



# Illinois LINKING STUDY

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

Science Supplement

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

MARCH 2011

Recently, NWEA completed a project to connect the scale of Illinois Standards Achievement Test used for Illinois science assessment with NWEA's RIT general science 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 6,504 Illinois students from over 130 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 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.

Tables 3 through 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 for identifying target RIT-score objectives likely to correspond to a student's successful level of performance on the state test.

Table 5 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 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 Illinois Standards Achievement State Test.

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

SCIENCE 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	<172	<b>172</b>	<b>1</b>	<b>181</b>	<b>15</b>	<b>197</b>	<b>82</b>
3	<173	<b>173</b>	<b>1</b>	<b>186</b>	<b>15</b>	<b>204</b>	<b>82</b>
4	<174	174	1	190	15	210	82
5	<182	<b>182</b>	<b>2</b>	<b>193</b>	<b>13</b>	<b>212</b>	<b>76</b>
6	<182	<b>183</b>	<b>2</b>	<b>194</b>	<b>13</b>	<b>214</b>	<b>76</b>
7	<185	185	2	196	13	218	76
8	<186	<b>186</b>	<b>2</b>	<b>199</b>	<b>13</b>	<b>221</b>	<b>76</b>

\*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.

Data is **bold italics** is interpolated

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

SCIENCE-Prior 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	<172	<b>172</b>	<b>1</b>	<b>176</b>	<b>16</b>	<b>192</b>	<b>83</b>
3	<173	<b>173</b>	<b>1</b>	<b>182</b>	<b>16</b>	<b>200</b>	<b>83</b>
4	<176	176	1	186	16	206	83
5	<180	<b>180</b>	<b>2</b>	<b>189</b>	<b>14</b>	<b>209</b>	<b>77</b>
6	<181	<b>181</b>	<b>2</b>	<b>192</b>	<b>14</b>	<b>213</b>	<b>77</b>
7	<183	183	2	195	14	216	77
8	<184	<b>185</b>	<b>2</b>	<b>198</b>	<b>14</b>	<b>219</b>	<b>77</b>

\*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.

Data is **bold italics** is interpolated

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

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

\*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 fourth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 73%.

Bold and Italics denotes interpolated probabilities

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

Science-Prior Season							
Estimated Probability of Passing State Test Based on Observed MAP							
RIT	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%	1%	0%	0%	0%	0%	0%
135	2%	1%	1%	0%	0%	0%	0%
140	3%	1%	1%	1%	1%	0%	0%
145	4%	2%	2%	1%	1%	1%	0%
150	7%	4%	3%	2%	1%	1%	1%
155	11%	6%	4%	3%	2%	2%	1%
160	17%	10%	7%	5%	4%	3%	2%
165	25%	15%	11%	8%	6%	5%	4%
170	35%	23%	17%	13%	10%	8%	6%
175	48%	33%	25%	20%	15%	12%	9%
180	60%	45%	35%	29%	23%	18%	14%
185	71%	57%	48%	40%	33%	27%	21%
190	80%	69%	60%	52%	45%	38%	31%
195	87%	79%	71%	65%	57%	50%	43%
200	92%	86%	80%	75%	69%	62%	55%
205	95%	91%	87%	83%	79%	73%	67%
210	97%	94%	92%	89%	86%	82%	77%
215	98%	96%	95%	93%	91%	88%	85%
220	99%	98%	97%	96%	94%	92%	90%
225	99%	99%	98%	97%	96%	95%	94%
230	100%	99%	99%	98%	98%	97%	96%
235	100%	100%	99%	99%	99%	98%	98%
240	100%	100%	100%	99%	99%	99%	99%
245	100%	100%	100%	100%	100%	99%	99%
250	100%	100%	100%	100%	100%	100%	99%
255	100%	100%	100%	100%	100%	100%	100%
260	100%	100%	100%	100%	100%	100%	100%
265	100%	100%	100%	100%	100%	100%	100%
270	100%	100%	100%	100%	100%	100%	100%
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 fourth grade student scored 200 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 75%.

Bold and Italics denotes interpolated probabilities

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

Grade	Science Correlation Pearson's <i>r</i>
3	
4	.756
5	
6	
7	.667
8	

\* 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

\* 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				
4	2714	83.3%	8.2%	8.5%
5				
6				
7	3340	87.5%	6.0%	6.4%

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