



New York LINKING STUDY

A Study of the Alignment of the NWEA RIT Scale
with the Grade 3-8 Math and English Test

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A STUDY OF THE ALIGNMENT OF THE NWEA RIT SCALE WITH THE GRADE 3-8 MATH AND ENGLISH TEST

FEBRUARY 2011

Recently, NWEA completed a project to connect the scale of Grade 3-8 Math and English Test used for New York mathematics and English Language Arts 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 over 7,000 New York students from 42 schools who completed both exams in the spring of 2010. The Grade 3-8 Math and English 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 Grade 3-8 Math and English Test.

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	Does Not Meet Cut Score	Partially Meets		Meets		Meets with Distinction	
		Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<174	174	8	187	38	198	72
3	<184	184	8	199	38	209	72
4	<189	189	6	207	38	219	71
5	<197	197	7	214	37	229	74
6	<201	201	8	221	41	236	78
7	<202	202	7	224	38	240	75
8	<207	207	8	235	52	252	88

*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. 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	Does Not Meet Cut Score	Partially Meets		Meets		Meets with Distinction	
		Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<172	172	10	188	45	202	82
3	<181	181	10	198	45	211	82
4	<185	185	8	205	45	225	94
5	<194	194	11	212	50	225	86
6	<197	197	10	216	51	234	94
7	<199	199	10	220	53	235	91
8	<203	203	10	223	52	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. 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	Does Not Meet Cut Score	Partially Meets		Meets		Meets with Distinction	
		Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<166	166	9	175	38	185	73
3	<176	176	9	189	40	199	73
4	<183	183	6	200	40	210	73
5	<191	191	7	207	37	221	75
6	<197	197	8	216	43	230	79
7	<200	200	7	220	39	235	75
8	<204	204	8	231	52	249	89

* 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. 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	Does Not Meet Cut Score	Partially Meets		Meets		Meets with Distinction	
		Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<163	163	11	177	45	192	82
3	<174	174	10	190	45	204	83
4	<180	180	8	200	47	219	94
5	<189	189	11	208	51	221	87
6	<193	193	10	213	51	231	94
7	<197	197	10	218	55	233	91
8	<201	201	10	221	53	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. 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	1%	0%	0%	0%	0%	0%	0%
150	2%	1%	0%	0%	0%	0%	0%
155	4%	1%	1%	0%	0%	0%	0%
160	6%	2%	1%	0%	0%	0%	0%
165	10%	3%	1%	1%	0%	0%	0%
170	15%	5%	2%	1%	1%	0%	0%
175	23%	8%	4%	2%	1%	1%	0%
180	33%	13%	6%	3%	2%	1%	0%
185	45%	20%	10%	5%	3%	2%	1%
190	57%	29%	15%	8%	4%	3%	1%
195	69%	40%	23%	13%	7%	5%	2%
200	79%	52%	33%	20%	11%	8%	3%
205	86%	65%	45%	29%	17%	13%	5%
210	91%	75%	57%	40%	25%	20%	8%
215	94%	83%	69%	52%	35%	29%	12%
220	96%	89%	79%	65%	48%	40%	18%
225	98%	93%	86%	75%	60%	52%	27%
230	99%	96%	91%	83%	71%	65%	38%
235	99%	97%	94%	89%	80%	75%	50%
240	100%	98%	96%	93%	87%	83%	62%
245	100%	99%	98%	96%	92%	89%	73%
250	100%	99%	99%	97%	95%	93%	82%
255	100%	100%	99%	98%	97%	96%	88%
260	100%	100%	100%	99%	98%	97%	92%
265	100%	100%	100%	99%	99%	98%	95%
270	100%	100%	100%	100%	99%	99%	97%
275	100%	100%	100%	100%	100%	99%	98%
280	100%	100%	100%	100%	100%	100%	99%
285	100%	100%	100%	100%	100%	100%	99%
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 20%.

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	4%	1%	1%	0%	0%	0%	0%
160	6%	2%	1%	1%	0%	0%	0%
165	9%	4%	2%	1%	1%	0%	0%
170	14%	6%	3%	1%	1%	1%	0%
175	21%	9%	5%	2%	2%	1%	1%
180	31%	14%	8%	4%	3%	2%	1%
185	43%	21%	12%	6%	4%	3%	2%
190	55%	31%	18%	10%	7%	5%	4%
195	67%	43%	27%	15%	11%	8%	6%
200	77%	55%	38%	23%	17%	12%	9%
205	85%	67%	50%	33%	25%	18%	14%
210	90%	77%	62%	45%	35%	27%	21%
215	94%	85%	73%	57%	48%	38%	31%
220	96%	90%	82%	69%	60%	50%	43%
225	98%	94%	88%	79%	71%	62%	55%
230	99%	96%	92%	86%	80%	73%	67%
235	99%	98%	95%	91%	87%	82%	77%
240	99%	99%	97%	94%	92%	88%	85%
245	100%	99%	98%	96%	95%	92%	90%
250	100%	99%	99%	98%	97%	95%	94%
255	100%	100%	99%	99%	98%	97%	96%
260	100%	100%	100%	99%	99%	98%	98%
265	100%	100%	100%	100%	99%	99%	99%
270	100%	100%	100%	100%	100%	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 23%.

| 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%	0%	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	12%	3%	1%	1%	0%	0%	0%
160	18%	5%	2%	1%	0%	0%	0%
165	27%	8%	3%	1%	1%	0%	0%
170	38%	13%	5%	2%	1%	1%	0%
175	50%	20%	8%	4%	2%	1%	0%
180	62%	29%	12%	6%	3%	2%	1%
185	73%	40%	18%	10%	4%	3%	1%
190	82%	52%	27%	15%	7%	5%	2%
195	88%	65%	38%	23%	11%	8%	3%
200	92%	75%	50%	33%	17%	12%	4%
205	95%	83%	62%	45%	25%	18%	7%
210	97%	89%	73%	57%	35%	27%	11%
215	98%	93%	82%	69%	48%	38%	17%
220	99%	96%	88%	79%	60%	50%	25%
225	99%	97%	92%	86%	71%	62%	35%
230	100%	98%	95%	91%	80%	73%	48%
235	100%	99%	97%	94%	87%	82%	60%
240	100%	99%	98%	96%	92%	88%	71%
245	100%	100%	99%	98%	95%	92%	80%
250	100%	100%	99%	99%	97%	95%	87%
255	100%	100%	100%	99%	98%	97%	92%
260	100%	100%	100%	100%	99%	98%	95%
265	100%	100%	100%	100%	99%	99%	97%
270	100%	100%	100%	100%	100%	99%	98%
275	100%	100%	100%	100%	100%	100%	99%
280	100%	100%	100%	100%	100%	100%	99%
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 33%.

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	1%	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	10%	3%	1%	0%	0%	0%	0%
160	15%	5%	2%	1%	0%	0%	0%
165	23%	8%	3%	1%	1%	0%	0%
170	33%	12%	5%	2%	1%	1%	1%
175	45%	18%	8%	4%	2%	1%	1%
180	57%	27%	12%	6%	4%	2%	2%
185	69%	38%	18%	9%	6%	4%	3%
190	79%	50%	27%	14%	9%	6%	4%
195	86%	62%	38%	21%	14%	9%	7%
200	91%	73%	50%	31%	21%	14%	11%
205	94%	82%	62%	43%	31%	21%	17%
210	96%	88%	73%	55%	43%	31%	25%
215	98%	92%	82%	67%	55%	43%	35%
220	99%	95%	88%	77%	67%	55%	48%
225	99%	97%	92%	85%	77%	67%	60%
230	100%	98%	95%	90%	85%	77%	71%
235	100%	99%	97%	94%	90%	85%	80%
240	100%	99%	98%	96%	94%	90%	87%
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%	99%	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 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 31%.

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	0.512	0.520
4	0.719	0.714
5	0.713	0.504
6	0.740	0.556
7	0.787	0.614
8	0.809	0.628

* 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	989	77.8%	11.1%	11.1%
4	1066	79.1%	10.0%	10.9%
5	1601	84.7%	7.4%	7.9%
6	1623	83.7%	8.4%	7.8%
7	1069	84.1%	7.9%	8.0%
8	939	82.3%	8.7%	8.9%
Reading				
3	977	74.5%	13.3%	12.2%
4	1040	77.4%	10.7%	11.9%
5	1384	77.2%	12.2%	10.6%
6	1622	78.0%	10.5%	11.5%
7	979	77.2%	11.8%	10.9%
8	968	74.9%	12.0%	13.1%

* 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%.