



Mississippi LINKING STUDY

A Study of the Alignment of the NWEA RIT Scale
with the Mississippi Curriculum Test (MCT)

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A STUDY OF THE ALIGNMENT OF THE NWEA RIT SCALE WITH THE MISSISSIPPI CURRICULUM TEST

FEBRUARY 2011

Recently, NWEA completed a project to connect the scale of Mississippi Curriculum Test used for Mississippi Mathematics and Reading assessments with NWEA's RIT scale. Information from the state assessments was used in a study to establish performance-level scores on the RIT scale that would indicate a good chance of success on these tests.

To perform the analysis, we linked together state test and NWEA test results for a sample of 22,483 Mississippi students from 64 schools who completed both exams in the spring of 2010. The Mississippi state test is administered in the Spring. For the spring season (labeled "current season"), an equipercentile method was used to estimate the RIT score equivalent to each state performance level. For fall (labeled "prior season"), we determined the percentage of the population within the selected study group that performed at each level on the state test and found the equivalent percentile ranges within the NWEA dataset to estimate the cut scores. For example, if 40% of the study group population in grade 3 mathematics performed below the proficient level on the state test, we would find the RIT score that would be equivalent to the 40th percentile for the study population (this would not be the same as the 40th percentile in the NWEA norms). This RIT score would be the estimated point on the NWEA RIT scale that would be equivalent to the minimum score for proficiency on the state test. Documentation about this method can be found on our website.

Tables 1 through 4 show the best estimate of the minimum RIT equivalent to each state performance level for same-season (spring) and prior-season (fall) RIT scores. These tables can be used to identify students who may need additional help to perform well on these tests.

Tables 5 through 8 show the estimated probability of a student receiving a proficient score on the state assessment, based on that student's RIT score. These tables can be used to assist in identifying students who are not likely to pass these assessments and also for identifying target RIT-score objectives likely to correspond to a student's successful level of performance on the state test.

Table 9 shows the correlation coefficients between MAP and the state test for reading and mathematics in each grade. These statistics show the degree to which MAP and the state test are linearly related, with values at or near 1.0 suggesting a perfect linear relationship, and values near 0.0 indicating no linear relationship. Table 10 shows the percentages of students at each grade and within each subject whose status on the state test (i.e., whether or not the student "met standards") was accurately predicted by their MAP performance and using the estimated cut scores within the current study. This table can be used to understand the predictive validity of MAP with respect to the Mississippi

TABLE 1 – MINIMUM ESTIMATED SAME-SEASON (SPRING) RIT CUT SCORES
CORRESPONDING TO STATE PERFORMANCE LEVELS – MATHEMATICS

MATH-Current Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Below	Basic		Proficient		Advanced	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<175	175	9	186	35	201	82
3	<185	185	9	198	35	213	82
4	<196	196	13	206	35	227	87
5	<203	203	14	213	34	236	87
6	<206	206	14	219	37	240	86
7	<210	210	15	222	34	245	84
8	<212	212	13	224	29	247	79

* Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate ‘target’ scores for a desired level of certainty. Bold italics represent extrapolated data.

TABLE 2 – MINIMUM ESTIMATED SAME-SEASON (SPRING) RIT CUT SCORES
CORRESPONDING TO STATE PERFORMANCE LEVELS – READING

READING-Current Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Below	Basic		Proficient		Advanced	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<174	174	13	189	48	203	84
3	<183	183	13	199	48	212	84
4	<188	188	11	204	42	219	85
5	<195	195	12	210	43	227	90
6	<197	197	10	213	41	232	91
7	<199	199	10	217	44	237	94
8	<207	207	15	222	49	240	94

* Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate ‘target’ scores for a desired level of certainty. Bold italics represent extrapolated data.

TABLE 3 – MINIMUM ESTIMATED PRIOR-SEASON (FALL) RIT CUT SCORES CORRESPONDING TO STATE PERFORMANCE LEVELS – MATHEMATICS

MATH-Prior Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Below	Basic		Proficient		Advanced	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<166	166	9	175	38	189	82
3	<176	176	9	188	37	203	84
4	<189	189	13	199	37	217	88
5	<197	197	14	206	34	227	87
6	<202	202	14	214	38	234	86
7	<207	207	15	218	34	240	84
8	<210	210	14	221	30	243	79

*Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate ‘target’ scores for a desired level of certainty. Bold Italics represent extrapolated data.

TABLE 4 – MINIMUM ESTIMATED PRIOR-SEASON (FALL) RIT CUT SCORES CORRESPONDING TO STATE PERFORMANCE LEVELS – READING

READING-Prior Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Below	Basic		Proficient		Advanced	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<164	164	13	179	50	193	84
3	<176	176	13	191	48	205	85
4	<183	183	11	199	44	214	86
5	<190	190	12	206	45	223	91
6	<193	193	10	210	42	229	91
7	<197	197	10	215	46	235	94
8	<205	205	15	220	50	238	94

*Note: the cut scores shown in this table are the **minimum** estimated scores. Meeting the minimum MAP cut score corresponds to a 50% probability of achieving that performance level. Use the probabilities in Tables 5-8 to determine the appropriate ‘target’ scores for a desired level of certainty. Bold Italics represent extrapolated data.

TABLE 5 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE MATHEMATICS TEST IN SAME SEASON (SPRING), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP MATHEMATICS

MATH-Current Season							
Estimated Probability of Passing State Test Based on Observed MAP Score							
RIT Range	2	3	4	5	6	7	8
120	0%	0%	0%	0%	0%	0%	0%
125	0%	0%	0%	0%	0%	0%	0%
130	0%	0%	0%	0%	0%	0%	0%
135	1%	0%	0%	0%	0%	0%	0%
140	1%	0%	0%	0%	0%	0%	0%
145	2%	0%	0%	0%	0%	0%	0%
150	3%	1%	0%	0%	0%	0%	0%
155	5%	1%	1%	0%	0%	0%	0%
160	8%	2%	1%	0%	0%	0%	0%
165	12%	4%	2%	1%	0%	0%	0%
170	18%	6%	3%	1%	1%	1%	0%
175	27%	9%	4%	2%	1%	1%	1%
180	38%	14%	7%	4%	2%	1%	1%
185	50%	21%	11%	6%	3%	2%	2%
190	62%	31%	17%	9%	5%	4%	3%
195	73%	43%	25%	14%	8%	6%	5%
200	82%	55%	35%	21%	13%	10%	8%
205	88%	67%	48%	31%	20%	15%	13%
210	92%	77%	60%	43%	29%	23%	20%
215	95%	85%	71%	55%	40%	33%	29%
220	97%	90%	80%	67%	52%	45%	40%
225	98%	94%	87%	77%	65%	57%	52%
230	99%	96%	92%	85%	75%	69%	65%
235	99%	98%	95%	90%	83%	79%	75%
240	100%	99%	97%	94%	89%	86%	83%
245	100%	99%	98%	96%	93%	91%	89%
250	100%	99%	99%	98%	96%	94%	93%
255	100%	100%	99%	99%	97%	96%	96%
260	100%	100%	100%	99%	98%	98%	97%
265	100%	100%	100%	99%	99%	99%	98%
270	100%	100%	100%	100%	99%	99%	99%
275	100%	100%	100%	100%	100%	100%	99%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%

*Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during that same (spring) season. Example: if a fifth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 21%. Bold italics represent extrapolated data.

TABLE 6 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE READING TEST IN SAME SEASON (SPRING), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP READING

READING-Current Season							
Estimated Probability of Passing State Test Based on Observed MAP Score							
RIT Range	2	3	4	5	6	7	8
120	0%	0%	0%	0%	0%	0%	0%
125	0%	0%	0%	0%	0%	0%	0%
130	0%	0%	0%	0%	0%	0%	0%
135	0%	0%	0%	0%	0%	0%	0%
140	1%	0%	0%	0%	0%	0%	0%
145	1%	0%	0%	0%	0%	0%	0%
150	2%	1%	0%	0%	0%	0%	0%
155	3%	1%	1%	0%	0%	0%	0%
160	5%	2%	1%	1%	0%	0%	0%
165	8%	3%	2%	1%	1%	1%	0%
170	13%	5%	3%	2%	1%	1%	1%
175	20%	8%	5%	3%	2%	1%	1%
180	29%	13%	8%	5%	4%	2%	1%
185	40%	20%	13%	8%	6%	4%	2%
190	52%	29%	20%	12%	9%	6%	4%
195	65%	40%	29%	18%	14%	10%	6%
200	75%	52%	40%	27%	21%	15%	10%
205	83%	65%	52%	38%	31%	23%	15%
210	89%	75%	65%	50%	43%	33%	23%
215	93%	83%	75%	62%	55%	45%	33%
220	96%	89%	83%	73%	67%	57%	45%
225	97%	93%	89%	82%	77%	69%	57%
230	98%	96%	93%	88%	85%	79%	69%
235	99%	97%	96%	92%	90%	86%	79%
240	99%	98%	97%	95%	94%	91%	86%
245	100%	99%	98%	97%	96%	94%	91%
250	100%	99%	99%	98%	98%	96%	94%
255	100%	100%	99%	99%	99%	98%	96%
260	100%	100%	100%	99%	99%	99%	98%
265	100%	100%	100%	100%	99%	99%	99%
270	100%	100%	100%	100%	100%	100%	99%
275	100%	100%	100%	100%	100%	100%	100%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%

* Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during that same (spring) season. Example: if a fifth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 27%.

Bold italics represent extrapolated data.

TABLE 7 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE MATHEMATICS TEST IN PRIOR SEASON (FALL), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP MATHEMATICS

MATH-Prior Season							
Estimated Probability of Passing State Test Based on Observed MAP Score							
RIT Range	2	3	4	5	6	7	8
120	0%	0%	0%	0%	0%	0%	0%
125	1%	0%	0%	0%	0%	0%	0%
130	1%	0%	0%	0%	0%	0%	0%
135	2%	1%	0%	0%	0%	0%	0%
140	3%	1%	0%	0%	0%	0%	0%
145	5%	1%	0%	0%	0%	0%	0%
150	8%	2%	1%	0%	0%	0%	0%
155	13%	4%	1%	1%	0%	0%	0%
160	20%	6%	2%	1%	0%	0%	0%
165	29%	10%	4%	2%	1%	0%	0%
170	40%	15%	6%	3%	1%	1%	1%
175	52%	23%	9%	4%	2%	1%	1%
180	65%	33%	14%	7%	4%	2%	2%
185	75%	45%	21%	11%	6%	4%	3%
190	83%	57%	31%	17%	9%	6%	5%
195	89%	69%	43%	25%	14%	9%	8%
200	93%	79%	55%	35%	21%	14%	12%
205	96%	86%	67%	48%	31%	21%	18%
210	97%	91%	77%	60%	43%	31%	27%
215	98%	94%	85%	71%	55%	43%	38%
220	99%	96%	90%	80%	67%	55%	50%
225	99%	98%	94%	87%	77%	67%	62%
230	100%	99%	96%	92%	85%	77%	73%
235	100%	99%	98%	95%	90%	85%	82%
240	100%	100%	99%	97%	94%	90%	88%
245	100%	100%	99%	98%	96%	94%	92%
250	100%	100%	99%	99%	98%	96%	95%
255	100%	100%	100%	99%	99%	98%	97%
260	100%	100%	100%	100%	99%	99%	98%
265	100%	100%	100%	100%	99%	99%	99%
270	100%	100%	100%	100%	100%	99%	99%
275	100%	100%	100%	100%	100%	100%	100%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%

*Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during that prior (fall) season. Example: if a fifth grade student scored 200 on a MAP test taken during the fall season, her/his estimated probability of passing the state test is 35%. Bold italics represent extrapolated data.

TABLE 8 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE READING TEST IN PRIOR SEASON (FALL), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP READING

READING-Prior Season							
Estimated Probability of Passing State Test Based on Observed MAP Score							
RIT Range	2	3	4	5	6	7	8
120	0%	0%	0%	0%	0%	0%	0%
125	0%	0%	0%	0%	0%	0%	0%
130	1%	0%	0%	0%	0%	0%	0%
135	1%	0%	0%	0%	0%	0%	0%
140	2%	1%	0%	0%	0%	0%	0%
145	4%	1%	0%	0%	0%	0%	0%
150	6%	2%	1%	0%	0%	0%	0%
155	9%	3%	1%	1%	0%	0%	0%
160	14%	4%	2%	1%	1%	0%	0%
165	21%	7%	4%	2%	1%	1%	0%
170	31%	11%	6%	3%	2%	1%	1%
175	43%	17%	9%	5%	3%	2%	1%
180	55%	25%	14%	8%	5%	3%	2%
185	67%	35%	21%	12%	8%	5%	3%
190	77%	48%	31%	18%	13%	8%	5%
195	85%	60%	43%	27%	20%	13%	8%
200	90%	71%	55%	38%	29%	20%	13%
205	94%	80%	67%	50%	40%	29%	20%
210	96%	87%	77%	62%	52%	40%	29%
215	98%	92%	85%	73%	65%	52%	40%
220	99%	95%	90%	82%	75%	65%	52%
225	99%	97%	94%	88%	83%	75%	65%
230	99%	98%	96%	92%	89%	83%	75%
235	100%	99%	98%	95%	93%	89%	83%
240	100%	99%	99%	97%	96%	93%	89%
245	100%	100%	99%	98%	97%	96%	93%
250	100%	100%	99%	99%	98%	97%	96%
255	100%	100%	100%	99%	99%	98%	97%
260	100%	100%	100%	100%	99%	99%	98%
265	100%	100%	100%	100%	100%	99%	99%
270	100%	100%	100%	100%	100%	100%	99%
275	100%	100%	100%	100%	100%	100%	100%
280	100%	100%	100%	100%	100%	100%	100%
285	100%	100%	100%	100%	100%	100%	100%
290	100%	100%	100%	100%	100%	100%	100%
295	100%	100%	100%	100%	100%	100%	100%
300	100%	100%	100%	100%	100%	100%	100%

* Note: This table provides the estimated probability of passing the state test based on a MAP test score taken during the prior (fall) season. Example: if a fifth grade student scored 200 on a MAP test taken during the fall season, her/his estimated probability of passing the state test is 38%. Bold italics represent extrapolated data.

TABLE 9 – CORRELATION COEFFICIENTS BETWEEN MAP AND STATE TEST FOR EACH GRADE AND TEST SUBJECT

Grade	Math Correlation Pearson's <i>r</i>	Reading Correlation Pearson's <i>r</i>
3	0.71	0.78
4	0.80	0.76
5	0.82	0.77
6	0.82	0.76
7	0.81	0.73
8	0.78	0.74

* Note: Correlations range from 0 (indicating no correlation between the state test score and the NWEA test score) to 1 (indicating complete correlation between the state test score and the NWEA test score).

TABLE 10 – PERCENTAGE OF STUDENTS WHOSE PASS STATUS WAS ACCURATELY PREDICTED BY THEIR MAP PERFORMANCE USING REPORTED CUT SCORES

Grade	Sample Size	MAP Accurately Predicted State Performance	MAP Underestimated State Performance	MAP Overestimated State Performance
Mathematics				
3	3550	82.1%	9.0%	9.0%
4	4056	85.1%	7.4%	7.5%
5	3892	85.7%	6.8%	7.5%
6	3766	84.2%	8.7%	7.1%
7	3635	84.3%	8.2%	7.5%
8	3584	82.5%	9.1%	8.4%
Reading				
3	3550	81.1%	9.6%	9.4%
4	4056	82.2%	8.6%	9.2%
5	3892	81.9%	8.7%	9.4%
6	3766	81.1%	10.2%	8.7%
7	3635	79.3%	11.8%	9.0%
8	3584	80.4%	10.6%	9.0%

* Note: The third column of this table shows the percentage of students whose Pass/NotPass status was predicted accurately when their state test score was linked to their MAP score based on this linking study. The fourth column shows the percentage of students whose MAP score predicted they would not pass the state benchmark but they did pass. The last column shows the percentage of students whose MAP score predicted they would pass the state benchmark but they did not pass.

Due to rounding, percentages may not add to 100%.