          | 0.738          | -0.092         | 0.184          | -0.230         | 0.120          | -0.337         | 0.088          | -0.027         | 0.047          |
| 42          | 0.517          | -0.225         | 0.013          | -0.095         | 0.058          | 0.196          | 0.093          | 0.159          | -0.085         |
| 43          | 0.453          | -0.024         | 0.177          | -0.120         | 0.202          | 0.286          | -0.108         | 0.519          | -0.058         |
| 44          | 0.563          | -0.096         | 0.157          | 0.180          | -0.072         | -0.029         | -0.080         | 0.151          | 0.022          |
| 45          | 0.354          | 0.052          | 0.180          | 0.315          | 0.024          | -0.056         | 0.530          | 0.031          | -0.259         |

**Table H38 (Cont.)**  
**Factor Patterns for Grade 6 Mathematics Form C (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> | <b>Factor8</b> | <b>Factor9</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.756          | -0.290         | -0.149         | 0.056          | -0.039         | -0.039         | 0.013          | -0.001         | -0.066         |
| 47          | 0.686          | -0.243         | -0.079         | 0.018          | -0.056         | -0.065         | 0.011          | 0.001          | -0.084         |
| 48          | 0.532          | 0.147          | -0.047         | 0.074          | -0.021         | 0.003          | 0.066          | 0.077          | -0.139         |
| 49          | 0.410          | -0.180         | -0.143         | 0.035          | 0.000          | 0.008          | -0.063         | 0.049          | -0.095         |
| 50          | 0.707          | -0.116         | 0.032          | -0.080         | -0.037         | 0.031          | 0.003          | -0.056         | -0.093         |
| 51          | 0.655          | 0.230          | 0.313          | -0.276         | -0.305         | 0.345          | 0.123          | -0.198         | -0.001         |
| 52          | 0.568          | -0.102         | 0.200          | -0.160         | -0.143         | 0.281          | 0.198          | -0.211         | 0.083          |
| 53          | 0.449          | 0.063          | 0.123          | 0.096          | 0.027          | -0.051         | 0.004          | 0.086          | -0.026         |
| 54          | 0.705          | 0.132          | 0.171          | 0.176          | -0.016         | -0.074         | -0.119         | 0.022          | -0.089         |
| 55          | 0.471          | -0.046         | -0.075         | -0.006         | 0.013          | 0.102          | 0.135          | 0.077          | -0.096         |
| 56          | 0.438          | 0.297          | -0.154         | 0.019          | -0.043         | 0.032          | 0.018          | 0.059          | 0.348          |
| 57          | 0.605          | -0.184         | -0.030         | 0.038          | 0.047          | 0.094          | 0.116          | -0.012         | 0.181          |
| 58          | 0.716          | -0.146         | -0.112         | 0.054          | 0.090          | 0.070          | 0.022          | -0.022         | -0.033         |
| 59          | 0.585          | 0.185          | -0.137         | -0.064         | 0.065          | 0.027          | 0.093          | 0.025          | 0.015          |
| 60          | 0.639          | 0.207          | -0.087         | -0.133         | -0.066         | -0.079         | -0.042         | 0.068          | -0.185         |
| 61          | 0.502          | 0.036          | -0.106         | -0.203         | -0.073         | 0.003          | 0.072          | 0.115          | 0.105          |
| 62          | 0.592          | -0.148         | -0.058         | -0.192         | 0.100          | 0.024          | 0.079          | -0.075         | 0.100          |

**Table H39**  
**Eigenvalues and factor patterns for Grade 6 Mathematics Form C (Objective Level)**

## Eigenvalues

| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.636  | 3.661 | 1.065  | 1.065 |
| 2      | -0.025 | 0.032 | -0.007 | 1.057 |
| 3      | -0.057 | 0.001 | -0.017 | 1.041 |
| 4      | -0.058 | 0.022 | -0.017 | 1.024 |
| 5      | -0.081 |       | -0.024 | 1.000 |

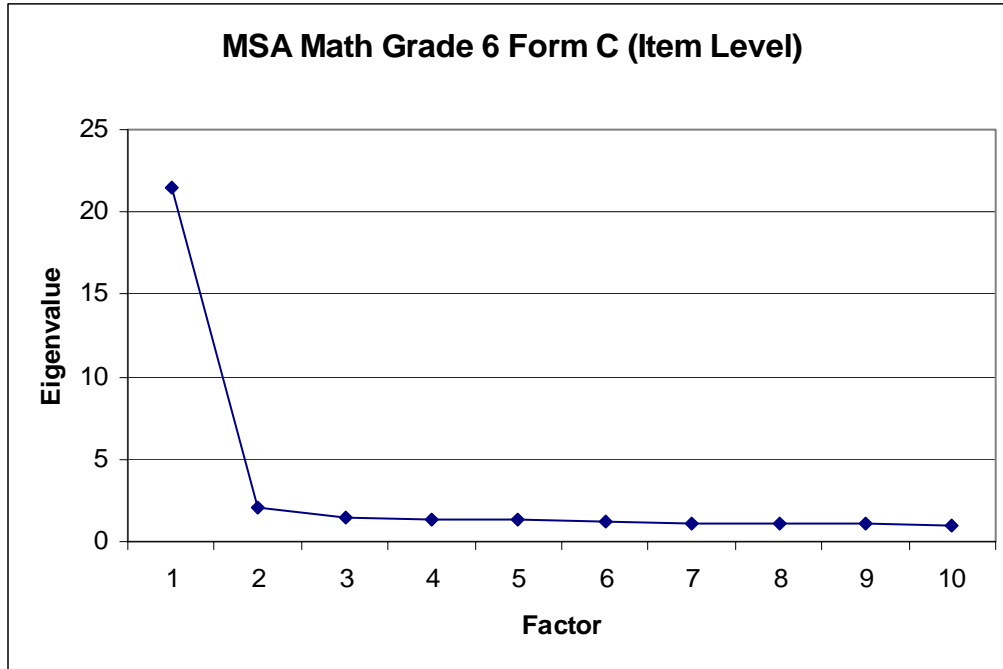
## Factor Pattern

| Objective | Factor1 |
|-----------|---------|
| 1         | 0.880   |
| 2         | 0.827   |
| 3         | 0.809   |
| 4         | 0.852   |
| 5         | 0.893   |

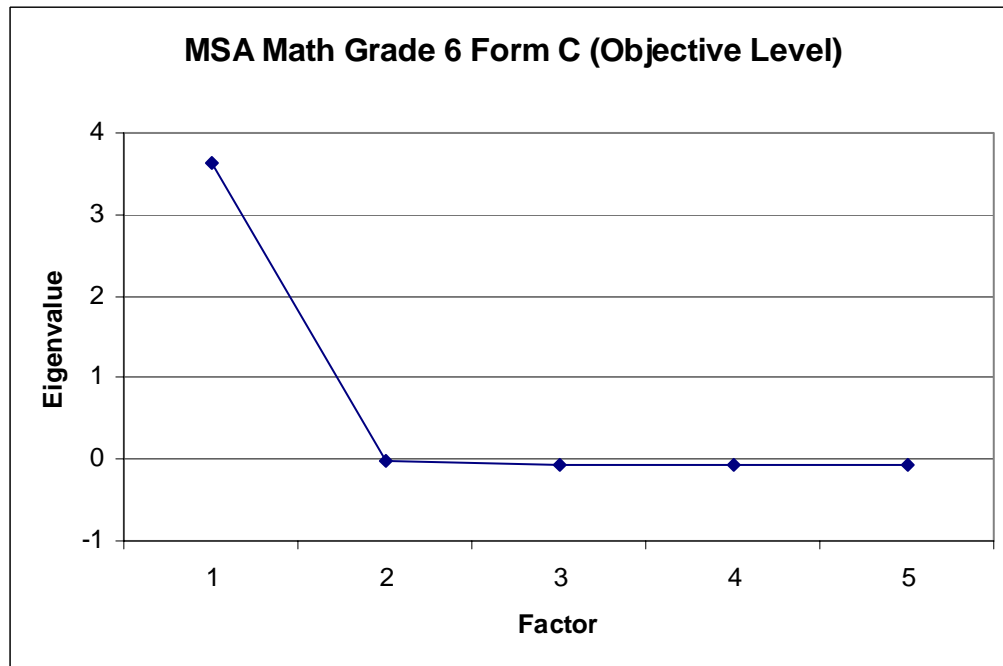


**Figure H13**  
**Scree Plot of Eigenvalues for Grade 6 Mathematics Form C**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H40**  
**Eigenvalues for Grade 6 Mathematics Form D (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 16.735       | 14.806      | 0.751       | 0.751      |
| 2             | 1.929        | 0.715       | 0.087       | 0.838      |
| 3             | 1.214        | 0.459       | 0.055       | 0.892      |
| 4             | 0.755        | 0.185       | 0.034       | 0.926      |
| 5             | 0.570        | 0.102       | 0.026       | 0.952      |
| 6             | 0.468        | 0.006       | 0.021       | 0.973      |
| 7             | 0.462        | 0.024       | 0.021       | 0.993      |
| 8             | 0.438        | 0.062       | 0.020       | 1.013      |
| 9             | 0.376        | 0.042       | 0.017       | 1.030      |
| 10            | 0.333        | 0.009       | 0.015       | 1.045      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H41**  
**Factor Patterns for Grade 6 Mathematics Form D (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> |
|-------------|----------------|----------------|----------------|-------------|----------------|----------------|----------------|
| 1           | 0.618          | -0.143         | -0.123         | 31          | 0.712          | 0.107          | 0.020          |
| 2           | 0.620          | -0.117         | -0.126         | 32          | 0.698          | -0.043         | -0.001         |
| 3           | 0.550          | -0.062         | 0.003          | 33          | 0.722          | -0.073         | -0.031         |
| 4           | 0.608          | -0.114         | -0.139         | 34          | 0.399          | -0.496         | 0.668          |
| 5           | 0.694          | 0.018          | -0.074         | 35          | 0.530          | -0.476         | 0.611          |
| 6           | 0.639          | 0.078          | -0.053         | 36          | 0.552          | -0.153         | -0.138         |
| 7           | 0.345          | 0.140          | 0.027          | 37          | 0.441          | -0.012         | -0.022         |
| 8           | 0.435          | 0.203          | 0.074          | 38          | 0.487          | 0.230          | 0.143          |
| 9           | 0.600          | 0.037          | -0.014         | 39          | 0.394          | 0.141          | 0.105          |
| 10          | 0.534          | -0.003         | 0.044          | 40          | 0.769          | 0.004          | -0.116         |
| 11          | 0.286          | 0.001          | 0.051          | 41          | 0.652          | -0.128         | -0.090         |
| 12          | 0.544          | 0.071          | 0.008          | 42          | 0.685          | -0.203         | -0.147         |
| 13          | 0.656          | 0.019          | 0.020          | 43          | 0.647          | -0.206         | -0.136         |
| 14          | 0.608          | 0.390          | 0.185          | 44          | 0.604          | -0.230         | -0.115         |
| 15          | 0.371          | 0.165          | 0.063          | 45          | 0.453          | 0.064          | 0.050          |
| 16          | 0.359          | 0.208          | 0.066          | 46          | 0.678          | -0.164         | -0.120         |
| 17          | 0.359          | -0.021         | -0.039         | 47          | 0.322          | -0.208         | -0.074         |
| 18          | 0.566          | 0.041          | -0.059         | 48          | 0.562          | -0.004         | 0.009          |
| 19          | 0.642          | -0.040         | -0.090         | 49          | 0.557          | 0.235          | 0.022          |
| 20          | 0.334          | 0.259          | 0.072          | 50          | 0.443          | 0.023          | 0.011          |
| 21          | 0.406          | 0.111          | 0.017          | 51          | 0.598          | -0.010         | 0.052          |
| 22          | 0.437          | 0.203          | 0.070          | 52          | 0.377          | -0.012         | 0.064          |
| 23          | 0.454          | 0.091          | 0.053          | 53          | 0.617          | -0.103         | -0.073         |
| 24          | 0.556          | 0.199          | 0.011          | 54          | 0.274          | 0.084          | 0.045          |
| 25          | 0.569          | 0.042          | 0.003          | 55          | 0.546          | 0.411          | 0.106          |
| 26          | 0.487          | 0.062          | -0.026         | 56          | 0.324          | 0.078          | -0.014         |
| 27          | 0.511          | -0.207         | -0.155         | 57          | 0.314          | 0.247          | 0.094          |
| 28          | 0.323          | -0.228         | -0.102         | 58          | 0.426          | 0.151          | 0.069          |
| 29          | 0.660          | -0.297         | -0.155         | 59          | 0.407          | 0.273          | 0.080          |
| 30          | 0.537          | 0.015          | 0.013          |             |                |                |                |

**Table H42**  
**Eigenvalues and factor patterns for Grade 6 Mathematics Form D (Objective Level)**

## Eigenvalues

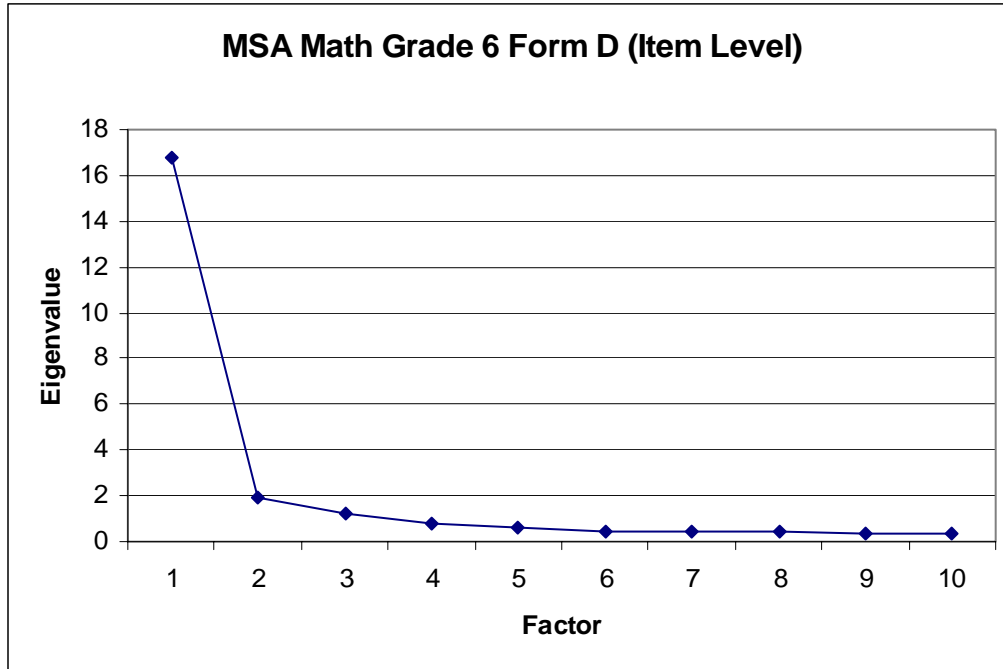
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.324  | 3.335 | 1.086  | 1.086 |
| 2      | -0.012 | 0.050 | -0.004 | 1.083 |
| 3      | -0.062 | 0.022 | -0.020 | 1.062 |
| 4      | -0.084 | 0.023 | -0.027 | 1.035 |
| 5      | -0.107 |       | -0.035 | 1.000 |

## Factor Pattern

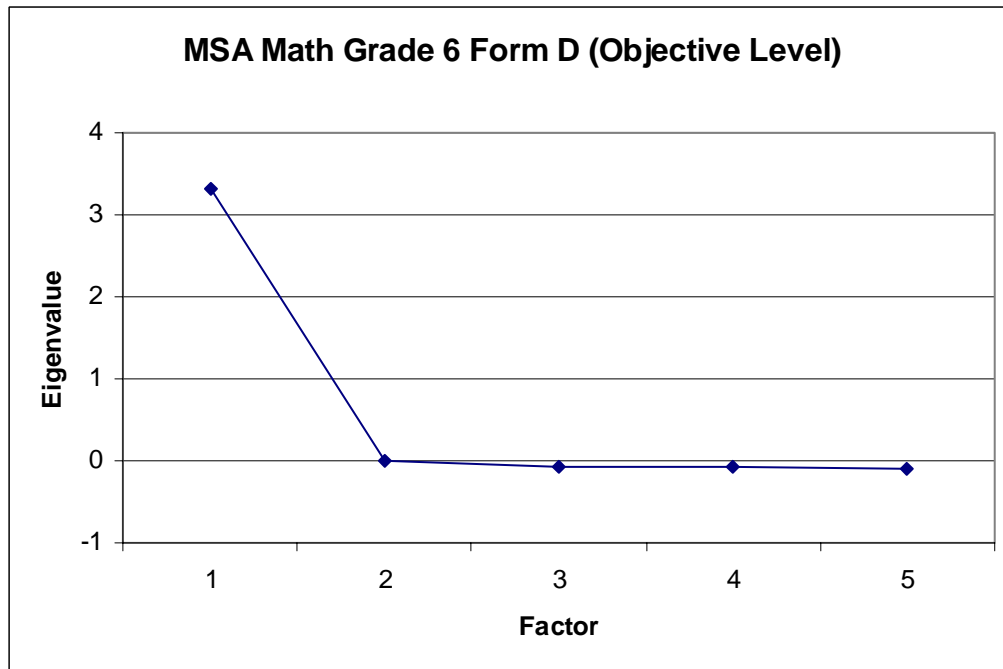
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.854   |
| 2         | 0.808   |
| 3         | 0.799   |
| 4         | 0.834   |
| 5         | 0.779   |

**Figure H14**  
**Scree Plot of Eigenvalues for Grade 6 Mathematics Form D**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H43**  
**Eigenvalues for Grade 6 Mathematics Form E (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 20.939       | 18.461      | 0.349       | 0.349      |
| 2             | 2.479        | 1.103       | 0.041       | 0.390      |
| 3             | 1.376        | 0.191       | 0.023       | 0.413      |
| 4             | 1.185        | 0.081       | 0.020       | 0.433      |
| 5             | 1.104        | 0.047       | 0.018       | 0.451      |
| 6             | 1.057        | 0.048       | 0.018       | 0.469      |
| 7             | 1.009        | 0.018       | 0.017       | 0.486      |
| 8             | 0.991        | 0.039       | 0.017       | 0.502      |
| 9             | 0.952        | 0.015       | 0.016       | 0.518      |
| 10            | 0.937        | 0.013       | 0.016       | 0.534      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H44**  
**Factor Patterns for Grade 6 Mathematics Form E (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.612          | -0.182         | -0.094         | -0.176         | -0.072         | -0.066         | 0.043          |
| 2           | 0.628          | -0.089         | -0.124         | -0.105         | 0.001          | -0.125         | 0.165          |
| 3           | 0.553          | -0.065         | -0.070         | 0.222          | -0.279         | -0.111         | 0.018          |
| 4           | 0.616          | -0.096         | -0.113         | -0.255         | -0.089         | -0.053         | 0.043          |
| 5           | 0.718          | -0.024         | -0.079         | -0.206         | -0.268         | 0.038          | -0.043         |
| 6           | 0.641          | 0.133          | -0.194         | -0.179         | 0.171          | -0.140         | 0.124          |
| 7           | 0.362          | 0.143          | -0.044         | 0.066          | 0.089          | 0.128          | 0.315          |
| 8           | 0.427          | 0.304          | -0.161         | 0.006          | 0.113          | 0.044          | 0.061          |
| 9           | 0.570          | 0.072          | -0.169         | -0.028         | 0.101          | -0.110         | 0.079          |
| 10          | 0.545          | -0.001         | -0.039         | 0.328          | -0.161         | -0.079         | 0.055          |
| 11          | 0.290          | 0.066          | 0.180          | 0.135          | -0.030         | 0.024          | 0.156          |
| 12          | 0.561          | 0.100          | -0.108         | 0.002          | 0.036          | -0.161         | 0.031          |
| 13          | 0.658          | 0.081          | -0.120         | -0.014         | -0.127         | -0.121         | -0.019         |
| 14          | 0.590          | 0.468          | -0.009         | 0.090          | -0.047         | 0.028          | -0.040         |
| 15          | 0.381          | 0.210          | 0.036          | 0.187          | 0.188          | 0.186          | 0.319          |
| 16          | 0.369          | 0.214          | -0.009         | -0.177         | -0.310         | 0.209          | 0.115          |
| 17          | 0.370          | -0.005         | 0.177          | 0.005          | 0.161          | -0.308         | 0.236          |
| 18          | 0.566          | 0.026          | 0.201          | -0.171         | -0.031         | -0.046         | -0.018         |
| 19          | 0.623          | -0.074         | 0.299          | -0.133         | -0.026         | -0.073         | 0.068          |
| 20          | 0.342          | 0.343          | 0.277          | -0.239         | 0.017          | 0.055          | -0.068         |
| 21          | 0.412          | 0.125          | 0.351          | -0.200         | -0.025         | -0.098         | 0.120          |
| 22          | 0.449          | 0.318          | 0.358          | -0.078         | 0.116          | -0.084         | 0.050          |
| 23          | 0.476          | 0.130          | 0.338          | 0.077          | 0.067          | -0.360         | -0.249         |
| 24          | 0.583          | 0.226          | -0.094         | -0.126         | -0.104         | 0.177          | -0.137         |
| 25          | 0.562          | 0.043          | -0.176         | -0.085         | -0.077         | 0.099          | 0.014          |
| 26          | 0.494          | 0.076          | -0.089         | -0.027         | 0.252          | 0.041          | -0.143         |
| 27          | 0.508          | -0.285         | -0.040         | -0.086         | 0.223          | 0.104          | -0.033         |
| 28          | 0.347          | -0.345         | 0.088          | 0.088          | 0.260          | 0.175          | -0.179         |
| 29          | 0.669          | -0.346         | -0.087         | -0.026         | 0.008          | 0.043          | 0.011          |
| 30          | 0.534          | 0.078          | -0.068         | 0.144          | 0.241          | -0.063         | -0.091         |
| 31          | 0.711          | 0.107          | -0.153         | -0.057         | 0.131          | 0.010          | -0.202         |
| 32          | 0.768          | -0.087         | -0.011         | 0.024          | -0.204         | -0.153         | -0.073         |
| 33          | 0.769          | -0.029         | -0.024         | 0.035          | -0.150         | -0.135         | -0.052         |
| 34          | 0.680          | 0.456          | 0.098          | 0.229          | 0.011          | 0.114          | 0.123          |
| 35          | 0.719          | 0.098          | 0.151          | 0.126          | -0.066         | 0.076          | 0.143          |
| 36          | 0.733          | 0.137          | -0.056         | 0.194          | -0.018         | -0.054         | -0.004         |
| 37          | 0.705          | 0.120          | -0.062         | 0.205          | -0.025         | -0.040         | 0.029          |
| 38          | 0.741          | 0.115          | -0.148         | -0.201         | -0.036         | 0.137          | -0.168         |
| 39          | 0.788          | 0.105          | -0.150         | -0.163         | -0.022         | 0.111          | -0.154         |
| 40          | 0.656          | -0.322         | -0.026         | -0.084         | 0.109          | -0.005         | 0.097          |
| 41          | 0.660          | -0.005         | -0.127         | 0.221          | -0.202         | -0.006         | -0.063         |
| 42          | 0.418          | 0.180          | 0.020          | 0.159          | 0.010          | 0.118          | -0.082         |
| 43          | 0.776          | -0.392         | -0.005         | 0.103          | -0.034         | -0.036         | 0.115          |
| 44          | 0.702          | -0.356         | -0.015         | 0.108          | -0.020         | -0.024         | 0.155          |
| 45          | 0.620          | -0.214         | 0.015          | 0.045          | -0.078         | -0.127         | -0.152         |

**Table H44 (Cont.)**  
**Factor Patterns for Grade 6 Mathematics Form E (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.635          | -0.222         | 0.057          | 0.076          | -0.034         | 0.058          | 0.074          |
| 47          | 0.519          | 0.112          | 0.073          | 0.213          | 0.087          | -0.249         | -0.301         |
| 48          | 0.661          | -0.157         | -0.082         | -0.008         | 0.073          | -0.101         | 0.033          |
| 49          | 0.652          | -0.243         | -0.023         | 0.052          | 0.060          | 0.074          | 0.025          |
| 50          | 0.731          | 0.071          | 0.046          | -0.146         | -0.124         | 0.052          | 0.048          |
| 51          | 0.785          | 0.044          | 0.032          | -0.066         | -0.069         | 0.018          | 0.056          |
| 52          | 0.510          | -0.005         | -0.249         | -0.113         | 0.313          | -0.149         | 0.224          |
| 53          | 0.413          | 0.093          | -0.010         | 0.242          | -0.084         | 0.312          | -0.014         |
| 54          | 0.466          | -0.122         | -0.041         | 0.091          | 0.125          | 0.088          | -0.140         |
| 55          | 0.349          | 0.411          | -0.058         | -0.091         | 0.222          | 0.091          | -0.015         |
| 56          | 0.558          | -0.293         | 0.248          | 0.083          | 0.099          | 0.286          | -0.084         |
| 57          | 0.601          | -0.305         | 0.234          | 0.011          | 0.100          | 0.235          | 0.026          |
| 58          | 0.667          | -0.143         | 0.205          | -0.168         | 0.001          | 0.129          | -0.048         |
| 59          | 0.582          | -0.068         | 0.337          | -0.044         | -0.037         | 0.025          | -0.097         |
| 60          | 0.541          | 0.092          | -0.130         | 0.033          | 0.153          | 0.029          | -0.266         |



**Table H45**  
**Eigenvalues and factor patterns for Grade 6 Mathematics Form E (Objective Level)**

## Eigenvalues

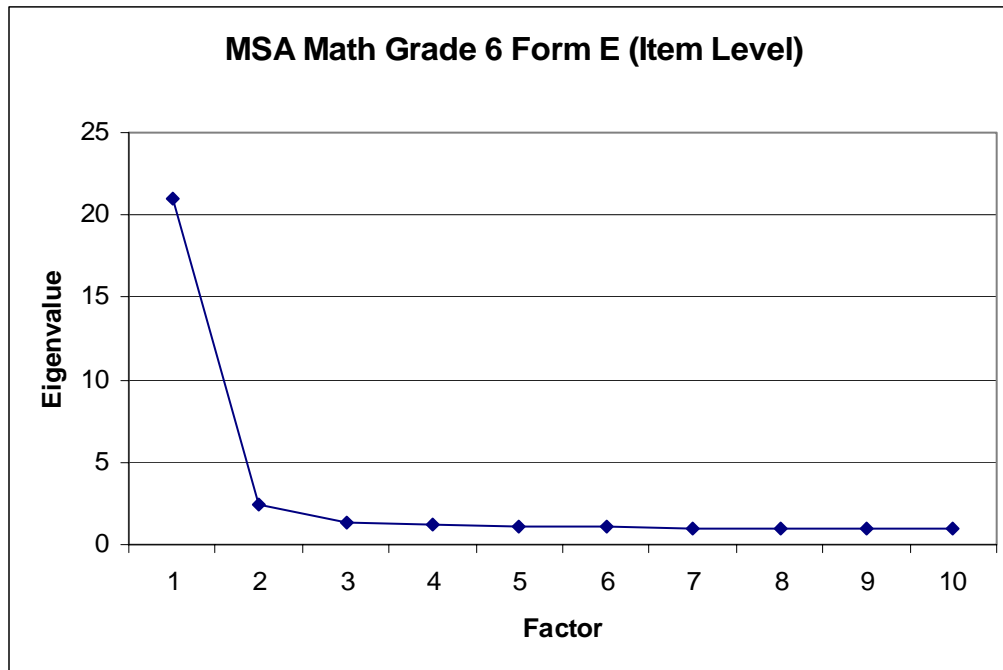
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.570  | 3.563 | 1.065  | 1.065 |
| 2      | 0.007  | 0.064 | 0.002  | 1.067 |
| 3      | -0.058 | 0.022 | -0.017 | 1.050 |
| 4      | -0.079 | 0.009 | -0.024 | 1.026 |
| 5      | -0.089 |       | -0.026 | 1.000 |

## Factor Pattern

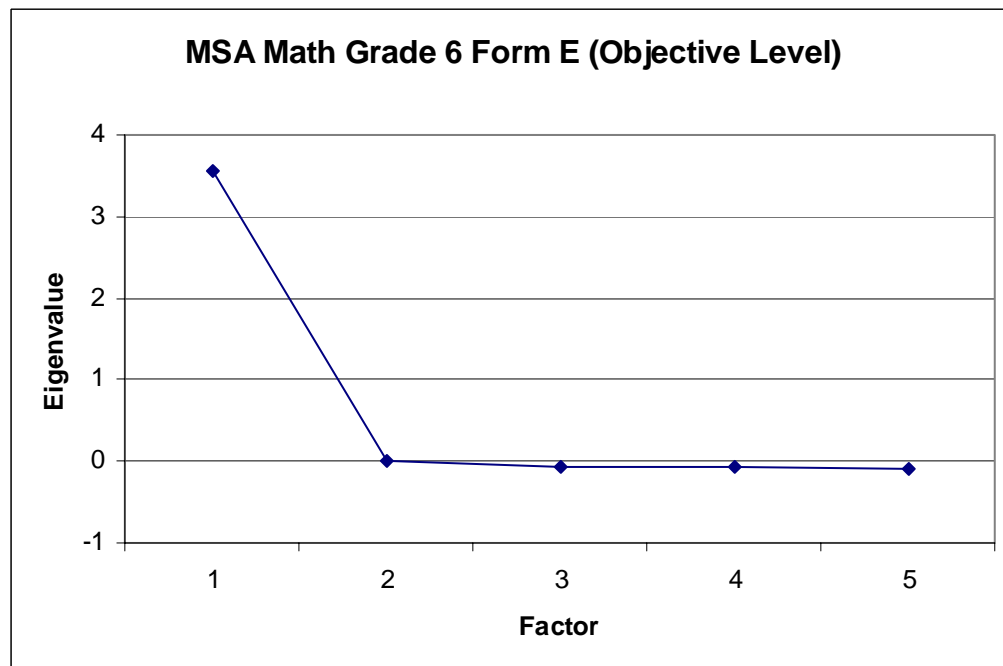
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.865   |
| 2         | 0.814   |
| 3         | 0.800   |
| 4         | 0.861   |
| 5         | 0.882   |

**Figure H15**  
**Scree Plot of Eigenvalues for Grade 6 Mathematics Form E**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H46**  
**Eigenvalues for Grade 6 Mathematics Form F (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 20.374       | 18.520      | 0.580       | 0.580      |
| 2             | 1.854        | 0.530       | 0.053       | 0.633      |
| 3             | 1.323        | 0.116       | 0.038       | 0.670      |
| 4             | 1.208        | 0.060       | 0.034       | 0.705      |
| 5             | 1.147        | 0.187       | 0.033       | 0.738      |
| 6             | 0.960        | 0.111       | 0.027       | 0.765      |
| 7             | 0.849        | 0.141       | 0.024       | 0.789      |
| 8             | 0.708        | 0.032       | 0.020       | 0.809      |
| 9             | 0.676        | 0.021       | 0.019       | 0.828      |
| 10            | 0.655        | 0.115       | 0.019       | 0.847      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H47**  
**Factor Patterns for Grade 6 Mathematics Form F (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.591          | -0.235         | 0.099          | -0.037         | -0.008         |
| 2           | 0.626          | -0.128         | 0.017          | -0.056         | 0.057          |
| 3           | 0.529          | -0.031         | -0.011         | 0.000          | -0.024         |
| 4           | 0.627          | -0.152         | 0.162          | -0.077         | -0.021         |
| 5           | 0.693          | -0.060         | 0.148          | -0.063         | -0.079         |
| 6           | 0.630          | 0.063          | 0.096          | -0.061         | -0.072         |
| 7           | 0.338          | 0.136          | 0.074          | 0.024          | -0.004         |
| 8           | 0.440          | 0.522          | -0.113         | -0.185         | 0.409          |
| 9           | 0.564          | 0.023          | -0.007         | -0.054         | -0.015         |
| 10          | 0.538          | 0.008          | -0.046         | 0.030          | 0.036          |
| 11          | 0.266          | -0.001         | 0.036          | 0.061          | -0.030         |
| 12          | 0.559          | 0.000          | -0.071         | -0.096         | -0.063         |
| 13          | 0.708          | 0.024          | -0.384         | -0.256         | -0.163         |
| 14          | 0.596          | 0.369          | 0.046          | 0.046          | -0.140         |
| 15          | 0.365          | 0.164          | 0.086          | 0.041          | -0.006         |
| 16          | 0.334          | 0.131          | 0.108          | -0.059         | -0.034         |
| 17          | 0.374          | -0.037         | -0.031         | 0.050          | 0.037          |
| 18          | 0.591          | 0.019          | 0.089          | 0.011          | -0.049         |
| 19          | 0.627          | -0.035         | 0.059          | -0.016         | -0.023         |
| 20          | 0.331          | 0.243          | 0.049          | 0.009          | -0.085         |
| 21          | 0.413          | 0.116          | 0.019          | 0.078          | -0.048         |
| 22          | 0.445          | 0.261          | 0.035          | 0.052          | -0.095         |
| 23          | 0.475          | 0.092          | -0.072         | 0.155          | -0.047         |
| 24          | 0.555          | 0.185          | 0.156          | -0.022         | -0.095         |
| 25          | 0.573          | 0.045          | 0.117          | -0.111         | -0.050         |
| 26          | 0.475          | 0.034          | 0.115          | -0.037         | -0.015         |
| 27          | 0.497          | -0.252         | 0.091          | -0.013         | 0.068          |
| 28          | 0.353          | -0.240         | -0.009         | 0.006          | 0.113          |
| 29          | 0.640          | -0.356         | 0.070          | -0.037         | 0.096          |
| 30          | 0.542          | 0.007          | -0.059         | 0.038          | -0.012         |
| 31          | 0.733          | 0.093          | 0.119          | -0.059         | -0.116         |
| 32          | 0.507          | -0.040         | 0.099          | -0.045         | 0.026          |
| 33          | 0.590          | -0.036         | 0.093          | -0.004         | 0.003          |
| 34          | 0.746          | -0.048         | -0.544         | -0.267         | -0.201         |
| 35          | 0.717          | -0.078         | -0.551         | -0.253         | -0.224         |
| 36          | 0.663          | 0.109          | -0.221         | 0.589          | 0.014          |
| 37          | 0.618          | 0.038          | -0.255         | 0.609          | 0.055          |
| 38          | 0.739          | -0.013         | 0.076          | -0.026         | -0.080         |
| 39          | 0.714          | -0.087         | 0.001          | 0.040          | -0.025         |
| 40          | 0.693          | 0.012          | -0.123         | 0.220          | -0.038         |
| 41          | 0.713          | -0.088         | -0.111         | 0.186          | -0.034         |
| 42          | 0.513          | -0.280         | 0.018          | 0.012          | 0.134          |
| 43          | 0.552          | -0.298         | -0.011         | 0.020          | 0.180          |
| 44          | 0.550          | -0.309         | 0.043          | 0.069          | 0.143          |
| 45          | 0.257          | 0.414          | 0.053          | 0.030          | -0.024         |

**Table H47 (Cont.)**  
**Factor Patterns for Grade 6 Mathematics Form F (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.432          | 0.179          | 0.091          | -0.052         | -0.030         |
| 47          | 0.841          | 0.040          | 0.258          | -0.066         | -0.156         |
| 48          | 0.781          | -0.040         | 0.186          | -0.041         | -0.136         |
| 49          | 0.549          | -0.084         | -0.003         | 0.026          | 0.048          |
| 50          | 0.635          | -0.156         | 0.057          | -0.050         | 0.052          |
| 51          | 0.456          | 0.090          | 0.027          | 0.067          | 0.005          |
| 52          | 0.608          | 0.198          | 0.134          | -0.014         | -0.079         |
| 53          | 0.670          | -0.144         | 0.016          | 0.001          | 0.064          |
| 54          | 0.695          | 0.383          | -0.100         | -0.168         | 0.557          |
| 55          | 0.575          | -0.039         | -0.076         | -0.099         | 0.524          |
| 56          | 0.536          | 0.168          | 0.118          | 0.010          | -0.044         |
| 57          | 0.601          | -0.081         | -0.023         | 0.065          | 0.079          |
| 58          | 0.575          | 0.083          | -0.086         | -0.047         | -0.044         |
| 59          | 0.596          | -0.005         | 0.086          | 0.026          | -0.054         |
| 60          | 0.634          | -0.180         | 0.050          | -0.023         | 0.040          |
| 61          | 0.603          | -0.038         | 0.091          | 0.018          | 0.000          |

**Table H48**  
**Eigenvalues and factor patterns for Grade 6 Mathematics Form F (Objective Level)**

## Eigenvalues

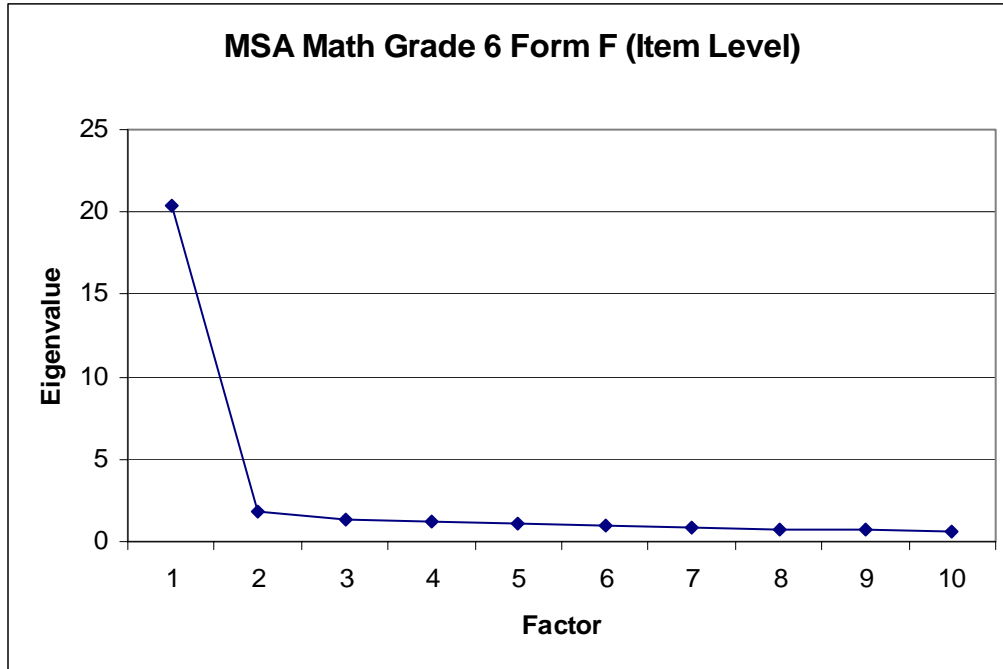
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.608  | 3.610 | 1.067  | 1.067 |
| 2      | -0.002 | 0.062 | -0.001 | 1.066 |
| 3      | -0.064 | 0.007 | -0.019 | 1.047 |
| 4      | -0.071 | 0.016 | -0.021 | 1.026 |
| 5      | -0.087 |       | -0.026 | 1.000 |

## Factor Pattern

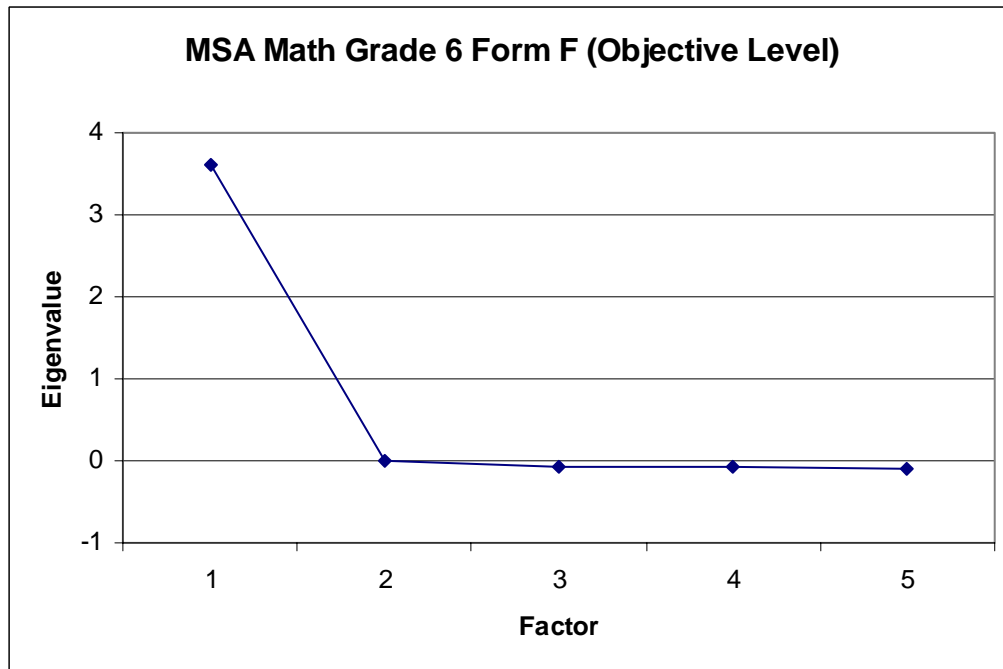
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.868   |
| 2         | 0.841   |
| 3         | 0.831   |
| 4         | 0.844   |
| 5         | 0.863   |

**Figure H16**  
**Scree Plot of Eigenvalues for Grade 6 Mathematics Form F**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H49**  
**Eigenvalues for Grade 7 Mathematics Form A (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 25.358       | 23.105      | 0.409       | 0.409      |
| 2             | 2.253        | 0.809       | 0.036       | 0.445      |
| 3             | 1.444        | 0.136       | 0.023       | 0.469      |
| 4             | 1.308        | 0.101       | 0.021       | 0.490      |
| 5             | 1.207        | 0.029       | 0.020       | 0.509      |
| 6             | 1.178        | 0.119       | 0.019       | 0.528      |
| 7             | 1.059        | 0.021       | 0.017       | 0.545      |
| 8             | 1.038        | 0.061       | 0.017       | 0.562      |
| 9             | 0.977        | 0.022       | 0.016       | 0.578      |
| 10            | 0.954        | 0.041       | 0.015       | 0.593      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion



**Table H50**  
**Factor Patterns for Grade 7 Mathematics Form A (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 | Factor6 | Factor7 | Factor8 |
|------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1    | 0.562   | 0.136   | -0.154  | 0.020   | 0.015   | 0.083   | 0.050   | 0.052   |
| 2    | 0.533   | 0.008   | -0.099  | 0.071   | -0.072  | 0.148   | -0.064  | -0.038  |
| 3    | 0.721   | -0.080  | -0.192  | -0.057  | 0.020   | 0.070   | -0.059  | -0.052  |
| 4    | 0.585   | -0.349  | 0.112   | -0.084  | 0.035   | -0.153  | -0.063  | -0.144  |
| 5    | 0.736   | -0.050  | -0.205  | -0.123  | 0.115   | 0.077   | -0.026  | 0.031   |
| 6    | 0.571   | 0.092   | -0.161  | -0.123  | 0.053   | -0.015  | -0.066  | 0.128   |
| 7    | 0.623   | 0.197   | 0.102   | -0.205  | 0.027   | 0.155   | -0.077  | -0.096  |
| 8    | 0.659   | 0.154   | 0.215   | -0.196  | 0.107   | 0.231   | 0.085   | -0.141  |
| 9    | 0.472   | 0.251   | -0.030  | -0.045  | 0.129   | -0.065  | -0.180  | 0.156   |
| 10   | 0.562   | 0.352   | -0.139  | 0.042   | -0.003  | 0.034   | 0.025   | 0.191   |
| 11   | 0.594   | 0.205   | -0.216  | 0.048   | 0.003   | 0.078   | -0.054  | 0.052   |
| 12   | 0.686   | -0.220  | -0.015  | 0.031   | -0.146  | -0.006  | -0.080  | -0.214  |
| 13   | 0.638   | -0.050  | -0.189  | -0.034  | 0.062   | 0.105   | -0.070  | -0.071  |
| 14   | 0.638   | -0.110  | 0.025   | 0.012   | 0.048   | -0.030  | -0.085  | -0.167  |
| 15   | 0.578   | -0.094  | 0.006   | -0.026  | 0.116   | -0.136  | -0.139  | -0.130  |
| 16   | 0.614   | -0.124  | 0.085   | 0.056   | 0.221   | -0.121  | 0.018   | -0.047  |
| 17   | 0.449   | 0.136   | 0.014   | 0.051   | 0.101   | -0.025  | -0.073  | 0.069   |
| 18   | 0.673   | -0.133  | -0.167  | -0.141  | 0.147   | 0.061   | -0.001  | -0.008  |
| 19   | 0.363   | 0.433   | 0.092   | -0.148  | -0.150  | 0.016   | -0.159  | 0.163   |
| 20   | 0.557   | 0.380   | 0.141   | -0.117  | -0.180  | 0.012   | -0.141  | 0.025   |
| 21   | 0.481   | 0.048   | -0.140  | 0.124   | -0.151  | 0.134   | -0.203  | -0.016  |
| 22   | 0.525   | -0.287  | 0.048   | 0.046   | -0.139  | 0.065   | -0.037  | -0.226  |
| 23   | 0.753   | -0.151  | -0.104  | -0.063  | -0.011  | 0.014   | -0.044  | -0.050  |
| 24   | 0.475   | 0.288   | 0.044   | 0.290   | -0.285  | -0.033  | 0.284   | -0.060  |
| 25   | 0.775   | 0.083   | -0.128  | 0.092   | 0.038   | 0.018   | 0.069   | 0.024   |
| 26   | 0.685   | -0.083  | -0.076  | 0.011   | 0.037   | 0.089   | 0.087   | 0.019   |
| 27   | 0.529   | 0.116   | -0.125  | 0.099   | 0.084   | 0.027   | 0.156   | 0.175   |
| 28   | 0.669   | -0.008  | -0.149  | -0.011  | 0.128   | 0.053   | 0.080   | 0.085   |
| 29   | 0.649   | 0.205   | 0.052   | 0.175   | -0.065  | 0.013   | 0.099   | -0.040  |
| 30   | 0.147   | 0.215   | 0.537   | -0.221  | 0.065   | 0.254   | 0.281   | -0.113  |
| 31   | 0.681   | 0.132   | -0.110  | 0.034   | -0.002  | 0.043   | -0.053  | 0.104   |
| 32   | 0.432   | -0.198  | 0.153   | 0.114   | -0.099  | 0.115   | -0.042  | 0.277   |
| 33   | 0.614   | 0.057   | -0.089  | 0.206   | -0.061  | 0.043   | -0.035  | 0.096   |
| 34   | 0.479   | 0.124   | 0.292   | 0.298   | 0.208   | -0.273  | 0.011   | 0.081   |
| 35   | 0.675   | -0.036  | -0.077  | -0.046  | -0.002  | -0.066  | -0.055  | 0.010   |
| 36   | 0.586   | -0.173  | -0.013  | 0.081   | 0.108   | 0.011   | 0.168   | -0.012  |
| 37   | 0.545   | 0.080   | -0.081  | 0.213   | -0.138  | 0.114   | 0.102   | -0.043  |
| 38   | 0.576   | -0.087  | -0.159  | -0.404  | -0.282  | -0.345  | 0.372   | 0.098   |
| 39   | 0.660   | -0.015  | -0.126  | -0.352  | -0.283  | -0.334  | 0.305   | 0.109   |
| 40   | 0.777   | -0.120  | -0.085  | -0.070  | -0.054  | -0.079  | -0.149  | -0.093  |
| 41   | 0.748   | -0.183  | -0.026  | -0.087  | -0.040  | -0.109  | -0.119  | -0.103  |
| 42   | 0.761   | 0.168   | 0.041   | -0.112  | 0.157   | 0.028   | -0.035  | 0.108   |
| 43   | 0.729   | 0.087   | 0.095   | -0.142  | 0.108   | -0.081  | -0.040  | 0.080   |
| 44   | 0.777   | 0.165   | -0.067  | -0.022  | -0.006  | 0.045   | -0.031  | 0.037   |
| 45   | 0.776   | 0.141   | 0.150   | -0.212  | 0.097   | 0.228   | 0.046   | -0.134  |

**Table H50 (Cont.)**  
**Factor Patterns for Grade 7 Mathematics Form A (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> | <b>Factor8</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.644          | 0.052          | 0.191          | -0.240         | 0.151          | 0.243          | 0.133          | -0.101         |
| 47          | 0.540          | -0.452         | 0.305          | -0.004         | -0.242         | 0.215          | -0.101         | 0.418          |
| 48          | 0.619          | -0.444         | 0.285          | -0.015         | -0.234         | 0.166          | -0.100         | 0.372          |
| 49          | 0.735          | -0.111         | -0.006         | 0.149          | -0.075         | 0.029          | 0.059          | -0.118         |
| 50          | 0.592          | 0.044          | 0.080          | 0.239          | -0.223         | 0.007          | 0.272          | -0.134         |
| 51          | 0.719          | -0.116         | -0.048         | 0.001          | -0.046         | -0.012         | -0.007         | -0.048         |
| 52          | 0.632          | 0.157          | 0.086          | 0.207          | -0.184         | 0.043          | 0.118          | -0.096         |
| 53          | 0.782          | 0.074          | 0.226          | 0.243          | 0.201          | -0.243         | -0.025         | 0.054          |
| 54          | 0.747          | -0.005         | 0.238          | 0.186          | 0.172          | -0.267         | 0.044          | 0.063          |
| 55          | 0.699          | -0.175         | 0.127          | -0.056         | 0.149          | -0.177         | -0.007         | -0.003         |
| 56          | 0.726          | -0.194         | 0.143          | -0.061         | 0.103          | -0.201         | 0.007          | 0.006          |
| 57          | -0.019         | -0.421         | -0.236         | 0.154          | 0.377          | 0.293          | 0.413          | 0.162          |
| 58          | 0.768          | -0.048         | -0.030         | 0.093          | -0.158         | 0.091          | -0.116         | -0.148         |
| 59          | 0.632          | -0.220         | 0.039          | 0.089          | -0.134         | 0.046          | -0.050         | -0.226         |
| 60          | 0.871          | 0.096          | -0.141         | 0.056          | 0.034          | 0.051          | -0.017         | 0.003          |
| 61          | 0.791          | 0.150          | 0.051          | 0.087          | 0.040          | -0.142         | -0.063         | 0.002          |
| 62          | 0.793          | -0.045         | -0.060         | -0.010         | 0.072          | -0.015         | 0.019          | 0.049          |

**Table H51**  
**Eigenvalues and factor patterns for Grade 7 Mathematics Form A (Objective Level)**

## Eigenvalues

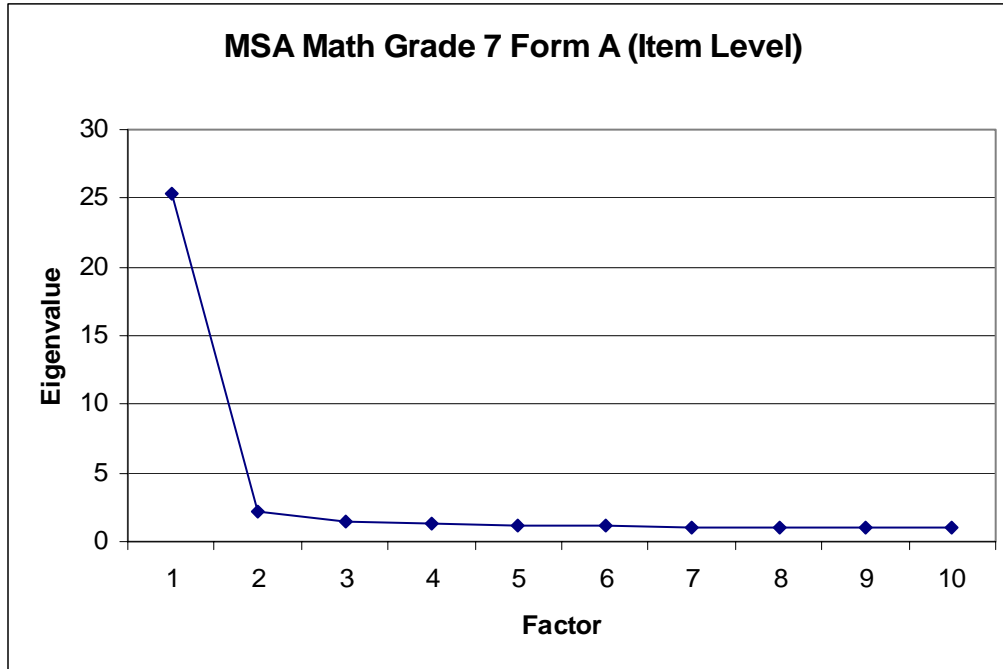
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.834  | 3.832 | 1.048  | 1.048 |
| 2      | 0.002  | 0.034 | 0.001  | 1.049 |
| 3      | -0.032 | 0.024 | -0.009 | 1.040 |
| 4      | -0.056 | 0.033 | -0.015 | 1.024 |
| 5      | -0.089 |       | -0.024 | 1.000 |

## Factor Pattern

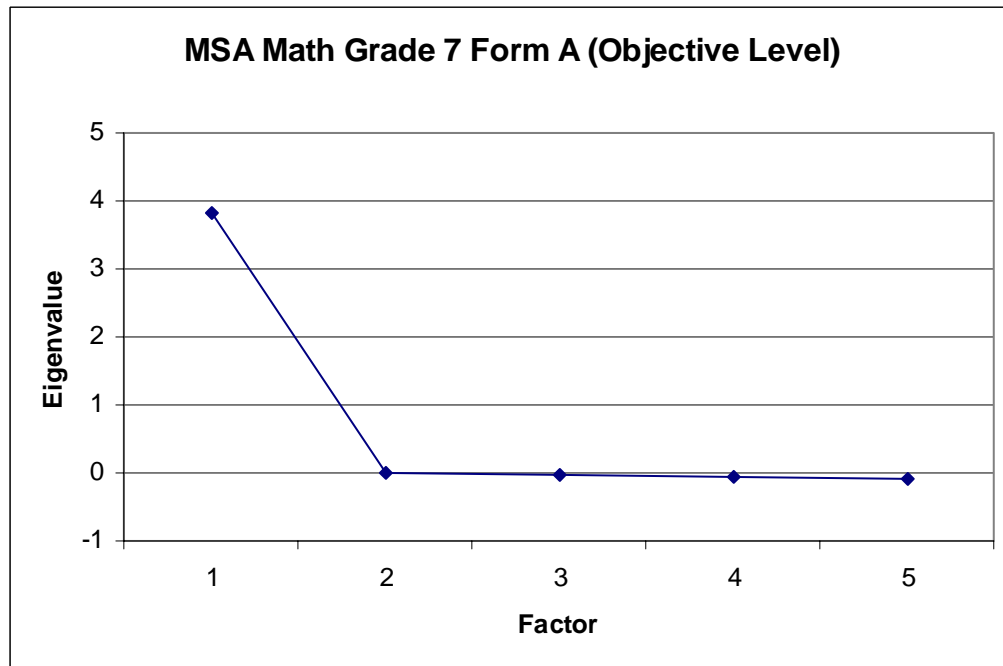
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.885   |
| 2         | 0.825   |
| 3         | 0.890   |
| 4         | 0.880   |
| 5         | 0.895   |

**Figure H17**  
**Scree Plot of Eigenvalues for Grade 7 Mathematics Form A**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H52**  
**Eigenvalues for Grade 7 Mathematics Form B (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 25.079       | 22.442      | 0.411       | 0.411      |
| 2             | 2.637        | 0.976       | 0.043       | 0.454      |
| 3             | 1.661        | 0.221       | 0.027       | 0.482      |
| 4             | 1.440        | 0.233       | 0.024       | 0.505      |
| 5             | 1.207        | 0.018       | 0.020       | 0.525      |
| 6             | 1.189        | 0.120       | 0.020       | 0.545      |
| 7             | 1.069        | 0.032       | 0.018       | 0.562      |
| 8             | 1.037        | 0.064       | 0.017       | 0.579      |
| 9             | 0.973        | 0.061       | 0.016       | 0.595      |
| 10            | 0.913        | 0.007       | 0.015       | 0.610      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H53**  
**Factor Patterns for Grade 7 Mathematics Form B (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 | Factor6 | Factor7 | Factor8 |
|------|---------|---------|---------|---------|---------|---------|---------|---------|
| 1    | 0.557   | 0.238   | -0.104  | 0.018   | -0.088  | 0.001   | -0.025  | 0.091   |
| 2    | 0.531   | 0.050   | -0.141  | 0.022   | 0.030   | -0.134  | -0.142  | -0.168  |
| 3    | 0.726   | -0.044  | -0.156  | -0.130  | -0.150  | -0.064  | -0.032  | 0.055   |
| 4    | 0.552   | -0.320  | -0.025  | -0.084  | 0.055   | 0.084   | 0.117   | 0.054   |
| 5    | 0.741   | 0.012   | -0.143  | -0.157  | -0.145  | -0.123  | 0.023   | 0.048   |
| 6    | 0.569   | 0.116   | -0.116  | 0.020   | -0.207  | -0.030  | 0.040   | 0.076   |
| 7    | 0.646   | 0.178   | 0.157   | -0.170  | -0.121  | 0.049   | -0.115  | -0.046  |
| 8    | 0.669   | 0.150   | 0.241   | -0.226  | -0.022  | -0.039  | -0.130  | -0.013  |
| 9    | 0.463   | 0.283   | 0.035   | 0.006   | -0.085  | 0.114   | 0.189   | 0.012   |
| 10   | 0.581   | 0.348   | -0.009  | 0.104   | -0.147  | 0.043   | 0.055   | 0.012   |
| 11   | 0.601   | 0.201   | -0.141  | 0.007   | -0.131  | -0.035  | -0.026  | 0.088   |
| 12   | 0.689   | -0.280  | -0.032  | -0.027  | -0.101  | 0.285   | -0.172  | -0.122  |
| 13   | 0.616   | -0.024  | -0.200  | -0.105  | -0.102  | -0.039  | 0.024   | 0.179   |
| 14   | 0.621   | -0.097  | -0.056  | -0.030  | 0.044   | 0.086   | 0.114   | 0.132   |
| 15   | 0.585   | -0.045  | -0.117  | -0.083  | -0.014  | 0.021   | 0.136   | 0.189   |
| 16   | 0.605   | -0.045  | 0.003   | -0.020  | 0.011   | 0.002   | 0.145   | 0.063   |
| 17   | 0.442   | 0.135   | -0.035  | 0.055   | 0.022   | 0.158   | 0.151   | 0.032   |
| 18   | 0.684   | -0.063  | -0.165  | -0.165  | -0.052  | -0.156  | 0.118   | 0.088   |
| 19   | 0.361   | 0.428   | 0.176   | 0.240   | -0.222  | 0.370   | 0.079   | -0.051  |
| 20   | 0.549   | 0.326   | 0.224   | 0.067   | -0.105  | 0.187   | 0.054   | -0.016  |
| 21   | 0.485   | 0.060   | -0.018  | 0.120   | -0.112  | 0.080   | -0.120  | 0.068   |
| 22   | 0.492   | -0.344  | -0.013  | 0.155   | 0.159   | 0.100   | -0.057  | -0.224  |
| 23   | 0.748   | -0.138  | -0.078  | -0.050  | -0.073  | -0.057  | 0.018   | 0.044   |
| 24   | 0.476   | 0.220   | 0.043   | 0.302   | 0.201   | 0.062   | 0.013   | -0.062  |
| 25   | 0.751   | 0.102   | -0.131  | 0.007   | 0.043   | -0.063  | -0.112  | -0.014  |
| 26   | 0.644   | 0.052   | -0.117  | 0.013   | 0.077   | -0.204  | -0.131  | -0.075  |
| 27   | 0.466   | 0.254   | -0.130  | 0.200   | 0.250   | -0.110  | -0.101  | -0.121  |
| 28   | 0.622   | 0.117   | -0.153  | -0.007  | 0.135   | -0.263  | -0.072  | -0.152  |
| 29   | 0.630   | 0.215   | -0.024  | 0.159   | 0.182   | -0.016  | -0.146  | -0.022  |
| 30   | 0.548   | 0.173   | -0.107  | 0.128   | 0.237   | -0.181  | -0.203  | -0.155  |
| 31   | 0.691   | -0.356  | -0.039  | -0.031  | -0.104  | 0.330   | -0.178  | -0.183  |
| 32   | 0.730   | -0.372  | -0.029  | -0.036  | -0.112  | 0.296   | -0.150  | -0.176  |
| 33   | 0.756   | -0.209  | -0.074  | -0.125  | -0.093  | 0.045   | 0.100   | 0.061   |
| 34   | 0.732   | -0.257  | -0.050  | -0.123  | -0.066  | 0.068   | 0.134   | 0.026   |
| 35   | 0.632   | 0.144   | 0.078   | -0.135  | -0.056  | -0.102  | 0.450   | -0.432  |
| 36   | 0.699   | 0.100   | 0.071   | -0.124  | 0.003   | -0.088  | 0.414   | -0.397  |
| 37   | 0.839   | 0.180   | -0.081  | -0.004  | -0.024  | 0.009   | -0.071  | 0.084   |
| 38   | 0.763   | 0.134   | -0.112  | -0.009  | -0.039  | -0.043  | -0.062  | -0.002  |
| 39   | 0.706   | 0.139   | 0.178   | -0.181  | 0.046   | -0.071  | -0.077  | -0.033  |
| 40   | 0.799   | 0.112   | 0.194   | -0.199  | 0.032   | -0.065  | -0.147  | -0.034  |
| 41   | 0.484   | -0.319  | 0.356   | 0.489   | -0.313  | -0.353  | 0.019   | 0.044   |
| 42   | 0.616   | -0.335  | 0.312   | 0.444   | -0.282  | -0.288  | 0.035   | 0.032   |
| 43   | 0.827   | 0.141   | -0.087  | 0.061   | 0.027   | 0.036   | -0.029  | 0.098   |
| 44   | 0.732   | 0.145   | 0.000   | 0.210   | 0.105   | 0.146   | 0.063   | 0.107   |
| 45   | 0.673   | -0.192  | -0.109  | -0.062  | -0.009  | -0.020  | 0.068   | 0.075   |

**Table H53 (Cont.)**  
**Factor Patterns for Grade 7 Mathematics Form B (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> | <b>Factor8</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.644          | 0.172          | 0.051          | 0.195          | 0.139          | 0.129          | -0.094         | 0.034          |
| 47          | 0.806          | 0.054          | -0.102         | 0.001          | 0.091          | -0.103         | 0.004          | -0.068         |
| 48          | 0.766          | 0.001          | -0.051         | 0.004          | 0.136          | -0.122         | 0.055          | -0.100         |
| 49          | 0.510          | 0.037          | 0.656          | -0.307         | 0.108          | -0.038         | -0.129         | 0.080          |
| 50          | 0.590          | 0.000          | 0.584          | -0.268         | 0.153          | -0.037         | -0.094         | 0.063          |
| 51          | 0.812          | 0.271          | 0.076          | 0.111          | -0.076         | 0.206          | 0.022          | 0.048          |
| 52          | 0.552          | -0.311         | 0.011          | 0.034          | 0.070          | 0.113          | 0.021          | -0.142         |
| 53          | 0.566          | -0.393         | -0.007         | 0.141          | 0.174          | 0.150          | -0.072         | -0.210         |
| 54          | 0.790          | -0.106         | -0.071         | -0.006         | 0.064          | 0.033          | -0.081         | 0.157          |
| 55          | 0.731          | -0.077         | -0.044         | -0.043         | 0.058          | 0.000          | -0.122         | 0.169          |
| 56          | 0.606          | -0.170         | -0.072         | -0.040         | 0.117          | 0.026          | 0.117          | 0.153          |
| 57          | 0.667          | -0.237         | 0.039          | -0.106         | 0.125          | -0.106         | 0.049          | 0.100          |
| 58          | 0.696          | 0.170          | -0.104         | -0.002         | -0.093         | -0.069         | -0.041         | 0.066          |
| 59          | 0.582          | -0.254         | -0.002         | 0.015          | 0.084          | -0.042         | 0.071          | 0.057          |
| 60          | 0.570          | -0.260         | 0.146          | 0.265          | 0.034          | -0.081         | 0.070          | 0.110          |
| 61          | 0.190          | -0.037         | 0.128          | 0.153          | 0.539          | 0.132          | 0.334          | 0.283          |

**Table H54**  
**Eigenvalues and factor patterns for Grade 7 Mathematics Form B (Objective Level)**

## Eigenvalues

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 3.748        | 3.663       | 1.037       | 1.037      |
| 2             | 0.085        | 0.129       | 0.024       | 1.061      |
| 3             | -0.044       | 0.032       | -0.012      | 1.049      |
| 4             | -0.076       | 0.025       | -0.021      | 1.028      |
| 5             | -0.100       |             | -0.028      | 1.000      |

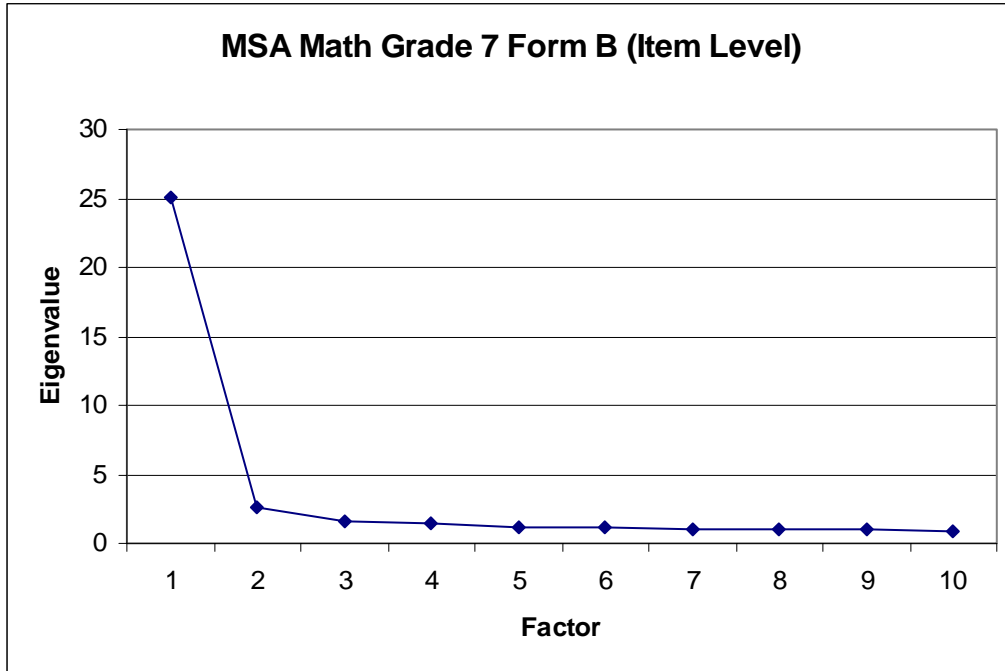
## Factor Pattern

| <b>Objective</b> | <b>Factor1</b> |
|------------------|----------------|
| 1                | 0.884          |
| 2                | 0.831          |
| 3                | 0.877          |
| 4                | 0.857          |
| 5                | 0.879          |

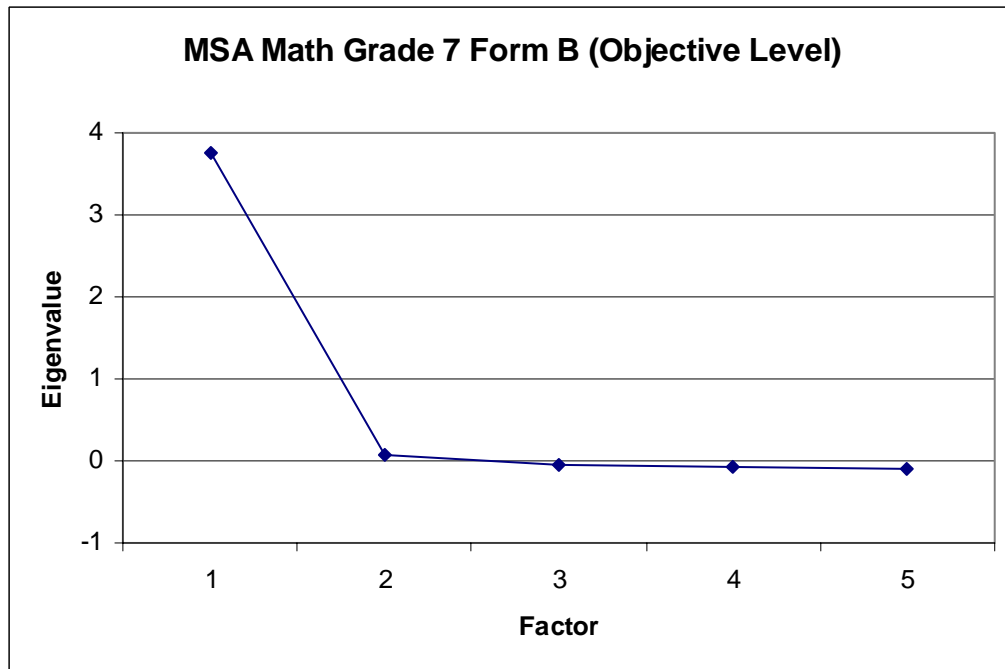


**Figure H18**  
**Scree Plot of Eigenvalues for Grade 7 Mathematics Form B**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H55**  
**Eigenvalues for Grade 7 Mathematics Form C (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 26.636       | 24.433      | 0.430       | 0.430      |
| 2             | 2.203        | 0.736       | 0.036       | 0.465      |
| 3             | 1.468        | 0.152       | 0.024       | 0.489      |
| 4             | 1.316        | 0.146       | 0.021       | 0.510      |
| 5             | 1.170        | 0.129       | 0.019       | 0.529      |
| 6             | 1.041        | 0.067       | 0.017       | 0.546      |
| 7             | 0.974        | 0.069       | 0.016       | 0.561      |
| 8             | 0.905        | 0.004       | 0.015       | 0.576      |
| 9             | 0.901        | 0.029       | 0.015       | 0.591      |
| 10            | 0.872        | 0.033       | 0.014       | 0.605      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H56**  
**Factor Patterns for Grade 7 Mathematics Form C (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.583          | 0.166          | 0.044          | -0.151         | -0.098         | -0.169         |
| 2           | 0.526          | 0.036          | 0.063          | -0.144         | 0.178          | -0.189         |
| 3           | 0.728          | -0.111         | -0.039         | -0.184         | -0.174         | -0.099         |
| 4           | 0.573          | -0.334         | -0.107         | -0.033         | 0.005          | 0.216          |
| 5           | 0.761          | -0.032         | -0.132         | -0.255         | -0.156         | -0.104         |
| 6           | 0.559          | 0.108          | 0.005          | -0.122         | -0.203         | 0.036          |
| 7           | 0.637          | 0.163          | -0.239         | 0.256          | -0.163         | -0.226         |
| 8           | 0.672          | 0.140          | -0.296         | 0.245          | -0.052         | -0.185         |
| 9           | 0.450          | 0.255          | 0.031          | 0.051          | -0.175         | 0.130          |
| 10          | 0.548          | 0.382          | 0.115          | -0.051         | -0.169         | 0.087          |
| 11          | 0.612          | 0.207          | 0.107          | -0.148         | -0.219         | -0.048         |
| 12          | 0.689          | -0.292         | 0.134          | 0.147          | -0.115         | -0.020         |
| 13          | 0.647          | -0.032         | -0.042         | -0.186         | -0.167         | -0.027         |
| 14          | 0.623          | -0.096         | 0.027          | 0.018          | 0.087          | 0.203          |
| 15          | 0.564          | -0.062         | -0.032         | -0.032         | 0.028          | 0.227          |
| 16          | 0.589          | -0.015         | -0.053         | 0.007          | 0.123          | 0.237          |
| 17          | 0.413          | 0.140          | 0.025          | 0.005          | -0.041         | 0.199          |
| 18          | 0.682          | -0.113         | -0.187         | -0.262         | -0.038         | -0.026         |
| 19          | 0.329          | 0.407          | 0.023          | 0.220          | -0.232         | 0.213          |
| 20          | 0.527          | 0.361          | -0.056         | 0.282          | -0.138         | 0.074          |
| 21          | 0.491          | 0.023          | 0.196          | 0.108          | -0.172         | -0.115         |
| 22          | 0.497          | -0.345         | 0.199          | 0.231          | 0.015          | -0.048         |
| 23          | 0.764          | -0.145         | -0.011         | -0.101         | -0.127         | 0.032          |
| 24          | 0.459          | 0.309          | 0.297          | 0.095          | 0.172          | -0.044         |
| 25          | 0.759          | 0.162          | 0.090          | -0.098         | 0.046          | -0.062         |
| 26          | 0.656          | 0.022          | 0.055          | -0.153         | 0.158          | -0.169         |
| 27          | 0.488          | 0.260          | 0.170          | -0.073         | 0.263          | -0.005         |
| 28          | 0.659          | 0.116          | 0.020          | -0.237         | 0.225          | -0.032         |
| 29          | 0.615          | 0.266          | 0.207          | 0.021          | 0.213          | -0.037         |
| 30          | 0.578          | 0.190          | 0.182          | -0.065         | 0.314          | -0.156         |
| 31          | 0.790          | 0.002          | 0.189          | -0.019         | -0.177         | -0.023         |
| 32          | 0.706          | -0.245         | 0.194          | 0.063          | -0.117         | 0.027          |
| 33          | 0.817          | 0.019          | 0.042          | -0.125         | -0.172         | 0.152          |
| 34          | 0.798          | -0.059         | -0.003         | -0.111         | -0.148         | 0.166          |
| 35          | 0.681          | 0.053          | -0.360         | 0.089          | 0.149          | 0.270          |
| 36          | 0.735          | 0.035          | -0.311         | 0.073          | 0.159          | 0.264          |
| 37          | 0.719          | -0.108         | -0.175         | -0.092         | 0.180          | -0.092         |
| 38          | 0.689          | 0.030          | -0.339         | 0.097          | 0.228          | -0.138         |
| 39          | 0.799          | 0.101          | -0.318         | 0.159          | 0.116          | -0.189         |
| 40          | 0.570          | -0.296         | 0.179          | 0.128          | 0.001          | -0.063         |
| 41          | 0.726          | -0.315         | 0.163          | 0.180          | 0.000          | 0.026          |
| 42          | 0.650          | 0.252          | 0.236          | 0.013          | 0.051          | -0.088         |
| 43          | 0.635          | 0.001          | 0.149          | 0.108          | 0.120          | 0.060          |
| 44          | 0.733          | -0.146         | 0.015          | -0.085         | -0.005         | -0.009         |
| 45          | 0.732          | -0.029         | 0.040          | -0.057         | 0.099          | -0.084         |

**Table H56 (Cont.)**  
**Factor Patterns for Grade 7 Mathematics Form C (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.863          | 0.010          | 0.013          | -0.064         | 0.055          | 0.105          |
| 47          | 0.698          | -0.041         | 0.023          | -0.098         | 0.078          | 0.100          |
| 48          | 0.828          | 0.147          | -0.154         | 0.203          | -0.122         | -0.140         |
| 49          | 0.776          | 0.087          | -0.201         | 0.282          | -0.072         | -0.143         |
| 50          | 0.745          | -0.119         | -0.129         | -0.222         | -0.137         | -0.111         |
| 51          | 0.694          | -0.372         | 0.123          | 0.188          | 0.014          | -0.089         |
| 52          | 0.544          | -0.369         | 0.164          | 0.302          | 0.060          | -0.064         |
| 53          | 0.801          | -0.092         | -0.035         | -0.158         | 0.036          | 0.074          |
| 54          | 0.822          | -0.117         | -0.043         | -0.121         | 0.075          | 0.109          |
| 55          | 0.606          | 0.041          | 0.095          | 0.023          | 0.037          | 0.123          |
| 56          | 0.700          | -0.191         | -0.209         | -0.018         | 0.079          | -0.052         |
| 57          | 0.729          | 0.198          | 0.051          | -0.084         | -0.081         | -0.101         |
| 58          | 0.546          | 0.124          | 0.117          | 0.148          | 0.073          | 0.220          |
| 59          | 0.677          | -0.155         | 0.106          | 0.073          | -0.088         | -0.076         |
| 60          | 0.604          | -0.100         | 0.032          | 0.060          | -0.006         | 0.068          |
| 61          | 0.401          | 0.144          | 0.050          | 0.136          | 0.176          | 0.086          |
| 62          | 0.489          | 0.082          | 0.134          | -0.013         | 0.064          | 0.003          |

**Table H57**  
**Eigenvalues and factor patterns for Grade 7 Mathematics Form C (Objective Level)**

## Eigenvalues

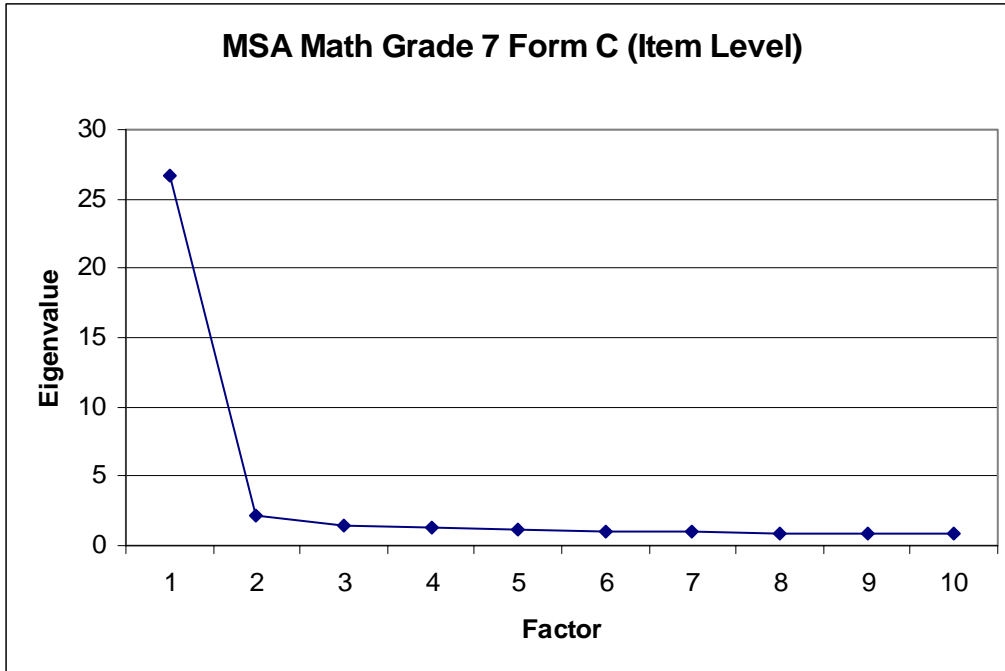
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.933  | 3.933 | 1.043  | 1.043 |
| 2      | 0.000  | 0.023 | 0.000  | 1.042 |
| 3      | -0.023 | 0.031 | -0.006 | 1.036 |
| 4      | -0.055 | 0.028 | -0.015 | 1.022 |
| 5      | -0.082 |       | -0.022 | 1.000 |

## Factor Pattern

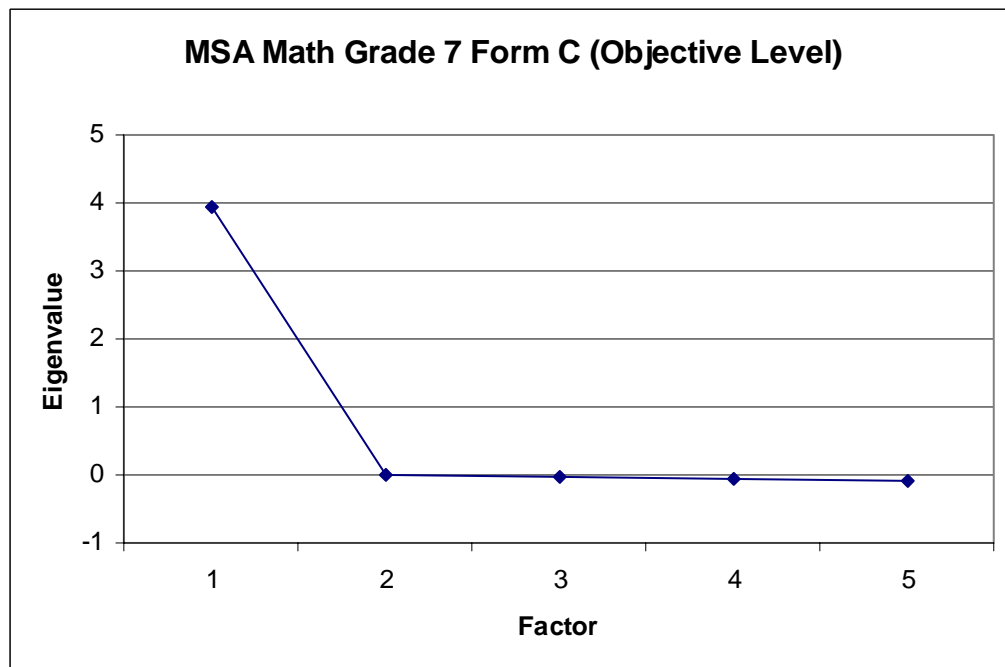
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.884   |
| 2         | 0.865   |
| 3         | 0.888   |
| 4         | 0.875   |
| 5         | 0.921   |

**Figure H19**  
**Scree Plot of Eigenvalues for Grade 7 Mathematics Form C**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H58**  
**Eigenvalues for Grade 7 Mathematics Form D (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 23.513       | 21.209      | 0.399       | 0.399      |
| 2             | 2.304        | 0.579       | 0.039       | 0.438      |
| 3             | 1.725        | 0.387       | 0.029       | 0.467      |
| 4             | 1.337        | 0.205       | 0.023       | 0.490      |
| 5             | 1.132        | 0.066       | 0.019       | 0.509      |
| 6             | 1.066        | 0.062       | 0.018       | 0.527      |
| 7             | 1.004        | 0.061       | 0.017       | 0.544      |
| 8             | 0.943        | 0.061       | 0.016       | 0.560      |
| 9             | 0.882        | 0.018       | 0.015       | 0.575      |
| 10            | 0.864        | 0.005       | 0.015       | 0.589      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H59**  
**Factor Patterns for Grade 7 Mathematics Form D (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.587          | 0.107          | 0.105          | -0.087         | -0.079         | 0.003          | 0.085          |
| 2           | 0.528          | -0.086         | 0.067          | -0.176         | 0.119          | -0.189         | 0.057          |
| 3           | 0.707          | -0.139         | 0.007          | -0.192         | -0.123         | 0.105          | 0.065          |
| 4           | 0.539          | -0.324         | -0.105         | 0.087          | 0.177          | 0.188          | -0.145         |
| 5           | 0.728          | -0.098         | -0.007         | -0.278         | -0.133         | 0.132          | 0.071          |
| 6           | 0.554          | 0.064          | 0.092          | -0.091         | -0.070         | 0.247          | 0.066          |
| 7           | 0.664          | 0.178          | -0.290         | -0.056         | -0.289         | -0.187         | -0.118         |
| 8           | 0.676          | 0.159          | -0.267         | -0.019         | -0.118         | -0.104         | -0.088         |
| 9           | 0.460          | 0.241          | 0.049          | 0.095          | 0.012          | 0.163          | 0.067          |
| 10          | 0.605          | 0.300          | 0.201          | 0.044          | -0.079         | 0.121          | 0.132          |
| 11          | 0.614          | 0.114          | 0.144          | -0.127         | -0.163         | 0.091          | 0.115          |
| 12          | 0.690          | -0.313         | -0.022         | 0.106          | -0.057         | -0.116         | 0.153          |
| 13          | 0.630          | -0.086         | 0.030          | -0.196         | -0.088         | 0.158          | 0.027          |
| 14          | 0.621          | -0.131         | 0.010          | 0.047          | 0.064          | 0.163          | -0.162         |
| 15          | 0.561          | -0.080         | -0.022         | 0.025          | -0.033         | 0.187          | -0.148         |
| 16          | 0.584          | -0.046         | -0.023         | 0.006          | 0.130          | 0.077          | -0.092         |
| 17          | 0.438          | 0.119          | 0.118          | 0.065          | -0.125         | 0.053          | -0.086         |
| 18          | 0.668          | -0.131         | -0.042         | -0.307         | -0.035         | 0.126          | 0.002          |
| 19          | 0.389          | 0.413          | -0.002         | 0.240          | -0.111         | 0.011          | 0.224          |
| 20          | 0.590          | 0.393          | -0.069         | 0.282          | -0.104         | -0.058         | 0.142          |
| 21          | 0.469          | -0.056         | 0.100          | 0.030          | -0.145         | 0.004          | 0.349          |
| 22          | 0.505          | -0.398         | -0.004         | 0.317          | -0.007         | 0.000          | 0.019          |
| 23          | 0.729          | -0.183         | -0.017         | -0.134         | -0.105         | 0.156          | 0.073          |
| 24          | 0.498          | 0.169          | 0.250          | 0.116          | 0.190          | -0.214         | 0.004          |
| 25          | 0.748          | 0.062          | 0.159          | -0.140         | 0.077          | -0.085         | -0.051         |
| 26          | 0.665          | -0.060         | 0.091          | -0.217         | 0.203          | -0.105         | -0.006         |
| 27          | 0.503          | 0.208          | 0.210          | -0.140         | 0.198          | -0.146         | -0.147         |
| 28          | 0.643          | 0.035          | 0.174          | -0.295         | 0.137          | -0.095         | -0.093         |
| 29          | 0.635          | 0.168          | 0.204          | -0.018         | 0.165          | -0.200         | 0.025          |
| 30          | 0.595          | 0.094          | 0.204          | -0.127         | 0.231          | -0.298         | -0.010         |
| 31          | 0.775          | -0.159         | 0.049          | -0.009         | -0.103         | -0.113         | 0.155          |
| 32          | 0.709          | -0.239         | -0.012         | 0.080          | -0.062         | -0.131         | 0.164          |
| 33          | 0.552          | 0.250          | -0.611         | -0.096         | 0.394          | 0.124          | 0.223          |
| 34          | 0.583          | 0.239          | -0.591         | -0.069         | 0.385          | 0.100          | 0.214          |
| 35          | 0.775          | 0.067          | 0.112          | -0.026         | 0.045          | -0.068         | -0.036         |
| 36          | 0.787          | 0.113          | 0.116          | -0.026         | -0.010         | 0.013          | -0.089         |
| 37          | 0.778          | 0.204          | 0.022          | 0.016          | 0.001          | 0.025          | -0.127         |
| 38          | 0.814          | 0.192          | -0.111         | -0.066         | -0.098         | -0.084         | -0.090         |
| 39          | 0.581          | -0.370         | 0.009          | 0.146          | 0.045          | -0.161         | 0.192          |
| 40          | 0.689          | -0.361         | -0.070         | 0.162          | 0.029          | -0.101         | 0.163          |
| 41          | 0.614          | -0.361         | -0.061         | -0.043         | 0.097          | 0.049          | -0.068         |
| 42          | 0.758          | -0.161         | 0.010          | -0.036         | 0.034          | 0.034          | -0.052         |
| 43          | 0.716          | 0.244          | 0.181          | 0.228          | 0.018          | 0.137          | 0.006          |
| 44          | 0.660          | -0.001         | -0.011         | 0.135          | 0.178          | -0.162         | -0.092         |
| 45          | 0.775          | 0.064          | -0.343         | -0.028         | -0.278         | -0.204         | -0.211         |



**Table H59 (Cont.)**  
**Factor Patterns for Grade 7 Mathematics Form D (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.634          | -0.008         | -0.365         | -0.031         | -0.283         | -0.266         | -0.229         |
| 47          | 0.757          | 0.250          | -0.115         | 0.278          | -0.077         | -0.020         | 0.027          |
| 48          | 0.764          | -0.106         | 0.031          | 0.037          | 0.055          | 0.074          | -0.074         |
| 49          | 0.591          | -0.365         | -0.042         | 0.346          | 0.059          | -0.034         | -0.014         |
| 50          | 0.750          | -0.132         | 0.103          | 0.132          | -0.017         | -0.026         | 0.096          |
| 51          | 0.330          | 0.138          | 0.108          | 0.246          | 0.117          | 0.128          | -0.305         |
| 52          | 0.565          | 0.068          | 0.101          | 0.107          | 0.010          | 0.177          | -0.144         |
| 53          | 0.620          | -0.150         | -0.152         | 0.028          | 0.007          | 0.107          | -0.258         |
| 54          | 0.619          | 0.128          | 0.115          | -0.050         | -0.055         | 0.048          | 0.079          |
| 55          | 0.418          | 0.213          | 0.082          | 0.180          | 0.057          | 0.096          | -0.070         |
| 56          | 0.460          | -0.101         | 0.022          | 0.164          | 0.094          | 0.076          | -0.079         |
| 57          | 0.501          | 0.010          | 0.049          | 0.025          | -0.033         | 0.236          | -0.034         |
| 58          | 0.719          | -0.006         | 0.076          | -0.160         | -0.100         | 0.144          | 0.100          |
| 59          | 0.555          | -0.017         | 0.163          | -0.044         | 0.008          | -0.097         | 0.043          |

**Table H60**  
**Eigenvalues and factor patterns for Grade 7 Mathematics Form D (Objective Level)**

## Eigenvalues

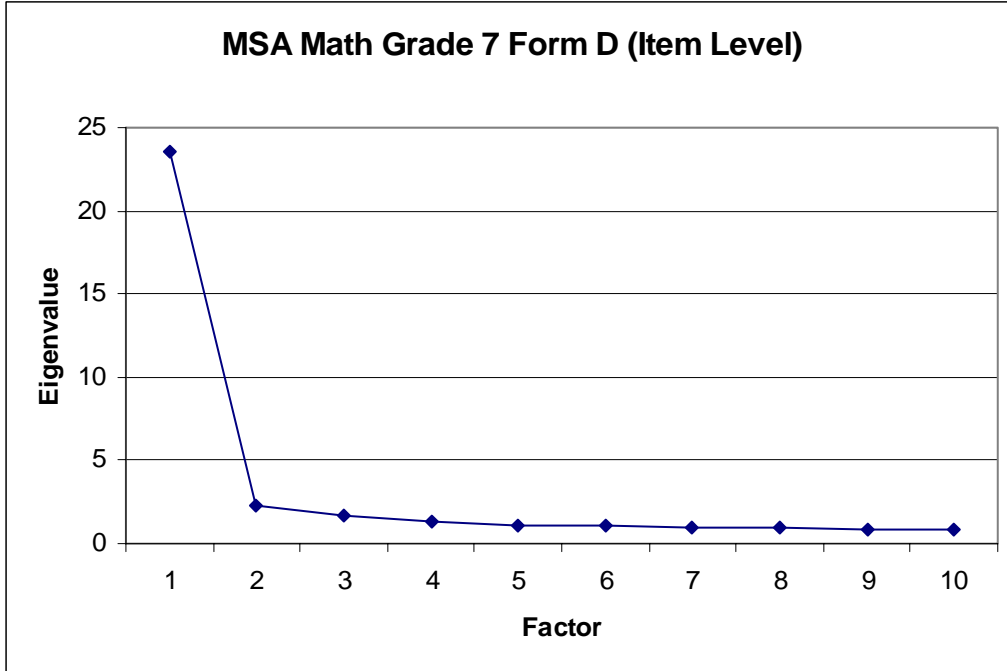
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.624  | 3.597 | 1.056  | 1.056 |
| 2      | 0.028  | 0.060 | 0.008  | 1.064 |
| 3      | -0.033 | 0.043 | -0.010 | 1.054 |
| 4      | -0.076 | 0.033 | -0.022 | 1.032 |
| 5      | -0.110 |       | -0.032 | 1.000 |

## Factor Pattern

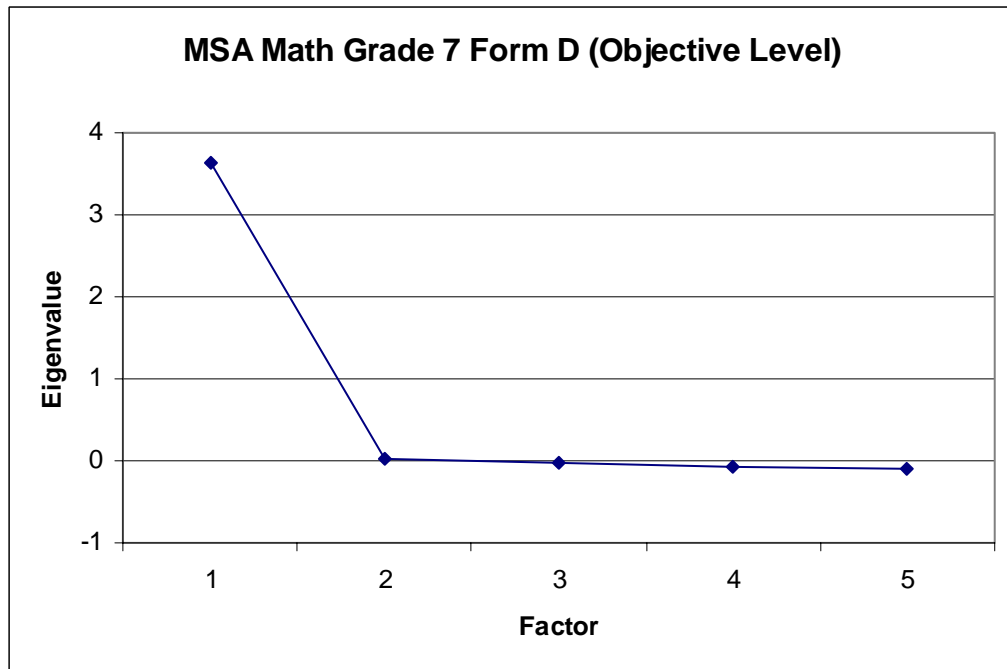
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.865   |
| 2         | 0.840   |
| 3         | 0.877   |
| 4         | 0.873   |
| 5         | 0.800   |

**Figure H20**  
**Scree Plot of Eigenvalues for Grade 7 Mathematics Form D**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H61**  
**Eigenvalues for Grade 7 Mathematics Form E (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 24.599       | 22.295      | 0.410       | 0.410      |
| 2             | 2.304        | 0.928       | 0.038       | 0.448      |
| 3             | 1.377        | 0.130       | 0.023       | 0.471      |
| 4             | 1.247        | 0.099       | 0.021       | 0.492      |
| 5             | 1.148        | 0.032       | 0.019       | 0.511      |
| 6             | 1.115        | 0.097       | 0.019       | 0.530      |
| 7             | 1.018        | 0.087       | 0.017       | 0.547      |
| 8             | 0.931        | 0.051       | 0.016       | 0.562      |
| 9             | 0.880        | 0.011       | 0.015       | 0.577      |
| 10            | 0.869        | 0.029       | 0.015       | 0.592      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H62**  
**Factor Patterns for Grade 7 Mathematics Form E (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.576          | 0.172          | -0.126         | -0.043         | 0.128          | -0.018         | -0.081         |
| 2           | 0.527          | 0.002          | -0.268         | 0.036          | 0.014          | 0.171          | -0.174         |
| 3           | 0.727          | -0.093         | -0.143         | -0.166         | 0.146          | -0.054         | 0.026          |
| 4           | 0.548          | -0.345         | 0.023          | -0.015         | -0.184         | -0.088         | -0.028         |
| 5           | 0.743          | -0.029         | -0.158         | -0.212         | 0.084          | -0.024         | 0.063          |
| 6           | 0.556          | 0.133          | -0.149         | -0.103         | 0.199          | -0.057         | 0.073          |
| 7           | 0.644          | 0.203          | 0.204          | -0.188         | -0.014         | 0.063          | -0.121         |
| 8           | 0.662          | 0.191          | 0.296          | -0.235         | -0.125         | 0.126          | -0.070         |
| 9           | 0.442          | 0.218          | 0.178          | 0.059          | 0.212          | -0.293         | 0.046          |
| 10          | 0.577          | 0.315          | -0.005         | 0.057          | 0.202          | 0.008          | 0.210          |
| 11          | 0.600          | 0.177          | -0.122         | -0.041         | 0.261          | -0.005         | 0.115          |
| 12          | 0.673          | -0.289         | 0.079          | 0.030          | 0.124          | 0.094          | -0.071         |
| 13          | 0.619          | -0.055         | -0.144         | -0.181         | 0.100          | -0.102         | 0.055          |
| 14          | 0.604          | -0.110         | 0.016          | 0.076          | -0.067         | -0.124         | 0.045          |
| 15          | 0.550          | -0.090         | 0.007          | 0.046          | -0.087         | -0.133         | 0.037          |
| 16          | 0.612          | -0.036         | 0.015          | 0.193          | -0.103         | -0.390         | -0.296         |
| 17          | 0.428          | 0.075          | -0.002         | -0.010         | 0.065          | 0.048          | 0.247          |
| 18          | 0.679          | -0.094         | -0.138         | -0.212         | -0.006         | -0.082         | 0.049          |
| 19          | 0.370          | 0.360          | 0.271          | 0.098          | 0.271          | -0.002         | 0.045          |
| 20          | 0.544          | 0.359          | 0.292          | 0.054          | 0.179          | -0.030         | -0.064         |
| 21          | 0.479          | -0.014         | 0.010          | 0.061          | 0.298          | 0.193          | 0.095          |
| 22          | 0.498          | -0.398         | 0.087          | 0.213          | 0.059          | 0.197          | 0.162          |
| 23          | 0.749          | -0.125         | -0.104         | -0.137         | 0.082          | -0.025         | 0.069          |
| 24          | 0.489          | 0.225          | -0.041         | 0.361          | 0.000          | 0.087          | -0.066         |
| 25          | 0.748          | 0.103          | -0.192         | 0.018          | -0.005         | 0.077          | -0.017         |
| 26          | 0.668          | 0.024          | -0.184         | -0.044         | -0.132         | 0.099          | -0.032         |
| 27          | 0.488          | 0.284          | -0.148         | 0.185          | -0.140         | 0.218          | -0.005         |
| 28          | 0.667          | 0.115          | -0.245         | -0.007         | -0.126         | 0.082          | -0.082         |
| 29          | 0.629          | 0.220          | -0.107         | 0.256          | -0.061         | 0.089          | -0.165         |
| 30          | 0.586          | 0.149          | -0.242         | 0.162          | -0.182         | 0.218          | -0.155         |
| 31          | 0.642          | -0.454         | 0.198          | 0.115          | 0.274          | 0.147          | -0.198         |
| 32          | 0.640          | -0.493         | 0.215          | 0.114          | 0.232          | 0.136          | -0.205         |
| 33          | 0.731          | -0.295         | -0.030         | -0.180         | 0.064          | -0.191         | -0.142         |
| 34          | 0.722          | -0.329         | 0.014          | -0.147         | 0.044          | -0.203         | -0.152         |
| 35          | 0.772          | 0.195          | 0.120          | -0.035         | 0.055          | -0.084         | 0.068          |
| 36          | 0.681          | 0.136          | 0.199          | 0.062          | -0.037         | -0.078         | -0.014         |
| 37          | 0.780          | 0.121          | -0.018         | 0.046          | 0.013          | 0.079          | -0.053         |
| 38          | 0.768          | 0.172          | 0.007          | 0.040          | -0.034         | 0.027          | -0.016         |
| 39          | 0.721          | 0.068          | 0.075          | -0.117         | -0.148         | 0.155          | -0.027         |
| 40          | 0.726          | 0.080          | 0.208          | -0.181         | -0.159         | 0.224          | -0.083         |
| 41          | 0.512          | 0.015          | -0.080         | 0.115          | -0.052         | -0.015         | 0.216          |
| 42          | 0.771          | -0.122         | -0.137         | 0.031          | -0.027         | -0.032         | 0.039          |
| 43          | 0.747          | -0.033         | -0.170         | -0.125         | -0.021         | -0.034         | 0.055          |
| 44          | 0.854          | 0.127          | -0.098         | 0.156          | -0.039         | -0.289         | -0.143         |
| 45          | 0.784          | 0.044          | -0.054         | 0.180          | -0.118         | -0.289         | -0.196         |

**Table H62 (Cont.)**  
**Factor Patterns for Grade 7 Mathematics Form E (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.763          | 0.175          | 0.293          | -0.204         | -0.177         | 0.096          | -0.047         |
| 47          | 0.636          | 0.005          | 0.265          | -0.209         | -0.229         | 0.051          | -0.051         |
| 48          | 0.554          | 0.044          | 0.213          | 0.022          | -0.003         | -0.082         | 0.032          |
| 49          | 0.825          | -0.004         | -0.103         | 0.040          | 0.110          | 0.063          | 0.117          |
| 50          | 0.571          | -0.357         | 0.097          | 0.224          | -0.024         | 0.185          | 0.195          |
| 51          | 0.767          | -0.089         | -0.053         | 0.079          | -0.042         | 0.037          | -0.005         |
| 52          | 0.604          | -0.174         | -0.028         | 0.074          | -0.250         | -0.063         | 0.230          |
| 53          | 0.571          | 0.002          | 0.145          | -0.206         | -0.161         | 0.049          | 0.120          |
| 54          | 0.707          | 0.162          | -0.094         | -0.038         | 0.117          | 0.047          | 0.023          |
| 55          | 0.663          | -0.077         | 0.015          | 0.076          | -0.072         | 0.181          | -0.112         |
| 56          | 0.322          | 0.056          | 0.258          | 0.359          | -0.179         | -0.193         | 0.248          |
| 57          | 0.572          | -0.072         | 0.046          | -0.002         | -0.015         | -0.132         | 0.191          |
| 58          | 0.512          | -0.234         | 0.079          | 0.186          | -0.054         | 0.029          | 0.165          |
| 59          | 0.737          | -0.035         | -0.096         | -0.091         | 0.085          | -0.039         | 0.090          |
| 60          | 0.451          | -0.079         | -0.044         | -0.077         | -0.242         | -0.054         | 0.313          |

**Table H63**  
**Eigenvalues and factor patterns for Grade 7 Mathematics Form E (Objective Level)**

## Eigenvalues

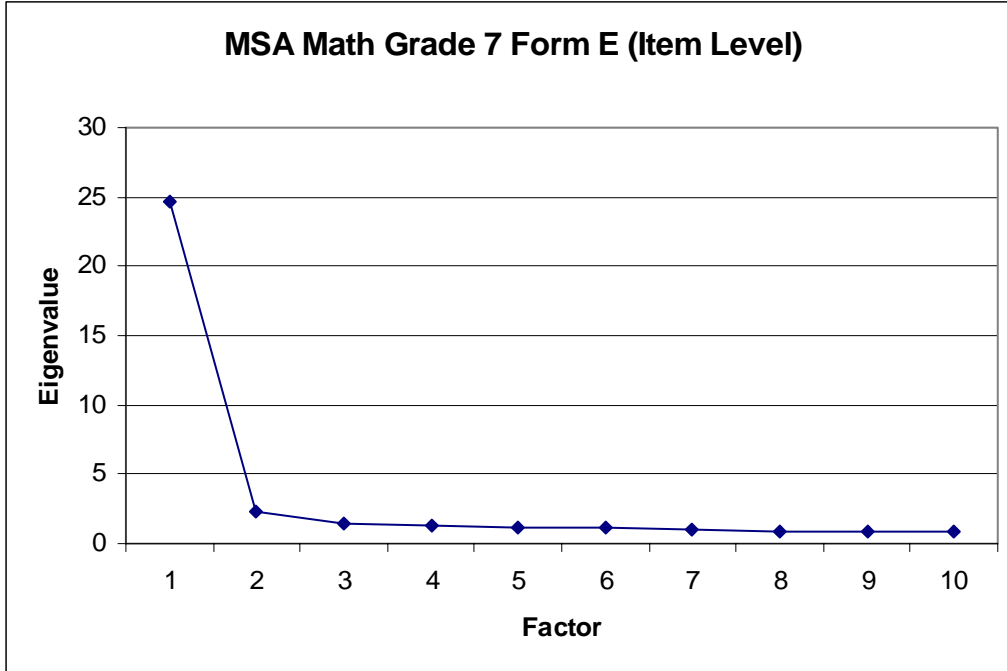
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.728  | 3.704 | 1.052  | 1.052 |
| 2      | 0.024  | 0.074 | 0.007  | 1.059 |
| 3      | -0.050 | 0.013 | -0.014 | 1.045 |
| 4      | -0.063 | 0.033 | -0.018 | 1.027 |
| 5      | -0.096 |       | -0.027 | 1.000 |

## Factor Pattern

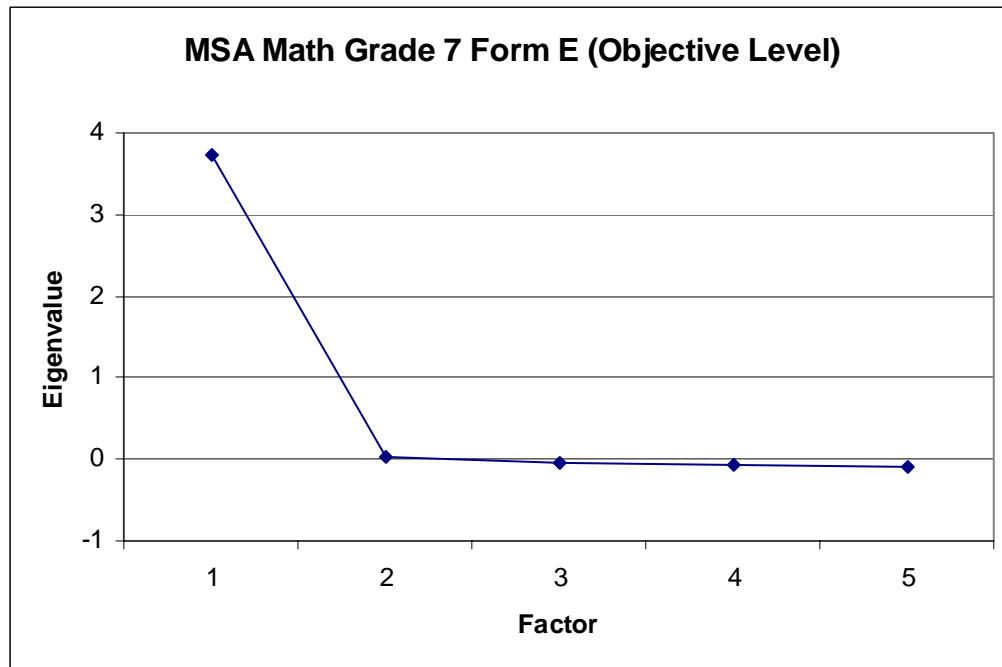
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.878   |
| 2         | 0.830   |
| 3         | 0.887   |
| 4         | 0.875   |
| 5         | 0.846   |

**Figure H21**  
**Scree Plot of Eigenvalues for Grade 7 Mathematics Form E**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**





**Table H64**  
**Eigenvalues for Grade 7 Mathematics Form F (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 23.118       | 20.748      | 0.392       | 0.392      |
| 2             | 2.371        | 0.516       | 0.040       | 0.432      |
| 3             | 1.855        | 0.533       | 0.031       | 0.464      |
| 4             | 1.322        | 0.126       | 0.022       | 0.486      |
| 5             | 1.196        | 0.171       | 0.020       | 0.506      |
| 6             | 1.025        | 0.066       | 0.017       | 0.524      |
| 7             | 0.959        | 0.029       | 0.016       | 0.540      |
| 8             | 0.930        | 0.013       | 0.016       | 0.556      |
| 9             | 0.916        | 0.037       | 0.016       | 0.571      |
| 10            | 0.880        | 0.016       | 0.015       | 0.586      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: cumulative proportion

**Table H65**  
**Factor Patterns for Grade 7 Mathematics Form F (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.565          | -0.015         | 0.167          | -0.023         | -0.107         | -0.038         |
| 2           | 0.512          | -0.106         | 0.062          | 0.258          | 0.015          | 0.127          |
| 3           | 0.719          | -0.134         | -0.102         | -0.045         | -0.181         | -0.056         |
| 4           | 0.531          | -0.146         | -0.357         | 0.154          | 0.113          | 0.071          |
| 5           | 0.748          | -0.138         | -0.082         | -0.061         | -0.256         | 0.011          |
| 6           | 0.561          | -0.053         | 0.089          | -0.031         | -0.145         | 0.048          |
| 7           | 0.645          | 0.220          | 0.072          | -0.134         | -0.006         | 0.179          |
| 8           | 0.670          | 0.293          | -0.015         | -0.092         | 0.041          | 0.165          |
| 9           | 0.462          | 0.104          | 0.188          | -0.243         | -0.087         | 0.107          |
| 10          | 0.612          | 0.051          | 0.301          | -0.169         | -0.139         | -0.097         |
| 11          | 0.616          | -0.052         | 0.174          | -0.127         | -0.164         | -0.055         |
| 12          | 0.687          | -0.171         | -0.256         | -0.113         | 0.259          | 0.073          |
| 13          | 0.632          | -0.134         | -0.083         | -0.087         | -0.156         | 0.154          |
| 14          | 0.606          | -0.091         | -0.084         | -0.038         | 0.097          | 0.178          |
| 15          | 0.552          | -0.104         | -0.058         | -0.057         | 0.050          | 0.205          |
| 16          | 0.573          | -0.009         | -0.038         | -0.021         | 0.072          | 0.091          |
| 17          | 0.419          | -0.011         | 0.170          | -0.054         | 0.038          | 0.051          |
| 18          | 0.668          | -0.110         | -0.142         | 0.042          | -0.254         | 0.083          |
| 19          | 0.355          | 0.217          | 0.355          | -0.287         | -0.054         | 0.030          |
| 20          | 0.548          | 0.274          | 0.234          | -0.199         | -0.007         | 0.037          |
| 21          | 0.505          | -0.122         | 0.066          | -0.129         | 0.171          | -0.130         |
| 22          | 0.477          | -0.141         | -0.252         | -0.017         | 0.343          | -0.164         |
| 23          | 0.765          | -0.148         | -0.168         | -0.061         | -0.141         | -0.181         |
| 24          | 0.472          | 0.032          | 0.375          | 0.089          | 0.201          | -0.223         |
| 25          | 0.779          | -0.032         | 0.167          | 0.113          | -0.005         | -0.036         |
| 26          | 0.649          | -0.022         | 0.093          | 0.278          | -0.019         | -0.049         |
| 27          | 0.522          | -0.004         | 0.271          | 0.381          | -0.012         | -0.063         |
| 28          | 0.660          | -0.035         | 0.140          | 0.389          | -0.101         | -0.039         |
| 29          | 0.645          | 0.066          | 0.261          | 0.197          | 0.161          | -0.087         |
| 30          | 0.574          | -0.019         | 0.254          | 0.387          | 0.108          | -0.090         |
| 31          | 0.530          | -0.039         | 0.088          | -0.142         | 0.053          | -0.090         |
| 32          | 0.703          | -0.069         | -0.060         | -0.106         | 0.072          | -0.021         |
| 33          | 0.578          | -0.075         | 0.012          | -0.131         | 0.127          | 0.036          |
| 34          | 0.196          | 0.517          | -0.019         | -0.011         | 0.254          | 0.116          |
| 35          | 0.643          | 0.003          | 0.199          | -0.071         | -0.089         | -0.042         |
| 36          | 0.645          | -0.060         | -0.066         | 0.112          | 0.006          | -0.047         |
| 37          | 0.390          | -0.025         | 0.039          | 0.202          | 0.150          | 0.004          |
| 38          | 0.617          | -0.091         | 0.183          | 0.060          | 0.050          | -0.110         |
| 39          | 0.417          | 0.117          | 0.215          | -0.152         | 0.259          | -0.051         |
| 40          | 0.657          | -0.065         | -0.038         | -0.059         | -0.020         | -0.096         |
| 41          | 0.705          | -0.166         | -0.289         | -0.096         | 0.241          | 0.054          |
| 42          | 0.681          | -0.121         | -0.183         | -0.073         | 0.068          | 0.039          |
| 43          | 0.809          | -0.088         | -0.015         | -0.108         | -0.175         | -0.146         |
| 44          | 0.746          | -0.119         | -0.104         | -0.089         | -0.117         | -0.089         |
| 45          | 0.590          | 0.654          | -0.180         | 0.088          | -0.060         | 0.013          |

**Table H65 (Cont.)**  
**Factor Patterns for Grade 7 Mathematics Form F (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.594          | 0.599          | -0.188         | 0.100          | -0.024         | 0.016          |
| 47          | 0.624          | -0.078         | -0.153         | 0.278          | -0.085         | 0.326          |
| 48          | 0.731          | -0.103         | 0.102          | 0.059          | -0.197         | 0.167          |
| 49          | 0.685          | 0.187          | -0.050         | 0.148          | -0.013         | 0.299          |
| 50          | 0.701          | 0.321          | 0.129          | -0.076         | 0.102          | 0.270          |
| 51          | 0.798          | -0.050         | 0.126          | -0.046         | 0.156          | -0.060         |
| 52          | 0.720          | -0.165         | -0.064         | -0.001         | -0.063         | 0.064          |
| 53          | 0.799          | -0.105         | -0.036         | -0.037         | -0.118         | -0.156         |
| 54          | 0.712          | -0.066         | -0.130         | 0.074          | 0.156          | -0.024         |
| 55          | 0.506          | 0.610          | -0.317         | 0.035          | -0.133         | -0.303         |
| 56          | 0.570          | 0.315          | -0.385         | 0.021          | -0.069         | -0.350         |
| 57          | 0.743          | -0.134         | -0.117         | -0.027         | -0.192         | -0.012         |
| 58          | 0.723          | -0.125         | 0.058          | -0.144         | 0.126          | 0.021          |
| 59          | 0.719          | -0.133         | -0.081         | -0.091         | 0.255          | -0.098         |

**Table H66**  
**Eigenvalues and factor patterns for Grade 7 Mathematics Form F (Objective Level)**

## Eigenvalues

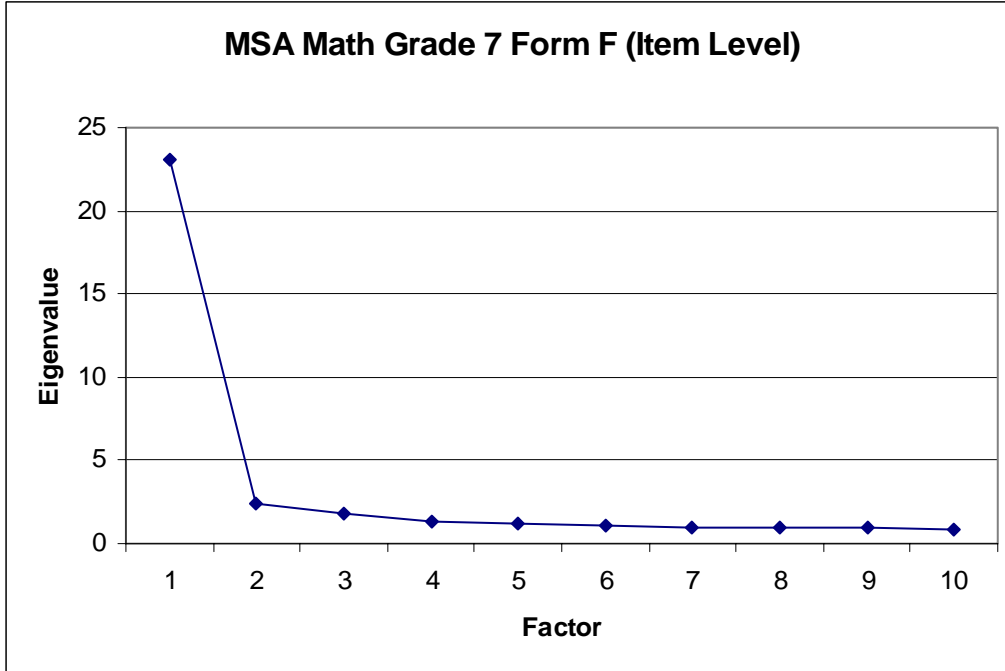
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.600  | 3.549 | 1.055  | 1.055 |
| 2      | 0.052  | 0.105 | 0.015  | 1.070 |
| 3      | -0.054 | 0.022 | -0.016 | 1.054 |
| 4      | -0.075 | 0.034 | -0.022 | 1.032 |
| 5      | -0.109 |       | -0.032 | 1.000 |

## Factor Pattern

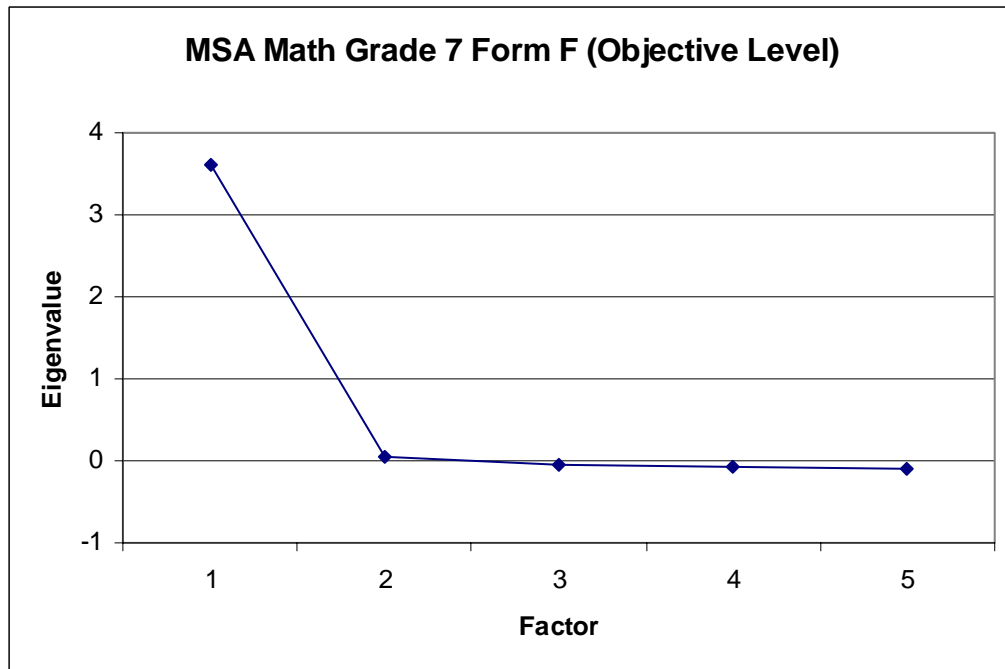
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.864   |
| 2         | 0.833   |
| 3         | 0.882   |
| 4         | 0.867   |
| 5         | 0.794   |

**Figure H22**  
**Scree Plot of Eigenvalues for Grade 7 Mathematics Form F**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H67**  
**Eigenvalues for Grade 8 Mathematics Form 1 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 22.551       | 20.775      | 0.376       | 0.376      |
| 2             | 1.777        | 0.314       | 0.030       | 0.406      |
| 3             | 1.462        | 0.057       | 0.024       | 0.430      |
| 4             | 1.405        | 0.081       | 0.023       | 0.453      |
| 5             | 1.324        | 0.260       | 0.022       | 0.475      |
| 6             | 1.064        | 0.047       | 0.018       | 0.493      |
| 7             | 1.016        | 0.036       | 0.017       | 0.510      |
| 8             | 0.980        | 0.017       | 0.016       | 0.526      |
| 9             | 0.964        | 0.013       | 0.016       | 0.542      |
| 10            | 0.951        | 0.029       | 0.016       | 0.558      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion

**Table H68**  
**Factor Patterns for Grade 8 Mathematics Form 1 (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 1           | 0.567          | 0.156          | -0.061         | -0.025         | -0.062         | 0.045          | -0.038         |
| 2           | 0.567          | -0.038         | -0.069         | -0.021         | 0.046          | 0.118          | 0.086          |
| 3           | 0.439          | -0.331         | 0.144          | -0.060         | 0.058          | 0.255          | -0.054         |
| 4           | 0.663          | -0.333         | 0.129          | -0.197         | 0.067          | 0.126          | 0.066          |
| 5           | 0.490          | 0.245          | -0.071         | -0.079         | -0.389         | 0.340          | 0.355          |
| 6           | 0.352          | 0.042          | 0.284          | 0.146          | 0.203          | 0.088          | -0.011         |
| 7           | 0.625          | -0.015         | 0.324          | -0.155         | -0.308         | -0.074         | -0.110         |
| 8           | 0.431          | -0.084         | 0.068          | 0.187          | 0.102          | 0.076          | -0.061         |
| 9           | 0.543          | -0.127         | 0.234          | -0.180         | -0.064         | 0.042          | -0.097         |
| 10          | 0.500          | 0.175          | 0.150          | -0.026         | -0.030         | 0.057          | -0.137         |
| 11          | 0.495          | 0.246          | 0.108          | -0.070         | -0.131         | -0.034         | -0.128         |
| 12          | 0.474          | 0.245          | 0.108          | 0.043          | -0.157         | -0.047         | -0.208         |
| 13          | 0.519          | -0.013         | -0.078         | -0.127         | -0.031         | 0.017          | -0.042         |
| 14          | 0.809          | -0.126         | -0.214         | -0.141         | 0.018          | 0.013          | -0.017         |
| 15          | 0.754          | -0.158         | -0.229         | -0.157         | 0.011          | -0.002         | -0.025         |
| 16          | 0.504          | 0.113          | 0.088          | -0.043         | 0.125          | 0.016          | 0.059          |
| 17          | 0.505          | -0.059         | 0.262          | -0.030         | 0.028          | 0.217          | -0.059         |
| 18          | 0.576          | -0.038         | -0.043         | 0.001          | 0.073          | 0.042          | -0.132         |
| 19          | 0.295          | 0.194          | -0.080         | -0.046         | 0.103          | -0.157         | 0.051          |
| 20          | 0.749          | -0.072         | 0.330          | -0.151         | -0.275         | -0.111         | -0.153         |
| 21          | 0.736          | -0.064         | 0.294          | -0.122         | -0.250         | -0.136         | -0.153         |
| 22          | 0.703          | -0.353         | 0.077          | 0.016          | 0.038          | 0.021          | 0.095          |
| 23          | 0.588          | 0.018          | 0.136          | 0.079          | 0.078          | -0.013         | 0.009          |
| 24          | 0.603          | -0.062         | 0.158          | 0.089          | -0.147         | -0.057         | -0.003         |
| 25          | 0.754          | -0.098         | 0.026          | 0.012          | -0.034         | -0.025         | -0.040         |
| 26          | 0.500          | -0.198         | 0.092          | 0.276          | -0.166         | -0.309         | 0.370          |
| 27          | 0.640          | -0.144         | 0.012          | 0.242          | -0.210         | -0.305         | 0.302          |
| 28          | 0.494          | 0.048          | -0.051         | -0.120         | 0.026          | -0.018         | 0.199          |
| 29          | 0.452          | 0.073          | 0.102          | -0.081         | 0.258          | 0.180          | 0.044          |
| 30          | 0.416          | 0.234          | 0.205          | 0.100          | 0.208          | -0.056         | 0.000          |
| 31          | 0.505          | 0.231          | -0.127         | -0.098         | -0.383         | 0.360          | 0.337          |
| 32          | 0.545          | 0.252          | -0.111         | 0.082          | 0.071          | 0.064          | -0.108         |
| 33          | 0.483          | 0.138          | -0.218         | 0.013          | 0.144          | -0.052         | -0.167         |
| 34          | 0.769          | -0.112         | -0.019         | -0.167         | 0.162          | -0.127         | 0.129          |
| 35          | 0.800          | -0.036         | -0.032         | -0.120         | 0.134          | -0.151         | 0.091          |
| 36          | 0.595          | 0.186          | -0.295         | 0.092          | -0.036         | 0.072          | -0.020         |
| 37          | 0.572          | 0.058          | 0.131          | -0.032         | 0.185          | 0.265          | -0.055         |
| 38          | 0.774          | -0.091         | -0.118         | -0.088         | 0.090          | 0.074          | -0.015         |
| 39          | 0.648          | -0.117         | -0.071         | -0.103         | 0.021          | 0.089          | -0.033         |
| 40          | 0.548          | 0.306          | -0.033         | 0.121          | -0.011         | -0.040         | -0.076         |
| 41          | 0.297          | 0.180          | 0.142          | 0.157          | 0.196          | -0.136         | 0.111          |
| 42          | 0.529          | -0.027         | -0.272         | -0.059         | -0.118         | 0.052          | -0.159         |
| 43          | 0.136          | 0.231          | 0.262          | 0.239          | 0.203          | 0.174          | 0.273          |
| 44          | 0.459          | 0.391          | -0.002         | 0.142          | -0.096         | -0.163         | -0.076         |
| 45          | 0.818          | -0.030         | -0.212         | -0.012         | -0.001         | -0.002         | -0.060         |

**Table H69 (cont.)**  
**Factor Patterns for Grade 8 Mathematics Form 1 (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|
| 46          | 0.775          | -0.151         | -0.229         | 0.008          | -0.047         | -0.079         | -0.047         |
| 47          | 0.842          | 0.023          | -0.242         | 0.080          | 0.013          | -0.007         | -0.057         |
| 48          | 0.832          | -0.060         | -0.245         | 0.083          | -0.034         | -0.062         | -0.050         |
| 49          | 0.472          | -0.130         | -0.022         | 0.381          | 0.051          | 0.138          | -0.139         |
| 50          | 0.598          | 0.037          | -0.153         | 0.198          | 0.002          | 0.029          | -0.040         |
| 51          | 0.212          | -0.309         | 0.004          | 0.492          | -0.221         | 0.164          | -0.153         |
| 52          | 0.495          | -0.256         | -0.033         | 0.489          | -0.036         | 0.097          | -0.050         |
| 53          | 0.856          | 0.253          | 0.061          | 0.006          | -0.043         | -0.058         | -0.051         |
| 54          | 0.851          | 0.184          | 0.025          | -0.031         | -0.070         | -0.072         | -0.055         |
| 55          | 0.735          | 0.050          | 0.020          | -0.051         | 0.141          | 0.035          | 0.045          |
| 56          | 0.669          | -0.184         | 0.013          | -0.158         | 0.168          | 0.018          | 0.137          |
| 57          | 0.534          | 0.183          | 0.094          | 0.179          | 0.154          | 0.107          | 0.060          |
| 58          | 0.788          | 0.042          | 0.058          | 0.025          | -0.048         | -0.038         | 0.091          |
| 59          | 0.802          | 0.039          | 0.017          | -0.051         | 0.217          | -0.139         | 0.060          |
| 60          | 0.769          | -0.076         | -0.038         | -0.055         | 0.184          | -0.194         | 0.085          |



**Table H69**  
**Eigenvalues and Factor Patterns for Grade 8 Mathematics Form 1 (Objective Level)**

**Eigenvalues**

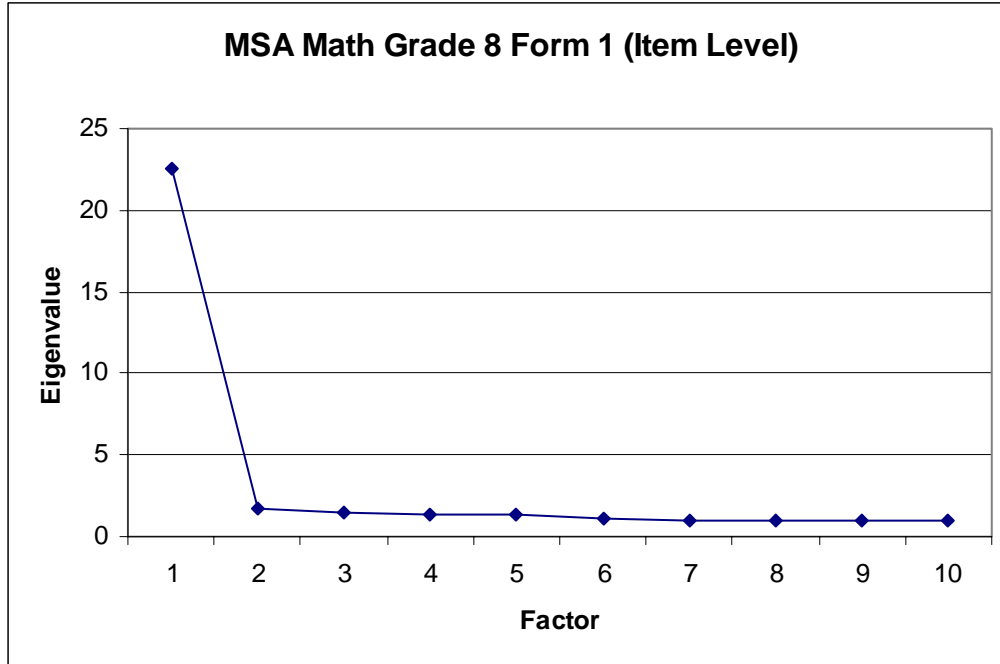
| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 3.692        | 3.707       | 1.055       | 1.055      |
| 2             | -0.016       | 0.026       | -0.004      | 1.051      |
| 3             | -0.041       | 0.011       | -0.012      | 1.039      |
| 4             | -0.052       | 0.033       | -0.015      | 1.024      |
| 5             | -0.085       |             | -0.024      | 1.000      |

**Factor Pattern**

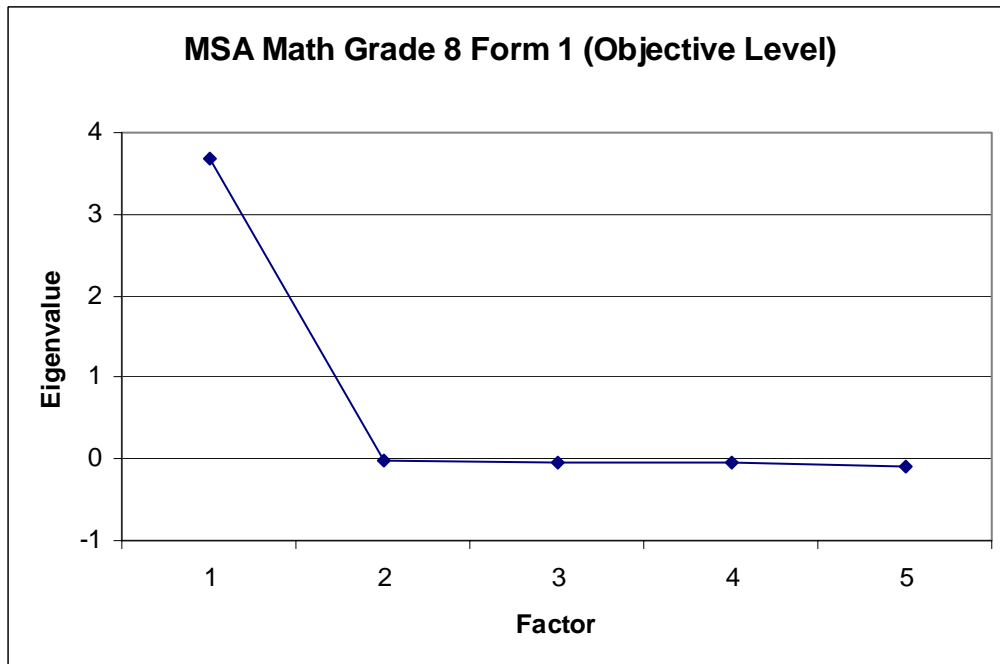
| <b>Objective</b> | <b>Factor1</b> |
|------------------|----------------|
| 1                | 0.887          |
| 2                | 0.847          |
| 3                | 0.852          |
| 4                | 0.786          |
| 5                | 0.919          |

**Figure H23**  
**Scree Plot of Eigenvalues for Grade 8 Mathematics Form 1**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H70**  
**Eigenvalues for Grade 8 Mathematics Form 2 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 23.597       | 21.657      | 0.387       | 0.387      |
| 2             | 1.940        | 0.513       | 0.032       | 0.419      |
| 3             | 1.427        | 0.141       | 0.023       | 0.442      |
| 4             | 1.286        | 0.025       | 0.021       | 0.463      |
| 5             | 1.261        | 0.089       | 0.021       | 0.484      |
| 6             | 1.172        | 0.071       | 0.019       | 0.503      |
| 7             | 1.100        | 0.058       | 0.018       | 0.521      |
| 8             | 1.042        | 0.030       | 0.017       | 0.538      |
| 9             | 1.012        | 0.012       | 0.017       | 0.555      |
| 10            | 1.000        | 0.043       | 0.016       | 0.571      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion

**Table H71**  
**Factor Patterns for Grade 8 Mathematics Form 2 (Item Level)**

| Item | Factor1 | Factor2 | Factor3 | Factor4 | Factor5 | Factor6 | Factor7 | Factor8 | Factor9 | Factor10 |
|------|---------|---------|---------|---------|---------|---------|---------|---------|---------|----------|
| 1    | 0.572   | 0.140   | 0.015   | -0.032  | 0.042   | -0.007  | 0.017   | -0.015  | 0.022   | 0.015    |
| 2    | 0.557   | -0.002  | 0.036   | 0.000   | 0.000   | -0.018  | 0.163   | -0.037  | 0.025   | 0.078    |
| 3    | 0.454   | -0.292  | -0.112  | 0.007   | -0.109  | 0.028   | 0.096   | -0.108  | 0.003   | 0.126    |
| 4    | 0.662   | -0.296  | -0.193  | 0.070   | -0.030  | 0.042   | 0.027   | -0.124  | 0.005   | 0.061    |
| 5    | 0.493   | 0.279   | -0.106  | -0.307  | 0.336   | -0.089  | 0.125   | -0.140  | 0.402   | 0.122    |
| 6    | 0.361   | 0.091   | -0.141  | 0.262   | -0.301  | 0.008   | 0.126   | 0.029   | 0.179   | 0.230    |
| 7    | 0.633   | 0.101   | -0.391  | -0.079  | -0.017  | 0.242   | -0.021  | 0.138   | 0.007   | -0.079   |
| 8    | 0.423   | -0.006  | -0.021  | 0.006   | -0.236  | 0.083   | 0.048   | 0.134   | 0.011   | 0.222    |
| 9    | 0.546   | -0.129  | -0.222  | 0.009   | -0.055  | 0.215   | 0.017   | -0.110  | 0.036   | -0.106   |
| 10   | 0.493   | 0.195   | -0.073  | -0.006  | -0.143  | 0.010   | 0.107   | -0.012  | -0.027  | -0.088   |
| 11   | 0.508   | 0.267   | -0.131  | -0.047  | 0.045   | 0.020   | 0.066   | -0.087  | -0.132  | -0.163   |
| 12   | 0.483   | 0.322   | -0.114  | -0.064  | 0.010   | 0.010   | -0.079  | -0.017  | -0.208  | -0.203   |
| 13   | 0.510   | -0.012  | 0.048   | -0.069  | 0.064   | -0.042  | 0.081   | 0.044   | 0.007   | -0.270   |
| 14   | 0.821   | -0.136  | 0.168   | -0.154  | 0.056   | 0.048   | -0.101  | -0.081  | -0.037  | 0.019    |
| 15   | 0.771   | -0.165  | 0.170   | -0.170  | 0.071   | 0.050   | -0.089  | -0.083  | -0.057  | -0.001   |
| 16   | 0.506   | 0.086   | 0.012   | 0.204   | -0.159  | -0.221  | 0.125   | -0.139  | 0.165   | -0.045   |
| 17   | 0.510   | -0.020  | -0.257  | 0.120   | -0.150  | 0.076   | 0.052   | -0.137  | -0.005  | 0.121    |
| 18   | 0.583   | -0.004  | 0.102   | 0.008   | -0.108  | 0.003   | 0.046   | -0.085  | -0.040  | -0.041   |
| 19   | 0.309   | 0.145   | 0.183   | 0.449   | 0.368   | 0.359   | 0.182   | -0.178  | 0.006   | -0.049   |
| 20   | 0.748   | 0.056   | -0.395  | -0.075  | -0.045  | 0.265   | -0.062  | 0.155   | -0.025  | -0.083   |
| 21   | 0.740   | 0.033   | -0.345  | -0.076  | -0.044  | 0.254   | -0.068  | 0.154   | -0.040  | -0.094   |
| 22   | 0.784   | 0.237   | -0.080  | -0.091  | 0.043   | -0.030  | 0.009   | -0.030  | -0.071  | -0.077   |
| 23   | 0.662   | -0.054  | 0.031   | 0.085   | -0.144  | -0.020  | 0.048   | -0.026  | 0.104   | -0.033   |
| 24   | 0.668   | -0.139  | 0.254   | -0.176  | -0.268  | 0.250   | -0.108  | -0.307  | 0.137   | -0.128   |
| 25   | 0.685   | -0.137  | 0.255   | -0.164  | -0.271  | 0.248   | -0.106  | -0.294  | 0.142   | -0.111   |
| 26   | 0.821   | 0.116   | 0.029   | 0.057   | -0.133  | 0.028   | -0.056  | -0.019  | 0.014   | 0.016    |
| 27   | 0.736   | 0.075   | 0.060   | 0.181   | 0.096   | 0.015   | -0.418  | 0.076   | 0.069   | 0.176    |
| 28   | 0.747   | 0.066   | 0.067   | 0.164   | 0.105   | 0.006   | -0.412  | 0.088   | 0.052   | 0.183    |
| 29   | 0.487   | 0.032   | -0.013  | 0.098   | 0.196   | -0.062  | -0.171  | -0.039  | 0.023   | 0.218    |
| 30   | 0.454   | 0.009   | -0.040  | 0.148   | -0.033  | -0.126  | 0.010   | -0.209  | -0.129  | 0.094    |
| 31   | 0.428   | 0.154   | -0.100  | 0.256   | -0.117  | -0.131  | -0.064  | -0.120  | -0.047  | 0.019    |
| 32   | 0.501   | 0.250   | -0.085  | -0.333  | 0.337   | -0.083  | 0.080   | -0.092  | 0.423   | 0.122    |
| 33   | 0.551   | 0.213   | 0.101   | 0.003   | -0.080  | -0.129  | 0.117   | -0.006  | -0.098  | -0.029   |
| 34   | 0.505   | 0.113   | 0.256   | -0.073  | -0.055  | -0.078  | -0.112  | 0.058   | -0.283  | -0.024   |
| 35   | 0.464   | 0.008   | -0.152  | -0.015  | 0.053   | -0.117  | 0.055   | -0.129  | -0.328  | 0.335    |
| 36   | 0.667   | -0.068  | -0.100  | -0.024  | 0.087   | -0.137  | -0.027  | -0.053  | -0.201  | 0.175    |
| 37   | 0.777   | -0.218  | 0.133   | -0.107  | 0.033   | 0.033   | -0.021  | -0.085  | -0.045  | 0.051    |
| 38   | 0.783   | -0.150  | 0.126   | -0.042  | 0.008   | 0.018   | 0.036   | -0.067  | -0.004  | 0.061    |
| 39   | 0.618   | -0.319  | 0.032   | -0.159  | 0.099   | 0.115   | 0.319   | 0.155   | -0.136  | 0.226    |
| 40   | 0.722   | -0.323  | 0.011   | -0.149  | 0.101   | 0.097   | 0.251   | 0.160   | -0.136  | 0.167    |
| 41   | 0.537   | 0.278   | 0.088   | -0.054  | -0.078  | -0.112  | 0.021   | -0.003  | -0.091  | -0.120   |
| 42   | 0.502   | 0.118   | 0.159   | -0.100  | 0.014   | -0.073  | 0.061   | 0.050   | -0.076  | 0.061    |
| 43   | 0.686   | 0.095   | 0.241   | -0.068  | 0.004   | -0.023  | -0.029  | 0.053   | -0.060  | 0.060    |
| 44   | 0.491   | 0.055   | 0.146   | 0.005   | -0.088  | -0.047  | 0.052   | 0.225   | -0.030  | -0.043   |
| 45   | 0.495   | 0.191   | 0.213   | 0.008   | 0.020   | -0.027  | -0.217  | 0.116   | -0.006  | 0.084    |

**Table H73 (cont.)**  
**Factor Patterns for Grade 8 Mathematics Form 2 (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Factor3</b> | <b>Factor4</b> | <b>Factor5</b> | <b>Factor6</b> | <b>Factor7</b> | <b>Factor8</b> | <b>Factor9</b> | <b>Factor10</b> |
|-------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|----------------|-----------------|
| 46          | 0.288          | 0.120          | 0.210          | 0.428          | 0.375          | 0.428          | 0.173          | -0.024         | -0.063         | -0.047          |
| 47          | 0.835          | -0.019         | 0.154          | -0.074         | -0.016         | 0.031          | 0.057          | 0.099          | 0.023          | 0.007           |
| 48          | 0.777          | -0.099         | 0.139          | -0.101         | 0.002          | 0.055          | 0.022          | 0.184          | 0.015          | -0.010          |
| 49          | 0.323          | -0.020         | 0.134          | 0.136          | -0.170         | -0.002         | 0.175          | 0.395          | 0.237          | 0.043           |
| 50          | 0.439          | 0.101          | -0.083         | -0.015         | -0.036         | 0.183          | -0.278         | 0.159          | 0.113          | 0.069           |
| 51          | 0.459          | 0.106          | 0.163          | 0.005          | 0.060          | -0.086         | 0.202          | 0.265          | 0.010          | -0.199          |
| 52          | 0.560          | 0.056          | 0.072          | 0.132          | -0.128         | 0.020          | -0.035         | 0.232          | 0.171          | 0.064           |
| 53          | 0.850          | 0.249          | -0.062         | -0.010         | -0.024         | -0.060         | 0.050          | -0.021         | -0.091         | -0.086          |
| 54          | 0.842          | 0.177          | -0.063         | -0.041         | 0.001          | -0.047         | 0.036          | 0.002          | -0.092         | -0.090          |
| 55          | 0.651          | -0.286         | -0.088         | 0.137          | 0.107          | -0.190         | -0.017         | -0.017         | 0.058          | -0.159          |
| 56          | 0.772          | 0.013          | -0.002         | 0.163          | -0.111         | -0.161         | 0.125          | -0.066         | 0.106          | -0.015          |
| 57          | 0.689          | -0.321         | -0.109         | 0.141          | 0.135          | -0.186         | -0.047         | -0.006         | 0.037          | -0.156          |
| 58          | 0.757          | 0.036          | 0.012          | 0.169          | -0.115         | -0.192         | 0.136          | -0.065         | 0.120          | -0.021          |
| 59          | 0.797          | 0.139          | -0.093         | -0.017         | 0.107          | -0.120         | 0.012          | -0.052         | -0.086         | 0.061           |
| 60          | 0.694          | -0.391         | -0.107         | 0.116          | 0.176          | -0.195         | -0.114         | 0.067          | 0.066          | -0.231          |
| 61          | 0.684          | -0.393         | -0.063         | 0.068          | 0.185          | -0.180         | -0.137         | 0.111          | 0.033          | -0.216          |

**Table H72**  
**Eigenvalues and factor patterns for Grade 8 Mathematics Form 2 (Objective Level)**

## Eigenvalues

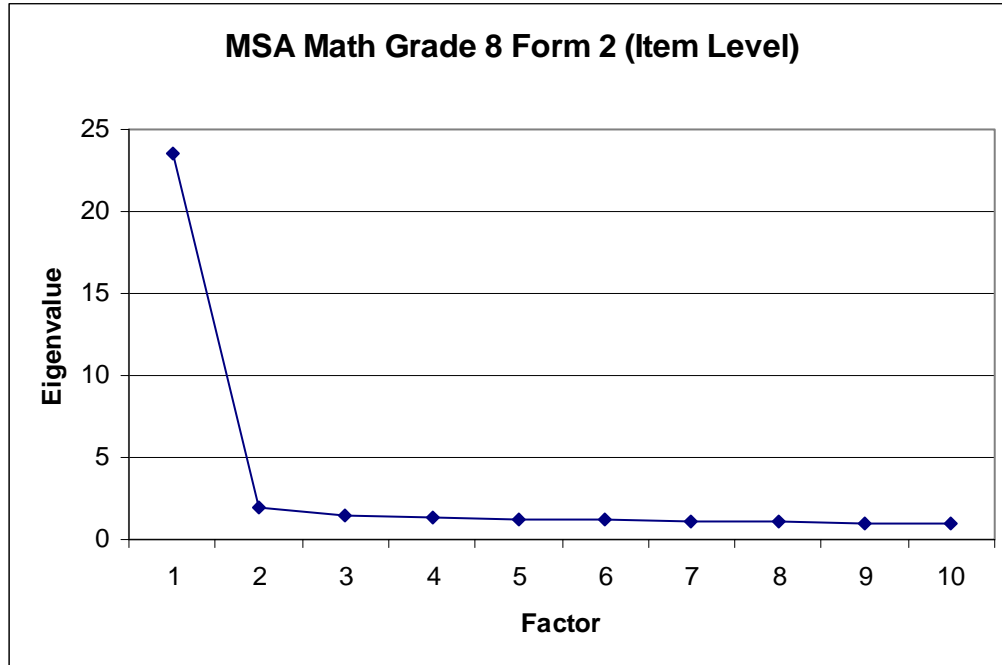
| Factor | Eigen  | Diff  | Prop   | Cum   |
|--------|--------|-------|--------|-------|
| 1      | 3.722  | 3.744 | 1.054  | 1.054 |
| 2      | -0.022 | 0.013 | -0.006 | 1.047 |
| 3      | -0.035 | 0.008 | -0.010 | 1.037 |
| 4      | -0.043 | 0.047 | -0.012 | 1.025 |
| 5      | -0.090 |       | -0.025 | 1.000 |

## Factor Pattern

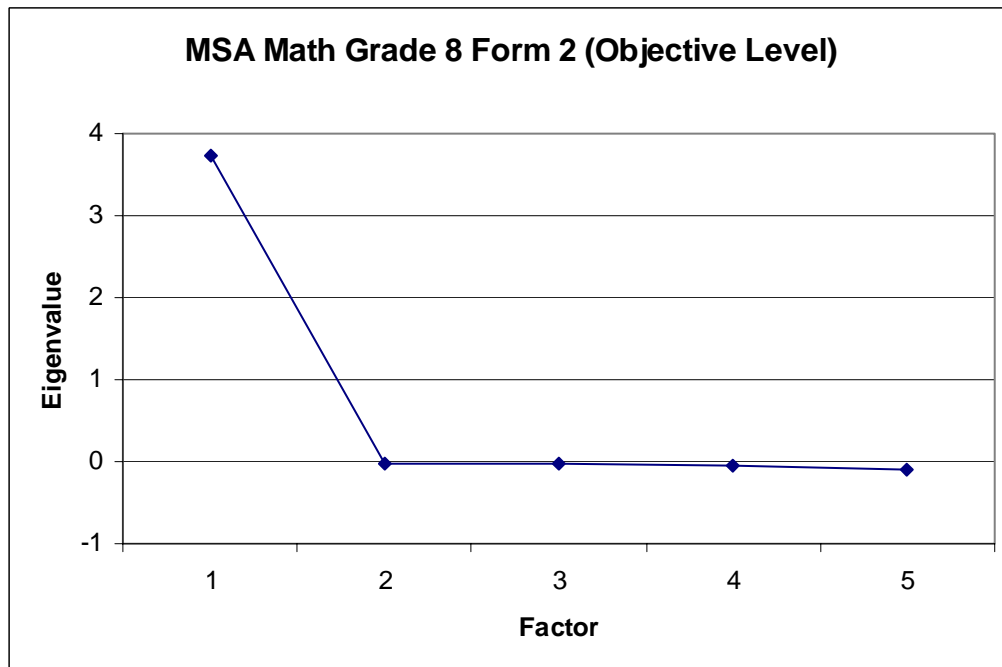
| Objective | Factor1 |
|-----------|---------|
| 1         | 0.899   |
| 2         | 0.842   |
| 3         | 0.830   |
| 4         | 0.822   |
| 5         | 0.916   |

**Figure H24**  
**Scree Plot of Eigenvalues for Grade 8 Mathematics Form 2**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H73**  
**Eigenvalues for Grade 10 Reading Form 1 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 17.343       | 16.218      | 0.864       | 0.864      |
| 2             | 1.125        | 0.334       | 0.056       | 0.920      |
| 3             | 0.791        | 0.127       | 0.039       | 0.959      |
| 4             | 0.664        | 0.144       | 0.033       | 0.992      |
| 5             | 0.521        | 0.127       | 0.026       | 1.018      |
| 6             | 0.394        | 0.104       | 0.020       | 1.038      |
| 7             | 0.289        | 0.024       | 0.014       | 1.052      |
| 8             | 0.266        | 0.048       | 0.013       | 1.066      |
| 9             | 0.218        | 0.023       | 0.011       | 1.076      |
| 10            | 0.195        | 0.043       | 0.010       | 1.086      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion



**Table H74**  
**Factor Patterns for Grade 10 Reading Form 1 (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> |
|-------------|----------------|----------------|-------------|----------------|----------------|
| 1           | 0.475          | 0.144          | 28          | 0.416          | 0.055          |
| 2           | 0.476          | 0.162          | 29          | 0.649          | 0.109          |
| 3           | 0.531          | 0.099          | 30          | 0.679          | 0.086          |
| 4           | 0.648          | 0.078          | 31          | 0.618          | 0.022          |
| 5           | 0.486          | 0.128          | 32          | 0.508          | 0.100          |
| 6           | 0.514          | 0.061          | 33          | 0.353          | 0.073          |
| 7           | 0.651          | 0.101          | 34          | 0.417          | 0.035          |
| 8           | 0.649          | 0.095          | 35          | 0.497          | -0.037         |
| 9           | 0.437          | 0.124          | 36          | 0.532          | -0.131         |
| 10          | 0.261          | 0.094          | 37          | 0.670          | -0.305         |
| 11          | 0.742          | 0.149          | 38          | 0.335          | -0.115         |
| 12          | 0.333          | 0.085          | 39          | 0.693          | -0.057         |
| 13          | 0.753          | 0.128          | 40          | 0.699          | -0.184         |
| 14          | 0.559          | 0.107          | 41          | 0.352          | -0.109         |
| 15          | 0.637          | 0.157          | 42          | 0.424          | -0.048         |
| 16          | 0.752          | 0.161          | 43          | 0.710          | -0.188         |
| 17          | 0.567          | 0.142          | 44          | 0.433          | -0.205         |
| 18          | 0.301          | 0.067          | 45          | 0.521          | -0.186         |
| 19          | 0.416          | 0.134          | 46          | 0.629          | -0.239         |
| 20          | 0.473          | 0.154          | 47          | 0.770          | -0.356         |
| 21          | 0.728          | 0.133          | 48          | 0.612          | -0.120         |
| 22          | 0.554          | 0.096          | 49          | 0.687          | -0.309         |
| 23          | 0.474          | 0.078          | 50          | 0.431          | -0.122         |
| 24          | 0.517          | 0.081          | 51          | 0.565          | -0.030         |
| 25          | 0.754          | 0.101          | 52          | 0.566          | -0.158         |
| 26          | 0.617          | 0.075          | 53          | 0.685          | -0.317         |
| 27          | 0.736          | 0.085          |             |                |                |

**Table H75**  
**Eigenvalues and Factor Patterns for Grade 10 Reading Form 1 (Objective Level)**

**Eigenvalues**

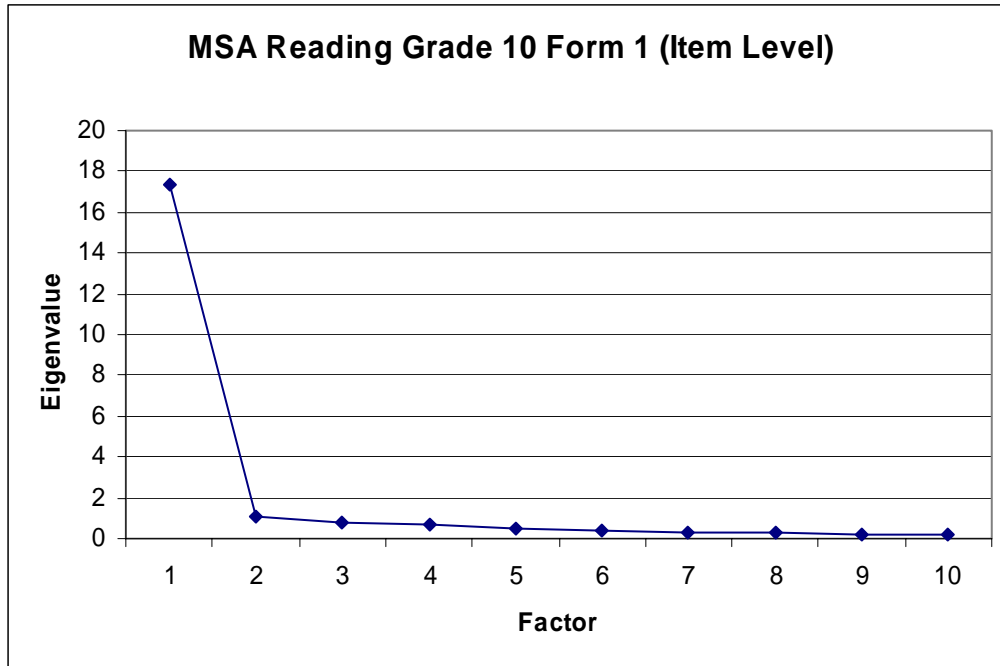
| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 2.371        | 2.446       | 1.073       | 1.073      |
| 2             | -0.075       | 0.012       | -0.034      | 1.039      |
| 3             | -0.087       |             | -0.039      | 1.000      |

**Factor Pattern**

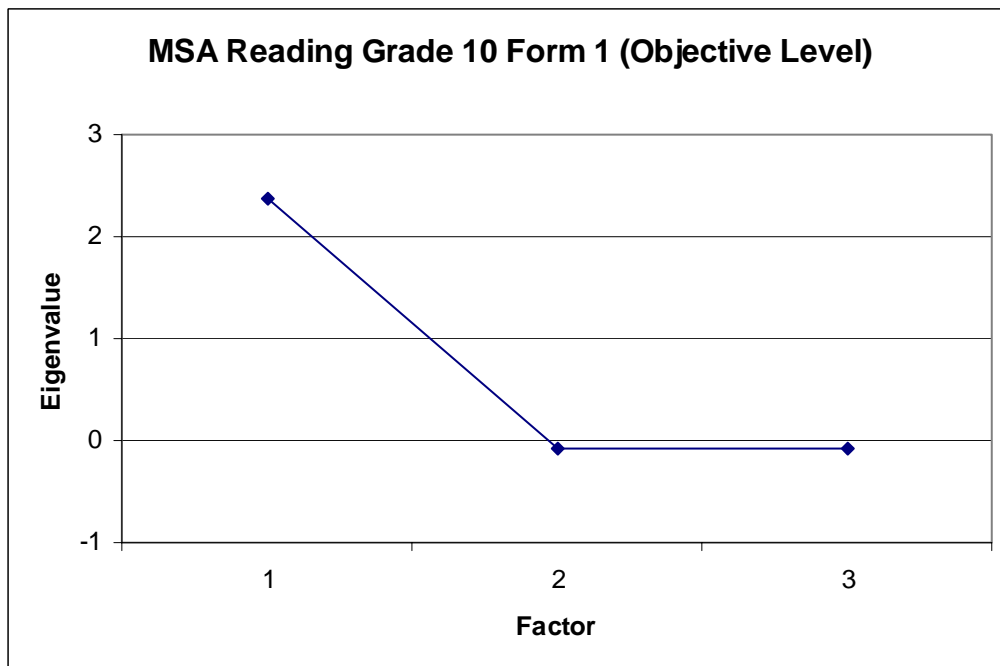
| <b>Objective</b> | <b>Factor1</b> |
|------------------|----------------|
| 1                | 0.873          |
| 2                | 0.896          |
| 3                | 0.899          |

**Figure H25**  
**Scree Plot of Eigenvalues for Grade 10 Reading Form 1**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**



**Table H76**  
**Eigenvalues for Grade 10 Reading Form 2 (Item Level)**

| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 18.342       | 16.900      | 0.837       | 0.837      |
| 2             | 1.442        | 0.559       | 0.066       | 0.903      |
| 3             | 0.883        | 0.090       | 0.040       | 0.944      |
| 4             | 0.793        | 0.215       | 0.036       | 0.980      |
| 5             | 0.579        | 0.187       | 0.026       | 1.006      |
| 6             | 0.392        | 0.040       | 0.018       | 1.024      |
| 7             | 0.351        | 0.061       | 0.016       | 1.040      |
| 8             | 0.291        | 0.057       | 0.013       | 1.053      |
| 9             | 0.234        | 0.027       | 0.011       | 1.064      |
| 10            | 0.207        | 0.029       | 0.009       | 1.073      |

- Eigen: Eigenvalue
- Diff: Difference
- Prop: Proportion
- Cum: Cumulative Proportion

**Table H77**  
**Factor Patterns for Grade 10 Reading Form 2 (Item Level)**

| <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> | <b>Item</b> | <b>Factor1</b> | <b>Factor2</b> |
|-------------|----------------|----------------|-------------|----------------|----------------|
| 1           | 0.482          | 0.139          | 28          | 0.430          | 0.066          |
| 2           | 0.492          | 0.187          | 29          | 0.646          | 0.124          |
| 3           | 0.523          | 0.101          | 30          | 0.688          | 0.110          |
| 4           | 0.668          | 0.057          | 31          | 0.616          | 0.064          |
| 5           | 0.484          | 0.172          | 32          | 0.524          | 0.115          |
| 6           | 0.545          | 0.046          | 33          | 0.365          | 0.068          |
| 7           | 0.661          | 0.123          | 34          | 0.420          | 0.030          |
| 8           | 0.655          | 0.084          | 35          | 0.528          | -0.141         |
| 9           | 0.452          | 0.108          | 36          | 0.579          | 0.086          |
| 10          | 0.276          | 0.106          | 37          | 0.716          | -0.333         |
| 11          | 0.746          | 0.160          | 38          | 0.706          | -0.393         |
| 12          | 0.333          | 0.063          | 39          | 0.438          | -0.147         |
| 13          | 0.753          | 0.115          | 40          | 0.678          | -0.247         |
| 14          | 0.555          | 0.107          | 41          | 0.690          | -0.155         |
| 15          | 0.641          | 0.143          | 42          | 0.509          | -0.192         |
| 16          | 0.753          | 0.166          | 43          | 0.733          | -0.316         |
| 17          | 0.578          | 0.150          | 44          | 0.358          | 0.048          |
| 18          | 0.312          | 0.078          | 45          | 0.592          | -0.170         |
| 19          | 0.413          | 0.179          | 46          | 0.701          | -0.237         |
| 20          | 0.478          | 0.156          | 47          | 0.717          | -0.184         |
| 21          | 0.742          | 0.151          | 48          | 0.672          | -0.053         |
| 22          | 0.557          | 0.117          | 49          | 0.427          | 0.113          |
| 23          | 0.481          | 0.125          | 50          | 0.465          | -0.076         |
| 24          | 0.507          | 0.155          | 51          | 0.683          | -0.247         |
| 25          | 0.751          | 0.137          | 52          | 0.635          | -0.352         |
| 26          | 0.615          | 0.101          | 53          | 0.698          | -0.281         |
| 27          | 0.739          | 0.085          |             |                |                |

**Table H78**  
**Eigenvalues and factor patterns for Grade 10 Reading Form 2 (Objective Level)**

## Eigenvalues

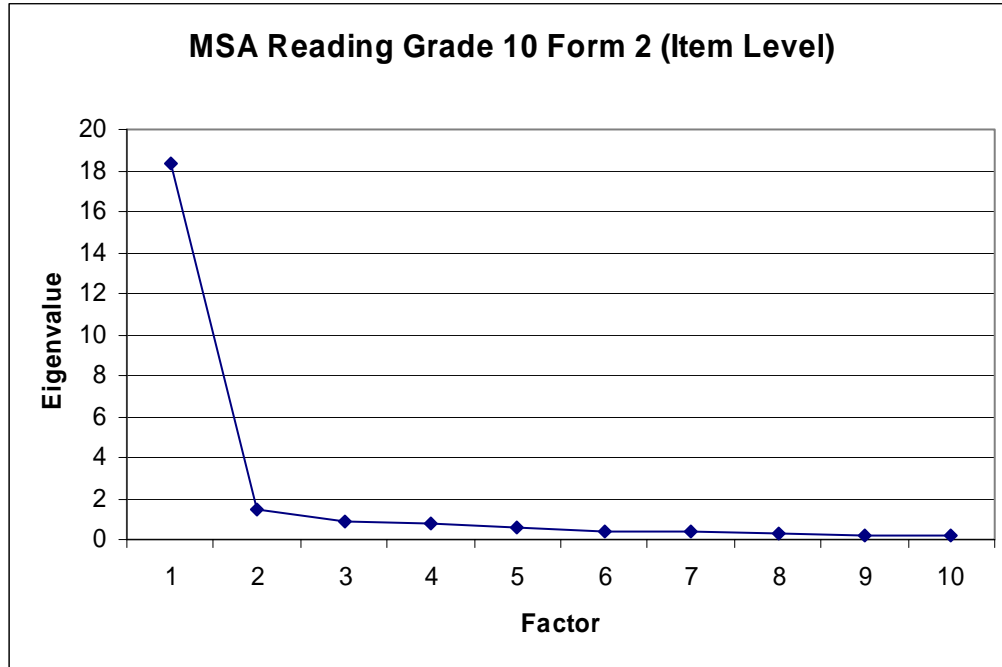
| <b>Factor</b> | <b>Eigen</b> | <b>Diff</b> | <b>Prop</b> | <b>Cum</b> |
|---------------|--------------|-------------|-------------|------------|
| 1             | 2.379        | 2.450       | 1.071       | 1.071      |
| 2             | -0.071       | 0.017       | -0.032      | 1.040      |
| 3             | -0.088       |             | -0.040      | 1.000      |

## Factor Pattern

| <b>Objective</b> | <b>Factor1</b> |
|------------------|----------------|
| 1                | 0.876          |
| 2                | 0.888          |
| 3                | 0.907          |

**Figure H26**  
**Scree Plot of Eigenvalues for Grade 10 Reading Form 2**

**Scree Plot of Eigenvalues (Item Level)**



**Scree Plot of Eigenvalues (Objective Level)**

