

SOUTH CAROLINA LINKING STUDY

A Study of the Alignment of the NWEA RIT Scale with South Carolina's Palmetto Assessment of State Standards (PASS) and with the High School Assessment Program (HSAP)

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The Kingsbury Center at Northwest Evaluation Association



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A STUDY OF THE ALIGNMENT OF THE NWEA RIT SCALE WITH SOUTH CAROLINA'S PALMETTO ASSESSMENT OF STATE STANDARDS (PASS) AND HIGH SCHOOL ASSESSMENT PROGRAM (HSAP)

KINGSBURY CENTER AT NWEA

AUGUST 2010

In March 2010, NWEA completed a project to connect the scale of Palmetto Assessment of State Standards (PASS) used for South Carolina mathematics and reading assessments with NWEA's RIT scale. Information from the PASS 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. In August 2010, this study was updated to include the relationship between the NWEA RIT scale and South Carolina's High School Assessment Program (HSAP) scale. This report is the combined results for both South Carolina assessments.

To perform the PASS analysis for grades 3-8, we linked together state test and NWEA test results for a sample of 37,000 South Carolina students from 126 schools who completed both exams in the spring of 2009. An equipercentile method was used to estimate the RIT score equivalent to each state performance level by determining the percentage of the population within the selected study group that performed at each level on the state test, and finding 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.

2nd grade results were extrapolated using the distribution of scores from the 3rd grade students. For instance, 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 2nd grade study population. The original PASS Linking Study published in March 2010 also extrapolated 9th and 10th grade scores based on 8th grade distributions. However, now that HSAP data is available, those extrapolations are not included.

The methodology for the HSAP analysis for grades 9-12 was the approximately same as the methodology for PASS. However, because South Carolina students can take the HSAP test during any high school year, all 3266 student records from 34 schools in either the spring of 2009 or the spring of 2008 were aligned to a single grade level which was repeated for 9th through 12th grades. The majority of students took the test in the 10th grade.

More complete documentation about our linking study methodology can be found on our website.

In the following pages, Tables 1 through 4 show the best estimate of the minimum RIT equivalent to each PASS or HSAP 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 achieving “Meets Standard” or better on PASS/HSAP, based on that student’s RIT score on MAP. These tables can be used to assist in identifying students who are not likely to pass these assessments, thereby increasing the probability that intervention strategies will be planned and implemented. These tables can also be useful for identifying target RIT-score objectives likely to correspond to successful performance on PASS.

Table 9 shows the correlation coefficients between MAP and PASS, and for MAP and HSAP, for reading and mathematics at each of the grades 3 through 8 and high school. These statistics show the degree to which MAP and PASS, and MAP and HSAP, are linearly related. Values at or near 1.0 suggest a perfect linear relationship, and values near 0 indicate no linear relationship.

Table 10 shows the percentages of students at each grade and within each subject whose status on PASS/HSAP (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 PASS and HSAP.

NOTE:

This study was revised in April 2011 to correct an error on page 10—the table showing the probability of a student passing the state Reading test based on Spring MAP scores was offset by one row. The other tables, as well as the information for all tables in the NWEA reporting system, are correct and have not been changed.

In addition to this correction, all of the probability tables (pages 9-12) have been revised to conform to current practices of showing the minimum probability as 1% (instead of 0%) and the maximum probability as 99% (instead of 100%).

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

MATH-Current Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Level 1	Level 2		Level 3		Level 4	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	< <i>186</i>	186	35	197	69		
3	<198	198	35	208	69		
4	<203	203	27	218	69		
5	<212	212	32	231	78		
6	<218	218	34	235	75		
7	<223	223	36	241	77		
8	<231	231	43	247	79		
High	<223	223	21	238	47	250	74

* 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.

Note: bolded, italicized text denotes extrapolated cut score

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

READING-Current Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Level 1	Level 2		Level 3		Level 4	
	Cut Score	Cut Score	Percentile	Cut Score	Percentile	Cut Score	Percentile
2	<180	180	23	192	54		
3	<189	189	23	201	54		
4	<198	198	26	212	67		
5	<200	200	19	217	66		
6	<209	209	30	222	69		
7	<212	212	30	226	70		
8	<216	216	32	230	72		
High	<208	208	12	225	44	236	74

* 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.

Note: *bolded, italicized text denotes extrapolated cut score*

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

MATH-Prior Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Level 1	Level 2		Level 3		Level 4	
	Cut Score	Cut Score	Percentile	Cut Score	Percentile	Cut Score	Percentile
2	< <i>175</i>	175	35	<i>184</i>	<i>69</i>		
3	<188	188	35	198	69		
4	<196	196	27	209	69		
5	<206	206	32	222	78		
6	<213	213	34	228	75		
7	<219	219	36	236	77		
8	<227	227	43	243	79		
High	<221	221	20	235	46	247	73

*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.

Note: bolded, *italicized text denotes extrapolated cut score*

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

READING-Prior Season							
Cut Scores and Percentiles for each State Performance Level							
Grade	Level 1	Level 2		Level 3		Level 4	
	Cut Score	Cut Score	Perce- tile	Cut Score	Perce- tile	Cut Score	Perce- tile
2	< <i>169</i>	<i>169</i>	<i>23</i>	<i>181</i>	<i>54</i>		
3	<181	181	23	193	54		
4	<192	192	26	207	67		
5	<196	196	19	213	66		
6	<206	206	30	219	69		
7	<210	210	30	223	70		
8	<214	214	32	228	72		
High	<207	207	12	224	44	234	74

* 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.

Note: bolded, italicized text denotes extrapolated cut score

TABLE 5 –ESTIMATED PROBABILITY OF “MEETING STANDARDS” OR BETTER ON THE MATHEMATICS TEST IN SAME SEASON (SPRING), BY STUDENT GRADE AND RIT RANGE

MATH-Current Season									
Estimated Probability of Passing State Test Based on Observed MAP Score									
RIT Range	2	3	4	5	6	7	8		High
130	1%	1%	1%	1%	1%	1%	1%		1%
135	1%	1%	1%	1%	1%	1%	1%		1%
140	1%	1%	1%	1%	1%	1%	1%		1%
145	2%	1%	1%	1%	1%	1%	1%		1%
150	3%	1%	1%	1%	1%	1%	1%		1%
155	5%	2%	1%	1%	1%	1%	1%		1%
160	8%	3%	2%	1%	1%	1%	1%		1%
165	13%	4%	3%	1%	1%	1%	1%		1%
170	20%	7%	4%	2%	1%	1%	1%		1%
175	29%	11%	7%	3%	2%	1%	1%		1%
180	40%	17%	11%	5%	3%	2%	1%		1%
185	52%	25%	17%	8%	4%	3%	1%		2%
190	64%	36%	25%	12%	7%	4%	2%		4%
195	75%	48%	36%	18%	11%	7%	3%		6%
200	83%	60%	48%	27%	17%	11%	5%		9%
205	89%	71%	60%	38%	25%	17%	8%		14%
210	93%	80%	71%	50%	36%	25%	13%		21%
215	96%	87%	80%	62%	48%	36%	20%		31%
220	97%	92%	87%	73%	60%	48%	29%		43%
225	98%	95%	92%	82%	71%	60%	40%		55%
230	99%	97%	95%	88%	80%	71%	52%		67%
235	99%	98%	97%	92%	87%	80%	64%		77%
240	99%	99%	98%	95%	92%	87%	75%		85%
245	99%	99%	99%	97%	95%	92%	83%		90%
250	99%	99%	99%	98%	97%	95%	89%		94%
255	99%	99%	99%	99%	98%	97%	93%		96%
260	99%	99%	99%	99%	99%	98%	96%		98%
265	99%	99%	99%	99%	99%	99%	97%		99%
270	99%	99%	99%	99%	99%	99%	98%		99%
275	99%	99%	99%	99%	99%	99%	99%		99%
280	99%	99%	99%	99%	99%	99%	99%		99%
285	99%	99%	99%	99%	99%	99%	99%		99%
290	99%	99%	99%	99%	99%	99%	99%		99%
295	99%	99%	99%	99%	99%	99%	99%		99%
300	99%	99%	99%	99%	99%	99%	99%		99%

* 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 third grade student scored 170 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 7%.

TABLE 6 –ESTIMATED PROBABILITY OF “MEETING STANDARDS” OR BETTER ON THE READING TEST IN SAME SEASON (SPRING), BY STUDENT GRADE AND RIT SCORE

READING-Current Season									
Estimated Probability of Passing State Test Based on Observed MAP Score									
RIT Range	2	3	4	5	6	7	8		High
130	1%	1%	1%	1%	1%	1%	1%		1%
135	1%	1%	1%	1%	1%	1%	1%		1%
140	2%	1%	1%	1%	1%	1%	1%		1%
145	4%	1%	1%	1%	1%	1%	1%		1%
150	6%	2%	1%	1%	1%	1%	1%		1%
155	9%	4%	2%	1%	1%	1%	1%		1%
160	14%	6%	3%	2%	1%	1%	1%		1%
165	22%	10%	4%	4%	1%	1%	1%		1%
170	31%	16%	7%	6%	2%	2%	1%		2%
175	43%	23%	11%	9%	4%	3%	2%		4%
180	55%	33%	17%	14%	6%	5%	3%		6%
185	67%	45%	25%	22%	10%	8%	5%		9%
190	77%	57%	36%	31%	16%	12%	8%		14%
195	84%	69%	48%	43%	23%	18%	13%		21%
200	90%	78%	60%	55%	33%	27%	20%		31%
205	94%	86%	71%	67%	45%	38%	29%		43%
210	96%	91%	80%	77%	57%	50%	40%		55%
215	98%	94%	87%	84%	69%	62%	52%		67%
220	99%	96%	92%	90%	78%	73%	64%		77%
225	99%	98%	95%	94%	86%	82%	75%		85%
230	99%	99%	97%	96%	91%	88%	83%		90%
235	99%	99%	98%	98%	94%	92%	89%		94%
240	99%	99%	99%	99%	96%	95%	93%		96%
245	99%	99%	99%	99%	98%	97%	96%		98%
250	99%	99%	99%	99%	99%	98%	97%		99%
255	99%	99%	99%	99%	99%	99%	98%		99%
260	99%	99%	99%	99%	99%	99%	99%		99%
265	99%	99%	99%	99%	99%	99%	99%		99%
270	99%	99%	99%	99%	99%	99%	99%		99%
275	99%	99%	99%	99%	99%	99%	99%		99%
280	99%	99%	99%	99%	99%	99%	99%		99%
285	99%	99%	99%	99%	99%	99%	99%		99%
290	99%	99%	99%	99%	99%	99%	99%		99%
295	99%	99%	99%	99%	99%	99%	99%		99%
300	99%	99%	99%	99%	99%	99%	99%		99%

* 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 third grade student scored 190 on a MAP test taken during the spring season, her/his estimated probability of passing the state test is 57%.

TABLE 7 – ESTIMATED PROBABILITY OF “MEETING STANDARDS” OR BETTER ON THE MATHEMATICS TEST IN PRIOR SEASON (FALL), BY STUDENT GRADE AND RIT RANGE

MATH-Prior Season									
Estimated Probability of Passing State Test Based on Observed MAP Score									
RIT Range	2	3	4	5	6	7	8		High
130	1%	1%	1%	1%	1%	1%	1%		1%
135	2%	1%	1%	1%	1%	1%	1%		1%
140	4%	1%	1%	1%	1%	1%	1%		1%
145	6%	2%	1%	1%	1%	1%	1%		1%
150	9%	3%	1%	1%	1%	1%	1%		1%
155	14%	4%	2%	1%	1%	1%	1%		1%
160	22%	7%	3%	1%	1%	1%	1%		1%
165	31%	11%	5%	2%	1%	1%	1%		1%
170	43%	17%	8%	3%	2%	1%	1%		1%
175	55%	25%	13%	5%	3%	1%	1%		1%
180	67%	36%	20%	8%	4%	2%	1%		2%
185	77%	48%	29%	13%	7%	4%	2%		3%
190	84%	60%	40%	20%	11%	6%	3%		4%
195	90%	71%	52%	29%	17%	10%	5%		7%
200	94%	80%	64%	40%	25%	16%	8%		11%
205	96%	87%	75%	52%	36%	23%	12%		17%
210	98%	92%	83%	64%	48%	33%	18%		25%
215	99%	95%	89%	75%	60%	45%	27%		35%
220	99%	97%	93%	83%	71%	57%	38%		48%
225	99%	98%	96%	89%	80%	69%	50%		60%
230	99%	99%	97%	93%	87%	78%	62%		71%
235	99%	99%	98%	96%	92%	86%	73%		80%
240	99%	99%	99%	97%	95%	91%	82%		87%
245	99%	99%	99%	98%	97%	94%	88%		92%
250	99%	99%	99%	99%	98%	96%	92%		95%
255	99%	99%	99%	99%	99%	98%	95%		97%
260	99%	99%	99%	99%	99%	99%	97%		98%
265	99%	99%	99%	99%	99%	99%	98%		99%
270	99%	99%	99%	99%	99%	99%	99%		99%
275	99%	99%	99%	99%	99%	99%	99%		99%
280	99%	99%	99%	99%	99%	99%	99%		99%
285	99%	99%	99%	99%	99%	99%	99%		99%
290	99%	99%	99%	99%	99%	99%	99%		99%
295	99%	99%	99%	99%	99%	99%	99%		99%
300	99%	99%	99%	99%	99%	99%	99%		99%

* Note: This table provides the estimated probability of passing the state test in spring, based on a MAP test score taken during the previous (fall) season. Example: if a third grade student scored 170 on a MAP test taken during the fall season, her/his estimated probability of passing the state test in spring is 17%.

TABLE 8 – ESTIMATED PROBABILITY OF “MEETING STANDARDS” OR BETTER ON THE READING TEST IN PRIOR SEASON (FALL), BY STUDENT GRADE AND RIT SCORE

READING-Prior Season									
Estimated Probability of Passing State Test Based on Observed MAP Score									
RIT Range	2	3	4	5	6	7	8		High
130	2%	1%	1%	1%	1%	1%	1%		1%
135	4%	1%	1%	1%	1%	1%	1%		1%
140	6%	2%	1%	1%	1%	1%	1%		1%
145	10%	3%	1%	1%	1%	1%	1%		1%
150	16%	5%	2%	1%	1%	1%	1%		1%
155	23%	8%	3%	2%	1%	1%	1%		1%
160	33%	13%	5%	3%	1%	1%	1%		1%
165	45%	20%	8%	5%	2%	1%	1%		1%
170	57%	29%	12%	8%	3%	2%	1%		2%
175	69%	40%	18%	13%	5%	4%	2%		4%
180	78%	52%	27%	20%	8%	6%	4%		6%
185	86%	64%	38%	29%	13%	9%	6%		10%
190	91%	75%	50%	40%	20%	14%	10%		15%
195	94%	83%	62%	52%	29%	22%	16%		23%
200	96%	89%	73%	64%	40%	31%	23%		33%
205	98%	93%	82%	75%	52%	43%	33%		45%
210	99%	96%	88%	83%	64%	55%	45%		57%
215	99%	97%	92%	89%	75%	67%	57%		69%
220	99%	98%	95%	93%	83%	77%	69%		79%
225	99%	99%	97%	96%	89%	84%	78%		86%
230	99%	99%	98%	97%	93%	90%	86%		91%
235	99%	99%	99%	98%	96%	94%	91%		94%
240	99%	99%	99%	99%	97%	96%	94%		96%
245	99%	99%	99%	99%	98%	98%	96%		98%
250	99%	99%	99%	99%	99%	99%	98%		99%
255	99%	99%	99%	99%	99%	99%	99%		99%
260	99%	99%	99%	99%	99%	99%	99%		99%
265	99%	99%	99%	99%	99%	99%	99%		99%
270	99%	99%	99%	99%	99%	99%	99%		99%
275	99%	99%	99%	99%	99%	99%	99%		99%
280	99%	99%	99%	99%	99%	99%	99%		99%
285	99%	99%	99%	99%	99%	99%	99%		99%
290	99%	99%	99%	99%	99%	99%	99%		99%
295	99%	99%	99%	99%	99%	99%	99%		99%
300	99%	99%	99%	99%	99%	99%	99%		99%

* Note: This table provides the estimated probability of passing the state test in spring, based on a MAP test score taken during the previous (fall) season. Example: if a third grade student scored a 190 on a MAP test taken during the fall season, her/his estimated probability of passing the state test in spring is 75%.

TABLE 9 – CORRELATION COEFFICIENTS BETWEEN MAP AND SOUTH CAROLINA 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	0.787
4	0.837	0.778
5	0.858	0.778
6	0.850	0.786
7	0.844	0.780
8	0.845	0.781
High	0.866	0.815

TABLE 10 – PERCENTAGE OF STUDENTS WHOSE 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	6475	86.04%	6.39%	7.34%
4	6363	86.64%	5.72%	7.51%
5	6103	88.33%	4.54%	6.90%
6	6004	80.63%	6.26%	7.88%
7	5992	84.61%	5.81%	8.76%
8	5686	81.23%	7.49%	9.34%
High	3266	88.17%	5.46%	6.37%
Reading				
3	6475	85.36%	6.33%	8.31%
4	6363	88.54%	5.03%	6.43%
5	6103	88.28%	5.54%	6.18%
6	6004	86.73%	6.26%	7.01%
7	5992	85.58%	6.93%	7.49%
8	5686	86.26%	6.44%	7.30%
High	3231	89.27%	4.90%	5.83%



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