



NEW MEXICO LINKING STUDY

A Study of the Alignment of the NWEA RIT Scale
with New Mexico's Standards Based Assessments (SBA)

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A STUDY OF THE ALIGNMENT OF THE NWEA RIT SCALE WITH THE NEW MEXICO STANDARDS BASED ASSESSMENT (SBA)

NOVEMBER 2011

Recently, NWEA completed a project to connect the scale of New Mexico Standards Based Assessments (SBA) used for New Mexico’s 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 43,003 New Mexico students from at least 167 schools who completed both exams in the spring of 2011. The New Mexico 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.

Table Sets 1 and 2 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.

Table Sets 3 and 4 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 successful or “proficient” performance on the state test.

Table 5 shows the correlation coefficients between MAP and the state test 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 6 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 SBA.

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

MATH-Current Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Developing/Emergent	Approaching Standard		Meets Standard		Exceeds Standard	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	<174	174	8	187	39	212	95
3	<186	186	8	200	39	224	95
4	<197	197	13	212	49	229	89
5	<204	204	14	221	51	236	84
6	<210	210	16	227	53	246	90
7	<213	213	15	231	50	253	90
8	<213	213	12	235	51	258	90
11	<211	211	9	240	53	262	88

READING-Current Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Developing/Emergent	Approaching Standard		Meets Standard		Exceeds Standard	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	<173	173	13	185	39	206	86
3	<183	183	13	195	39	215	86
4	<184	184	6	205	46	223	88
5	<192	192	7	209	40	226	83
6	<197	197	9	214	44	230	83
7	<200	200	9	217	43	238	90
8	<207	207	15	220	43	241	89
11	<200	200	9	224	51	242	85

* 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 Table Set 3 to determine the appropriate ‘target’ scores for a desired level of certainty. Italics represent extrapolated data.

TABLE SET 2 – MINIMUM ESTIMATED PRIOR-SEASON (FALL) RIT CUT SCORES
CORRESPONDING TO STATE PERFORMANCE LEVELS

MATH-Prior Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Developing/Emergent	Approaching Standard		Meets Standard		Exceeds Standard	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	<160	160	7	174	36	200	95
3	<174	174	7	188	36	213	95
4	<189	189	13	203	48	220	90
5	<197	197	14	213	51	227	84
6	<204	204	15	220	50	239	89
7	<208	208	14	226	51	247	90
8	<210	210	12	230	50	252	90
11	<210	210	9	237	52	260	89

READING-Prior Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Developing/Emergent	Approaching Standard		Meets Standard		Exceeds Standard	
	Cut Score	Cut Score	Percen-tile	Cut Score	Percen-tile	Cut Score	Percen-tile
2	<158	158	12	171	37	192	85
3	<173	173	13	185	36	206	85
4	<178	178	7	198	46	216	87
5	<186	186	7	203	38	220	82
6	<193	193	8	210	43	226	83
7	<197	197	8	213	40	234	89
8	<204	204	15	216	41	237	88
11	<203	203	11	224	51	241	85

* 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 Table Set 4 to determine the appropriate ‘target’ scores for a desired level of certainty. Italics represent extrapolated data.

TABLE SET 3 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE TEST IN SAME SEASON (SPRING), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP ASSESSMENT

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

Italics represent extrapolated data.

Note: RIT scores greater than 300 have a 100% probability.

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

Italics represent extrapolated data.

Note: RIT scores greater than 300 have a 100% probability.

TABLE SET 4 –ESTIMATED PROBABILITY OF SCORING AS PROFICIENT OR HIGHER ON THE STATE TEST IN PRIOR SEASON (FALL), BY STUDENT GRADE AND RIT SCORE RANGE ON MAP

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

Italics represent extrapolated data.

Note: RIT scores greater than 300 have a 100% probability.

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

Italics represent extrapolated data.

Note: RIT scores greater than 300 have a 100% probability.

TABLE 5 – CORRELATION COEFFICIENTS BETWEEN MAP AND STATE TEST FOR EACH GRADE AND TEST SUBJECT

Grade	Math Correlation Pearson's r	Reading Correlation Pearson's r
3	.833	.782
4	.855	.783
5	.872	.790
6	.855	.778
7	.856	.771
8	.875	.768
11	.775	.642

* 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 6 – 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	6815	84.2%	7.1%	8.7%
4	6837	85.8%	7.0%	7.2%
5	6867	86.5%	7.5%	6.1%
6	6810	86.9%	6.4%	6.7%
7	6404	87.4%	6.2%	6.3%
8	6539	86.5%	6.5%	7.0%
11	2141	85.4%	6.7%	7.9%
Reading				
3	6634	82.0%	8.4%	9.6%
4	6660	79.3%	9.9%	10.8%
5	6650	80.5%	9.4%	10.1%
6	6763	79.4%	11.0%	9.7%
7	6381	80.9%	9.5%	9.6%
8	6518	80.7%	9.8%	9.5%
11	1767	79.1%	10.7%	10.2%

*Note: The third column of this table shows the percentage of students whose Pass/Not Pass 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%.