



# Illinois LINKING STUDY

A Study of the Alignment of the NWEA RIT Scale  
with the Illinois Standards Achievement Test

February 2011

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# A STUDY OF THE ALIGNMENT OF THE NWEA RIT SCALE WITH THE ILLINOIS STANDARDS ACHIEVEMENT TEST

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Recently, NWEA completed a project to connect the scale of Illinois Standards Achievement Test used for Illinois 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 over 83,000 Illinois students from over 290 schools who completed both exams in the spring of 2010. The Illinois Standards Achievement State Test is administered in the spring. For the spring season (labeled "current season"), an Equipercntile 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 40<sup>th</sup> percentile for the study population (this would not be the same as the 40<sup>th</sup> 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 Illinois Standards Achievement State 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	Academic Warning Cut Score	Below		Meets		Exceeds	
		Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<b>&lt;166</b>	<b>166</b>	<b>1</b>	<b>177</b>	<b>13</b>	<b>195</b>	<b>62</b>
3	<173	173	1	188	13	206	62
4	<175	175	1	196	13	219	71
5	<181	181	1	204	16	235	86
6	<186	186	1	208	16	236	78
7	<188	188	1	212	17	239	73
8	<190	190	1	216	17	243	71

\* 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.

**Bold** and 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	Academic Warning Cut Score	Below		Meets		Exceeds	
		Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<b>&lt;164</b>	<b>164</b>	<b>3</b>	<b>181</b>	<b>25</b>	<b>200</b>	<b>77</b>
3	<171	171	3	190	25	209	77
4	<164	164	1	198	26	215	75
5	<169	169	1	204	27	220	75
6	<175	175	1	204	20	225	77
7	<177	177	1	210	26	232	85
8	<181	181	1	210	19	238	91

\* 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.

**Bold** and 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	Academic Warning	Below		Meets		Exceeds	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<b>&lt;162</b>	<b>162</b>	<b>1</b>	<b>168</b>	<b>14</b>	<b>182</b>	<b>64</b>
3	<167	167	1	179	14	196	63
4	<173	173	1	189	13	210	73
5	<177	177	1	198	16	227	87
6	<180	180	1	204	17	230	79
7	<182	182	1	209	18	234	73
8	<185	185	1	213	17	239	71

\* 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.

**Bold** and 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	Academic Warning	Below		Meets		Exceeds	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	<b>&lt;158</b>	<b>158</b>	<b>3</b>	<b>170</b>	<b>27</b>	<b>190</b>	<b>78</b>
3	<166	166	3	182	25	202	78
4	<166	166	1	192	27	210	77
5	<170	170	1	200	29	216	76
6	<173	173	1	201	20	222	78
7	<174	174	1	208	27	230	86
8	<176	176	1	208	20	236	91

\* 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.

**Bold** and 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	<b>0%</b>	0%	0%	0%	0%	0%	0%
125	<b>1%</b>	0%	0%	0%	0%	0%	0%
130	<b>1%</b>	0%	0%	0%	0%	0%	0%
135	<b>1%</b>	0%	0%	0%	0%	0%	0%
140	<b>2%</b>	1%	0%	0%	0%	0%	0%
145	<b>4%</b>	1%	1%	0%	0%	0%	0%
150	<b>6%</b>	2%	1%	0%	0%	0%	0%
155	<b>10%</b>	4%	2%	1%	0%	0%	0%
160	<b>15%</b>	6%	3%	1%	1%	1%	0%
165	<b>23%</b>	9%	4%	2%	1%	1%	1%
170	<b>33%</b>	14%	7%	3%	2%	1%	1%
175	<b>45%</b>	21%	11%	5%	4%	2%	2%
180	<b>57%</b>	31%	17%	8%	6%	4%	3%
185	<b>69%</b>	43%	25%	13%	9%	6%	4%
190	<b>79%</b>	55%	35%	20%	14%	10%	7%
195	<b>86%</b>	67%	48%	29%	21%	15%	11%
200	<b>91%</b>	77%	60%	40%	31%	23%	17%
205	<b>94%</b>	85%	71%	52%	43%	33%	25%
210	<b>96%</b>	90%	80%	65%	55%	45%	35%
215	<b>98%</b>	94%	87%	75%	67%	57%	48%
220	<b>99%</b>	96%	92%	83%	77%	69%	60%
225	<b>99%</b>	98%	95%	89%	85%	79%	71%
230	<b>100%</b>	99%	97%	93%	90%	86%	80%
235	<b>100%</b>	99%	98%	96%	94%	91%	87%
240	<b>100%</b>	99%	99%	97%	96%	94%	92%
245	<b>100%</b>	100%	99%	98%	98%	96%	95%
250	<b>100%</b>	100%	100%	99%	99%	98%	97%
255	<b>100%</b>	100%	100%	99%	99%	99%	98%
260	<b>100%</b>	100%	100%	100%	99%	99%	99%
265	<b>100%</b>	100%	100%	100%	100%	100%	99%
270	<b>100%</b>	100%	100%	100%	100%	100%	100%
275	<b>100%</b>	100%	100%	100%	100%	100%	100%
280	<b>100%</b>	100%	100%	100%	100%	100%	100%
285	<b>100%</b>	100%	100%	100%	100%	100%	100%
290	<b>100%</b>	100%	100%	100%	100%	100%	100%
295	<b>100%</b>	100%	100%	100%	100%	100%	100%
300	<b>100%</b>	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 40%.

**Bold** and *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	<b>0%</b>	0%	0%	0%	0%	0%	0%
125	<b>0%</b>	0%	0%	0%	0%	0%	0%
130	<b>1%</b>	0%	0%	0%	0%	0%	0%
135	<b>1%</b>	0%	0%	0%	0%	0%	0%
140	<b>2%</b>	1%	0%	0%	0%	0%	0%
145	<b>3%</b>	1%	0%	0%	0%	0%	0%
150	<b>4%</b>	2%	1%	0%	0%	0%	0%
155	<b>7%</b>	3%	1%	1%	1%	0%	0%
160	<b>11%</b>	5%	2%	1%	1%	1%	1%
165	<b>17%</b>	8%	4%	2%	2%	1%	1%
170	<b>25%</b>	12%	6%	3%	3%	2%	2%
175	<b>35%</b>	18%	9%	5%	5%	3%	3%
180	<b>48%</b>	27%	14%	8%	8%	5%	5%
185	<b>60%</b>	38%	21%	13%	13%	8%	8%
190	<b>71%</b>	50%	31%	20%	20%	12%	12%
195	<b>80%</b>	62%	43%	29%	29%	18%	18%
200	<b>87%</b>	73%	55%	40%	40%	27%	27%
205	<b>92%</b>	82%	67%	52%	52%	38%	38%
210	<b>95%</b>	88%	77%	65%	65%	50%	50%
215	<b>97%</b>	92%	85%	75%	75%	62%	62%
220	<b>98%</b>	95%	90%	83%	83%	73%	73%
225	<b>99%</b>	97%	94%	89%	89%	82%	82%
230	<b>99%</b>	98%	96%	93%	93%	88%	88%
235	<b>100%</b>	99%	98%	96%	96%	92%	92%
240	<b>100%</b>	99%	99%	97%	97%	95%	95%
245	<b>100%</b>	100%	99%	98%	98%	97%	97%
250	<b>100%</b>	100%	99%	99%	99%	98%	98%
255	<b>100%</b>	100%	100%	99%	99%	99%	99%
260	<b>100%</b>	100%	100%	100%	100%	99%	99%
265	<b>100%</b>	100%	100%	100%	100%	100%	100%
270	<b>100%</b>	100%	100%	100%	100%	100%	100%
275	<b>100%</b>	100%	100%	100%	100%	100%	100%
280	<b>100%</b>	100%	100%	100%	100%	100%	100%
285	<b>100%</b>	100%	100%	100%	100%	100%	100%
290	<b>100%</b>	100%	100%	100%	100%	100%	100%
295	<b>100%</b>	100%	100%	100%	100%	100%	100%
300	<b>100%</b>	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 40%.

Bold and 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	<b>1%</b>	0%	0%	0%	0%	0%	0%
125	<b>1%</b>	0%	0%	0%	0%	0%	0%
130	<b>2%</b>	1%	0%	0%	0%	0%	0%
135	<b>4%</b>	1%	0%	0%	0%	0%	0%
140	<b>6%</b>	2%	1%	0%	0%	0%	0%
145	<b>9%</b>	3%	1%	0%	0%	0%	0%
150	<b>14%</b>	5%	2%	1%	0%	0%	0%
155	<b>21%</b>	8%	3%	1%	1%	0%	0%
160	<b>31%</b>	13%	5%	2%	1%	1%	0%
165	<b>43%</b>	20%	8%	4%	2%	1%	1%
170	<b>55%</b>	29%	13%	6%	3%	2%	1%
175	<b>67%</b>	40%	20%	9%	5%	3%	2%
180	<b>77%</b>	52%	29%	14%	8%	5%	4%
185	<b>85%</b>	65%	40%	21%	13%	8%	6%
190	<b>90%</b>	75%	52%	31%	20%	13%	9%
195	<b>94%</b>	83%	65%	43%	29%	20%	14%
200	<b>96%</b>	89%	75%	55%	40%	29%	21%
205	<b>98%</b>	93%	83%	67%	52%	40%	31%
210	<b>99%</b>	96%	89%	77%	65%	52%	43%
215	<b>99%</b>	97%	93%	85%	75%	65%	55%
220	<b>99%</b>	98%	96%	90%	83%	75%	67%
225	<b>100%</b>	99%	97%	94%	89%	83%	77%
230	<b>100%</b>	99%	98%	96%	93%	89%	85%
235	<b>100%</b>	100%	99%	98%	96%	93%	90%
240	<b>100%</b>	100%	99%	99%	97%	96%	94%
245	<b>100%</b>	100%	100%	99%	98%	97%	96%
250	<b>100%</b>	100%	100%	99%	99%	98%	98%
255	<b>100%</b>	100%	100%	100%	99%	99%	99%
260	<b>100%</b>	100%	100%	100%	100%	99%	99%
265	<b>100%</b>	100%	100%	100%	100%	100%	99%
270	<b>100%</b>	100%	100%	100%	100%	100%	100%
275	<b>100%</b>	100%	100%	100%	100%	100%	100%
280	<b>100%</b>	100%	100%	100%	100%	100%	100%
285	<b>100%</b>	100%	100%	100%	100%	100%	100%
290	<b>100%</b>	100%	100%	100%	100%	100%	100%
295	<b>100%</b>	100%	100%	100%	100%	100%	100%
300	<b>100%</b>	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 55%.

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

Bold and 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	0.807	0.797
4	0.844	0.809
5	0.811	0.746
6	0.807	0.735
7	0.841	0.758
8	0.794	0.691

\* 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

\* 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.

Grade	Sample Size	MAP Accurately Predicted State Performance	MAP Underestimated State Performance	MAP Overestimated State Performance
<b>Mathematics</b>				
3	13940	92.2%	2.9%	4.9%
4	14186	92.2%	3.1%	4.7%
5	13848	90.9%	3.2%	5.9%
6	14889	92.5%	2.7%	4.8%
7	14679	92.4%	2.5%	5.1%
8	12314	91.1%	2.6%	6.3%
<b>Reading</b>				
3	13906	87.0%	5.9%	7.1%
4	14173	86.8%	6.0%	7.3%
5	13876	86.1%	6.1%	7.9%
6	14854	90.1%	4.2%	5.6%
7	14814	88.2%	3.9%	7.9%
8	12353	90.9%	3.4%	5.8%

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