

APPENDIX D: STANDARD SETTING REPORT

**Maryland Standard Setting for
The Modified Maryland School Assessment**

May 10–13, 2010

FINAL REPORT



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The Modified Maryland School Assessment
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EXECUTIVE SUMMARY

Committees of Maryland educators were convened from May 10 to 13, 2010, in Towson, Maryland, to set standards for the Modified Maryland School Assessment (Mod-MSA) tests for Reading and Math, Grades 3–5. A total of 134 educators participated for two days per subject to recommend cut scores for these tests. The outcomes of the conference are described in this summary and more detailed information will be provided in a subsequent Standard Setting Technical Report.

The main purpose of the standard setting meetings was to obtain cut score recommendations for each grade within the two content areas for each of the three performance levels: Basic, Proficient, and Advanced. The item mapping procedure was applied to set the recommended standards. Under the item mapping procedure, the panelists are presented with test items and score points in an ordered item book in which each item will appear on a separate page in the book. The panelists are asked to place bookmarks between those items the borderline student for a particular performance level should answer correctly and those item such a student should answer incorrectly.

Panelists

The panelists met in three committees: a committee representing Grade 3, a committee representing Grade 4, and a committee representing Grade 5. The number of panelists on each committee is shown in Table 1.

Table 1. The number of panelists on each committee

| Subject | Grade 3 | Grade 4 | Grade 5 |
|---------|---------|---------|---------|
| Reading | 23 | 22 | 23 |
| Math | 23 | 22 | 21 |

All the panelists provided voluntary demographic information. Complete demographic information from the panelists will be summarized in the Standard Setting Technical Report. A

summary of a subset of panelist demographic information is provided in Table 2, and a summary of the current positions of the panelists appears in Table 3.

Table 2. A summary of experience, gender, and ethnicity data for the committees

| Subject | Grade | Years Experience (Average) | Gender | | Ethnicity | | | |
|---------|-------|----------------------------|--------|--------|-----------|------------------|-------|---------|
| | | | Male | Female | Caucasian | African American | Other | Missing |
| Reading | 3 | 16.35 | 1 | 22 | 19 | 3 | 0 | 1 |
| | 4 | 17.32 | 2 | 20 | 18 | 4 | 0 | 0 |
| | 5 | 18.87 | 2 | 21 | 16 | 6 | 1 | 0 |
| Math | 3 | 14.37 | 1 | 22 | 19 | 2 | 1 | 1 |
| | 4 | 12.48 | 1 | 21 | 15 | 5 | 1 | 1 |
| | 5 | 14.90 | 2 | 19 | 15 | 5 | 1 | 0 |

Table 3. Panelists' current positions in Maryland

| Subject | N | Positions | | | | | |
|---------|----|-----------|-----|-----|-----|----|-----|
| | | CSO | GET | SET | SES | AP | SLP |
| Reading | 68 | 16 | 17 | 24 | 8 | 2 | 1 |
| Math | 66 | 14 | 22 | 25 | 4 | 1 | 0 |

Note: CSO: Content Specialist/Content Supervisor (Central Office); GET: General Education Teacher; SET: Special Education Teacher; SES: Special Education Supervisor (Central Office); AP: Assistant Principal; SLP: Speech and Language Pathologist.

Method and Procedure

The standard setting conference began on Monday, May 10. The Reading committees met first (on May 10 and 11), followed by the Math committees. The Reading and the Math committees followed identical agendas and processes. Therefore, the process presented in this document applies to both content areas.

Monday morning was devoted to introductions of the staff, to a description of standard setting, and to a description of the Mod-MSA tests and student population. For this stage of the conference, all the panelists met together in one large room. The agendas for the standard setting are shown in Appendix A. All committees within a subject followed the same agenda.

After the midmorning break, the committee members broke into their grade-specific groups. The three committees (Grade 3, Grade 4, and Grade 5) met separately in individual conference rooms. The committee members spent the remainder of the morning working individually to familiarize themselves with the Mod-MSA test items for their grade by completing the items in their ordered item booklets (OIBs). OIBs were constructed for the three grades by using items from the spring 2010 test administration. These booklets were created by augmenting items from the scored form (45 items for Reading and 51 items for Math) with unscored items that had acceptable item statistics to provide the most complete coverage possible of the scale score range while

maintaining content representation. The scale score associated with a response probability of 0.67 was calculated for each item in the OIB on the basis of spring 2010 data. Items were ordered on the basis of these scale scores and sorted from least to most difficult.

Each ordered item book was accompanied by an item map. The item maps for Reading Grade 3, Grade 4, and Grade 5 are shown in Appendices C, D, and E, respectively. Math Grade 3, Grade 4, and Grade 5 can be found in Appendices F, G, and H, respectively. Each item map contains seven pieces of information:

1. Page number
2. A unique item identifier
3. Item position on the administration form
4. Reporting strand
5. Content category or standard
6. Correct option
7. Location (scale score)
8. *p value*¹

Before and after lunch, the panelists reviewed the Mod-MSA performance level descriptors (PLDs) and created behavioral anchors to clearly and concretely describe “threshold” or minimally qualified students at the Proficient and Advanced performance levels. Throughout this process, the panelists were led through table-level and committee-level discussions by a Pearson facilitator. This process required Monday afternoon. The result from creating performance level descriptors was a set of descriptors for threshold students at the Proficient and Advanced levels.

After this process of PLD review, the panelists received additional training in the item mapping process. This training was provided by a Pearson psychometrician within each committee. After the training, each committee practiced the item mapping process as a group, using a practice OIB constructed from unused Mod-MSA items. This allowed the panelists to gain familiarity with the method and ask questions before beginning the process. For Grade 4, Math and Reading training did not include application to the practice ordered item booklet. Instead, the focus was on the process steps. In the item mapping procedure, the panelists are asked to identify the item in an OIB that is the last item that a threshold student at a given level would be able to correctly answer. The panelists were instructed to identify the last item in an ordered item book that a threshold student at a given level would have a response probability of at least 0.67 of answering correctly (Huynh, 2006).

After this training, all three committees began the standard setting process late Monday afternoon. The standard setting process consisted of three rounds of judgments. The panelists were provided with feedback after each round. The feedback was intended to inform the panelists’ decisions but not to dictate their ratings. After round 1, the panelists met in small groups of four or five panelists each. The panelists were provided the cut scores for each panelist in the group based on

¹ The P value information was shared during the second round of item mapping.

the round 1 of ratings in addition to the mean and median cut score at each level for that table. In reviewing the cut score report, the panelists were asked to think about the following:

- How similar are their cut scores to the cut score of the group (i.e., is a given panelist more lenient or stringent than the other panelists)?
- If so, why is this the case?
- Do the panelists have different conceptualizations of these threshold students?

The panelists were informed that there was no intention for them to come to consensus on their cut score judgments but that they should discuss differences to get a feel for why differences existed. After round 1, the panelists were provided with an item map containing *p values*, where a *p value* is an index of student performance on each test item. The panelists were informed that this information was to help them better understand the ordering of items, and that it would not provide any specific insights about the performance of students at a given level.

After round 2, the panelists received the same feedback for each table that was provided after round 1. Next, the panelists were given the mean and median cut scores for the committee, across tables. The Pearson facilitator led the discussion with the panelists from all five tables combined. The facilitator noted the differences and similarities across tables but reminded the panelists that consensus was not required.

Finally, the panelists were provided a graphic display of the impact of using the median cut score for all students. The impact data graphic representation provided the panelists with information on what percentages of students are at each performance level for the populations of interest (all students, African American/Caucasian, and female/male). The panelists were given time to discuss, within the big group, the appropriateness of the committee level cut scores given the proportion of students in each level.

After round 3, the panelists were shown the cut scores they were recommending on the basis of this final round of ratings, the panelists were given the mean and median cut scores for the committee, across tables, and were provided a graphic display of the impact of using the median cut score for all students.

Results

Round 3 Cut Scores

The Reading Grade 3, Grade 4, and Grade 5 ordered item books contained 53, 53, and 52 ordered items, respectively. The Math Grade 3, Grade 4, and Grade 5 ordered item books contained 62, 61, and 64 ordered items, respectively. Table 4 summarizes the cut scores after the round 3 final rating for these tests. These are the committees' recommendations based on item location in the ordered item book. The scale score cuts associated with these recommendations and the percentages of students in the Advanced and Proficient performance levels based on these cuts are presented in Table 5. Please note that separate committees made recommendations for each of these tests. Mean, median, minimum, and maximum ratings by round are presented in Appendix J. Graphs presenting individual ratings across the three rounds by performance level are

presented for Reading Grade 3 in Appendix K, Reading Grade 4 in Appendix L, Reading Grade 5 in Appendix M, Math Grade 3 in Appendix N, Math Grade 4 in Appendix O, and Math Grade 5 in Appendix P.

Table 4. OIB Cut scores after round 3 by subject and grade

| Subject | Grade | Score | Proficient | Advanced |
|---------|-------|--------|------------|----------|
| Reading | 3 | Mean | 24.87 | 45.09 |
| | | Median | 24.00 | 45.00 |
| | 4 | Mean | 16.91 | 39.36 |
| | | Median | 18.00 | 42.00 |
| | 5 | Mean | 18.35 | 40.09 |
| | | Median | 18.00 | 41.00 |
| Math | 3 | Mean | 20.17 | 44.30 |
| | | Median | 19.00 | 44.00 |
| | 4 | Mean | 18.86 | 52.68 |
| | | Median | 17.00 | 53.00 |
| | 5 | Mean | 18.52 | 48.76 |
| | | Median | 18.00 | 49.00 |

Table 5. Scale score cut scores after round 3 with associated impact by subject

| Subject | Grade | Proficient SS Cut | Percentage Proficient* | Advanced SS Cut | Percentage Advanced |
|---------|-------|----------------------|---------------------------|--------------------|------------------------|
| Reading | 3 | 55 | 20.4 | 65 | 13.3 |
| | 4 | 54 | 25.9 | 66 | 12.4 |
| | 5 | 53 | 35.7 | 69 | 8.4 |
| Math | 3 | 55 | 22.5 | 67 | 13.4 |
| | 4 | 54 | 28.5 | 68 | 9.9 |
| | 5 | 58 | 21.5 | 71 | 8.2 |

*The percentage indicates students who were Proficient but not Advanced.

Figure 1 shows the percentage of students in each performance level, using the cut scores after the round 3 final rating for Reading Grade 3, Grade 4, and Grade 5.

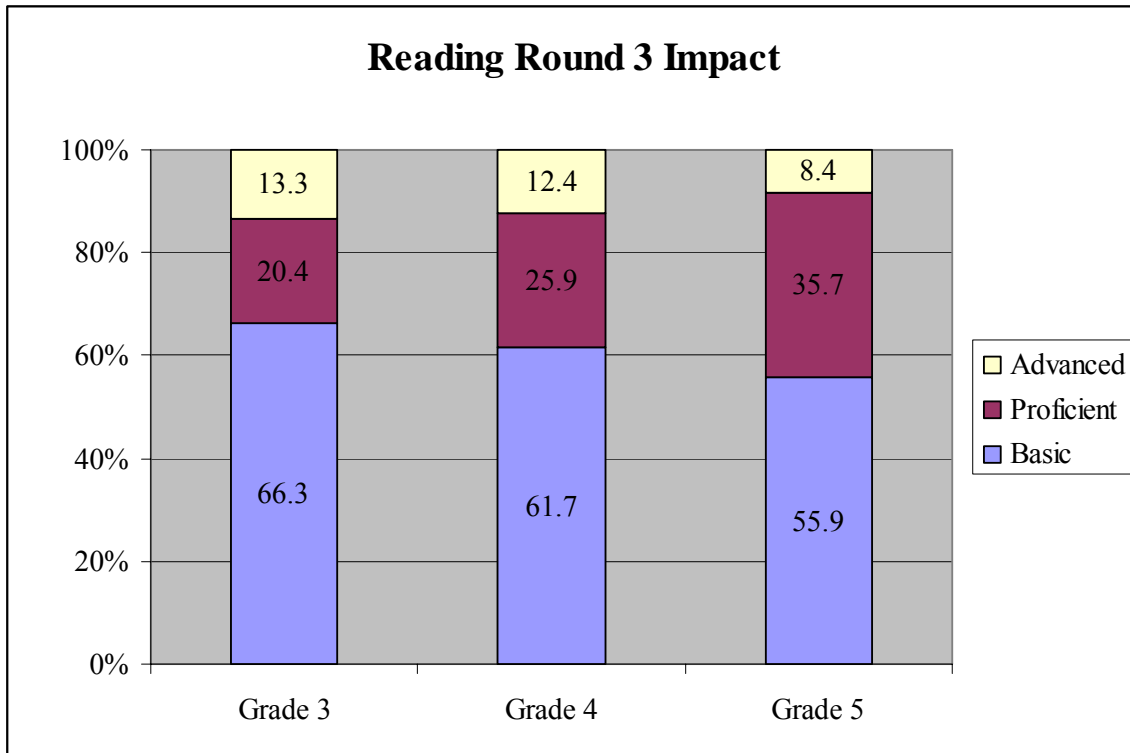


Figure 1. The percentages of students in each performance level, using the final cut scores for Reading by grade.

Figure 2 shows the percentage of students in each performance level, using the cut scores after the round 3 final rating for Math Grade 3, Grade 4, and Grade 5.

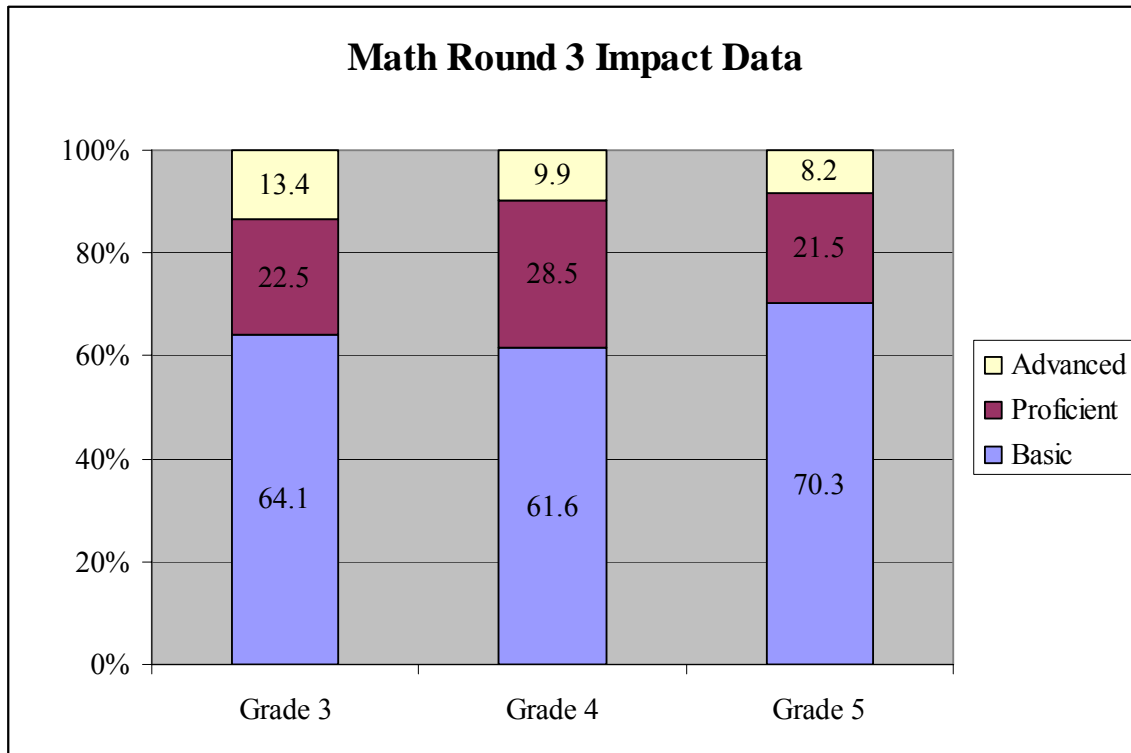


Figure 2. The percentage of students in each performance level, using the final cut scores for Math by grade.

FINAL REPORT

This document provides a detailed description of the standard-setting procedures used with the Maryland Mod-MSA Mathematics and Reading tests. The main purpose of the standard-setting meetings was to obtain cut score recommendations for each grade within the two content areas for each of the three performance levels: Basic, Proficient, and Advanced.

Committees of Maryland educators were convened May 10 through May 13, 2010, in Towson, Maryland, to set standards for the Modified Maryland School Assessment (Mod-MSA) tests for Math and Reading, grades 3 through 5 (see Appendix A for agenda). A total of 134 educators participated for two days per subject to recommend cut scores for these tests. The item mapping procedure was applied to set the recommended standards.

A total of six vendor staff members were involved in conducting the standard setting activity. For each standard setting meeting, a facilitator from Pearson provided training in the implementation of the standard setting procedure and the interpretation and use of feedback data. The Pearson facilitators were: Dr. Daniel Murphy, Dr. Stephen Murphy, and Dr. Kimberly O'Malley. In addition, one staff member from Pearson served the role of a data analyst, supporting the facilitator by taking notes, collecting judge's ratings and performing all analyses required to generate feedback reports. The Pearson data analyst was Morgen Hickey. Two additional Pearson staff members, Scott Hanlin and Andrea Tompkins, were present to oversee the standard setting meeting, coordinate meals, assist the psychometricians, and accommodate any unforeseen requests.

Panelists

The panelists met in three committees: a committee representing Grade 3, a committee representing Grade 4, and a committee representing Grade 5. The number of panelists on each committee is shown in Table 1.

Table 1. The number of panelists on each committee

| Subject | Grade 3 | Grade 4 | Grade 5 |
|---------|---------|---------|---------|
| Reading | 23 | 22 | 23 |
| Math | 23 | 22 | 21 |

All panelists provided voluntary demographic information, using the form shown in Appendix B. A summary of panelist gender and ethnicity information is provided in Table 2.

Table 2. A summary of experience, gender, and ethnicity data for the committees

| Subject | Grade | Years Experience (Average) | Gender | | Ethnicity | | | |
|---------|-------|----------------------------|--------|--------|-----------|------------------|-------|---------|
| | | | Male | Female | Caucasian | African American | Other | Missing |
| Reading | 3 | 16.35 | 1 | 22 | 19 | 3 | 0 | 1 |
| | 4 | 17.32 | 2 | 20 | 18 | 4 | 0 | 0 |
| | 5 | 18.87 | 2 | 21 | 16 | 6 | 1 | 0 |
| Math | 3 | 14.37 | 1 | 22 | 19 | 2 | 1 | 1 |
| | 4 | 12.48 | 1 | 21 | 15 | 5 | 1 | 1 |
| | 5 | 14.90 | 2 | 19 | 15 | 5 | 1 | 0 |

Table 3 provides a summary of panelists’ responses to the question, “Compared to other school districts in Maryland, how would you describe the size of your district?”

Table 3. Summary of panelists’ responses to district size.

| District Size | Reading | | | Math | | |
|---------------|---------|---------|---------|---------|---------|---------|
| | Grade 3 | Grade 4 | Grade 5 | Grade 3 | Grade 4 | Grade 5 |
| Large | 11 | 10 | 9 | 9 | 6 | 10 |
| Medium | 8 | 7 | 9 | 9 | 10 | 8 |
| Small | 4 | 5 | 5 | 5 | 6 | 3 |

Table 4 provides a summary of panelists’ responses to the question, “Compared to other school districts in Maryland, how would you describe the location of your district?”

Table 4. Summary of panelists’ responses to district location.

| District Location | Reading | | | Math | | |
|-------------------|---------|---------|---------|---------|---------|---------|
| | Grade 3 | Grade 4 | Grade 5 | Grade 3 | Grade 4 | Grade 5 |
| Rural | 7 | 6 | 9 | 7 | 8 | 4 |
| Suburban | 10 | 8 | 9 | 12 | 10 | 9 |
| Urban | 3 | 5 | 5 | 4 | 3 | 7 |
| Multiple Response | 2 | 3 | | | 1 | |

Table 5 provides a summary of panelists’ responses to the question, “Compared to other school districts in Maryland, how would you describe the geographic location of your district?”

Table 5. Summary of panelists’ responses to district geographic location.

| Geographic Location | Reading | | | Math | | |
|---------------------|---------|---------|---------|---------|---------|---------|
| | Grade 3 | Grade 4 | Grade 5 | Grade 3 | Grade 4 | Grade 5 |
| Central | 10 | 8 | 10 | 7 | 5 | 8 |
| East | 5 | 4 | 2 | 3 | 6 | 2 |
| North | 2 | 2 | 1 | 3 | 1 | 2 |
| South | 3 | 3 | 4 | 5 | 8 | 6 |
| West | 2 | 3 | 5 | | 2 | 2 |
| Multiple Response | 1 | 1 | 1 | 5 | | 1 |

Method and Procedure

The standard-setting conference began on Monday, May 10. The Reading committees met first (on May 10 and 11), followed by the Math committees. The Reading and the Math committees followed identical agendas and processes. For simplicity the process is presented only once in this document.

The morning of Monday, May 10, was devoted to introductions of the staff, to a description of standard setting, and to a description of the Mod-MSA tests and student population. For this stage of the conference, all panelists met together in one large room. The agendas for the standard setting are shown in Appendix A. All committees within a subject followed the same agenda.

Following the midmorning break, the committee members broke into their grade specific groups. The three committees (Grade 3, Grade 4, and Grade 5) met separately in individual conference rooms. The committees spent the remainder of the morning working individually to familiarize themselves with the Mod-MSA test items for their grade by completing the items in their ordered item booklet (OIB). OIBs were constructed for the three grades using items from the spring 2010 test administration. These booklets were created by augmenting items from the scored form (45 items for Reading and 51 items for Math) with unscored items with acceptable item statistics in order to provide the most complete coverage possible of the scale score range while maintaining content representation. The scale score associated with a response probability of 0.67 was calculated for each item in the OIB based on spring 2010 data. Items were ordered based on these scale scores and sorted from least to most difficult.

Each ordered item book was accompanied by an item map. The item maps for Reading Grade 3, Grade 4, and Grade 5 are shown in Appendices C, D and E, respectively, Math grades 3 through 5 can be found in Appendices F, G, and H, respectively. Each item map contains eight pieces of information:

1. Page number

2. A unique item identifier
3. Item position on the administration form
4. Reporting strand
5. Content category or standard
6. Correct option
7. Location (scale score)
8. *p value*¹

Before and after lunch, the panelists reviewed the Mod-MSA performance level descriptors (PLDs) and created behavioral anchors to clearly and concretely describe “threshold” or minimally qualified students at the Proficient and Advanced performance levels. Throughout this process the panelists were led through table-level and committee-level discussions by a Pearson facilitator. This process required the afternoon of Monday, May 10. The result from creating performance level descriptors was a set of descriptors for threshold students at the Proficient and Advanced levels.

After this process of PLD review, the panelists received additional training in the item mapping process. This training was provided by a Pearson psychometrician within each committee. Following the training, each committee practiced the item mapping process as a group, using a practice OIB constructed from unused Mod-MSA items. This allowed the panelists to gain familiarity with the method and ask questions before beginning the process. For Grade 4, Math and Reading training did not include application to the practice ordered item booklet. Instead, the focus was on the process steps. In the item mapping procedure, the panelists are asked to identify the item in an OIB that is the last item that a threshold student at a given level would be able to correctly answer. The panelists were instructed to identify the last item in an ordered item book that a threshold student at a given level would have a response probability of at least 0.67 of answering correctly (Huynh, 2006).

After this training, all three committees began the standard-setting process late Monday afternoon. The standard-setting process consisted of three rounds of judgments. During each round, panelists were asked to assign cut scores for each performance level. The panelists reviewed the items and placed bookmarks in the item book where they believed the cut scores should be. This was determined as the point at which *threshold* students of that proficiency level have a probability of at least 0.67 of responding correctly to that item and the items before it, and less than that probability of responding correctly to items following it.

“Threshold” examinees are students with the minimum level of proficiency needed to make it into a particular proficiency level. It is this hypothetical population of students that panelists must reference when making judgments about items. Therefore, it is extremely important that each judge have an understanding of what defines this group. was no easy task. The behavioral anchors generated earlier were used to define the knowledge and skills that characterize a typical “threshold” student in each level and provide a frame of reference for conceptualizing this population.

¹ The P value information was shared during the second round of item mapping.

To evaluate whether the training activities successfully helped panelists understand the task, a readiness survey was completed by each panelist prior to each round of judgments (Appendix I). The readiness survey asked panelists to report if they understood the task Pearson facilitators asked of them as well as any feedback data provided. Results of the readiness survey indicated if panelists unanimously understood their tasks for the rounds, were ready to begin the rounds, and understood the data presented. Table leaders were instructed to check the panelists' answers. If any panelist appeared to have questions about the next task, the table leader was instructed to answer the questions. If additional assistance was needed, the table leader alerted the facilitator to address the remaining questions.

In round one, panelists were divided into small groups. The panelists then worked independently to place the bookmarks.

In round two, still in small groups, panelists compared bookmarks and discussed the differences between them. Panelists were encouraged to describe the reasons they set bookmarks where they did. The discussion addressed all items in the range between the highest and lowest bookmark for a proficiency level. Once the discussion was over, the panelists independently reconsider their bookmark locations.

Following round two, still in small groups, panelists again compared bookmarks and discussed the differences between them. Next, panelists reconvened as a large group where cut score differences across small groups were discussed. A panelist from each small group presented the conclusions of their group.

In a final, third round, panelists independently made final bookmark placements. Panelists were then briefed on the results of their Round 3 ratings.

The cut score at each performance level was determined by computing the median page number recommended across panelists at a given grade level and identifying the scale score associated with this page in the OIB. This represents the minimum scale score that an examinee must attain to be classified at the particular level. Computed cuts could fall between page numbers. In the final report, all median page numbers were rounded to the next higher point if the decimal value is larger than 4 (e.g., 15.5 would become 16) prior to identifying the scale score for the recommended cut.

After the Round 3 rating sheets were collected, Pearson staff members analyzed data and produced the final cut score recommendations. The panelists reconvened and were presented the final cut score recommendations. The panelists were then asked to complete a short questionnaire, evaluating the standard-setting process. The questionnaire asked about panelists' level of comfort with the standard-setting procedure, their understanding of the performance levels and their satisfaction with final cut scores. More information about this is provided in the Evaluation section of this report.

Panelists were provided with feedback between each round. The feedback was intended to inform the panelist's decisions, but not to dictate their ratings. Following Round 1, panelists met in small groups of 5 to 7 panelists. They were provided the cut scores for each panelist based on the Round 1 ratings in addition to the mean and median cut score at each level for that table. In reviewing the cut score report panelists were asked to think about the following:

- How similar are their cut scores are to that of the group (i.e., is a given panelist more lenient or stringent than the other panelists)?
- If so, why is this the case?
- Do panelists have different conceptualization of these threshold students?

Panelists were informed that there was no intention for them to come to consensus on their cut score judgments, but they should discuss differences to get a feel for why differences exist. Following Round 1 panelists were also provided with an item map containing P values, an index of student performance on each test item. Panelists were given this information to help them better understand the ordering of items, but were cautioned that it would not provide any specific insights about the performance of students at a given level.

Following Round 2, panelists received the same table level feedback that was provided following Round 1. Next, panelists were given the mean and median cut scores for the committee (across tables). The Pearson facilitator lead the discussion with all five tables combined. The facilitator noted the differences and similarities across tables but reminded the panelists that consensus was not required.

Panelists were then shown a graphical display of the impact of using the round 2 median cut score. The impact data provided information on what percentage of students fall into each performance level for all students and for sub-populations of interest (African-American/white, female/male). Panelists were given time to discuss, within the big group, the appropriateness of the committee level cut scores given the proportion of students in each level.

Following Round 3, panelists were shown the cut scores they were recommending based on this round of ratings, given the mean and median cut scores for the committee (across tables), and provided a graphical display of the impact of using the median cut score for all students.

Results

Round 3 Cut Scores

The Reading Grade 3, Grade 4, and Grade 5 ordered item books contained 53, 53, and 52 ordered items, respectively. The Math Grade 3, Grade 4, and Grade 5 ordered item books contained 62, 61, and 64 ordered items, respectively. Table 6 summarizes the cut scores after the Round 3 final ratings. These are the recommendations from the committees based on item location in the ordered item book. The scale score cuts associated with these recommendations and the percentage of students in the advanced and proficient performance levels based upon these cuts are presented in Table 7. Please note that separate committees made recommendations for each of these tests. Mean, median, minimum, and maximum ratings by round are presented in Appendix J. Graphs presenting individual ratings across the three rounds by performance level are presented for Reading Grade 3 in Appendix K, Reading Grade 4 in Appendix L, Reading Grade 5 in Appendix M, Math Grade 3 in Appendix N, Math Grade 4 in Appendix O, and Math Grade 5 in Appendix P.

Table 6. OIB Cut scores after Round 3 by subject and grade.

| Subject | Grade | Score | Proficient | Advanced |
|----------------|--------------|--------------|-------------------|-----------------|
| Reading | 3 | Mean | 24.87 | 45.09 |
| | | Median | 24.00 | 45.00 |
| | 4 | Mean | 16.91 | 39.36 |
| | | Median | 18.00 | 42.00 |
| | 5 | Mean | 18.35 | 40.09 |
| | | Median | 18.00 | 41.00 |
| Math | 3 | Mean | 20.17 | 44.30 |
| | | Median | 19.00 | 44.00 |
| | 4 | Mean | 18.86 | 52.68 |
| | | Median | 17.00 | 53.00 |
| | 5 | Mean | 18.52 | 48.76 |
| | | Median | 18.00 | 49.00 |

Table 7. Scale score cut scores after the Round 3 with associated impact by subject.

| Subject | Grade | Proficient SS Cut | Percentage Proficient* | Advanced SS Cut | Percentage Advanced |
|----------------|--------------|------------------------------|-----------------------------------|----------------------------|--------------------------------|
| Reading | 3 | 55 | 20.4 | 65 | 13.3 |
| | 4 | 54 | 25.9 | 66 | 12.4 |
| | 5 | 53 | 35.7 | 69 | 8.4 |
| Math | 3 | 55 | 22.5 | 67 | 13.4 |
| | 4 | 54 | 28.5 | 68 | 9.9 |
| | 5 | 58 | 21.5 | 71 | 8.2 |

*The percentage indicates students who were Proficient but not Advanced.

Figure 1 shows the percentage of students in each performance level, using the cut scores after the round 3 final rating for Reading Grade 3, Grade 4, and Grade 5.

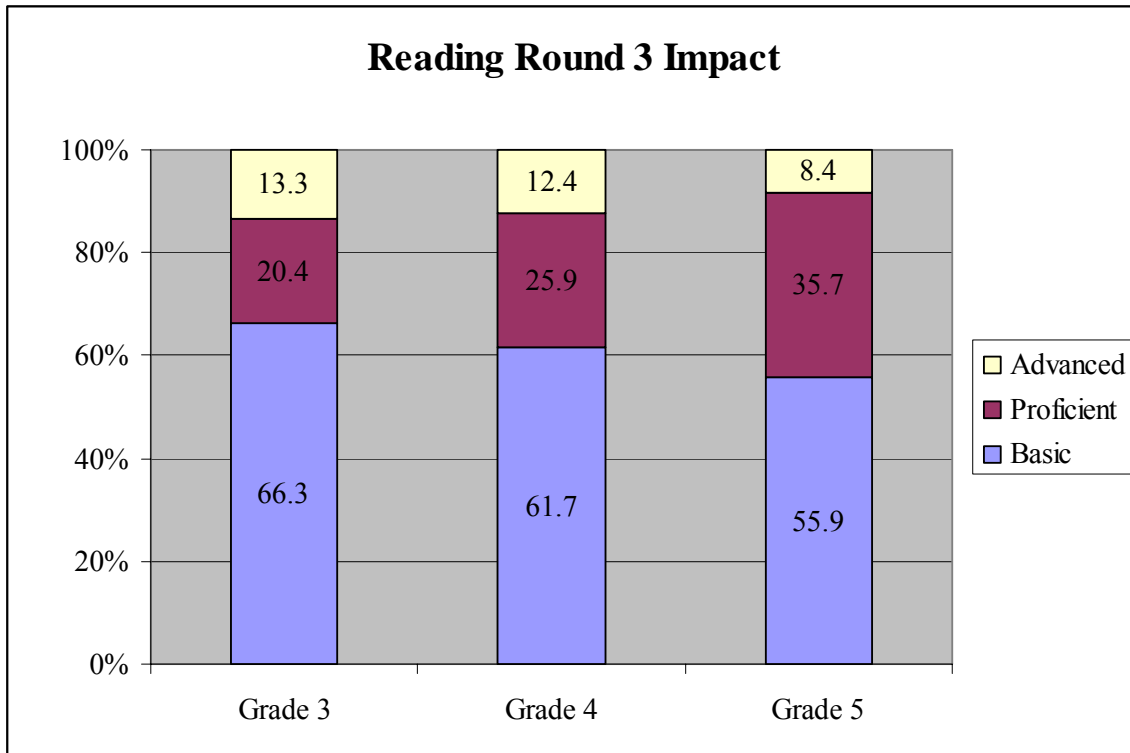


Figure 1. The percentages of students in each performance level, using the final cut scores for Reading by grade.

Figure 2 shows the percentage of students in each performance level, using the cut scores after the round 3 final rating for Math Grade 3, Grade 4, and Grade 5.

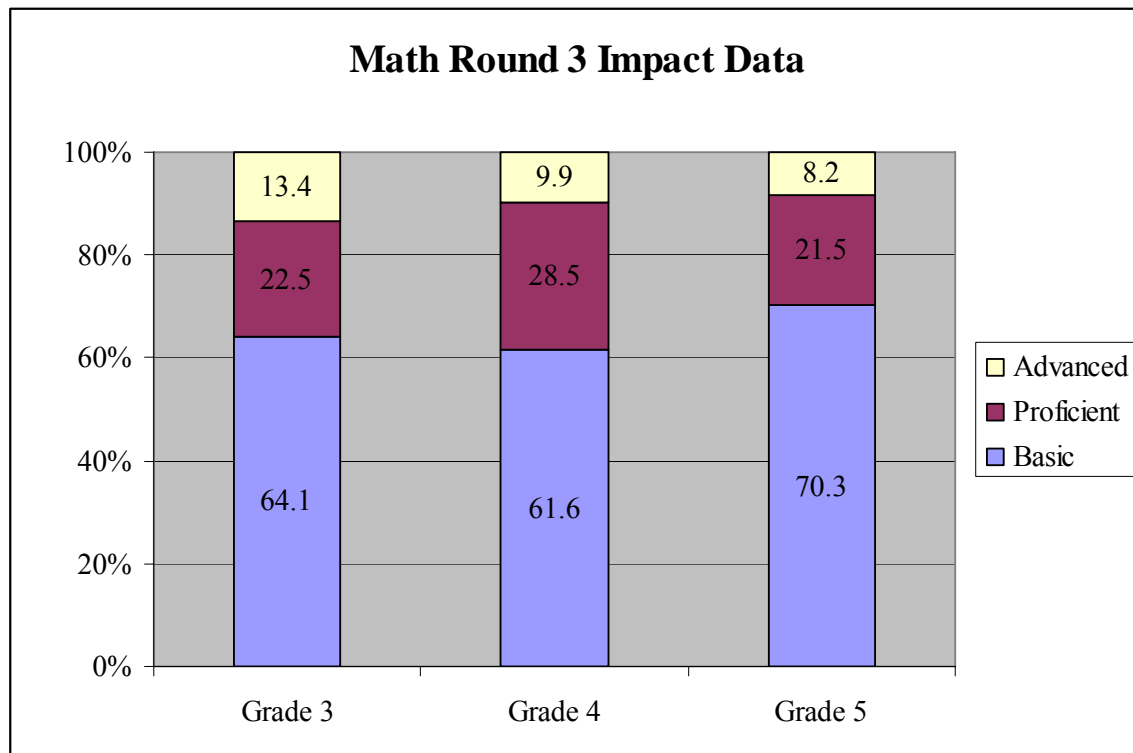


Figure 2. The percentage of students in each performance level, using the final cut scores for Math by grade.

Panelist Variability

In order to describe the variability in panelists’ judgments, a Generalizability Theory (G-Theory) study was performed. This information could be used to determine how similar the cut scores might be if a different set of panelists or different composition of small groups were used to set cut scores. For this investigation, the sources of variability of interest were panelists, small groups, and rounds. For each cut score, the variance associated with each of these sources was estimated using the maximum likelihood SAS VARCOMP procedure. For this study, the number of rounds was treated as a fixed factor (3 rounds in total, a typical practice in standard setting meetings), meaning that if the standard setting meeting was held again, the same number of rounds would be used. In addition, because judges discussed all activities in small groups, their judgments were considered dependent on group membership. Therefore, judges were considered “nested” within tables. Variances components for tables (σ^2_{Tables}) and judges within tables ($\sigma^2_{Judges:Tables}$) were computed. Computation of the standard errors was made using the following formula (Lee & Lewis, 2008):

$$SE_{cut} = \sqrt{\frac{\sigma_{Tables}^2}{N_{Tables}} + \frac{\sigma_{Judge:Table}^2}{N_{Judges} \bullet N_{Tables}} + \frac{\sigma_{Error}^2}{3N_{Tables} \bullet N_{Judges}}}$$

Because round was treated as a fixed facet, its variance component was not included in the error term. σ_{error}^2 was a confounding term and included the variance from the interaction between tables and judges within tables as well as variances unexplained by the defined facets. The sample size in the equation referred to the sample size likely to occur in the Decision Study (D study).

Without loss of generality, the sample sizes for the D study were assumed the same as the sample size in the G study. Standard errors were computed for each of the two recommended cut scores associated with each Mod-MSA test. For the purposes of this analysis the recommended cut scores were the scale scores associated with the pages bookmarked during standard setting. Different patterns of variance component estimates and hence standard errors for cut scores were anticipated for different cut scores (Lee & Lewis, 2008).

The conditional standard error of measurement (CSEM) for each recommended scale score cut for each Mod-MSA test was calculated using the following formula:

$$CSEM = \frac{1}{\sqrt{I(SS)}}$$

In this formula $I(SS)$ is the amount of psychometric information at a given scale score point; in this case this was the amount of information at each of the two recommended scale score cuts.

The standard error of the cut score (SE_{cut}) and conditional standard error of measurement (CSEM) were used to compute a composite standard error ($SEM_{combined}$) calculated using the following formula:

$$SEM_{combined} = \sqrt{(SE_{cut})^2 + (CSEM)^2}$$

These different standard error indices are presented for each test by grade and committee in Table 8.

Table 8. Standard Error Indices by Test, Grade and Committee.

| Committee | Grade | Cut | SE_{cut} | $CSEM$ | $SEM_{combined}$ |
|-----------|-------|------------|------------|--------|------------------|
| Reading | 3 | Proficient | 0.46 | 4.00 | 4.03 |
| | | Advanced | 1.26 | 5.00 | 5.16 |
| | 4 | Proficient | 0.93 | 5.00 | 5.09 |
| | | Advanced | 1.67 | 5.00 | 5.27 |
| | 5 | Proficient | 0.97 | 5.00 | 5.09 |
| | | Advanced | 1.74 | 6.00 | 6.25 |
| Math | 3 | Proficient | 0.99 | 5.00 | 5.10 |
| | | Advanced | 0.81 | 5.00 | 5.06 |
| | 4 | Proficient | 1.11 | 4.00 | 4.19 |
| | | Advanced | 0.97 | 5.00 | 5.09 |
| | 5 | Proficient | 0.96 | 5.00 | 5.09 |
| | | Advanced | 1.09 | 6.00 | 6.10 |

Each of these indices was applied to the panel recommended cut scores to produce 1, 2, and 3 standard error bands around the cut score. These results are reported in Appendix Q for Reading Grade 3, Appendix R for Reading Grade 4, Appendix S for Reading Grade 5, Appendix T for Math Grade 3, Appendix U for Math Grade 4, and Appendix V for Math Grade 5.

Evaluations

Exit surveys were administered following the completion of standard setting for each committee. An exit survey was completed by each panelist. For the Reading Grades 3, 4, and 5 and the Math Grades 3, 4 and 5 committees, these questions and the results are shown in Tables 9, 10, 11, 12, 13, and 14 respectively. Responses to each question were on a five-point scale (1 = Totally Disagree, 5 = Totally Agree).

Table 9. The questionnaire results for the Reading Grade 3 standard setting committee

| Question | Mean | Median | Min | Max |
|--|------|--------|-----|-----|
| The method for setting standards, item mapping, was conceptually clear. | 4.55 | 5.00 | 2 | 5 |
| I had a good understanding of what the test was intended to measure. | 4.61 | 5.00 | 3 | 5 |
| I could clearly distinguish between student performance levels. | 4.00 | 4.00 | 3 | 5 |
| After the <u>first</u> round of ratings, I felt comfortable with the standard setting procedure. | 4.00 | 4.00 | 2 | 5 |
| I found the feedback on item difficulty useful in setting standards. | 4.39 | 4.00 | 3 | 5 |
| I found the feedback on the ratings of judges compared to other judges useful in setting standards. | 4.43 | 5.00 | 3 | 5 |
| I found the feedback on the percent of the students tested that would be classified at each performance level useful in setting standards. | 4.30 | 4.00 | 3 | 5 |
| I feel confident that the final cut score recommendations reflect the performance levels associated with the Mod-MSA Grade 3 Reading Test. | 4.27 | 4.00 | 2 | 5 |

Table 10. The questionnaire results for the Reading Grade 4 standard setting committee

| Question | Mean | Median | Min | Max |
|--|------|--------|-----|-----|
| The method for setting standards, item mapping, was conceptually clear. | 4.55 | 5.00 | 3 | 5 |
| I had a good understanding of what the test was intended to measure. | 4.59 | 5.00 | 3 | 5 |
| I could clearly distinguish between student performance levels. | 4.05 | 4.00 | 3 | 5 |
| After the <u>first</u> round of ratings, I felt comfortable with the standard setting procedure. | 4.27 | 4.00 | 3 | 5 |
| I found the feedback on item difficulty useful in setting standards. | 4.41 | 4.50 | 3 | 5 |
| I found the feedback on the ratings of judges compared to other judges useful in setting standards. | 4.68 | 5.00 | 3 | 5 |
| I found the feedback on the percent of the students tested that would be classified at each performance level useful in setting standards. | 4.36 | 5.00 | 3 | 5 |
| I feel confident that the final cut score recommendations reflect the performance levels associated with the Mod-MSA Reading Grade 4 Test. | 4.23 | 4.00 | 4 | 5 |

Table 11. The questionnaire results for the Reading Grade 5 standard setting committee

| Question | Mean | Median | Min | Max |
|--|------|--------|-----|-----|
| The method for setting standards, item mapping, was conceptually clear. | 4.50 | 5.00 | 2 | 5 |
| I had a good understanding of what the test was intended to measure. | 4.82 | 5.00 | 4 | 5 |
| I could clearly distinguish between student performance levels. | 4.14 | 4.00 | 3 | 5 |
| After the <u>first</u> round of ratings, I felt comfortable with the standard setting procedure. | 3.73 | 4.00 | 2 | 5 |
| I found the feedback on item difficulty useful in setting standards. | 4.64 | 5.00 | 3 | 5 |
| I found the feedback on the ratings of judges compared to other judges useful in setting standards. | 4.77 | 5.00 | 3 | 5 |
| I found the feedback on the percent of the students tested that would be classified at each performance level useful in setting standards. | 4.41 | 4.00 | 4 | 5 |
| I feel confident that the final cut score recommendations reflect the performance levels associated with the Mod-MSA Reading Grade 5 Test. | 4.64 | 5.00 | 4 | 5 |

Table 12. The questionnaire results for the Math Grade 3 standard setting committee

| Question | Mean | Median | Min | Max |
|--|------|--------|-----|-----|
| The method for setting standards, item mapping, was conceptually clear. | 4.61 | 5.00 | 1 | 5 |
| I had a good understanding of what the test was intended to measure. | 4.73 | 5.00 | 2 | 5 |
| I could clearly distinguish between student performance levels. | 4.43 | 5.00 | 2 | 5 |
| After the <u>first</u> round of ratings, I felt comfortable with the standard setting procedure. | 4.30 | 5.00 | 1 | 5 |
| I found the feedback on item difficulty useful in setting standards. | 4.48 | 5.00 | 1 | 5 |
| I found the feedback on the ratings of judges compared to other judges useful in setting standards. | 4.57 | 5.00 | 1 | 5 |
| I found the feedback on the percent of the students tested that would be classified at each performance level useful in setting standards. | 4.55 | 5.00 | 2 | 5 |
| I feel confident that the final cut score recommendations reflect the performance levels associated with the Mod-MSA Math Grade 3 Test. | 4.50 | 5.00 | 1 | 5 |

Table 13. The questionnaire results for the Math Grade 4 standard setting committee

| Question | Mean | Median | Min | Max |
|--|------|--------|-----|-----|
| The method for setting standards, item mapping, was conceptually clear. | 4.86 | 5.00 | 4 | 5 |
| I had a good understanding of what the test was intended to measure. | 4.91 | 5.00 | 4 | 5 |
| I could clearly distinguish between student performance levels. | 4.18 | 4.00 | 3 | 5 |
| After the <u>first</u> round of ratings, I felt comfortable with the standard setting procedure. | 4.32 | 4.50 | 3 | 5 |
| I found the feedback on item difficulty useful in setting standards. | 4.52 | 5.00 | 4 | 5 |
| I found the feedback on the ratings of judges compared to other judges useful in setting standards. | 4.73 | 5.00 | 4 | 5 |
| I found the feedback on the percent of the students tested that would be classified at each performance level useful in setting standards. | 4.45 | 5.00 | 1 | 5 |
| I feel confident that the final cut score recommendations reflect the performance levels associated with the Mod-MSA Math Grade 4 Test. | 4.64 | 5.00 | 4 | 5 |

Table 14. The questionnaire results for the Math Grade 5 standard setting committee

| Question | Mean | Median | Min | Max |
|--|------|--------|-----|-----|
| The method for setting standards, item mapping, was conceptually clear. | 4.33 | 4.00 | 2 | 5 |
| I had a good understanding of what the test was intended to measure. | 4.57 | 5.00 | 4 | 5 |
| I could clearly distinguish between student performance levels. | 4.29 | 4.00 | 3 | 5 |
| After the <u>first</u> round of ratings, I felt comfortable with the standard setting procedure. | 4.14 | 4.00 | 2 | 5 |
| I found the feedback on item difficulty useful in setting standards. | 4.33 | 4.00 | 3 | 5 |
| I found the feedback on the ratings of judges compared to other judges useful in setting standards. | 4.76 | 5.00 | 4 | 5 |
| I found the feedback on the percent of the students tested that would be classified at each performance level useful in setting standards. | 4.29 | 4.00 | 3 | 5 |
| I feel confident that the final cut score recommendations reflect the performance levels associated with the Mod-MSA Math Grade 5 Test. | 4.52 | 5.00 | 3 | 5 |

References

- Huynh, H. (2006). A clarification on the response probability criterion RP67 for standard settings based on bookmark and item mapping. *Educational Measurement: Issues and Practice*, 25, 19–20.
- Lee, G, & Lewis, D. (2008). A generalizability theory approach to standard error estimates for Bookmark standard settings. *Educational and Psychological Measurement*, 68, 603–620.

Appendix A
Agendas for the Mod-MSA Standard Setting Meetings

Modified Maryland School Assessment – Reading
Standard Setting Agenda

DAY 1 – May 10, 2010

| | | |
|---|-------------|-------------|
| Registration | 8:00-8:30 | Large Group |
| Opening Remarks | 8:30-9:15 | Large Group |
| <ul style="list-style-type: none"> Welcome and Why You Are Here Introductions Review of Agenda Administrative Tasks Panelist Information | | |
| Overview of Standard Setting | 9:15-9:45 | Large Group |
| <ul style="list-style-type: none"> Purpose Item Mapping Methodology | | |
| Overview of the Mod-MSA Tests | 9:45-10:15 | Large Group |
| <ul style="list-style-type: none"> History Purposes Test Specifications | | |
| BREAK | 10:15-10:30 | |
| Complete Mod-MSA Test | 10:30-11:30 | Grade Group |
| Review Performance Level Descriptors | 11:30-12:00 | Grade Group |
| <ul style="list-style-type: none"> Create Behavioral Anchors | | |
| LUNCH | 12:00-1:00 | |
| <ul style="list-style-type: none"> Table Leader Training | | |

| | | |
|--|-----------|-------------|
| Review Performance Level Descriptors Create Behavioral Anchors | 1:00-2:00 | Grade Group |
| Overview of Standard Setting Item Mapping Ordered Item Booklet Item Map Ratings Forms | 2:00-2:30 | Grade Group |
| Practice Round | 2:30-3:00 | Grade Group |
| BREAK | 3:00-3:15 | |
| Round 1 Standard Setting Readiness Form Review Method Collect page number/item numbers | 3:15-4:15 | Grade Group |
| End of Day Activities Review Day 2 Schedule Check in materials | | |

END OF DAY 1

DAY 2 – May 11, 2010

| | | |
|---|------------|-------------|
| Breakfast | 8:00-8:30 | Large Group |
| Review schedule, answer questions | 8:30-8:45 | Grade Group |
| Round 1 Feedback Small group discussion of table agreement data | 8:45-9:15 | Grade Group |
| Round 2 Standard Setting Readiness Form | 9:15-10:15 | Grade Group |

Review Method
Collect page number/item numbers

| | | |
|--|-------------|-------------|
| BREAK | 10:15-10:45 | |
| Round 2 Feedback | 10:45-11:15 | Grade Group |
| Small group discussion of table agreement data | | |
| Large-group discussion of group agreement data | | |
| Large-group discussion of impact data | | |
| Round 3 Standard Setting | 11:15-12:00 | Grade Group |
| Readiness Form | | |
| Review Method | | |
| Collect page number/item numbers | | |
| LUNCH | 12:00-1:00 | |
| Round 3 Feedback | 1:00-1:15 | Grade Group |
| End of Day Activities | 1:15-2:00 | Grade Group |
| Complete Evaluations | | |
| Check in materials | | |
| END OF DAY 2 | | |

Modified Maryland School Assessment – Math
Standard Setting Agenda

DAY 1 – May 12, 2010

| | | |
|---|-------------|-------------|
| Registration | 8:00-8:30 | Large Group |
| Opening Remarks | 8:30-9:15 | Large Group |
| <ul style="list-style-type: none"> Welcome and Why You Are Here Introductions Review of Agenda Administrative Tasks Panelist Information | | |
| Overview of Standard Setting | 9:15-9:45 | Large Group |
| <ul style="list-style-type: none"> Purpose Item Mapping Methodology | | |
| Overview of the Mod-MSA Tests | 9:45-10:15 | Large Group |
| <ul style="list-style-type: none"> History Purposes Test Specifications | | |
| BREAK | 10:15-10:30 | |
| Complete Mod-MSA Test | 10:30-11:30 | Grade Group |
| Review Performance Level Descriptors | 11:30-12:00 | Grade Group |
| <ul style="list-style-type: none"> Create Behavioral Anchors | | |
| LUNCH | 12:00-1:00 | |
| <ul style="list-style-type: none"> Table Leader Training | | |
| Review Performance Level Descriptors | 1:00-2:00 | Grade Group |
| <ul style="list-style-type: none"> Create Behavioral Anchors | | |

| | | |
|--|-------------|-------------|
| Overview of Standard Setting | 2:00-2:30 | Grade Group |
| Item Mapping | | |
| Ordered Item Booklet | | |
| Item Map | | |
| Ratings Forms | | |
| Practice Round | 2:30-3:00 | Grade Group |
| BREAK | 3:00-3:15 | |
| Round 1 Standard Setting | 3:15-4:15 | Grade Group |
| Readiness Form | | |
| Review Method | | |
| Collect page number/item numbers | | |
| End of Day Activities | | |
| Review Day 2 Schedule | | |
| Check in materials | | |
| END OF DAY 1 | | |
| <u>DAY 2 – May 13, 2010</u> | | |
| Breakfast | 8:00-8:30 | Large Group |
| Review schedule, answer questions | 8:30-8:45 | Grade Group |
| Round 1 Feedback | 8:45-9:15 | Grade Group |
| Small group discussion of table agreement data | | |
| Round 2 Standard Setting | 9:15-10:15 | Grade Group |
| Readiness Form | | |
| Review Method | | |
| Collect page number/item numbers | | |
| BREAK | 10:15-10:45 | |

| | | |
|--|-------------|-------------|
| Round 2 Feedback | 10:45-11:15 | Grade Group |
| Small group discussion of table agreement data | | |
| Large-group discussion of group agreement data | | |
| Large-group discussion of impact data | | |
| Round 3 Standard Setting | 11:15-12:00 | Grade Group |
| Readiness Form | | |
| Review Method | | |
| Collect page number/item numbers | | |
| LUNCH | 12:00-1:00 | |
| Round 3 Feedback | 1:00-1:15 | Grade Group |
| End of Day Activities | 1:15-2:00 | Grade Group |
| Complete Evaluations | | |
| Check in materials | | |
| END OF DAY 2 | | |

Appendix B
Panelist Information Sheet

Mod-MSA Grade 3 Reading Standard Setting
Panelist Information Sheet

Judge ID: _____

Please provide the following demographic information that will be used to describe the general characteristics of the panelists who are recommending standards for the Mod-MSA Test.

Your Current Position:

Courses / Grades Taught / Educational Experience (e.g., teaching experience):

Gender (circle one): Male Female

Ethnicity:

Years of Educational Experience (e.g., years teaching):

Compared to other school districts in Maryland, how would you describe the size of your district (circle one)?

Large Medium Small

Compared to other school districts in Maryland, how would you describe the location of your district (circle one)?

Urban Suburban Rural

Compared to other school districts in Maryland, how would you describe the geographic location of your district (circle one)?

North South East West Central

Appendix C

Item Map for the Reading Grade 3 Ordered Item Book

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 1 | 100000101529 | 49 | 209 | 3A3c | 2 | 36 | 0.83 |
| 2 | 100000213633 | 3 | 208 | 1D3a | 4 | 39 | 0.8 |
| 3 | 100000101905 | 42 | 208 | 1E4b | 3 | 43 | 0.74 |
| 4 | 100000346450 | 32 | 212 | 2A4c | 3 | 43 | 0.74 |
| 5 | 100000213631 | 1 | 208 | 1D3a | 3 | 44 | 0.73 |
| 6 | 100000260365 | 68 | 209 | 3A7b | 3 | 44 | 0.73 |
| 7 | 100000101908 | 45 | 209 | 3A8b | 2 | 46 | 0.71 |
| 8 | 100000101911 | 48 | 209 | 3A6a | 2 | 46 | 0.7 |
| 9 | 100000101533 | 55 | 209 | 3A7b | 3 | 47 | 0.69 |
| 10 | 100000101969 | 14 | 208 | 1E4c | 3 | 47 | 0.69 |
| 11 | 100000260368 | 64 | 209 | 3A6a | 2 | 48 | 0.67 |
| 12 | 100000101530 | 50 | 209 | 3A3b | 1 | 50 | 0.65 |
| 13 | 100000300552 | 69 | 208 | 1E4c | 2 | 50 | 0.65 |
| 14 | 100000260338 | 56 | 209 | 3A3d | 2 | 50 | 0.65 |
| 15 | 100000101937 | 26 | 212 | 2A5a | 1 | 51 | 0.63 |
| 16 | 100000101514 | 8 | 208 | 1B1a | 3 | 52 | 0.62 |
| 17 | 100000346452 | 28 | 208 | 1E4c | 3 | 53 | 0.6 |
| 18 | 100000101527 | 53 | 208 | 1E4c | 2 | 53 | 0.6 |
| 19 | 100000260460 | 36 | 212 | 2A4g | 3 | 54 | 0.59 |
| 20 | 100000101932 | 21 | 208 | 1E4d | 1 | 54 | 0.59 |
| 21 | 100000260465 | 41 | 208 | 1E4c | 1 | 54 | 0.58 |
| 22 | 100000101909 | 46 | 209 | 3A7b | 1 | 54 | 0.58 |
| 23 | 100000360183 | 9 | 208 | 1B1a | 1 | 55 | 0.58 |
| 24 | 100000260339 | 61 | 209 | 3A7c | 1 | 55 | 0.57 |
| 25 | 100000260461 | 37 | 212 | 2A4b | 2 | 55 | 0.56 |
| 26 | 100000101518 | 12 | 208 | 1D3b | 3 | 56 | 0.56 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 27 | 100000101513 | 7 | 208 | 1B1a | 2 | 56 | 0.56 |
| 28 | 100000101528 | 54 | 208 | 1E4c | 1 | 58 | 0.53 |
| 29 | 100000101936 | 25 | 212 | 2A4a | 3 | 58 | 0.52 |
| 30 | 100000101934 | 22 | 212 | 2A4a | 3 | 58 | 0.52 |
| 31 | 100000260457 | 39 | 212 | 2A3a | 3 | 58 | 0.51 |
| 32 | 100000260371 | 65 | 209 | 3A2b | 3 | 59 | 0.51 |
| 33 | 100000260342 | 57 | 209 | 3A3e | 3 | 59 | 0.51 |
| 34 | 100000101970 | 15 | 208 | 1E4c | 1 | 59 | 0.5 |
| 35 | 100000346448 | 34 | 212 | 2A2b | 2 | 60 | 0.49 |
| 36 | 100000101907 | 44 | 209 | 3A3d | 1 | 60 | 0.48 |
| 37 | 100000101938 | 27 | 212 | 2A2b | 2 | 61 | 0.47 |
| 38 | 100000101532 | 52 | 209 | 3A6a | 3 | 62 | 0.46 |
| 39 | 100000346445 | 33 | 212 | 2A5a | 1 | 62 | 0.46 |
| 40 | 100000101972 | 17 | 212 | 2A4h | 3 | 62 | 0.46 |
| 41 | 100000101975 | 20 | 212 | 2A3b | 3 | 63 | 0.45 |
| 42 | 100000346444 | 30 | 212 | 2A2d | 1 | 63 | 0.44 |
| 43 | 100000101974 | 19 | 212 | 2A5a | 2 | 64 | 0.43 |
| 44 | 100000360182 | 5 | 208 | 1D3a | 2 | 64 | 0.42 |
| 45 | 100000101516 | 10 | 208 | 1D3b | 3 | 65 | 0.42 |
| 46 | 100000260458 | 35 | 212 | 2A4c | 3 | 65 | 0.42 |
| 47 | 100000300707 | 62 | 208 | 1E4a | 2 | 65 | 0.4 |
| 48 | 100000300557 | 66 | 209 | 3A3e | 1 | 66 | 0.39 |
| 49 | 100000260364 | 63 | 209 | 3A8b | 1 | 67 | 0.38 |
| 50 | 100000213634 | 4 | 208 | 1D3a | 3 | 67 | 0.38 |
| 51 | 100000101973 | 18 | 212 | 2A6e | 1 | 68 | 0.37 |
| 52 | 100000101517 | 11 | 208 | 1D3b | 2 | 71 | 0.32 |
| 53 | 100000260345 | 58 | 209 | 3A2b | 2 | 71 | 0.32 |

Appendix D

Item Map for the Reading Grade 4 Ordered Item Book

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 1 | 100000213641 | 10 | 208 | 1D3a | 1 | 40 | 0.78 |
| 2 | 100000357133 | 15 | 208 | 1E4c | 3 | 43 | 0.74 |
| 3 | 100000357109 | 25 | 212 | 2A5a | 3 | 44 | 0.73 |
| 4 | 100000360192 | 12 | 208 | 1D3a | 1 | 44 | 0.73 |
| 5 | 100000301034 | 65 | 209 | 3A3d | 3 | 47 | 0.69 |
| 6 | 100000102024 | 59 | 208 | 1E4c | 3 | 47 | 0.69 |
| 7 | 100000213637 | 6 | 208 | 1D3a | 3 | 47 | 0.69 |
| 8 | 100000213638 | 7 | 208 | 1D3a | 3 | 47 | 0.69 |
| 9 | 100000357134 | 13 | 212 | 2A4c | 1 | 49 | 0.67 |
| 10 | 100000213642 | 11 | 208 | 1D3a | 4 | 50 | 0.66 |
| 11 | 100000357104 | 21 | 208 | 1E4b | 2 | 50 | 0.65 |
| 12 | 100000260489 | 31 | 212 | 2A4i | 3 | 51 | 0.64 |
| 13 | 100000267470 | 63 | 208 | 1E4b | 1 | 51 | 0.63 |
| 14 | 100000357105 | 23 | 208 | 1E4c | 1 | 52 | 0.63 |
| 15 | 100000267472 | 68 | 209 | 3A2b | 3 | 53 | 0.61 |
| 16 | 100000357107 | 22 | 212 | 2A4e | 2 | 53 | 0.61 |
| 17 | 100000357101 | 46 | 209 | 3A4b | 1 | 54 | 0.59 |
| 18 | 100000213647 | 4 | 208 | 1D3b | 1 | 54 | 0.59 |
| 19 | 100000462157 | 47 | 209 | 3A4b | 3 | 55 | 0.58 |
| 20 | 100000102029 | 61 | 209 | 3A2b | 2 | 55 | 0.58 |
| 21 | 100000260483 | 29 | 208 | 1E4e | 2 | 56 | 0.57 |
| 22 | 100000357136 | 17 | 212 | 2A5a | 3 | 56 | 0.57 |
| 23 | 100000357137 | 18 | 212 | 2A3a | 1 | 56 | 0.56 |
| 24 | 100000269896 | 34 | 212 | 2A4c | 3 | 57 | 0.55 |
| 25 | 100000102027 | 57 | 209 | 3A3e | 2 | 58 | 0.53 |
| 26 | 100000101997 | 48 | 209 | 3A3a | 3 | 59 | 0.52 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 27 | 100000102000 | 52 | 209 | 3A3b | 2 | 59 | 0.52 |
| 28 | 100000357106 | 20 | 212 | 2A4i | 3 | 59 | 0.52 |
| 29 | 100000200070 | 54 | 208 | 1E4d | 1 | 60 | 0.51 |
| 30 | 100000267473 | 66 | 209 | 3A3c | 2 | 60 | 0.50 |
| 31 | 100000213645 | 2 | 208 | 1D3b | 1 | 61 | 0.50 |
| 32 | 100000357108 | 24 | 212 | 2A4d | 1 | 61 | 0.49 |
| 33 | 100000102001 | 53 | 209 | 3A7b | 1 | 61 | 0.49 |
| 34 | 100000102023 | 58 | 208 | 1E4b | 2 | 62 | 0.47 |
| 35 | 100000213646 | 3 | 208 | 1D3b | 3 | 63 | 0.47 |
| 36 | 100000269897 | 38 | 212 | 2A6e | 3 | 63 | 0.46 |
| 37 | 100000102028 | 60 | 209 | 3A8b | 1 | 63 | 0.46 |
| 38 | 100000357132 | 14 | 208 | 1E4c | 2 | 64 | 0.45 |
| 39 | 100000357135 | 16 | 212 | 2A4g | 2 | 64 | 0.45 |
| 40 | 100000102026 | 56 | 209 | 3A6a | 3 | 65 | 0.44 |
| 41 | 100000101996 | 49 | 209 | 1E4b | 3 | 65 | 0.43 |
| 42 | 100000101999 | 51 | 209 | 3A7b | 1 | 66 | 0.42 |
| 43 | 100000269899 | 40 | 212 | 2A3a | 1 | 66 | 0.42 |
| 44 | 100000357138 | 19 | 212 | 2A2f | 2 | 67 | 0.41 |
| 45 | 100000357100 | 45 | 209 | 3A6a | 3 | 68 | 0.40 |
| 46 | 100000271197 | 35 | 208 | 1E4b | 1 | 69 | 0.38 |
| 47 | 100000213644 | 1 | 208 | 1D3b | 1 | 70 | 0.36 |
| 48 | 100000269900 | 37 | 212 | 2A4g | 1 | 72 | 0.33 |
| 49 | 100000357098 | 43 | 209 | 3A3f | 2 | 73 | 0.33 |
| 50 | 100000102025 | 55 | 209 | 3A3d | 1 | 75 | 0.30 |
| 51 | 100000260492 | 33 | 212 | 2A6e | 1 | 77 | 0.28 |
| 52 | 100000260488 | 32 | 212 | 2A4h | 1 | 78 | 0.26 |
| 53 | 100000260486 | 28 | 212 | 2A4g | 1 | 79 | 0.25 |

Appendix E
Item Map for the Reading Grade 5 Ordered Item Book

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 1 | 100000213656 | 7 | 208 | 1D3a | 1 | 40 | 0.78 |
| 2 | 100000102093 | 13 | 208 | 1E4e | 1 | 44 | 0.73 |
| 3 | 100000213655 | 6 | 208 | 1D3a | 2 | 44 | 0.73 |
| 4 | 100000213653 | 4 | 208 | 1D3a | 4 | 44 | 0.73 |
| 5 | 100000102112 | 24 | 208 | 1E4a | 3 | 45 | 0.72 |
| 6 | 100000102111 | 20 | 208 | 1E4b | 3 | 46 | 0.70 |
| 7 | 100000102050 | 43 | 209 | 3A6a | 3 | 47 | 0.70 |
| 8 | 100000213651 | 2 | 208 | 1D3a | 4 | 47 | 0.69 |
| 9 | 100000213657 | 8 | 208 | 1D3a | 3 | 47 | 0.69 |
| 10 | 100000213652 | 3 | 208 | 1D3a | 2 | 48 | 0.68 |
| 11 | 100000102067 | 57 | 208 | 1E4c | 2 | 49 | 0.67 |
| 12 | 100000213650 | 1 | 208 | 1D3a | 1 | 49 | 0.67 |
| 13 | 100000213659 | 10 | 208 | 1D3a | 1 | 50 | 0.65 |
| 14 | 100000102106 | 30 | 212 | 2A4b | 3 | 51 | 0.65 |
| 15 | 100000102052 | 45 | 209 | 3A7b | 2 | 52 | 0.63 |
| 16 | 100000360197 | 11 | 208 | 1D3a | 2 | 52 | 0.62 |
| 17 | 100000102084 | 34 | 208 | 1E4b | 3 | 52 | 0.62 |
| 18 | 100000102072 | 60 | 209 | 3A7c | 3 | 53 | 0.62 |
| 19 | 100000102047 | 46 | 208 | 1E4c | 2 | 53 | 0.61 |
| 20 | 100000102059 | 49 | 209 | 3A3f | 1 | 54 | 0.60 |
| 21 | 100000303033 | 67 | 209 | 3A7a | 3 | 55 | 0.59 |
| 22 | 100000102068 | 54 | 209 | 3A3a | 2 | 56 | 0.58 |
| 23 | 100000102048 | 41 | 209 | 3A3b | 1 | 58 | 0.55 |
| 24 | 100000102066 | 56 | 208 | 1E4b | 3 | 58 | 0.54 |
| 25 | 100000102104 | 26 | 212 | 2A4h | 1 | 59 | 0.53 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 26 | 100000102114 | 21 | 212 | 2A4b | 1 | 60 | 0.51 |
| 27 | 100000102095 | 12 | 212 | 2A4a | 3 | 60 | 0.51 |
| 28 | 100000102113 | 19 | 212 | 2A2d | 1 | 60 | 0.51 |
| 29 | 100000102096 | 15 | 212 | 2A4g | 2 | 61 | 0.50 |
| 30 | 100000102116 | 23 | 212 | 2A5a | 2 | 61 | 0.50 |
| 31 | 100000102061 | 51 | 209 | 3A8b | 1 | 61 | 0.50 |
| 32 | 100000213658 | 9 | 208 | 1D3a | 2 | 62 | 0.49 |
| 33 | 100000267477 | 61 | 209 | 3A3e | 1 | 63 | 0.47 |
| 34 | 100000102051 | 44 | 209 | 3A8b | 1 | 63 | 0.47 |
| 35 | 100000102056 | 47 | 208 | 1E4c | 2 | 63 | 0.47 |
| 36 | 100000102071 | 59 | 209 | 3A3b | 3 | 63 | 0.47 |
| 37 | 100000268380 | 64 | 209 | 3A7b | 2 | 66 | 0.43 |
| 38 | 100000102087 | 35 | 212 | 2A6b | 2 | 66 | 0.42 |
| 39 | 100000102108 | 32 | 212 | 2A3a | 2 | 68 | 0.40 |
| 40 | 100000102057 | 52 | 208 | 1E4b | 2 | 69 | 0.39 |
| 41 | 100000102090 | 39 | 212 | 2A3a | 1 | 69 | 0.38 |
| 42 | 100000102098 | 17 | 212 | 2A5a | 2 | 70 | 0.37 |
| 43 | 100000102069 | 55 | 209 | 3A6a | 1 | 70 | 0.37 |
| 44 | 100000102060 | 50 | 209 | 3A6a | 3 | 71 | 0.36 |
| 45 | 100000102117 | 25 | 212 | 2A3a | 2 | 72 | 0.35 |
| 46 | 100000102099 | 18 | 212 | 2A3a | 1 | 72 | 0.34 |
| 47 | 100000102115 | 22 | 212 | 2A4i | 3 | 72 | 0.34 |
| 48 | 100000102107 | 31 | 212 | 2A6e | 3 | 73 | 0.33 |
| 49 | 100000102094 | 14 | 208 | 1E4b | 1 | 74 | 0.32 |
| 50 | 100000268378 | 62 | 209 | 3A6a | 1 | 75 | 0.30 |
| 51 | 100000102088 | 36 | 212 | 2A4g | 1 | 76 | 0.30 |
| 52 | 100000267481 | 65 | 209 | 3A6c | 1 | 77 | 0.29 |

Appendix F
Item Map for the Math Grade 3 Ordered Item Book

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 1 | 100000197601 | 1 | 246 | 2A1a | 3 | 40 | 0.77 |
| 2 | 100000185313 | 64 | 268 | 6A1a | 3 | 42 | 0.75 |
| 3 | 100000197651 | 31 | 246 | 2E2a | 3 | 43 | 0.74 |
| 4 | 100000197660 | 56 | 246 | 2E2a | 1 | 46 | 0.71 |
| 5 | 100000098452 | 40 | 241 | 1B2b | 2 | 46 | 0.70 |
| 6 | 100000185378 | 48 | 268 | 6A2a | 1 | 47 | 0.69 |
| 7 | 100000098454 | 46 | 241 | 1C1a | 2 | 47 | 0.69 |
| 8 | 100000098440 | 19 | 241 | 1A1c | 3 | 48 | 0.68 |
| 9 | 100000197649 | 61 | 273 | 7 | 1 | 49 | 0.66 |
| 10 | 100000197756 | 57 | 257 | 4B1c | 2 | 51 | 0.64 |
| 11 | 100000185384 | 79 | 268 | 6C1c | 2 | 52 | 0.63 |
| 12 | 100000098449 | 52 | 241 | 1B2b | 1 | 52 | 0.63 |
| 13 | 100000185486 | 77 | 273 | 7 | 2 | 52 | 0.63 |
| 14 | 100000185381 | 74 | 268 | 6A3b | 1 | 52 | 0.62 |
| 15 | 100000197621 | 55 | 246 | 2D1a | 2 | 53 | 0.61 |
| 16 | 100000197665 | 66 | 251 | 3C1b | 2 | 54 | 0.60 |
| 17 | 100000197761 | 50 | 273 | 7 | 2 | 54 | 0.59 |
| 18 | 100000098445 | 4 | 241 | 1A2b | 2 | 55 | 0.59 |
| 19 | 100000098516 | 6 | 268 | 6A1d | 1 | 55 | 0.58 |
| 20 | 100000197661 | 91 | 251 | 3A1b | 1 | 56 | 0.57 |
| 21 | 100000350878 | 29 | 241 | 1C1b | 3 | 57 | 0.56 |
| 22 | 100000197647 | 18 | 246 | 2E1a | 3 | 58 | 0.55 |
| 23 | 100000197723 | 9 | 257 | 4A1c | 2 | 58 | 0.54 |
| 24 | 100000197670 | 37 | 251 | 3C1b | 1 | 58 | 0.54 |
| 25 | 100000098515 | 92 | 268 | 6A1c | 2 | 59 | 0.53 |
| 26 | 100000197781 | 12 | 262 | 5B1a | 2 | 59 | 0.53 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 27 | 100000098435 | 75 | 241 | 1A1a | 3 | 59 | 0.52 |
| 28 | 100000197674 | 38 | 273 | 7 | 1 | 59 | 0.52 |
| 29 | 100000197602 | 54 | 246 | 2A1b | 1 | 59 | 0.52 |
| 30 | 100000197604 | 2 | 246 | 2A1c | 3 | 61 | 0.50 |
| 31 | 100000197724 | 71 | 257 | 4B1a | 1 | 61 | 0.50 |
| 32 | 100000197662 | 65 | 251 | 3A1c | 2 | 61 | 0.49 |
| 33 | 100000185485 | 76 | 273 | 7 | 1 | 62 | 0.49 |
| 34 | 100000185380 | 78 | 268 | 6A2b | 2 | 62 | 0.48 |
| 35 | 100000185376 | 89 | 268 | 6A1b | 1 | 63 | 0.46 |
| 36 | 100000197780 | 11 | 262 | 5B1a | 3 | 63 | 0.46 |
| 37 | 100000197675 | 39 | 273 | 7 | 2 | 64 | 0.46 |
| 38 | 100000098438 | 3 | 241 | 1A1a | 3 | 65 | 0.44 |
| 39 | 100000197720 | 81 | 257 | 4A1b | 2 | 65 | 0.44 |
| 40 | 100000197663 | 94 | 251 | 3B1a | 1 | 66 | 0.43 |
| 41 | 100000197722 | 28 | 257 | 4A1c | 3 | 66 | 0.42 |
| 42 | 100000185387 | 88 | 268 | 6C1d | 1 | 66 | 0.42 |
| 43 | 100000185382 | 63 | 268 | 6B1a | 3 | 66 | 0.42 |
| 44 | 100000197752 | 14 | 257 | 4B1b | 3 | 67 | 0.41 |
| 45 | 100000197677 | 26 | 257 | 4A1a | 3 | 67 | 0.41 |
| 46 | 100000185484 | 68 | 273 | 7 | 1 | 68 | 0.40 |
| 47 | 100000197650 | 62 | 273 | 7 | 2 | 68 | 0.39 |
| 48 | 100000197664 | 86 | 251 | 3C1a | 2 | 69 | 0.39 |
| 49 | 100000185403 | 8 | 273 | 7 | 2 | 69 | 0.38 |
| 50 | 100000197667 | 42 | 251 | 3C1a | 1 | 70 | 0.37 |
| 51 | 100000197676 | 85 | 251 | 3C2a | 1 | 70 | 0.36 |
| 52 | 100000098444 | 41 | 241 | 1A2a | 1 | 71 | 0.36 |
| 53 | 100000185401 | 7 | 273 | 7 | 2 | 71 | 0.35 |
| 54 | 100000098446 | 58 | 241 | 1B1a | 2 | 73 | 0.33 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 55 | 100000185473 | 84 | 273 | 7 | 2 | 73 | 0.33 |
| 56 | 100000197753 | 15 | 273 | 7 | 3 | 74 | 0.31 |
| 57 | 100000098527 | 73 | 268 | 6A3a | 3 | 75 | 0.31 |
| 58 | 100000098532 | 87 | 268 | 6C1b | 1 | 75 | 0.30 |
| 59 | 100000098447 | 47 | 241 | 1B1a | 2 | 76 | 0.29 |
| 60 | 100000197648 | 60 | 246 | 2E2a | 3 | 77 | 0.28 |
| 61 | 100000197754 | 16 | 273 | 7 | 1 | 78 | 0.27 |
| 62 | 100000197751 | 27 | 257 | 4A1b | 1 | 78 | 0.26 |

Appendix G

Item Map for the Math Grade 4 Ordered Item Book

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 1 | 100000098585 | 57 | 241 | 1B2b | 1 | 39 | 0.79 |
| 2 | 100000198094 | 45 | 246 | 2B1b | 2 | 39 | 0.78 |
| 3 | 100000098584 | 11 | 241 | 1B2b | 2 | 40 | 0.78 |
| 4 | 100000198098 | 14 | 246 | 2B2b | 3 | 42 | 0.76 |
| 5 | 100000186578 | 74 | 268 | 6A2b | 1 | 44 | 0.73 |
| 6 | 100000186576 | 63 | 268 | 6C1f | 3 | 44 | 0.72 |
| 7 | 100000186577 | 92 | 268 | 6A1c | 1 | 45 | 0.72 |
| 8 | 100000098579 | 20 | 241 | 1A2b | 2 | 46 | 0.71 |
| 9 | 100000198150 | 65 | 262 | 5B1a | 1 | 46 | 0.70 |
| 10 | 100000198144 | 60 | 262 | 5B1a | 2 | 47 | 0.69 |
| 11 | 100000186562 | 43 | 273 | 7 | 2 | 49 | 0.67 |
| 12 | 100000098568 | 93 | 241 | 1A1a | 3 | 50 | 0.64 |
| 13 | 100000198140 | 22 | 262 | 5B1a | 3 | 51 | 0.64 |
| 14 | 100000186580 | 75 | 268 | 6A2f | 3 | 52 | 0.63 |
| 15 | 100000186581 | 82 | 268 | 6B1b | 3 | 53 | 0.61 |
| 16 | 100000207143 | 83 | 268 | 6C1c | 3 | 53 | 0.60 |
| 17 | 100000098571 | 81 | 241 | 1A1a | 2 | 54 | 0.60 |
| 18 | 100000198096 | 46 | 246 | 2B2a | 2 | 55 | 0.58 |
| 19 | 100000198099 | 28 | 246 | 2D1a | 3 | 55 | 0.58 |
| 20 | 100000198123 | 5 | 257 | 4B1a | 3 | 56 | 0.57 |
| 21 | 100000198113 | 2 | 273 | 7 | 1 | 56 | 0.57 |
| 22 | 100000198114 | 3 | 273 | 7 | 2 | 56 | 0.56 |
| 23 | 100000198125 | 89 | 257 | 4A1a | 1 | 57 | 0.55 |
| 24 | 100000198127 | 98 | 257 | 4B1a | 2 | 57 | 0.55 |
| 25 | 100000186567 | 96 | 268 | 6A3a | 1 | 57 | 0.54 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 26 | 100000198107 | 36 | 251 | 3A1a | 2 | 58 | 0.53 |
| 27 | 100000198142 | 23 | 273 | 7 | 3 | 58 | 0.53 |
| 28 | 100000186560 | 78 | 273 | 7 | 2 | 58 | 0.53 |
| 29 | 100000098666 | 64 | 268 | 6C1g | 1 | 59 | 0.53 |
| 30 | 100000098582 | 58 | 241 | 1B1b | 1 | 59 | 0.52 |
| 31 | 100000198111 | 1 | 251 | 3C1a | 2 | 59 | 0.52 |
| 32 | 100000098664 | 99 | 268 | 6B1c | 2 | 59 | 0.52 |
| 33 | 100000198143 | 24 | 273 | 7 | 2 | 59 | 0.51 |
| 34 | 100000198103 | 39 | 273 | 7 | 1 | 60 | 0.51 |
| 35 | 100000186579 | 101 | 268 | 6A2e | 1 | 60 | 0.50 |
| 36 | 100000198158 | 41 | 262 | 5B1a | 1 | 61 | 0.49 |
| 37 | 100000186574 | 68 | 273 | 7 | 2 | 61 | 0.49 |
| 38 | 100000186575 | 69 | 273 | 7 | 2 | 61 | 0.49 |
| 39 | 100000098586 | 52 | 241 | 1C1a | 2 | 61 | 0.48 |
| 40 | 100000198102 | 38 | 273 | 7 | 2 | 62 | 0.48 |
| 41 | 100000198092 | 27 | 246 | 2A1a | 1 | 62 | 0.48 |
| 42 | 100000198148 | 40 | 262 | 5B1a | 2 | 62 | 0.47 |
| 43 | 100000198128 | 26 | 257 | 4B1b | 3 | 63 | 0.46 |
| 44 | 100000198137 | 80 | 257 | 4B2a | 1 | 64 | 0.44 |
| 45 | 100000198108 | 71 | 251 | 3B1a | 2 | 64 | 0.44 |
| 46 | 100000098645 | 73 | 268 | 6A1d | 3 | 64 | 0.44 |
| 47 | 100000098587 | 34 | 241 | 1C1a | 3 | 65 | 0.42 |
| 48 | 100000098573 | 77 | 241 | 1A1b | 2 | 65 | 0.42 |
| 49 | 100000098578 | 6 | 241 | 1A2a | 2 | 66 | 0.42 |
| 50 | 100000198139 | 56 | 257 | 4B2a | 3 | 66 | 0.42 |
| 51 | 100000198121 | 84 | 251 | 3C1c | 2 | 67 | 0.41 |
| 52 | 100000098572 | 51 | 241 | 1A1a | 1 | 67 | 0.40 |
| 53 | 100000198101 | 37 | 246 | 2E1a | 1 | 68 | 0.39 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 54 | 100000186582 | 97 | 268 | 6C2a | 2 | 68 | 0.38 |
| 55 | 100000198122 | 72 | 251 | 3C2a | 1 | 69 | 0.37 |
| 56 | 100000098583 | 10 | 241 | 1B2a | 3 | 69 | 0.37 |
| 57 | 100000186573 | 67 | 268 | 6B1b | 3 | 70 | 0.36 |
| 58 | 100000186561 | 79 | 273 | 7 | 2 | 71 | 0.35 |
| 59 | 100000186566 | 9 | 273 | 7 | 3 | 72 | 0.33 |
| 60 | 100000098580 | 100 | 241 | 1B1a | 3 | 73 | 0.32 |
| 61 | 100000198157 | 76 | 262 | 5B1a | 3 | 73 | 0.32 |

Appendix H

Item Map for the Math Grade 5 Ordered Item Book

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|------|--------------|--------------|------------------|------------------|------------|----------|---------|
| 1 | 100000196100 | 72 | 246 | 2D1a | 2 | 36 | 0.80 |
| 2 | 100000196234 | 42 | 251 | 3C1b | 2 | 42 | 0.75 |
| 3 | 100000187390 | 18 | 268 | 6B1d | 3 | 43 | 0.73 |
| 4 | 100000099089 | 45 | 241 | 1B2b | 2 | 44 | 0.72 |
| 5 | 100000187386 | 22 | 268 | 6B1c | 1 | 46 | 0.70 |
| 6 | 100000099085 | 40 | 241 | 1B1c | 1 | 47 | 0.69 |
| 7 | 100000196036 | 25 | 273 | 7 | 2 | 48 | 0.68 |
| 8 | 100000196263 | 81 | 257 | 4B1b | 2 | 49 | 0.67 |
| 9 | 100000196233 | 8 | 251 | 3C1a | 2 | 50 | 0.65 |
| 10 | 100000099080 | 5 | 241 | 1A1c | 1 | 51 | 0.64 |
| 11 | 100000196253 | 14 | 257 | 4A1c | 2 | 51 | 0.64 |
| 12 | 100000196284 | 33 | 262 | 5B1a | 2 | 53 | 0.63 |
| 13 | 100000099079 | 38 | 241 | 1A1b | 3 | 53 | 0.63 |
| 14 | 100000099086 | 30 | 241 | 1B1c | 1 | 53 | 0.62 |
| 15 | 100000196025 | 85 | 273 | 7 | 3 | 55 | 0.60 |
| 16 | 100000187428 | 62 | 268 | 6C1f | 1 | 56 | 0.59 |
| 17 | 100000099072 | 65 | 241 | 1A1a | 2 | 58 | 0.56 |
| 18 | 100000187429 | 61 | 268 | 6C1g | 3 | 58 | 0.56 |
| 19 | 100000187376 | 21 | 268 | 6A1d | 3 | 59 | 0.55 |
| 20 | 100000196029 | 26 | 273 | 7 | 1 | 59 | 0.54 |
| 21 | 100000099091 | 46 | 241 | 1C1a | 3 | 60 | 0.54 |
| 22 | 100000099075 | 29 | 241 | 1A1a | 2 | 60 | 0.53 |
| 23 | 100000099083 | 28 | 241 | 1B1b | 3 | 61 | 0.53 |
| 24 | 100000196256 | 56 | 257 | 4A1d | 3 | 61 | 0.53 |
| 25 | 100000196045 | 13 | 273 | 7 | 2 | 61 | 0.52 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 26 | 100000196223 | 71 | 246 | 2E1a | 3 | 61 | 0.52 |
| 27 | 100000187361 | 67 | 273 | 7 | 2 | 62 | 0.51 |
| 28 | 100000196277 | 32 | 257 | 4B2a | 3 | 63 | 0.50 |
| 29 | 100000196057 | 34 | 273 | 7 | 3 | 64 | 0.48 |
| 30 | 100000099177 | 88 | 241 | 1C1b | 3 | 64 | 0.48 |
| 31 | 100000196054 | 35 | 273 | 7 | 2 | 65 | 0.47 |
| 32 | 100000187367 | 2 | 268 | 6A1a | 3 | 65 | 0.47 |
| 33 | 100000196094 | 73 | 246 | 2C1a | 2 | 65 | 0.47 |
| 34 | 100000187370 | 77 | 268 | 6A1b | 2 | 65 | 0.46 |
| 35 | 100000196229 | 10 | 251 | 3A1b | 2 | 66 | 0.46 |
| 36 | 100000187366 | 89 | 273 | 7 | 1 | 66 | 0.45 |
| 37 | 100000099180 | 64 | 268 | 6C1e | 3 | 67 | 0.45 |
| 38 | 100000099082 | 92 | 241 | 1B1a | 2 | 67 | 0.44 |
| 39 | 100000196043 | 12 | 273 | 7 | 2 | 68 | 0.43 |
| 40 | 100000196281 | 51 | 262 | 5A1a | 2 | 69 | 0.41 |
| 41 | 100000196247 | 82 | 257 | 4A1a | 3 | 69 | 0.41 |
| 42 | 100000187382 | 80 | 268 | 6B1b | 3 | 70 | 0.41 |
| 43 | 100000196079 | 84 | 246 | 2A1b | 1 | 70 | 0.40 |
| 44 | 100000187388 | 53 | 273 | 7 | 1 | 70 | 0.40 |
| 45 | 100000099090 | 6 | 241 | 1B2b | 3 | 71 | 0.40 |
| 46 | 100000196231 | 24 | 251 | 3B2a | 2 | 71 | 0.40 |
| 47 | 100000196042 | 93 | 273 | 7 | 1 | 71 | 0.40 |
| 48 | 100000187380 | 60 | 268 | 6B1a | 1 | 71 | 0.39 |
| 49 | 100000099081 | 37 | 241 | 1B1a | 2 | 71 | 0.39 |
| 50 | 100000196238 | 83 | 251 | 3C2a | 1 | 72 | 0.38 |
| 51 | 100000187360 | 66 | 273 | 7 | 1 | 72 | 0.38 |
| 52 | 100000187391 | 78 | 268 | 6C1a | 3 | 72 | 0.38 |
| 53 | 100000187363 | 75 | 273 | 7 | 1 | 73 | 0.36 |

| Page | Item CID | Item Seq. No | Reporting Strand | Content Standard | Answer Key | Location | P-Value |
|-------------|-----------------|---------------------|-------------------------|-------------------------|-------------------|-----------------|----------------|
| 54 | 100000187389 | 54 | 273 | 7 | 2 | 74 | 0.35 |
| 55 | 100000196270 | 55 | 257 | 4B1e | 2 | 75 | 0.35 |
| 56 | 100000196088 | 16 | 246 | 2B1a | 1 | 76 | 0.33 |
| 57 | 100000196258 | 69 | 257 | 4B1a | 3 | 77 | 0.32 |
| 58 | 100000196273 | 11 | 257 | 4B2a | 1 | 78 | 0.31 |
| 59 | 100000196090 | 19 | 246 | 2B2b | 2 | 79 | 0.29 |
| 60 | 100000196279 | 36 | 262 | 5A1a | 3 | 80 | 0.28 |
| 61 | 100000187381 | 99 | 268 | 6B1b | 1 | 83 | 0.26 |
| 62 | 100000187372 | 63 | 268 | 6A1c | 3 | 85 | 0.24 |
| 63 | 100000187387 | 52 | 268 | 6B1d | 1 | 87 | 0.22 |
| 64 | 100000196244 | 44 | 251 | 3C2b | 2 | 89 | 0.20 |

Appendix I
Panelist Readiness Survey

**Maryland Mod-MSA Grade 3 Reading
Standard Setting Readiness Survey**

Panelist ID: _____

Instructions: Please circle your response to the following questions.

| | | |
|-----------------------------------|-----------|------------|
| Round 1 | | |
| I understand my task for Round 1. | No | Yes |
| I am ready to begin Round 1. | No | Yes |

| | | |
|---|-----------|------------|
| Round 2 | | |
| I understand my task for Round 2. | No | Yes |
| I understand the panelist agreement data that was presented from Round 1. | No | Yes |
| I understand the item difficulty data that was provided. | No | Yes |
| I am ready to begin Round 2. | No | Yes |

| | | |
|---|-----------|------------|
| Round 3 | | |
| I understand my task for Round 3. | No | Yes |
| I understand the impact data that was presented from Round 2. | No | Yes |
| I am ready to begin Round 3. | No | Yes |

Appendix J

Mean, Median, Minimum, and Maximum Ratings by Round

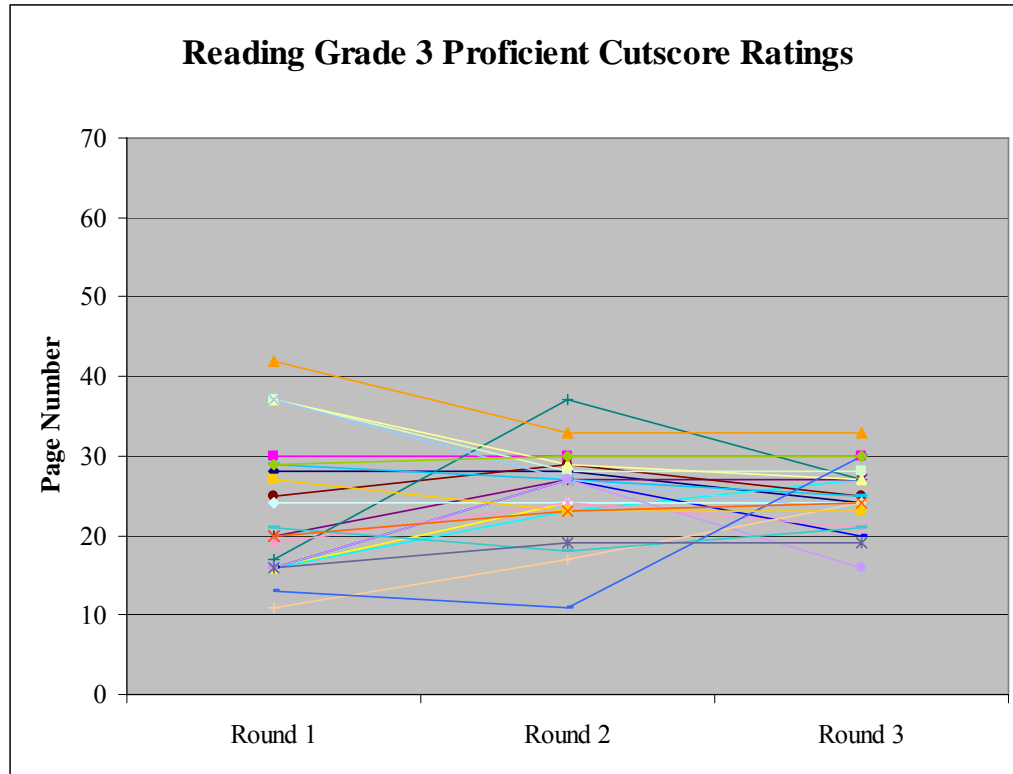
| | Reading Grade 3 | | | | | |
|-------------------|------------------------|-------|-------|-------|-------|-------|
| Round | 1 | | 2 | | 3 | |
| Achievement Level | P | A | P | A | P | A |
| Mean | 23.74 | 42.43 | 25.43 | 43.78 | 24.87 | 45.09 |
| Median | 21.00 | 43.00 | 27.00 | 44.00 | 24.00 | 45.00 |
| Minimum | 11.00 | 30.00 | 11.00 | 33.00 | 16.00 | 40.00 |
| Maximum | 42.00 | 51.00 | 37.00 | 51.00 | 33.00 | 51.00 |
| | Reading Grade 4 | | | | | |
| Round | 1 | | 2 | | 3 | |
| Achievement Level | P | A | P | A | P | A |
| Mean | 19.05 | 39.55 | 17.82 | 40.95 | 16.91 | 39.36 |
| Median | 20.00 | 43.00 | 18.00 | 43.00 | 18.00 | 42.00 |
| Minimum | 5.00 | 14.00 | 14.00 | 34.00 | 13.00 | 23.00 |
| Maximum | 29.00 | 48.00 | 24.00 | 48.00 | 20.00 | 48.00 |
| | Reading Grade 5 | | | | | |
| Round | 1 | | 2 | | 3 | |
| Achievement Level | P | A | P | A | P | A |
| Mean | 15.26 | 35.87 | 18.87 | 39.13 | 18.35 | 40.09 |
| Median | 17.00 | 38.00 | 18.00 | 41.00 | 18.00 | 41.00 |
| Minimum | 2.00 | 5.00 | 8.00 | 27.00 | 17.00 | 34.00 |
| Maximum | 25.00 | 49.00 | 32.00 | 49.00 | 35.00 | 44.00 |
| | Math Grade 3 | | | | | |
| Round | 1 | | 2 | | 3 | |
| Achievement Level | P | A | P | A | P | A |
| Mean | 20.96 | 43.48 | 19.74 | 43.78 | 20.17 | 44.30 |
| Median | 20.00 | 44.00 | 19.00 | 45.00 | 19.00 | 44.00 |
| Minimum | 7.00 | 28.00 | 11.00 | 19.00 | 12.00 | 34.00 |
| Maximum | 38.00 | 60.00 | 28.00 | 58.00 | 28.00 | 50.00 |

| | Math Grade 4 | | | | | |
|-------------------|---------------------|-------|-------|-------|-------|-------|
| Round | 1 | | 2 | | 3 | |
| Achievement Level | P | A | P | A | P | A |
| Mean | 24.91 | 48.41 | 22.09 | 50.41 | 18.86 | 52.68 |
| Median | 23.00 | 50.00 | 22.00 | 53.00 | 17.00 | 53.00 |
| Minimum | 16.00 | 31.00 | 17.00 | 35.00 | 16.00 | 48.00 |
| Maximum | 39.00 | 57.00 | 27.00 | 54.00 | 25.00 | 54.00 |

| | Math Grade 5 | | | | | |
|-------------------|---------------------|-------|-------|-------|-------|-------|
| Round | 1 | | 2 | | 3 | |
| Achievement Level | P | A | P | A | P | A |
| Mean | 20.95 | 50.57 | 20.29 | 50.43 | 18.52 | 48.76 |
| Median | 18.00 | 50.00 | 20.00 | 50.00 | 18.00 | 49.00 |
| Minimum | 9.00 | 41.00 | 15.00 | 46.00 | 13.00 | 43.00 |
| Maximum | 44.00 | 62.00 | 28.00 | 59.00 | 24.00 | 52.00 |

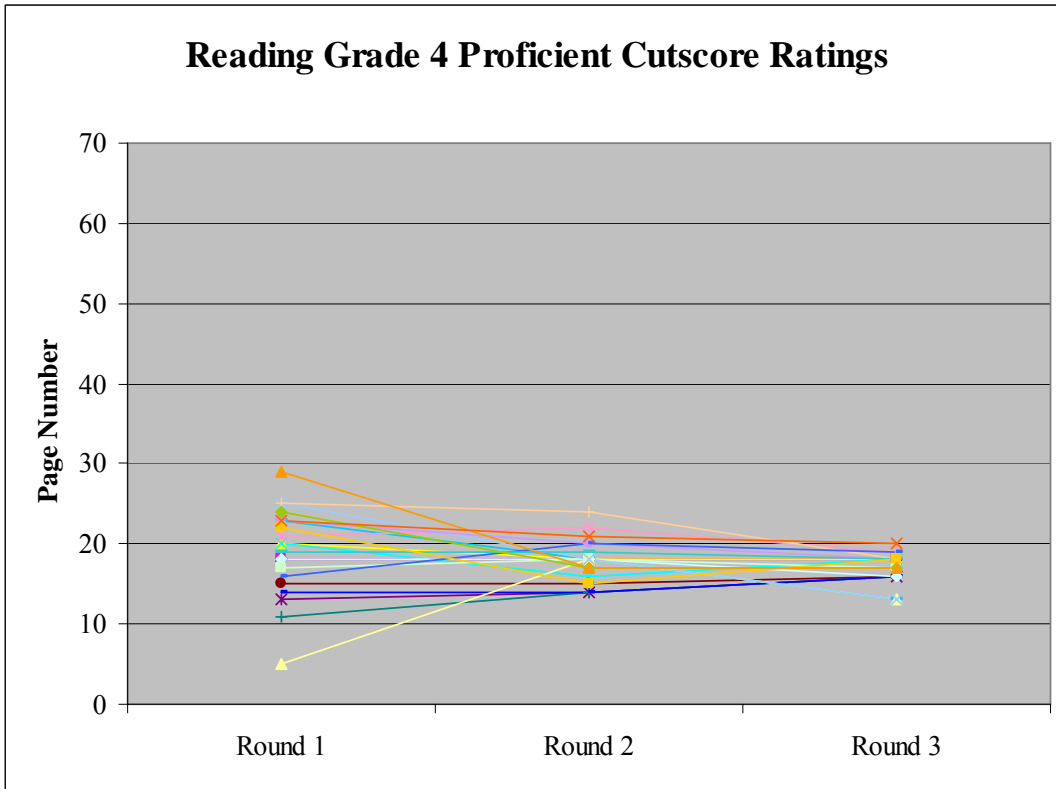
Appendix K

Individual Ratings across Rounds for Reading Grade 3

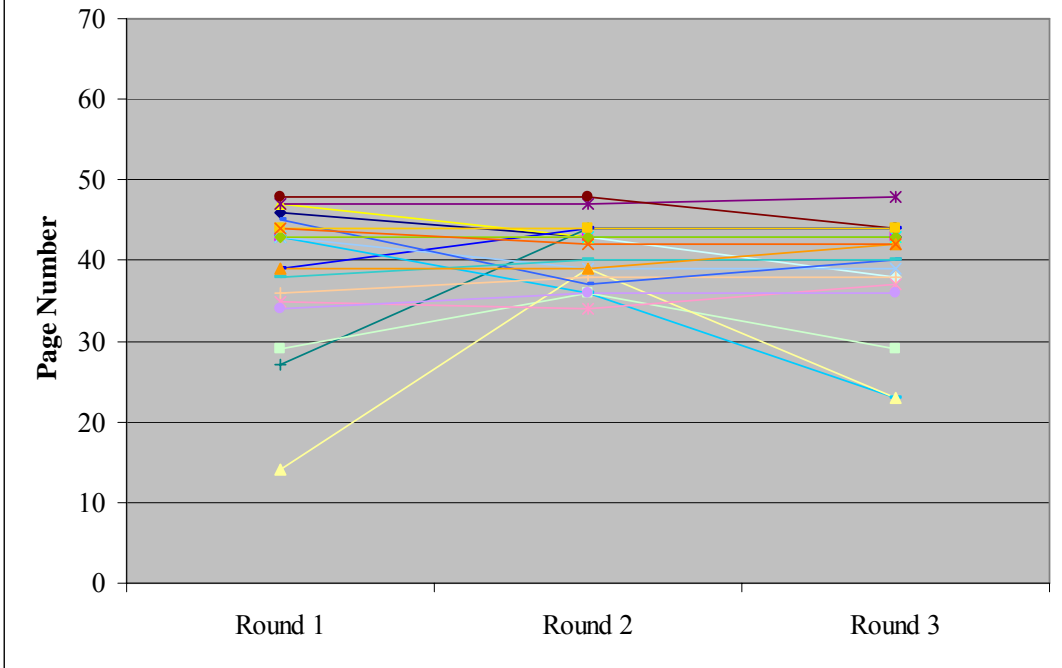


Appendix L

Individual Ratings across Rounds for Reading Grade 4

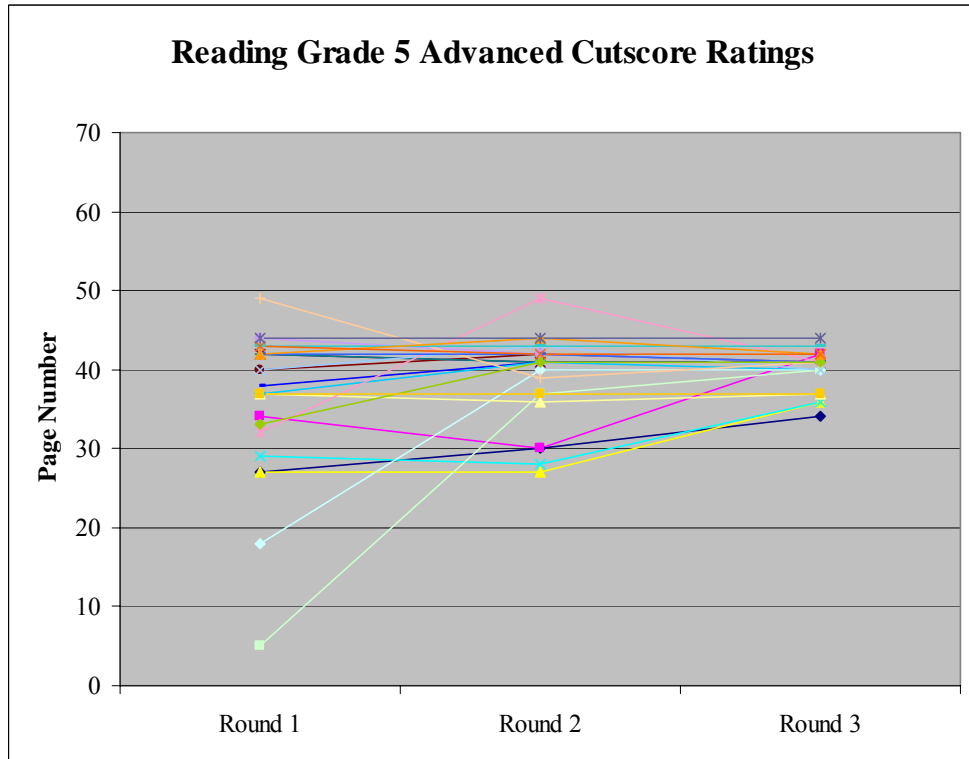
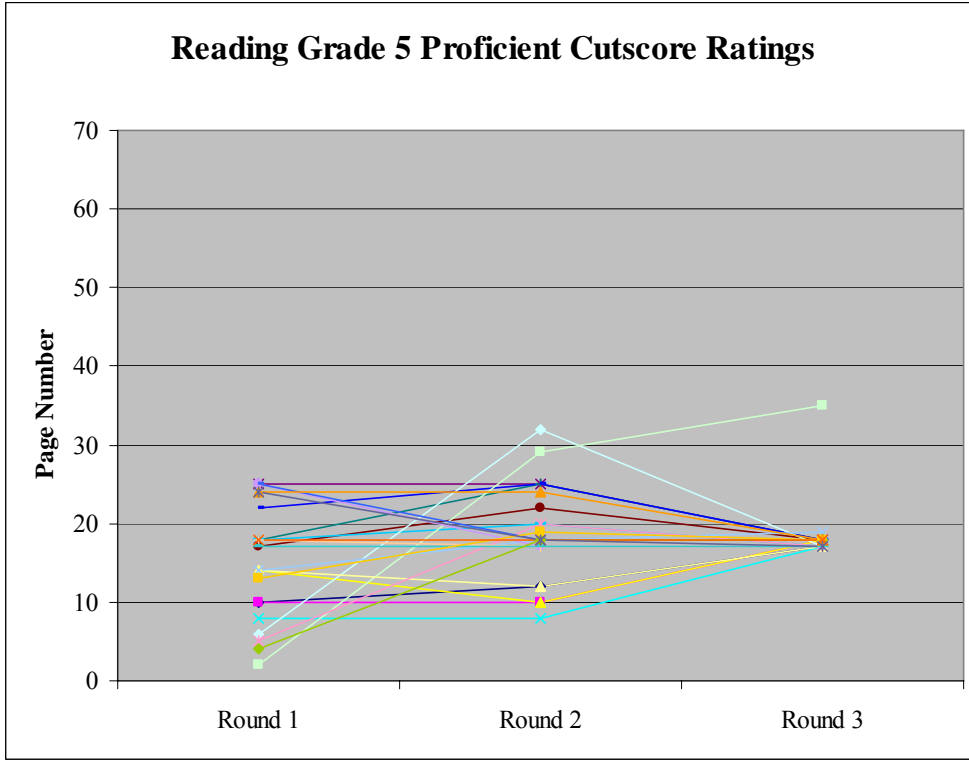


Reading Grade 4 Advanced Cutscore Ratings

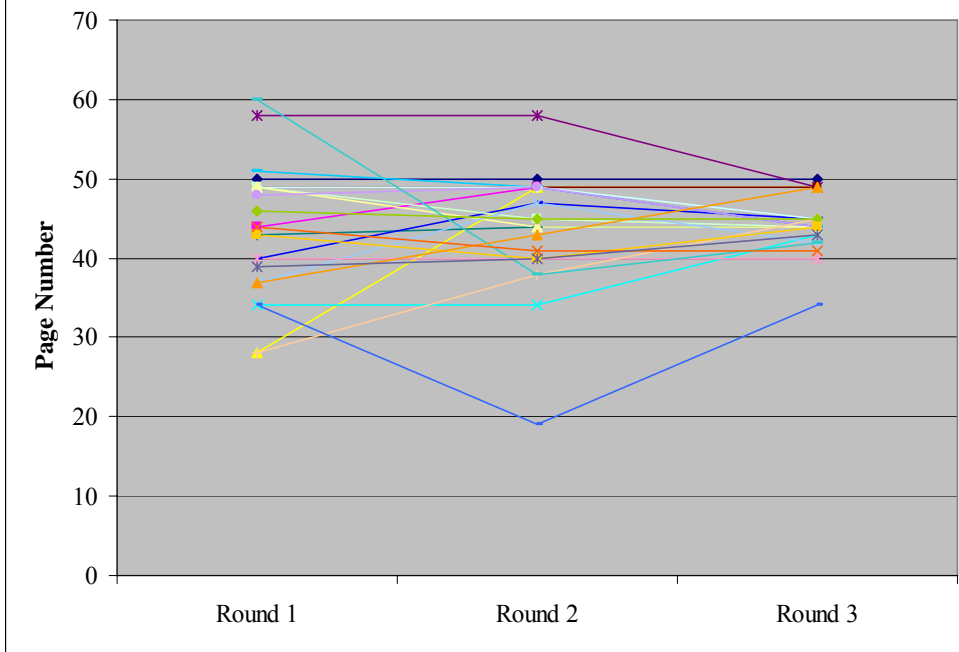


Appendix M

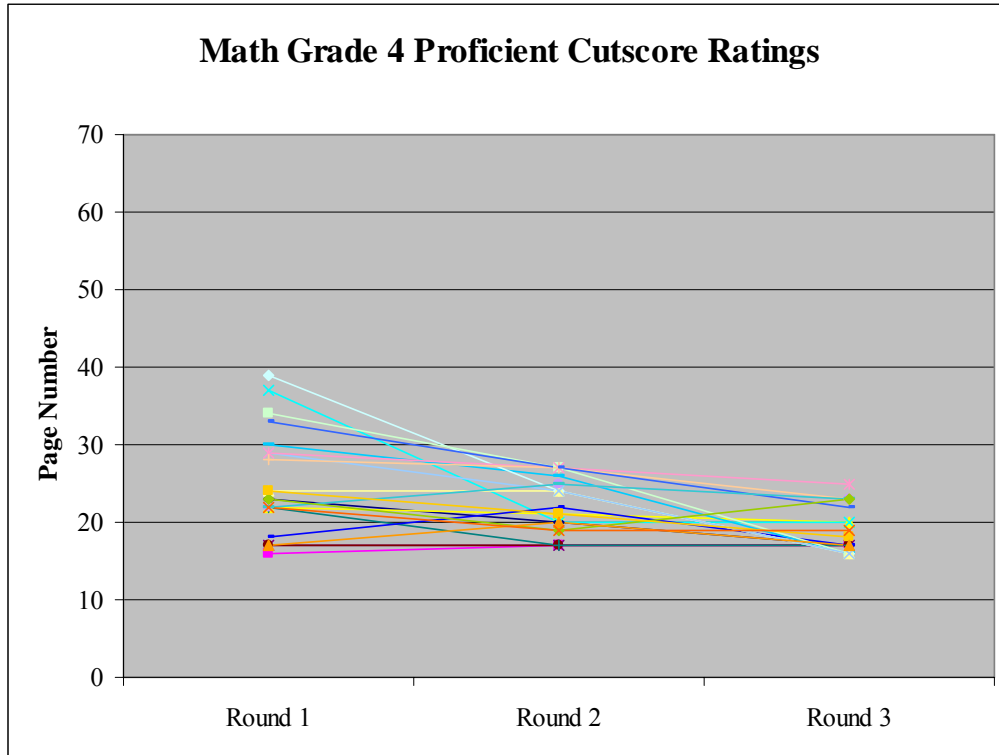
Individual Ratings across Rounds for Reading Grade 5



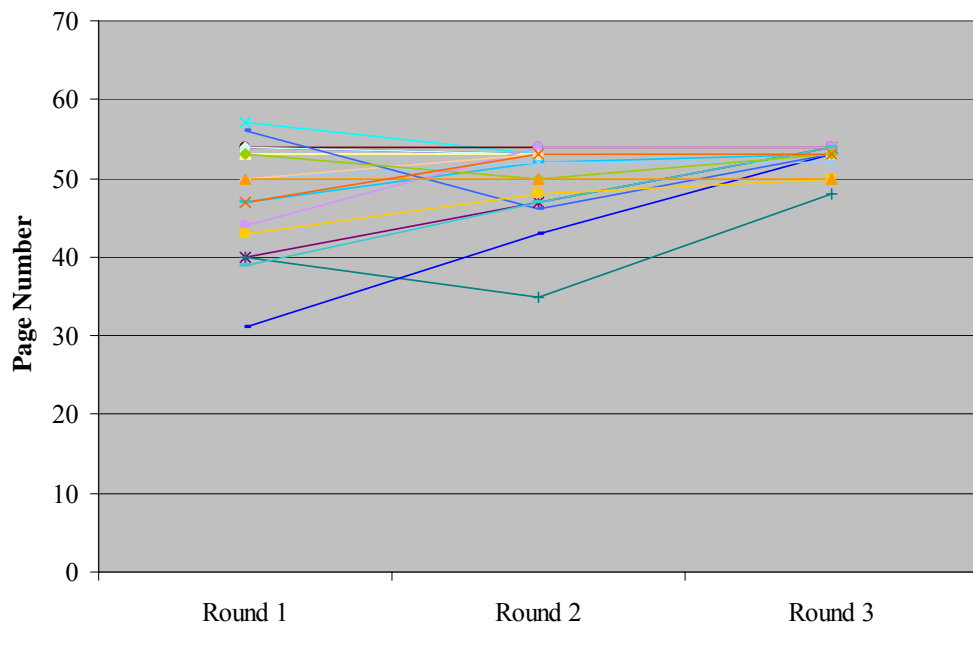
Math Grade 3 Advanced Cutscore Ratings



Appendix O
Individual Ratings across Rounds for Math Grade 4

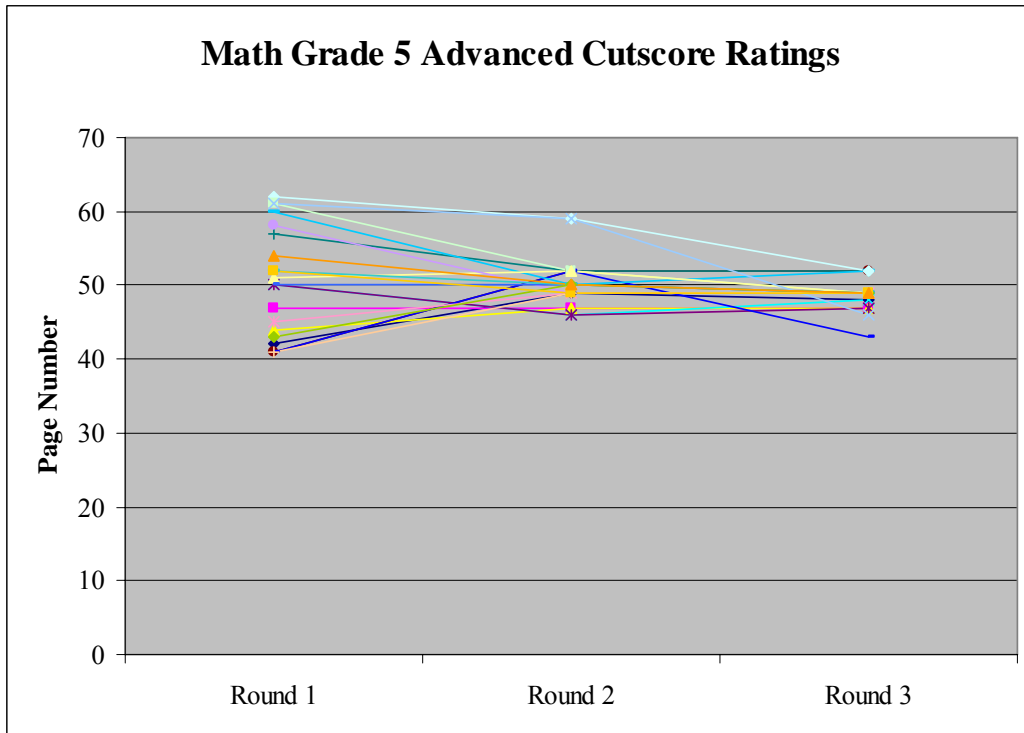
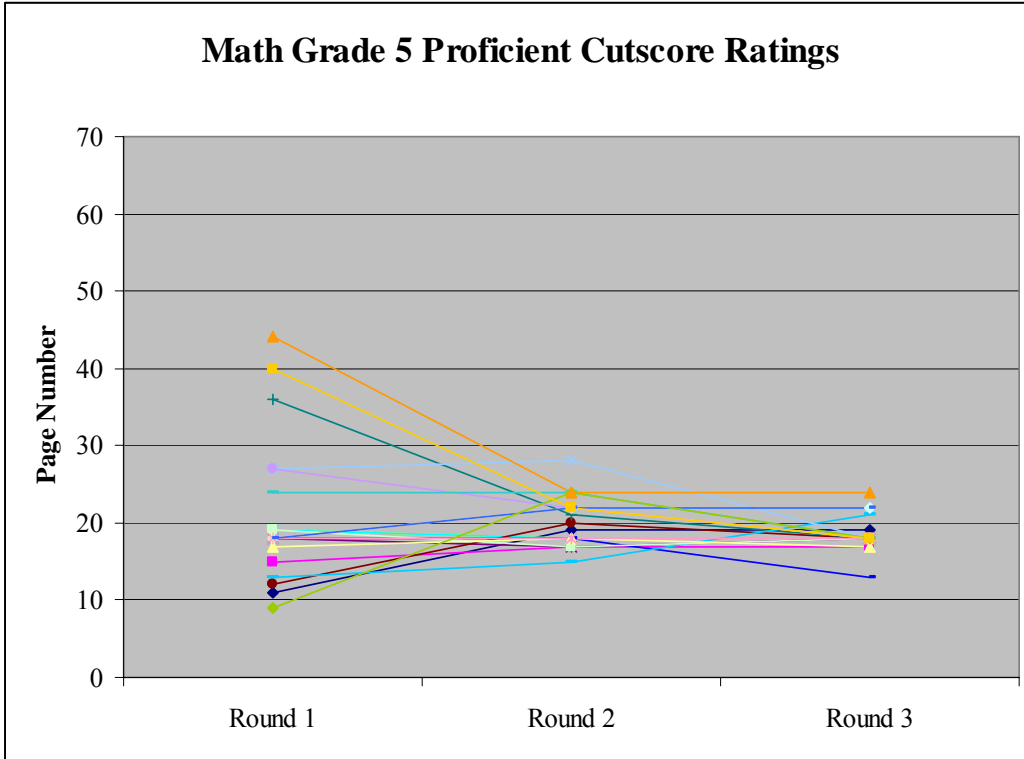


Math Grade 4 Advanced Cutscore Ratings



Appendix P

Individual Ratings across Rounds for Math Grade 5



Appendix Q
Standard Error Bands for Reading Grade 3

| Reading Grade 3 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error (SE) cut score | | 0.46 | 1.26 | |
| Participants Recommended Cut Point* + 3 SEs | | 56 | 69 | + 3 SEs |
| Percent of students in each Performance Level | 66.3 | 23.4 | 10.3 | |
| Participants Recommended Cut Point* + 2 SEs | | 56 | 68 | + 2 SEs |
| Percent of students in each Performance Level | 66.3 | 23.4 | 10.3 | |
| Participants Recommended Cut Point* + 1 SEs | | 55 | 66 | + 1 SEs |
| Percent of students in each Performance Level | 66.3 | 20.4 | 13.3 | |
| Participants Recommended Cut Point* | | 55 | 65 | |
| Percent of students in each Performance Level | 66.3 | 20.4 | 13.3 | |
| Participants Recommended Cut Point* - 1 SEs | | 55 | 64 | - 1 SEs |
| Percent of students in each Performance Level | 66.3 | 17.0 | 16.7 | |
| Participants Recommended Cut Point* - 2 SEs | | 54 | 62 | - 2 SEs |
| Percent of students in each Performance Level | 61.0 | 19.1 | 19.9 | |
| Participants Recommended Cut Point* - 3 SEs | | 54 | 61 | - 3 SEs |
| Percent of students in each Performance Level | 61.0 | 19.1 | 19.9 | |
| *Large Group Medians | | | | |

| Reading Grade 3 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error of Measurement (CSEM) | | 4.0 | 5.0 | |
| Participants Recommended Cut Point* + 3 SEs | | 67 | 80 | + 3 SEs |
| Percent of students in each Performance Level | 89.7 | 4.1 | 6.2 | |
| Participants Recommended Cut Point* + 2 SEs | | 63 | 75 | + 2 SEs |
| Percent of students in each Performance Level | 83.3 | 10.5 | 6.2 | |
| Participants Recommended Cut Point* + 1 SEs | | 59 | 70 | + 1 SEs |
| Percent of students in each Performance Level | 74.8 | 14.9 | 10.3 | |
| Participants Recommended Cut Point* | | 55 | 65 | |
| Percent of students in each Performance Level | 66.3 | 20.4 | 13.3 | |
| Participants Recommended Cut Point* - 1 SEs | | 51 | 60 | - 1 SEs |
| Percent of students in each Performance Level | 51.2 | 25.7 | 23.1 | |
| Participants Recommended Cut Point* - 2 SEs | | 47 | 55 | - 2 SEs |
| Percent of students in each Performance Level | 37.2 | 29.1 | 33.7 | |
| Participants Recommended Cut Point* - 3 SEs | | 43 | 50 | - 3 SEs |
| Percent of students in each Performance Level | 23.3 | 23.2 | 53.5 | |
| *Large Group Medians | | | | |

| Reading Grade 3 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| SEM Combined (SEMcomb) | | 4.03 | 5.16 | |
| Participants Recommended Cut Point* + 3 SEs | | 67 | 80 | + 3 SEs |
| Percent of students in each Performance Level | 89.7 | 4.1 | 6.2 | |
| Participants Recommended Cut Point* + 2 SEs | | 63 | 75 | + 2 SEs |
| Percent of students in each Performance Level | 83.3 | 10.5 | 6.2 | |
| Participants Recommended Cut Point* + 1 SEs | | 59 | 70 | + 1 SEs |
| Percent of students in each Performance Level | 74.8 | 14.9 | 10.3 | |
| Participants Recommended Cut Point* | | 55 | 65 | |
| Percent of students in each Performance Level | 66.3 | 20.4 | 13.3 | |
| Participants Recommended Cut Point* - 1 SEs | | 51 | 60 | - 1 SEs |
| Percent of students in each Performance Level | 51.2 | 25.7 | 23.1 | |
| Participants Recommended Cut Point* - 2 SEs | | 47 | 55 | - 2 SEs |
| Percent of students in each Performance Level | 37.2 | 29.1 | 33.7 | |
| Participants Recommended Cut Point* - 3 SEs | | 43 | 50 | - 3 SEs |
| Percent of students in each Performance Level | 23.3 | 23.2 | 53.5 | |
| *Large Group Medians | | | | |

Appendix R
Standard Error Bands for Reading Grade 4

| Reading Grade 4 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error (SE) cut score | | 0.93 | 1.67 | |
| Participants Recommended Cut Point* + 3 SEs | | 57 | 71 | + 3 SEs |
| Percent of students in each Performance Level | 69.8 | 22.0 | 8.2 | |
| Participants Recommended Cut Point* + 2 SEs | | 56 | 69 | + 2 SEs |
| Percent of students in each Performance Level | 65.5 | 24.6 | 9.9 | |
| Participants Recommended Cut Point* + 1 SEs | | 55 | 68 | + 1 SEs |
| Percent of students in each Performance Level | 65.5 | 24.6 | 9.9 | |
| Participants Recommended Cut Point* | | 54 | 66 | |
| Percent of students in each Performance Level | 61.7 | 25.9 | 12.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 53 | 64 | - 1 SEs |
| Percent of students in each Performance Level | 57.6 | 26.9 | 15.5 | |
| Participants Recommended Cut Point* - 2 SEs | | 52 | 63 | - 2 SEs |
| Percent of students in each Performance Level | 52.7 | 28.5 | 18.8 | |
| Participants Recommended Cut Point* - 3 SEs | | 51 | 61 | - 3 SEs |
| Percent of students in each Performance Level | 52.7 | 25.1 | 22.2 | |
| *Large Group Medians | | | | |

| Reading Grade 4 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error of Measurement (CSEM) | | 5.0 | 5.0 | |
| Participants Recommended Cut Point* + 3 SEs | | 69 | 81 | + 3 SEs |
| Percent of students in each Performance Level | 90.1 | 6.7 | 3.2 | |
| Participants Recommended Cut Point* + 2 SEs | | 64 | 76 | + 2 SEs |
| Percent of students in each Performance Level | 84.5 | 11.6 | 3.9 | |
| Participants Recommended Cut Point* + 1 SEs | | 59 | 71 | + 1 SEs |
| Percent of students in each Performance Level | 73.8 | 18.0 | 8.2 | |
| Participants Recommended Cut Point* | | 54 | 66 | |
| Percent of students in each Performance Level | 61.7 | 25.9 | 12.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 49 | 61 | - 1 SEs |
| Percent of students in each Performance Level | 41.0 | 36.8 | 22.2 | |
| Participants Recommended Cut Point* - 2 SEs | | 44 | 56 | - 2 SEs |
| Percent of students in each Performance Level | 26.6 | 38.9 | 34.5 | |
| Participants Recommended Cut Point* - 3 SEs | | 39 | 51 | - 3 SEs |
| Percent of students in each Performance Level | 14.1 | 38.6 | 47.3 | |
| *Large Group Medians | | | | |

| Reading Grade 4 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| SEM Combined (SEMcomb) | | 5.09 | 5.27 | |
| Participants Recommended Cut Point* + 3 SEs | | 69 | 82 | + 3 SEs |
| Percent of students in each Performance Level | 90.1 | 6.7 | 3.2 | |
| Participants Recommended Cut Point* + 2 SEs | | 64 | 77 | + 2 SEs |
| Percent of students in each Performance Level | 84.5 | 11.6 | 3.9 | |
| Participants Recommended Cut Point* + 1 SEs | | 59 | 71 | + 1 SEs |
| Percent of students in each Performance Level | 73.8 | 18.0 | 8.2 | |
| Participants Recommended Cut Point* | | 54 | 66 | |
| Percent of students in each Performance Level | 61.7 | 25.9 | 12.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 49 | 61 | - 1 SEs |
| Percent of students in each Performance Level | 41.0 | 36.8 | 22.2 | |
| Participants Recommended Cut Point* - 2 SEs | | 44 | 55 | - 2 SEs |
| Percent of students in each Performance Level | 26.6 | 38.9 | 34.5 | |
| Participants Recommended Cut Point* - 3 SEs | | 39 | 50 | - 3 SEs |
| Percent of students in each Performance Level | 14.1 | 32.4 | 53.5 | |
| *Large Group Medians | | | | |

Appendix S
Standard Error Bands for Reading Grade 5

| Reading Grade 5 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error (SE) cut score | | 0.97 | 1.74 | |
| Participants Recommended Cut Point* + 3 SEs | | 56 | 74 | + 3 SEs |
| Percent of students in each Performance Level | 67.2 | 28.6 | 4.2 | |
| Participants Recommended Cut Point* + 2 SEs | | 55 | 72 | + 2 SEs |
| Percent of students in each Performance Level | 62.0 | 32.1 | 5.9 | |
| Participants Recommended Cut Point* + 1 SEs | | 54 | 71 | + 1 SEs |
| Percent of students in each Performance Level | 62.0 | 32.1 | 5.9 | |
| Participants Recommended Cut Point* | | 53 | 69 | |
| Percent of students in each Performance Level | 55.9 | 35.7 | 8.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 52 | 67 | - 1 SEs |
| Percent of students in each Performance Level | 50.5 | 35.7 | 13.8 | |
| Participants Recommended Cut Point* - 2 SEs | | 51 | 66 | - 2 SEs |
| Percent of students in each Performance Level | 45.4 | 40.8 | 13.8 | |
| Participants Recommended Cut Point* - 3 SEs | | 50 | 64 | - 3 SEs |
| Percent of students in each Performance Level | 45.4 | 38.4 | 16.2 | |
| *Large Group Medians | | | | |

| Reading Grade 5 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error of Measurement (CSEM) | | 5.0 | 6.0 | |
| Participants Recommended Cut Point* + 3 SEs | | 68 | 87 | + 3 SEs |
| Percent of students in each Performance Level | 89.0 | 8.3 | 2.7 | |
| Participants Recommended Cut Point* + 2 SEs | | 63 | 81 | + 2 SEs |
| Percent of students in each Performance Level | 83.8 | 13.5 | 2.7 | |
| Participants Recommended Cut Point* + 1 SEs | | 58 | 75 | + 1 SEs |
| Percent of students in each Performance Level | 72.0 | 23.8 | 4.2 | |
| Participants Recommended Cut Point* | | 53 | 69 | |
| Percent of students in each Performance Level | 55.9 | 35.7 | 8.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 48 | 63 | - 1 SEs |
| Percent of students in each Performance Level | 40.1 | 43.7 | 16.2 | |
| Participants Recommended Cut Point* - 2 SEs | | 43 | 57 | - 2 SEs |
| Percent of students in each Performance Level | 13.4 | 53.8 | 32.8 | |
| Participants Recommended Cut Point* - 3 SEs | | 38 | 51 | - 3 SEs |
| Percent of students in each Performance Level | 13.4 | 32.0 | 54.6 | |
| *Large Group Medians | | | | |

| Reading Grade 5 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| SEM Combined (SEMcomb) | | 5.09 | 6.25 | |
| Participants Recommended Cut Point* + 3 SEs | | 68 | 88 | + 3 SEs |
| Percent of students in each Performance Level | 89.0 | 8.3 | 2.7 | |
| Participants Recommended Cut Point* + 2 SEs | | 63 | 81 | + 2 SEs |
| Percent of students in each Performance Level | 83.8 | 13.5 | 2.7 | |
| Participants Recommended Cut Point* + 1 SEs | | 58 | 75 | + 1 SEs |
| Percent of students in each Performance Level | 72.0 | 23.8 | 4.2 | |
| Participants Recommended Cut Point* | | 53 | 69 | |
| Percent of students in each Performance Level | 55.9 | 35.7 | 8.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 48 | 63 | - 1 SEs |
| Percent of students in each Performance Level | 40.1 | 43.7 | 16.2 | |
| Participants Recommended Cut Point* - 2 SEs | | 43 | 57 | - 2 SEs |
| Percent of students in each Performance Level | 13.4 | 53.8 | 32.8 | |
| Participants Recommended Cut Point* - 3 SEs | | 38 | 50 | - 3 SEs |
| Percent of students in each Performance Level | 13.4 | 32.0 | 54.6 | |
| *Large Group Medians | | | | |

Appendix T
Standard Error Bands for Math Grade 3

| Mathematics Grade 3 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error (SE) cut score | | 0.99 | 0.81 | |
| Participants Recommended Cut Point* + 3 SEs | | 58 | 69 | + 3 SEs |
| Percent of students in each Performance Level | 71.3 | 17.7 | 11.0 | |
| Participants Recommended Cut Point* + 2 SEs | | 57 | 69 | + 2 SEs |
| Percent of students in each Performance Level | 68.0 | 21.0 | 11.0 | |
| Participants Recommended Cut Point* + 1 SEs | | 56 | 68 | + 1 SEs |
| Percent of students in each Performance Level | 64.1 | 24.9 | 11.0 | |
| Participants Recommended Cut Point* | | 55 | 67 | |
| Percent of students in each Performance Level | 64.1 | 22.5 | 13.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 54 | 66 | - 1 SEs |
| Percent of students in each Performance Level | 61.0 | 23.4 | 15.6 | |
| Participants Recommended Cut Point* - 2 SEs | | 53.0 | 65 | - 2 SEs |
| Percent of students in each Performance Level | 55.8 | 28.6 | 15.6 | |
| Participants Recommended Cut Point* - 3 SEs | | 52 | 65 | - 3 SEs |
| Percent of students in each Performance Level | 52.4 | 32.0 | 15.6 | |
| *Large Group Medians | | | | |

| Mathematics Grade 3 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error of Measurement (CSEM) | | 5 | 5 | |
| Participants Recommended Cut Point* + 3 SEs | | 70 | 82 | + 3 SEs |
| Percent of students in each Performance Level | 89.8 | 6.1 | 4.1 | |
| Participants Recommended Cut Point* + 2 SEs | | 65 | 77 | + 2 SEs |
| Percent of students in each Performance Level | 84.4 | 10.5 | 5.1 | |
| Participants Recommended Cut Point* + 1 SEs | | 60 | 72 | + 1 SEs |
| Percent of students in each Performance Level | 71.3 | 18.5 | 10.2 | |
| Participants Recommended Cut Point* | | 55 | 67 | |
| Percent of students in each Performance Level | 64.1 | 22.5 | 13.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 50 | 62 | - 1 SEs |
| Percent of students in each Performance Level | 44.7 | 35.0 | 20.3 | |
| Participants Recommended Cut Point* - 2 SEs | | 45.0 | 57.0 | - 2 SEs |
| Percent of students in each Performance Level | 25.2 | 42.8 | 32.0 | |
| Participants Recommended Cut Point* - 3 SEs | | 40 | 52 | - 3 SEs |
| Percent of students in each Performance Level | 17.3 | 35.1 | 47.6 | |
| *Large Group Medians | | | | |

| Mathematics Grade 3 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| SEM Combined (SEMcomb) | | 5.10 | 5.06 | |
| Participants Recommended Cut Point* + 3 SEs | | 70 | 82 | + 3 SEs |
| Percent of students in each Performance Level | 89.8 | 6.1 | 4.1 | |
| Participants Recommended Cut Point* + 2 SEs | | 65 | 77 | + 2 SEs |
| Percent of students in each Performance Level | 84.4 | 10.5 | 5.1 | |
| Participants Recommended Cut Point* + 1 SEs | | 60 | 72 | + 1 SEs |
| Percent of students in each Performance Level | 71.3 | 18.5 | 10.2 | |
| Participants Recommended Cut Point* | | 55 | 67 | |
| Percent of students in each Performance Level | 64.1 | 22.5 | 13.4 | |
| Participants Recommended Cut Point* - 1 SEs | | 50 | 62 | - 1 SEs |
| Percent of students in each Performance Level | 44.7 | 35.0 | 20.3 | |
| Participants Recommended Cut Point* - 2 SEs | | 45.0 | 57.0 | - 2 SEs |
| Percent of students in each Performance Level | 25.2 | 42.8 | 32.0 | |
| Participants Recommended Cut Point* - 3 SEs | | 40 | 52 | - 3 SEs |
| Percent of students in each Performance Level | 17.3 | 35.1 | 47.6 | |
| *Large Group Medians | | | | |

Appendix U
Standard Error Bands for Math Grade 4

| Mathematics Grade 4 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error (SE) cut score | | 1.11 | 0.97 | |
| Participants Recommended Cut Point* + 3 SEs | | 57 | 71 | + 3 SEs |
| Percent of students in each Performance Level | 68.8 | 23.2 | 8.0 | |
| Participants Recommended Cut Point* + 2 SEs | | 56 | 70 | + 2 SEs |
| Percent of students in each Performance Level | 64.7 | 27.3 | 8.0 | |
| Participants Recommended Cut Point* + 1 SEs | | 55 | 69 | + 1 SEs |
| Percent of students in each Performance Level | 64.7 | 25.4 | 9.9 | |
| Participants Recommended Cut Point* | | 54 | 68 | |
| Percent of students in each Performance Level | 61.6 | 28.5 | 9.9 | |
| Participants Recommended Cut Point* - 1 SEs | | 53 | 67 | - 1 SEs |
| Percent of students in each Performance Level | 57.5 | 30.7 | 11.8 | |
| Participants Recommended Cut Point* - 2 SEs | | 52 | 66 | - 2 SEs |
| Percent of students in each Performance Level | 53.4 | 32.1 | 14.5 | |
| Participants Recommended Cut Point* - 3 SEs | | 51 | 65 | - 3 SEs |
| Percent of students in each Performance Level | 53.4 | 32.1 | 14.5 | |
| *Large Group Medians | | | | |

| Mathematics Grade 4 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error of Measurement (CSEM) | | 4.0 | 5.0 | |
| Participants Recommended Cut Point* + 3 SEs | | 66 | 78 | + 3 SEs |
| Percent of students in each Performance Level | 85.5 | 7.7 | 6.8 | |
| Participants Recommended Cut Point* + 2 SEs | | 62 | 78 | + 2 SEs |
| Percent of students in each Performance Level | 80.9 | 12.3 | 6.8 | |
| Participants Recommended Cut Point* + 1 SEs | | 58 | 73 | + 1 SEs |
| Percent of students in each Performance Level | 72.6 | 20.6 | 6.8 | |
| Participants Recommended Cut Point* | | 54 | 68 | |
| Percent of students in each Performance Level | 61.6 | 28.5 | 9.9 | |
| Participants Recommended Cut Point* - 1 SEs | | 50 | 63 | - 1 SEs |
| Percent of students in each Performance Level | 49.0 | 34.0 | 17.0 | |
| Participants Recommended Cut Point* - 2 SEs | | 46 | 58 | - 2 SEs |
| Percent of students in each Performance Level | 36.8 | 35.8 | 27.4 | |
| Participants Recommended Cut Point* - 3 SEs | | 42 | 53 | - 3 SEs |
| Percent of students in each Performance Level | 18.9 | 38.6 | 42.5 | |
| *Large Group Medians | | | | |

| Mathematics Grade 4 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| SEM Combined (SEMcomb) | | 4.15 | 5.09 | |
| Participants Recommended Cut Point* + 3 SEs | | 66 | 78 | + 3 SEs |
| Percent of students in each Performance Level | 85.5 | 7.7 | 6.8 | |
| Participants Recommended Cut Point* + 2 SEs | | 62 | 78 | + 2 SEs |
| Percent of students in each Performance Level | 80.9 | 12.3 | 6.8 | |
| Participants Recommended Cut Point* + 1 SEs | | 58 | 73 | + 1 SEs |
| Percent of students in each Performance Level | 72.6 | 20.6 | 6.8 | |
| Participants Recommended Cut Point* | | 54 | 68 | |
| Percent of students in each Performance Level | 61.6 | 28.5 | 9.9 | |
| Participants Recommended Cut Point* - 1 SEs | | 50 | 63 | - 1 SEs |
| Percent of students in each Performance Level | 49.0 | 34.0 | 17.0 | |
| Participants Recommended Cut Point* - 2 SEs | | 46 | 58 | - 2 SEs |
| Percent of students in each Performance Level | 36.8 | 35.8 | 27.4 | |
| Participants Recommended Cut Point* - 3 SEs | | 42 | 53 | - 3 SEs |
| Percent of students in each Performance Level | 18.9 | 38.6 | 42.5 | |
| *Large Group Medians | | | | |

Appendix V
Standard Error Bands for Math Grade 5

| Mathematics Grade 5 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error (SE) cut score | | 0.96 | 1.09 | |
| Participants Recommended Cut Point* + 3 SEs | | 61 | 74 | + 3 SEs |
| Percent of students in each Performance Level | 78.0 | 15.0 | 7.0 | |
| Participants Recommended Cut Point* + 2 SEs | | 60 | 73 | + 2 SEs |
| Percent of students in each Performance Level | 74.6 | 18.4 | 7.0 | |
| Participants Recommended Cut Point* + 1 SEs | | 59 | 72 | + 1 SEs |
| Percent of students in each Performance Level | 74.6 | 17.2 | 8.2 | |
| Participants Recommended Cut Point* | | 58 | 71 | |
| Percent of students in each Performance Level | 70.3 | 21.5 | 8.2 | |
| Participants Recommended Cut Point* - 1 SEs | | 57 | 70 | - 1 SEs |
| Percent of students in each Performance Level | 66.9 | 23.0 | 10.1 | |
| Participants Recommended Cut Point* - 2 SEs | | 56 | 69 | - 2 SEs |
| Percent of students in each Performance Level | 66.9 | 23.0 | 10.1 | |
| Participants Recommended Cut Point* - 3 SEs | | 55 | 68 | - 3 SEs |
| Percent of students in each Performance Level | 63.0 | 24.2 | 12.8 | |
| *Large Group Medians | | | | |

| Mathematics Grade 5 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| Standard Error of Measurement (CSEM) | | 5 | 6 | |
| | | | | |
| Participants Recommended Cut Point* + 3 SEs | | 73 | 89 | + 3 SEs |
| Percent of students in each Performance Level | 93.0 | 6.2 | 0.8 | |
| | | | | |
| Participants Recommended Cut Point* + 2 SEs | | 68 | 83 | + 2 SEs |
| Percent of students in each Performance Level | 87.2 | 10.8 | 2.0 | |
| | | | | |
| Participants Recommended Cut Point* + 1 SEs | | 63 | 77 | + 1 SEs |
| Percent of students in each Performance Level | 80.5 | 15.5 | 4.0 | |
| | | | | |
| Participants Recommended Cut Point* | | 58 | 71 | |
| Percent of students in each Performance Level | 70.3 | 21.5 | 8.2 | |
| | | | | |
| Participants Recommended Cut Point* - 1 SEs | | 53 | 65 | - 1 SEs |
| Percent of students in each Performance Level | 54.5 | 28.2 | 17.3 | |
| | | | | |
| Participants Recommended Cut Point* - 2 SEs | | 48 | 59 | - 2 SEs |
| Percent of students in each Performance Level | 37.1 | 37.5 | 25.4 | |
| | | | | |
| Participants Recommended Cut Point* - 3 SEs | | 43 | 53 | - 3 SEs |
| Percent of students in each Performance Level | 22.1 | 32.4 | 45.5 | |
| *Large Group Medians | | | | |

| Mathematics Grade 5 | | | | |
|---|-------|---------------------------|-------------------------|-----------------|
| Recommended Cut Points*Plus/Minus Selected Standards Errors (SEs) of the Cut Scores | | | | |
| | Basic | Proficient Scale Score | Advanced Scale Score | SE Calculations |
| SEM Combined (SEMcomb) | | 5.09 | 6.10 | |
| | | | | |
| Participants Recommended Cut Point* + 3 SEs | | 73 | 89 | + 3 SEs |
| Percent of students in each Performance Level | 93.0 | 6.2 | 0.8 | |
| | | | | |
| Participants Recommended Cut Point* + 2 SEs | | 68 | 83 | + 2 SEs |
| Percent of students in each Performance Level | 87.2 | 10.8 | 2.0 | |
| | | | | |
| Participants Recommended Cut Point* + 1 SEs | | 63 | 77 | + 1 SEs |
| Percent of students in each Performance Level | 80.5 | 15.5 | 4.0 | |
| | | | | |
| Participants Recommended Cut Point* | | 58 | 71 | |
| Percent of students in each Performance Level | 70.3 | 21.5 | 8.2 | |
| | | | | |
| Participants Recommended Cut Point* - 1 SEs | | 53 | 65 | - 1 SEs |
| Percent of students in each Performance Level | 54.5 | 28.2 | 17.3 | |
| | | | | |
| Participants Recommended Cut Point* - 2 SEs | | 48 | 59 | - 2 SEs |
| Percent of students in each Performance Level | 37.1 | 37.5 | 25.4 | |
| | | | | |
| Participants Recommended Cut Point* - 3 SEs | | 43 | 53 | - 3 SEs |
| Percent of students in each Performance Level | 22.1 | 32.4 | 45.5 | |
| *Large Group Medians | | | | |