

### 3. CENTRAL TENDENCY MEASURES AND OTHER CLASSICAL ITEM ANALYSES OF THE 2010 MOD-MSA: MATHEMATICS

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This section provides central tendency statistics and results of classical statistical item analyses for students in grades 3 through 8.

The analyses provided for the central tendency measures of the operational test are based on the statewide population. However, the item level statistics are based on the equating sample mainly because those are the item statistics that were used in selecting the operational items and are stored in the item bank. In the absence of a table note, the analyses in this report will be assumed to be based on the equating sample.

#### 3.1. Measures of Central Tendency

The classical measures of central tendency, variability, and score precision of raw scores are presented in Table 3.2.1 by grades for each strand as well as the total operational test. The tables include the following:

- Number of items by strands and the total test
- Maximum score attainable
- N-Count (sample size)
- Mean (average raw score)
- SD (standard deviation)
- SE (standard error of the mean)

#### Standard Error of the Mean

The standard error of the mean (SE) is an estimate of the magnitude of sampling error associated in the estimation of the population mean. It is defined as follows:

$$SE = \frac{\hat{\sigma}}{\sqrt{n}}, \text{ where}$$

SE = standard error of the mean

$\hat{\sigma}$  = standard deviation of the sample

n = number of responses in the sample

**Table 3.1.1. Central Tendency Statistics of the Operational Test by Subscales and Grades**

<b>Grade</b>	<b>Modality (Strand)</b>	<b># Items</b>	<b>Max Points</b>	<b>N Count</b>	<b>RS Mean</b>	<b>SD</b>	<b>SE</b>
3	Algebra	9	9	961	4.96	1.92	0.06
	Geometry and Measurement	11	11	961	5.89	2.16	0.07
	Statistics and Probability	10	10	961	4.80	2.09	0.07
	Number and Computation	11	11	961	6.12	2.47	0.08
	Process	10	10	961	4.63	2.05	0.07
	Total Test	51	51	961	26.40	8.39	0.27
4	Algebra	10	10	1294	5.15	2.11	0.06
	Geometry and Measurement	10	10	1294	5.17	2.04	0.06
	Statistics and Probability	11	11	1294	5.83	2.33	0.06
	Number and Computation	10	10	1294	5.56	2.15	0.06
	Process	10	10	1294	5.14	2.06	0.06
	Total Test	51	51	1294	26.85	8.25	0.23
5	Algebra	10	10	1430	5.50	2.07	0.05
	Geometry and Measurement	10	10	1430	4.68	1.90	0.05
	Statistics and Probability	9	9	1430	4.38	1.94	0.05
	Number and Computation	10	10	1430	4.59	1.94	0.05
	Process	12	12	1430	5.82	2.25	0.06
	Total Test	51	51	1430	24.97	7.38	0.20
6	Algebra	10	10	1477	5.24	2.08	0.05
	Geometry and Measurement	10	10	1477	3.86	2.11	0.05
	Statistics and Probability	10	10	1477	4.71	2.11	0.06
	Number and Computation	10	10	1477	4.87	2.09	0.05
	Process	11	11	1477	4.98	2.19	0.06
	Total Test	51	51	1477	23.66	8.04	0.21
7	Algebra	10	10	1755	5.14	2.12	0.05
	Geometry and Measurement	9	9	1755	3.99	1.77	0.04
	Statistics and Probability	10	10	1755	4.32	1.97	0.05
	Number and Computation	10	10	1755	5.64	2.08	0.05
	Process	12	12	1755	4.87	1.90	0.05
	Total Test	51	51	1755	23.96	6.87	0.16
8	Algebra	11	11	1920	5.65	2.24	0.05
	Geometry and Measurement	9	9	1920	3.58	1.65	0.04
	Statistics and Probability	10	10	1920	4.28	1.99	0.05
	Number and Computation	8	8	1920	4.18	1.63	0.04
	Process	13	13	1920	5.72	2.38	0.05
	Total Test	51	51	1920	23.40	7.21	0.16

Note: Analyses were conducted with the statewide population after applying equating exclusion criteria.

### 3.2. Item Level Descriptive Statistics

This section presents the raw score summary statistics for all items in the Mod-MSA: Mathematics spring 2010 within the framework of CTT. The  $p$ -value for each item is defined as the proportion of students that answer an item correctly for the multiple choice items. A high  $p$ -value means that an item is easy; a low  $p$ -value means that an item is difficult.

The point biserial correlation for each item is an index of the association between the item score and the total test score. It shows the proficiency of the item to discriminate between low proficiency and high proficiency students. An item with a high point biserial correlation discriminates more effectively between the low and the high proficiency students than a low point biserial correlation.

The item-level statistics for the operational and the embedded field test items for the 2010 Mod-MSA: Mathematics based on the equating sample are presented in Table 3.3.1 to Table 3.3.6. The following item information and statistics are presented for each item:

- Item number based on their sequential appearance in the form.
- Item UIN number
- Item strand number
- N-count (number of students)
- Response options
- $P$ -value for multiple choice items (percentage of examinees that answered the item correctly), and item mean for constructed-response items (average number of points earned out of the maximum number of possible points)
- Point biserial (index of discrimination between high and low scoring students)

Item distractor analyses are provided in Appendix B. These analyses include

- Item UIN number
- Item strand number
- Item mean
- Item standard deviation
- Percentage of distribution by distractors
- Percent of omits
- Distractor-to-total correlation

**Table 3.2.1. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 3**

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n-Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
1	100000197601	246	669	3	0.77	0.30
2	100000197604	246	669	3	0.50	0.34
3	100000098438	241	669	3	0.44	0.19
4	100000098445	241	669	3	0.59	0.37
5	100000098439	241	669	3	0.55	0.36
6	100000098516	268	669	3	0.58	0.42
7	100000185401	273	669	3	0.35	0.24
8	100000185403	273	669	3	0.38	0.17
9	100000197723	257	669	3	0.54	0.24
10	100000197745	257	669	3	0.57	0.39
11	100000197780	262	669	3	0.46	0.17
12	100000197781	262	669	3	0.53	0.32
13	100000098529	268	669	3	0.38	0.13
14	100000197752	257	669	3	0.41	0.30
15	100000197753	273	669	3	0.31	0.28
16	100000197754	273	669	3	0.27	0.09
17	100000197620	246	669	3	0.70	0.22
18	100000197647	246	669	3	0.55	0.29
19	100000098440	241	669	3	0.68	0.26
20	100000098448	241	669	3	0.63	0.38
21	100000185375	268	669	3	0.61	0.33
22	100000185389	273	669	3	0.45	0.17
23	100000185391	273	669	3	0.42	0.35
24	100000197617	246	669	3	0.36	0.13
25	100000197603	246	669	3	0.66	0.20
26	100000197677	257	669	3	0.41	0.13
27	100000197751	257	669	3	0.26	0.21
28	100000197722	257	669	3	0.42	0.21
29	100000350878	241	669	3	0.56	0.27
30	100000098450	241	669	3	0.57	0.33
31	100000197651	246	669	3	0.74	0.12
32	100000197655	273	669	3	0.22	0.11
33	100000197656	273	669	3	0.71	0.32
34	100000197741	257	669	3	0.48	0.40
35	100000197755	257	669	3	0.52	0.27
36	100000197779	262	669	3	0.62	0.41
37	100000197670	251	669	3	0.54	0.30

Table 3.2.1. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 3 (Continued)

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
38	100000197674	273	669	3	0.52	0.34
39	100000197675	273	669	3	0.46	0.31
40	100000098452	241	669	3	0.70	0.41
41	100000098444	241	669	3	0.36	0.21
42	100000197667	251	669	3	0.37	0.25
43	100000197668	273	669	3	0.46	0.28
44	100000197669	273	669	3	0.33	0.25
45	100000098451	241	669	3	0.62	0.44
46	100000098454	241	669	3	0.69	0.33
47	100000098447	241	669	3	0.29	0.12
48	100000185378	268	669	3	0.69	0.38
49	100000197757	257	669	3	0.57	0.47
50	100000197761	273	669	3	0.59	0.33
51	100000197765	273	669	3	0.52	0.14
52	100000098449	241	669	3	0.63	0.43
53	100000098453	241	669	3	0.39	0.17
54	100000197602	246	669	3	0.52	0.15
55	100000197621	246	669	3	0.61	0.31
56	100000197660	246	669	3	0.71	0.37
57	100000197756	257	669	3	0.64	0.31
58	100000098446	241	669	3	0.33	0.23
59	100000098455	241	669	3	0.36	0.09
60	100000197648	246	669	3	0.28	0.09
61	100000197649	273	669	3	0.66	0.34
62	100000197650	273	669	3	0.39	0.12
63	100000185382	268	669	3	0.42	0.23
64	100000185313	268	669	3	0.75	0.37
65	100000197662	251	669	3	0.49	0.44
66	100000197665	251	669	3	0.60	0.34
67	100000098522	268	669	3	0.70	0.42
68	100000185484	273	669	3	0.40	0.23
69	100000185404	273	669	3	0.43	0.29
70	100000197746	257	669	3	0.31	0.05
71	100000197724	257	669	3	0.50	0.40
72	100000197750	257	669	3	0.38	0.17
73	100000098527	268	669	3	0.31	0.19
74	100000185381	268	669	3	0.62	0.37
75	100000098435	241	669	3	0.52	0.34

Table 3.2.1 The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 3 (Continued)

Item Seq. No.	Item CID	Strand No. <sup>1</sup>	n-Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
76	100000185485	273	669	3	0.49	0.40
77	100000185486	273	669	3	0.63	0.41
78	100000185380	268	669	3	0.48	0.28
79	100000185384	268	669	3	0.63	0.37
80	100000185377	268	669	3	0.53	0.35
81	100000197720	257	669	3	0.44	0.30
82	100000185386	268	669	3	0.39	0.24
83	100000185477	273	669	3	0.67	0.32
84	100000185473	273	669	3	0.33	0.34
85	100000197676	251	669	3	0.36	0.13
86	100000197664	251	669	3	0.39	0.29
87	100000098532	268	669	3	0.30	0.11
88	100000185387	268	669	3	0.42	0.39
89	100000185376	268	669	3	0.46	0.22
90	100000197740	257	669	3	0.62	0.39
91	100000197661	251	669	3	0.57	0.28
92	100000098515	268	669	3	0.53	0.49
93	100000185385	268	669	3	0.26	0.14
94	100000197663	251	669	3	0.43	0.22
95	100000197666	251	669	3	0.56	0.31
96	100000098441	241	669	3	0.52	0.04
97	100000185388	273	669	3	0.57	0.30
98	100000185390	273	669	3	0.61	0.42
99	100000185379	268	669	3	0.61	0.28
100	100000185383	268	669	3	0.68	0.48

Note: 1. 241= Algebra, 246=Geometry, 251=Measurement, 257=Statistics, 262= Probability, 268=Numbers and Computation, and 373&374= Process  
 2. These analyses are based on the equating sample used with the exclusion criteria.

**Table 3.2.2. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 4**

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
1	100000198111	251	872	3	0.52	0.37
2	100000198113	273	872	3	0.57	0.32
3	100000198114	273	872	3	0.56	0.17
4	100000198138	257	872	3	0.34	0.30
5	100000198123	257	872	3	0.57	0.29
6	100000098578	241	872	3	0.42	0.37
7	100000186564	268	872	3	0.42	0.19
8	100000186565	273	872	3	0.32	0.17
9	100000186566	273	872	3	0.33	0.02
10	100000098583	241	872	3	0.37	0.19
11	100000098584	241	872	3	0.78	0.39
12	100000198124	257	872	3	0.57	0.29
13	100000198153	262	872	3	0.39	0.13
14	100000198098	246	872	3	0.76	0.31
15	100000198100	246	872	3	0.49	0.19
16	100000198133	257	872	3	0.39	0.25
17	100000198134	273	872	3	0.49	0.30
18	100000198135	273	872	3	0.36	-0.08
19	100000198110	251	872	3	0.76	0.32
20	100000098579	241	872	3	0.71	0.30
21	100000098581	241	872	3	0.43	0.33
22	100000198140	262	872	3	0.64	0.34
23	100000198142	273	872	3	0.53	0.20
24	100000198143	273	872	3	0.51	0.24
25	100000198126	257	872	3	0.31	0.03
26	100000198128	257	872	3	0.46	0.17
27	100000198092	246	872	3	0.48	0.13
28	100000198099	246	872	3	0.58	0.13
29	100000198117	251	872	3	0.46	0.38
30	100000198118	273	872	3	0.53	0.28
31	100000198119	273	872	3	0.34	0.12
32	100000098577	241	872	3	0.61	0.32
33	100000098576	241	872	3	0.36	0.03
34	100000098587	241	872	3	0.42	0.19
35	100000198116	251	872	3	0.20	-0.01
36	100000198107	251	872	3	0.53	0.33
37	100000198101	246	872	3	0.39	0.18

Table 3.2.2 The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 4 (Continued)

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
38	100000198102	273	872	3	0.48	0.29
39	100000198103	273	872	3	0.51	0.31
40	100000198148	262	872	3	0.47	0.26
41	100000198158	262	872	3	0.49	0.37
42	100000098646	268	872	3	0.78	0.41
43	100000186562	273	872	3	0.67	0.36
44	100000186563	273	872	3	0.44	0.18
45	100000198094	246	872	3	0.78	0.35
46	100000198096	246	872	3	0.58	0.32
47	100000198129	257	872	3	0.53	0.38
48	100000198131	273	872	3	0.34	0.19
49	100000198132	273	872	3	0.40	0.21
50	100000198093	246	872	3	0.90	0.38
51	100000098572	241	872	3	0.40	0.38
52	100000098586	241	872	3	0.48	0.32
53	100000198104	246	872	3	0.55	0.12
54	100000198105	273	872	3	0.54	0.26
55	100000198106	273	872	3	0.43	0.23
56	100000198139	257	872	3	0.42	0.21
57	100000098585	241	872	3	0.79	0.33
58	100000098582	241	872	3	0.52	0.38
59	100000207144	251	872	3	0.41	0.17
60	100000198144	262	872	3	0.69	0.47
61	100000198145	273	872	3	0.39	0.29
62	100000198147	273	872	3	0.49	0.24
63	100000186576	268	872	3	0.72	0.37
64	100000098666	268	872	3	0.53	0.24
65	100000198150	262	872	3	0.70	0.45
66	100000198149	262	872	3	0.56	0.33
67	100000186573	268	872	3	0.36	0.29
68	100000186574	273	872	3	0.49	0.26
69	100000186575	273	872	3	0.49	0.31
70	100000186583	268	872	3	0.50	-0.07
71	100000198108	251	872	3	0.44	0.36
72	100000198122	251	872	3	0.37	0.19
73	100000098645	268	872	3	0.44	0.25
74	100000186578	268	872	3	0.73	0.41
75	100000186580	268	872	3	0.63	0.42



Table 3.2.2. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 4 (Continued)

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
76	100000198157	262	872	3	0.32	0.22
77	100000098573	241	872	3	0.42	0.28
78	100000186560	273	872	3	0.53	0.21
79	100000186561	273	872	3	0.35	0.20
80	100000198137	257	872	3	0.44	0.34
81	100000098571	241	872	3	0.60	0.39
82	100000186581	268	872	3	0.61	0.30
83	100000207143	268	872	3	0.60	0.36
84	100000198121	251	872	3	0.41	0.23
85	100000098588	241	872	3	0.55	0.29
86	100000098657	268	872	3	0.35	0.25
87	100000186571	273	872	3	0.47	0.12
88	100000186572	273	872	3	0.47	0.27
89	100000198125	257	872	3	0.55	0.37
90	100000198151	262	872	3	0.71	0.40
91	100000098653	268	872	3	0.33	0.21
92	100000186577	268	872	3	0.72	0.38
93	100000098568	241	872	3	0.64	0.41
94	100000186558	273	872	3	0.57	0.38
95	100000186559	273	872	3	0.49	0.21
96	100000186567	268	872	3	0.54	0.31
97	100000186582	268	872	3	0.38	0.21
98	100000198127	257	872	3	0.55	0.38
99	100000098664	268	872	3	0.52	0.32
100	100000098580	241	872	3	0.32	0.15
101	100000186579	268	872	3	0.50	0.34
102	100000198109	251	872	3	0.40	0.32

Note: 1. 241= Algebra, 246=Geometry, 251=Measurement, 257=Statistics, 262= Probability, 268=Numbers and Computation, and 373&374= Process  
 2. These analyses are based on the equating sample used with the exclusion criteria.

**Table 3.2.3. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 5**

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
1	100000187371	268	926	3	0.83	0.36
2	100000187367	268	926	3	0.47	0.22
3	100000187378	268	926	3	0.68	0.31
4	100000099084	241	926	3	0.67	0.39
5	100000099080	241	926	3	0.64	0.38
6	100000099090	241	926	3	0.40	0.16
7	100000099087	241	926	3	0.26	0.06
8	100000196233	251	926	3	0.65	0.38
9	100000196246	251	926	3	0.12	-0.04
10	100000196229	251	926	3	0.46	0.25
11	100000196273	257	926	3	0.31	0.34
12	100000196043	273	926	3	0.43	0.30
13	100000196045	273	926	3	0.52	0.21
14	100000196253	257	926	3	0.64	0.40
15	100000196278	257	926	3	0.29	0.32
16	100000196088	246	926	3	0.33	0.15
17	100000187430	268	926	3	0.55	0.30
18	100000187390	268	926	3	0.73	0.25
19	100000196090	246	926	3	0.29	0.15
20	100000196081	246	926	3	0.35	0.14
21	100000187376	268	926	3	0.55	0.16
22	100000187386	268	926	3	0.70	0.14
23	100000187383	268	926	3	0.41	0.18
24	100000196231	251	926	3	0.40	0.17
25	100000196036	273	926	3	0.68	0.27
26	100000196029	273	926	3	0.54	0.30
27	100000196242	251	926	3	0.60	0.34
28	100000099083	241	926	3	0.53	0.19
29	100000099075	241	926	3	0.53	0.34
30	100000099086	241	926	3	0.62	0.35
31	100000196200	246	926	3	0.63	0.30
32	100000196277	257	926	3	0.50	0.26
33	100000196284	262	926	3	0.63	0.36
34	100000196057	273	926	3	0.48	0.27
35	100000196054	273	926	3	0.47	0.26
36	100000196279	262	926	3	0.28	0.19
37	100000099081	241	926	3	0.39	0.13

Table 3.2.3 The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 5 (Continued)

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n-Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
38	100000099079	241	926	3	0.63	0.25
39	100000099088	241	926	3	0.54	0.12
40	100000099085	241	926	3	0.69	0.33
41	100000196237	251	926	3	0.39	0.08
42	100000196234	251	926	3	0.75	0.27
43	100000196053	273	926	3	0.64	0.34
44	100000196244	251	926	3	0.20	0.09
45	100000099089	241	926	3	0.72	0.39
46	100000099091	241	926	3	0.54	0.30
47	100000099092	241	926	3	0.54	0.23
48	100000187365	273	926	3	0.40	0.23
49	100000187364	273	926	3	0.46	0.25
50	100000196381	262	926	3	0.76	0.38
51	100000196281	262	926	3	0.41	0.16
52	100000187387	268	926	3	0.22	0.15
53	100000187388	273	926	3	0.40	0.08
54	100000187389	273	926	3	0.35	0.02
55	100000196270	257	926	3	0.35	0.31
56	100000196256	257	926	3	0.53	0.31
57	100000196267	257	926	3	0.85	0.31
58	100000099178	241	926	3	0.53	0.25
59	100000187369	268	926	3	0.40	0.15
60	100000187380	268	926	3	0.39	0.15
61	100000187429	268	926	3	0.56	0.34
62	100000187428	268	926	3	0.59	0.33
63	100000187372	268	926	3	0.24	0.04
64	100000099180	268	926	3	0.45	0.29
65	100000099072	241	926	3	0.56	0.37
66	100000187360	273	926	3	0.38	0.13
67	100000187361	273	926	3	0.51	0.34
68	100000196260	257	926	3	0.41	0.04
69	100000196258	257	926	3	0.32	0.07
70	100000196269	257	926	3	0.22	0.23
71	100000196223	246	926	3	0.52	0.20
72	100000196100	246	926	3	0.80	0.36
73	100000196094	246	926	3	0.47	0.24
74	100000187373	273	926	3	0.35	0.21
75	100000187363	273	926	3	0.36	0.08

Table 3.2.3 The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 5 (Continued)

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
76	100000196037	273	926	3	0.47	0.16
77	100000187370	268	926	3	0.46	0.28
78	100000187391	268	926	3	0.38	0.28
79	100000187392	268	926	3	0.40	0.11
80	100000187382	268	926	3	0.41	0.15
81	100000196263	257	926	3	0.67	0.28
82	100000196247	257	926	3	0.41	0.28
83	100000196238	251	926	3	0.38	0.09
84	100000196079	246	926	3	0.40	0.22
85	100000196025	273	926	3	0.60	0.22
86	100000187393	273	926	3	0.28	-0.02
87	100000196225	246	926	3	0.31	0.07
88	100000099177	241	926	3	0.48	0.32
89	100000187366	273	926	3	0.45	0.23
90	100000196049	273	926	3	0.58	0.22
91	100000196235	251	926	3	0.28	0.05
92	100000099082	241	926	3	0.44	0.05
93	100000196042	273	926	3	0.40	0.22
94	100000187385	268	926	3	0.49	0.20
95	100000187374	273	926	3	0.45	0.04
96	100000187424	273	926	3	0.40	0.16
97	100000187379	268	926	3	0.55	0.37
98	100000187377	268	926	3	0.24	0.04
99	100000187381	268	926	3	0.26	0.19
100	100000187375	268	926	3	0.38	0.12

Note: 1. 241= Algebra, 246=Geometry, 251=Measurement, 257=Statistics, 262= Probability, 268=Numbers and Computation, and 373 & 374= Process  
 2. These analyses are based on the equating sample used with the exclusion criteria.

**Table 3.2.4. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 6**

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n-Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
1	100000272103	246	852	3	0.72	0.16
2	100000272105	246	852	3	0.62	0.17
3	100000272100	246	852	3	0.30	0.14
4	100000272095	246	852	3	0.21	0.17
5	100000272117	251	852	3	0.41	0.29
6	100000198185	251	852	3	0.41	0.37
7	100000272111	251	852	3	0.35	0.11
8	100000272115	251	852	3	0.37	0.09
9	100000272113	251	852	3	0.41	0.36
10	100000272076	241	852	3	0.58	0.30
11	100000272073	241	852	3	0.53	0.15
12	100000099232	241	852	3	0.60	0.43
13	100000272096	246	852	3	0.55	0.36
14	100000272145	273	852	3	0.47	0.24
15	100000272146	273	852	3	0.49	0.17
16	100000198162	246	852	3	0.43	0.18
17	100000272101	246	852	3	0.46	0.24
18	100000198232	262	852	3	0.33	0.21
19	100000272084	262	852	3	0.34	-0.01
20	100000198210	257	852	3	0.35	0.32
21	100000198211	273	852	3	0.51	0.28
22	100000198212	273	852	3	0.63	0.41
23	100000272129	257	852	3	0.52	0.31
24	100000187836	268	852	3	0.61	0.32
25	100000272156	268	852	3	0.60	0.29
26	100000272158	268	852	3	0.41	0.13
27	100000272159	268	852	3	0.39	0.21
28	100000272066	241	852	3	0.73	0.37
29	100000272077	241	852	3	0.31	0.17
30	100000272068	241	852	3	0.36	0.19
31	100000272075	241	852	3	0.70	0.29
32	100000272072	241	852	3	0.61	0.23
33	100000272067	241	852	3	0.66	0.43
34	100000272131	257	852	3	0.44	0.27
35	100000272127	257	852	3	0.62	0.39
36	100000272134	257	852	3	0.65	0.32
37	100000273844	241	852	3	0.50	0.18

Table 3.2.4 The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 6 (Continued)

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
38	100000273626	273	852	3	0.31	0.17
39	100000272143	273	852	3	0.54	0.37
40	100000272144	273	852	3	0.45	0.27
41	100000198178	246	852	3	0.47	0.26
42	100000272099	246	852	3	0.28	0.08
43	100000272148	273	852	3	0.42	0.14
44	100000272149	273	852	3	0.49	0.15
45	100000198235	262	852	3	0.48	0.19
46	100000272080	262	852	3	0.69	0.31
47	100000272082	262	852	3	0.66	0.31
48	100000272114	251	852	3	0.26	0.20
49	100000272116	251	852	3	0.40	0.32
50	100000198186	251	852	3	0.35	0.29
51	100000272112	251	852	3	0.34	0.09
52	100000099325	241	852	3	0.65	0.43
53	100000272128	257	852	3	0.56	0.30
54	100000272125	257	852	3	0.45	0.22
55	100000272069	241	852	3	0.58	0.35
56	100000272155	268	852	3	0.23	-0.02
57	100000272166	268	852	3	0.39	0.27
58	100000272167	268	852	3	0.25	0.28
59	100000187852	268	852	3	0.60	0.37
60	100000272065	241	852	3	0.43	0.38
61	100000198218	257	852	3	0.52	0.29
62	100000198220	273	852	3	0.53	0.41
63	100000198219	273	852	3	0.50	0.35
64	100000187841	268	852	3	0.60	0.32
65	100000272161	268	852	3	0.27	0.18
66	100000272163	268	852	3	0.45	0.35
67	100000198170	246	852	3	0.23	0.24
68	100000272104	246	852	3	0.45	0.17
69	100000272150	273	852	3	0.44	0.17
70	100000272151	273	852	3	0.28	0.05
71	100000272098	246	852	3	0.60	0.28
72	100000272071	241	852	3	0.74	0.25
73	100000099236	241	852	3	0.62	0.34
74	100000273837	241	852	3	0.65	0.34
75	100000273598	273	852	3	0.51	0.20

Table 3.2.4 The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 6 (Continued)

Item Seq. No.	Item CID	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
76	100000272141	273	852	3	0.63	0.28
77	100000198202	257	852	3	0.62	0.38
78	100000272126	257	852	3	0.54	0.29
79	100000272133	257	852	3	0.38	0.35
80	100000272132	257	852	3	0.63	0.33
81	100000272165	268	852	3	0.53	0.10
82	100000272152	273	852	3	0.38	0.22
83	100000273858	273	852	3	0.40	0.14
84	100000272160	268	852	3	0.69	0.34
85	100000187850	268	852	3	0.66	0.32
86	100000272157	268	852	3	0.18	0.22
87	100000272154	273	852	3	0.46	0.12
88	100000272153	273	852	3	0.57	0.26
89	100000272162	268	852	3	0.55	0.31
90	100000099252	241	852	3	0.35	0.11
91	100000198165	273	852	3	0.44	0.30
92	100000272097	246	852	3	0.52	0.26
93	100000187833	273	852	3	0.35	0.21
94	100000272102	246	852	3	0.47	0.00
95	100000198174	273	852	3	0.40	0.19
96	100000272164	268	852	3	0.34	0.19

Note: 1. 241= Algebra, 246=Geometry, 251=Measurement, 257=Statistics, 262= Probability, 268=Numbers and Computation, and 373b & 374= Process  
 2. These analyses are based on the equating sample used with the exclusion criteria.

**Table 3.2.5. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 7**

Item Seq. No. <sup>1</sup>	Item CID	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
1	100000322134	246	1000	3	0.63	0.32
2	100000273428	273	1000	3	0.29	0.13
3	100000273431	246	1000	3	0.27	0.04
4	100000272267	273	1000	3	0.80	0.12
5	100000197499	257	1000	3	0.59	0.34
6	100000272217	257	1000	3	0.60	0.19
7	100000322127	246	1000	3	0.20	0.24
8	100000322131	246	1000	3	0.15	0.01
9	100000197494	251	1000	3	0.35	0.23
10	100000322136	251	1000	3	0.27	-0.06
11	100000322138	251	1000	3	0.26	0.21
12	100000197496	251	1000	3	0.21	0.23
13	100000322166	241	1000	3	0.63	0.29
14	100000322165	241	1000	3	0.43	0.18
15	100000322169	241	1000	3	0.33	0.09
16	100000099488	268	1000	3	0.83	0.35
17	100000322151	268	1000	3	0.34	0.18
18	100000322141	268	1000	3	0.54	0.26
19	100000322152	268	1000	3	0.52	0.23
20	100000322140	268	1000	3	0.58	0.19
21	100000287243	273	1000	3	0.76	0.26
22	100000272268	273	1000	3	0.63	0.19
23	100000287244	251	1000	3	0.16	0.17
24	100000272270	273	1000	3	0.32	0.11
25	100000322137	251	1000	3	0.31	0.12
26	100000322139	251	1000	3	0.26	0.21
27	100000272201	251	1000	3	0.38	0.00
28	100000322164	241	1000	3	0.55	0.25
29	100000272171	241	1000	3	0.60	0.15
30	100000099420	241	1000	3	0.63	0.12
31	100000099421	241	1000	3	0.72	0.29
32	100000272271	273	1000	3	0.37	0.18
33	100000272216	257	1000	3	0.43	0.10
34	100000272272	273	1000	3	0.47	0.21
35	100000322175	262	1000	3	0.57	0.26
36	100000322172	262	1000	3	0.31	0.21
37	100000197528	262	1000	3	0.34	0.20



Table 3.2.5 The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 7 (Continued)

Item Seq. No. <sup>1</sup>	Item CID	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
38	100000374151	273	1000	3	0.37	0.02
39	100000374152	246	1000	3	0.41	0.01
40	100000196052	273	1000	3	0.42	0.00
41	100000196055	273	1000	3	0.33	0.15
42	100000322129	246	1000	3	0.62	0.26
43	100000197481	246	1000	3	0.59	0.35
44	100000273423	273	1000	3	0.47	0.19
46	100000273427	241	1000	3	0.37	0.02
48	100000272203	251	1000	3	0.52	0.37
49	100000322153	268	1000	3	0.58	0.40
50	100000272246	268	1000	3	0.29	0.07
51	100000322154	268	1000	3	0.62	0.22
52	100000322128	246	1000	3	0.29	0.14
53	100000322173	262	1000	3	0.34	0.04
54	100000322174	262	1000	3	0.28	0.03
55	100000273415	273	1000	3	0.29	0.03
56	100000273416	262	1000	3	0.17	0.12
57	100000272274	273	1000	3	0.41	0.16
58	100000272186	246	1000	3	0.65	0.23
59	100000322135	246	1000	3	0.65	0.36
60	100000322132	246	1000	3	0.48	0.12
61	100000272187	246	1000	3	0.46	0.25
63	100000374196	268	1000	3	0.34	0.27
64	100000272248	268	1000	3	0.58	0.21
65	100000322146	268	1000	3	0.33	0.13
66	100000197501	257	1000	3	0.46	0.24
67	100000322158	241	1000	3	0.44	0.53
68	100000322160	241	1000	3	0.48	0.38
69	100000322163	241	1000	3	0.46	0.29
70	100000272174	241	1000	3	0.41	0.39
71	100000099504	268	1000	3	0.32	0.22
72	100000322142	268	1000	3	0.80	0.26
73	100000167818	268	1000	3	0.63	0.45
74	100000322143	268	1000	3	0.80	0.31
75	100000322147	268	1000	3	0.49	0.29
76	100000099493	268	1000	3	0.69	0.27
77	100000273417	273	1000	3	0.47	0.12
78	100000273444	241	1000	3	0.47	0.41

Table 3.2.5. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 7 (Continued)

Item Seq. No. <sup>3</sup>	Item CID	Strand No. <sup>1</sup>	n-Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
79	100000273445	273	1000	3	0.33	0.15
80	100000197524	262	1000	3	0.19	0.23
81	100000272247	268	1000	3	0.68	0.26
82	100000322149	268	1000	3	0.68	0.41
83	100000322150	268	1000	3	0.50	0.17
84	100000322144	268	1000	3	0.74	0.27
85	100000322148	268	1000	3	0.61	0.44
86	100000099410	241	1000	3	0.43	0.37
87	100000322161	241	1000	3	0.42	0.27
88	100000099413	241	1000	3	0.25	0.20
89	100000322157	241	1000	3	0.75	0.23
90	100000099404	241	1000	3	0.49	0.44
91	100000196255	273	1000	3	0.55	0.22
92	100000197522	257	1000	3	0.59	0.23
93	100000196257	273	1000	3	0.37	0.18
94	100000196261	273	1000	3	0.47	0.08
95	100000322171	241	1000	3	0.48	0.43
96	100000322162	241	1000	3	0.47	0.30
97	100000322159	241	1000	3	0.42	0.36
98	100000099490	268	1000	3	0.46	0.29

Note: 1. 241= Algebra, 246=Geometry, 251=Measurement, 257=Statistics, 262= Probability, 268=Numbers and Computation, and 373&374= Process  
 2. These analyses are based on the equating sample used with the exclusion criteria.  
 3. Item #s 45, 47, 62 were not scored

**Table 3.2.6. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 8**

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
1	100000322198	241	1017	3	0.49	-0.04
2	100000322187	241	1017	3	0.41	0.11
3	100000197359	251	1017	3	0.60	0.24
4	100000272279	251	1017	3	0.15	0.15
5	100000272278	251	1017	3	0.37	0.07
6	100000272340	241	1017	3	0.47	0.24
7	100000099548	241	1017	3	0.74	0.28
8	100000322121	262	1017	3	0.54	0.25
9	100000322186	241	1017	3	0.73	0.17
10	100000322122	262	1017	3	0.59	0.01
11	100000322120	262	1017	3	0.55	0.31
12	100000099550	241	1017	3	0.43	0.34
13	100000272296	273	1017	3	0.26	0.06
14	100000272337	241	1017	3	0.28	0.22
15	100000272295	273	1017	3	0.29	0.14
16	100000272297	273	1017	3	0.51	0.10
17	100000272323	257	1017	3	0.45	0.08
18	100000322119	257	1017	3	0.58	0.22
19	100000322118	257	1017	3	0.47	0.33
20	100000322084	246	1017	3	0.32	0.11
21	100000197347	246	1017	3	0.38	0.21
22	100000322081	246	1017	3	0.54	0.23
23	100000272309	246	1017	3	0.33	0.04
24	100000322209	268	1017	3	0.53	0.21
25	100000322208	268	1017	3	0.65	0.29
26	100000322205	268	1017	3	0.42	0.10
27	100000322207	268	1017	3	0.77	0.29
28	100000197387	262	1017	3	0.42	0.41
29	100000286862	273	1017	3	0.39	0.02
30	100000272790	273	1017	3	0.58	0.32
31	100000286872	262	1017	3	0.40	0.07
32	100000373799	268	1017	3	0.37	0.21
33	100000272368	268	1017	3	0.34	-0.02
34	100000322200	268	1017	3	0.34	0.32
35	100000099626	268	1017	3	0.72	0.23
36	100000286792	273	1017	3	0.45	0.18
37	100000272298	273	1017	3	0.27	0.12

Table 3.2.6. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 8 (Continued)

Item Seq. No.	Item UIN	Strand No. <sup>1</sup>	n- Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
38	100000286786	251	1017	3	0.76	0.13
39	100000272300	273	1017	3	0.15	0.12
40	100000322079	251	1017	3	0.44	0.08
41	100000322078	251	1017	3	0.59	0.23
42	100000197367	257	1017	3	0.36	0.27
43	100000286859	273	1017	3	0.33	0.31
44	100000272305	273	1017	3	0.30	0.29
45	100000286860	257	1017	3	0.27	0.23
46	100000322116	257	1017	3	0.49	0.06
47	100000322117	257	1017	3	0.83	0.31
48	100000286845	273	1017	3	0.42	0.24
49	100000272301	273	1017	3	0.15	0.16
50	100000286846	246	1017	3	0.30	0.15
51	100000322080	246	1017	3	0.46	0.23
52	100000272353	262	1017	3	0.48	0.21
53	100000167565	273	1017	3	0.48	0.19
54	100000167566	273	1017	3	0.30	0.17
55	100000174558	262	1017	3	0.26	0.19
56	100000322204	268	1017	3	0.34	0.19
57	100000322206	268	1017	3	0.81	0.26
58	100000322199	268	1017	3	0.41	0.10
59	100000099639	268	1017	3	0.40	0.29
60	100000272308	246	1017	3	0.43	0.22
61	100000197322	246	1017	3	0.45	0.20
62	100000322082	246	1017	3	0.42	0.24
63	100000322115	257	1017	3	0.74	0.27
64	100000197365	257	1017	3	0.38	0.24
65	100000272339	241	1017	3	0.56	0.35
66	100000197377	273	1017	3	0.61	0.20
67	100000197373	273	1017	3	0.44	0.20
68	100000197375	257	1017	3	0.18	0.24
69	100000197376	273	1017	3	0.64	0.23
70	100000322201	268	1017	3	0.89	0.19
71	100000322203	268	1017	3	0.28	0.22
72	100000322193	241	1017	3	0.48	0.14
73	100000099553	241	1017	3	0.68	0.37
74	100000322185	241	1017	3	0.53	0.33
75	100000322195	241	1017	3	0.44	0.28

Table 3.2.6. The 2010 Mod-MSA: Mathematics Classical Item Statistics: Grade 8 (Continued)

Item Seq. No.	Item CID	Strand No. <sup>1</sup>	n-Count <sup>2</sup>	Response Options	P-Value	Point-Biserial
76	100000373853	273	1017	3	0.48	0.36
77	100000167561	273	1017	3	0.58	0.34
78	100000373854	241	1017	3	0.52	0.41
79	100000322188	241	1017	3	0.58	0.43
80	100000197319	246	1017	3	0.36	0.23
81	100000322196	241	1017	3	0.65	0.20
82	100000322191	241	1017	3	0.52	0.23
83	100000322189	241	1017	3	0.76	0.37
84	100000099647	241	1017	3	0.52	0.28
85	100000286880	273	1017	3	0.37	0.18
86	100000272303	273	1017	3	0.57	0.17
87	100000286879	241	1017	3	0.41	0.17
88	100000286793	273	1017	3	0.40	0.16
89	100000286797	257	1017	3	0.39	0.28
90	100000272293	273	1017	3	0.74	0.24
91	100000272294	273	1017	3	0.64	0.25
92	100000322192	241	1017	3	0.56	0.34
93	100000322190	241	1017	3	0.29	0.21
94	100000322202	268	1017	3	0.77	0.27
95	100000272367	268	1017	3	0.80	0.24
96	100000099631	268	1017	3	0.35	0.19
97	100000322197	241	1017	3	0.41	0.35
98	100000322194	241	1017	3	0.64	0.21

Note: 1. 241= Algebra, 246=Geometry, 251=Measurement, 257=Statistics, 262= Probability, 268=Numbers and Computation, and 373&374= Process

2. These analyses are based on the equating sample used with the exclusion criteria.