PGCPS
Research & Evaluation

Prince George's County Public Schools

RESEARCH RPORT

Linking MAP-R and PARCC ELA Assessments in PGCPS

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February 2019 © Prince George's County Public Schools

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Linking MAP-R and PARCC ELA Assessments in PGCPS

Executive Summary

Background

Prince George's County Public Schools' (PGCPS) singular goal is "Outstanding Academic Achievement for All Students"[1] Measuring the extent to which PGCPS is reaching this goal requires the regular assessment of student achievement. As a participant in the Partnership for Assessment of Readiness for College and Careers (PARCC), the state of Maryland utilizes the end-of-year and end-of-course exams developed by PARCC to determine whether PGCPS students are on track to be successful in college and careers. In addition to the state-required exams administered at the end of the school year, PGCPS utilizes interim assessments to gauge student progress during the school year. In the area of English language arts (ELA), PGCPS employs the Measure of Academic Progress-Reading (MAP-R) from assessment developer, NWEA.

The purpose of the interim assessment is to catch students who are not on-track to perform well on the PARCC early in the school year. In this way, the school and teachers have the opportunity to adjust instruction and provide extra support to shore up students' weak areas. For MAP-R to be an effective interim assessment for this purpose, it was necessary to link the two assessments using statistical methods. The results of this linking study provide information on how to use MAP-R data to adjust instruction and to provide the needed supports for students whose MAP-R performance is indicative of being at risk for not attaining college and career readiness scores on PARCC.

The study addresses the following research questions for Grades 3 through 8 in reading:

1) How did fall/winter/spring MAP RIT scores correlate to summative PARCC scale scores in spring?
2) How did fall/spring MAP RIT scores correspond to summative PARCC scale scores?
3) How accurately did fall/spring MAP RIT scores predict college and career readiness on PARCC?

Methodology

A single-group linking method was used to address the research questions, using data from students in Grades 3 through 8 who took both MAP-R and PARCC assessments during the

[1] SY2016 – 2020 Strategic Plan, Prince George's County Public Schools, March 2015 (https://www1.pgcps.org/strategic-plan/)

2017/2018 school year. The study samples were created based on MAP-R test administrations (fall, winter and spring). The study examined correlation, concordant and predictive relationships between MAP and PARCC through the following statistical procedures: Pearson correlation analysis, equipercentile linking method and classification accuracy analysis.

Findings

Results from the correlation analyses indicate a strong positive relationship between MAP-R and PARCC ELA test scores across assessment periods among students in Grades 3 through 8. Results from the linking study produced concordance tables for all scale scores in MAP-R and PARCC ELA across assessment periods in among test-takers in Grades 3 through 8. The concordance tables can be used to convert MAP-R RIT scores to PARCC ELA scores. For each grade level, the study also identified MAP-R cut scores that correspond to the PARCC ELA score benchmark for college and career readiness (performance level 4 or a scale score of 750) across the fall, winter and spring MAP-R assessment periods. Finally, the study demonstrates that MAP reading scores can consistently and accurately classify a student's proficiency status on PARCC ELA from the interim MAP-R .

I. INTRODUCTION

A. Background

The state of Maryland participates in the Partnership for Assessment of Readiness for College and Careers (PARCC), which is aligned with the Common Core State Standards (CCSS), and thus requires the state's public schools to administer PARCC to all students beginning in third grade. In addition to state mandated assessments, Prince George's County Public Schools (PGCPS) utilizes interim assessments throughout the school year as a way to determine whether students are progressing toward their learning objectives as needed, and if not, what skills are lacking. Prior to the 2017 school year, PGCPS utilized the Scholastic Reading Inventory (SRI) as its districtwide interim assessment tool for Reading and English Language Arts (RELA). Beginning in the 2017 school year, however, the Northwest Evaluation Association's (NWEA) reading assessment tool, Measures of Academic Progress-Reading (MAP-R), replaced the SRI as the interim assessment for RELA. PGCPS administers the MAP-R assessments to students in Grades 3 through 8 in the fall, winter and spring of each academic year. Teachers and administrators use MAP-R data to monitor student academic performance and growth toward meeting or exceeding benchmarks and to adjust instructional practices.

There are few studies that have connected MAP data and PARCC assessments to estimate how MAP RIT scores correspond to PARCC performance levels. NWEA (2016a, 2016b) completed a linking study to connect MAP with PARCC in reading and mathematics. Montgomery County Public schools also conducted a linking study of MAP and PARCC (Wang, Zhao and Addison, 2016). In both cases, the reports produced concordance tables for both tests and data that corresponded to the college and career readiness benchmark on PARCC (performance level 4 or higher) for reading and mathematics in Grades 3 through 8 were generated. There is no comparable study using test results from students within PGCPS that can confirm the predictive validity of the MAP-R assessment on PARCC.

B. Purpose of the Study

The purpose of this study is to establish evidence of the predictive validity of MAP-R assessments through linking fall, winter and spring MAP data with the summative PARCC ELA data for the 2017–2018 school year. In more detail, this study serves the following purposes:

1) Find the predictive and concurrent validity evidence through examining the correlation of MAP-R RIT scores and PARCC ELA scale scores.

2) Develop concordance tables to show how MAP-R RIT scores are related to PARCC ELA scale scores.

3) Establish the accuracy of MAP-R predicted thresholds on PARCC ELA college and career readiness performance levels.

C. Research Questions

Within the parameters discussed above, the following research questions were developed:

1. How did fall/winter/spring MAP-R RIT scores correlate to summative PARCC ELA scale scores?
2. How did fall/winter/spring MAP-R RIT scores correspond to summative PARCC ELA scale scores?
3. How accurately did MAP-R RIT cut scores predict college and career readiness on PARCC?

Each question is addressed individually and broken down by grade level in section III of this report.

II. Data Sources and Analysis

A. Samples

During the 2017–2018 school year, all PGCPS students in Grades 3 through 8 took the MAP-R assessments. To examine relationships between MAP-R and PARCC ELA data, students with fall, winter and spring MAP RIT scores and summative PARCC scale scores were included as separate samples by grade level. Thus, the study included three linking samples of students in Grades 3 through 8: Sample #1–Students who took both fall MAP-R and summative PARCC ELA assessments; Sample #2–Students who took both winter MAP-R and summative PARCC ELA assessments; and Sample #3–Students who took both spring MAP-R and summative PARCC. While the first two samples will be used to test the predictive validity of the fall and winter MAP-R assessments, the spring sample will be used to test the concurrent validity of MAP-R and PACCC ELA.

The descriptive statistics of the scale scores for the MAP-R RIT and PARCC ELA tests, summarized across samples, are given in Tables 1, 2 and 3. The tables provide the number of students who were tested, the average scale scores (grand mean), the standard deviation of the mean scale scores, the minimum and maximum mean scale scores, and the percentage of students who were on-track for college and career readiness based on the standards developed by PARCC for Grades 3 through 8. Table 1 also includes similar descriptive statistics for the fall administration of MAP-R; Table 2 adds the descriptive statistics for the winter administration; and Table 3 shows MAP-R's spring administration descriptive statistics.

Table 1–SY2018 PARCC ELA and Fall MAP-R performance by grade

			PARCC Overall Scale score				MAP-R RIT Score FALL			
Grade Level Test	N	on-track for college readiness	Mean Score	SD	Min. Score	Max. Score	Mean Score	SD	Min. Score	Max. Score
ELA 3	9,499	26.5%	723.4	40.9	650.0	850.0	180.8	17.6	134.0	235.0
ELA 4	9,599	30.1%	731.3	34.5	650.0	850.0	191.1	17.4	138.0	241.0
ELA 5	9,468	28.4%	730.1	32.7	650.0	847.0	198.8	16.8	135.0	250.0
ELA 6	8,782	28.3%	731.6	31.1	650.0	850.0	203.9	17.1	141.0	254.0
ELA 7	8,156	34.6%	733.2	39.2	650.0	850.0	207.7	17.3	143.0	261.0
ELA 8	8,161	32.6%	731.5	39.0	650.0	850.0	212.4	17.7	142.0	266.0

Note: Sample only includes students who were tested in the fall for MAP-R and had PARCC score in spring

Table 2–SY2018 PARCC ELA and Winter MAP-R performance by grade

			PARCC Overall Scale score				MAP-R RIT Score Winter			
Grade Level Test	N	on-track for college readiness	Mean Score	SD	Min. Score	Max. Score	Mean Score	SD	Min. Score	Max. Score
ELA 3	9,785	26.5%	723.4	40.9	650.0	850.0	188.1	17.1	136.0	235.0
ELA 4	9,906	30.3%	731.5	34.4	650.0	850.0	196.3	16.7	141.0	258.0
ELA 5	9,669	28.4%	730.0	32.8	650.0	847.0	203.3	16.2	143.0	248.0
ELA 6	9,052	28.1%	731.5	31.0	650.0	850.0	207.7	16.7	138.0	260.0
ELA 7	8,444	35.0%	733.3	39.2	650.0	850.0	210.9	17.2	145.0	258.0
ELA 8	8,517	32.2%	731.2	38.9	650.0	850.0	215.0	17.7	138.0	265.0

Note: Sample only includes students who were tested in winter for MAP-R and had PARCC score in spring

Table 3–SY2018 PARCC ELA and Spring MAP-R performance by grade

			PARCC Overall Scale score				MAP-R RIT Score Spring			
Grade Level Test	N	on-track for college readiness	Mean Score	SD	Min. Score	Max. Score	Mean Score	SD	Min. Score	Max. Score
ELA 3	9,623	26.4%	723.3	40.9	650.0	850.0	190.3	17.1	136.0	240.0
ELA 4	9,775	30.1%	731.2	34.5	650.0	850.0	197.7	16.5	144.0	246.0
ELA 5	9,562	28.5%	730.0	32.7	650.0	847.0	204.1	16.4	145.0	249.0
ELA 6	8,841	28.2%	731.7	30.9	650.0	850.0	208.5	16.7	143.0	258.0
ELA 7	7,854	35.7%	734.2	39.3	650.0	850.0	212.0	17.3	148.0	272.0
ELA 8	7,845	32.9%	732.1	38.9	650.0	850.0	215.8	17.7	143.0	264.0

Note: Sample only includes students who were tested in spring for MAP-R and had PARCC score in spring

B. Analyses

Pearson correlation analysis was used to address research question one. This measures the strength and direction of the relationship between MAP RIT scores and PARCC scale scores. The correlation coefficients between MAP-R RIT scores and PARCC ELA scale scores were presented for each of the linking samples for each of the grade levels. Moreover, correlation coefficients between MAP RIT scores and the PARCC reading and writing claim scale scores separately and are reported in Appendix B.

Equipercentile linking method was used to address research question two. The equipercentile method, which identifies comparable test scores across two different tests using student achievement percentiles generated from each set of test results, was used to generate

concordance tables. The equipercentile method is appropriate for this study because (a) the two tests, MAP-R and PARCC ELA, measure similar educational standards and the population satisfies the single-subject requirement as the samples used for the analysis were tested on both tests (Kolen & Brennan, 2004). The concordance tables can be used to convert MAP-R RIT scores to PARCC ELA scale scores; that is, given any MAP RIT score, a corresponding PARCC score can be identified. The R computer program EQUATE (Albano, 2014) was used for equipercentile linking and the equipercentile concordant function produced concordance tables for MAP-R RIT scores and PARCC ELA scale scores. Finally, based on the concordance tables, each student in the samples was assigned a predicted value of "on-track for college" or "not on-track for college" using cut scores on the MAP-R RIT score that correspond to the PARCC ELA cut score that indicates college and career readiness (i.e. 750).

Accuracy of Classification Analysis was used to address research question three. This analysis allows us to estimate the predictive accuracy of the MAP-R threshold identified in question two in meeting the college and career readiness benchmark (performance level 4 or higher) on PARCC.

In conducting this accuracy testing, the following steps were followed. First, two separate variables were created: (1) Predicted on-track for college using cut scores on the MAP-R RIT score that correspond to the PARCC college readiness as described above; and (2) an actual on-track for college variable based on PARCC ELA score; that is, a scale score of 750 or above or performance levels of 4 and 5. Second, the accuracy of classification test was conducted on STATA using the receiver operating characteristic (ROC) function. The ROC analysis produces sensitivity (true positive rate), specificity (true negative rate) and overall classification accuracy rates. The true positive rate is the proportion of students who were college and career ready for which the predicted condition was also college and career ready. The true negative rate is the proportion of who were not college and career ready for which the predicted condition was also not college and career ready. The percentage of correctly classified cases determines the predictive accuracy of MAP-R. A higher classification rate indicates stronger congruence between MAP RIT scores and PARCC scale scores. A threshold of 80 percent is used as a guide for a good accuracy.[2]

[2] A rough guide for classifying the accuracy is: 90-100 = excellent, 80-90 = good, 70-80 = fair, 60-70 = poor and 50-60 = fail.

III. FINDINGS

In this section we provide the answers to questions that guided this study. Each research question is answered individually.

A. Correlation between MAP-R and PARCC ELA

Q1: *How did fall/winter/spring MAP-R RIT scores correlate to summative PARCC ELA scale scores?*

The correlation coefficients ranged from 0.77 to 0.81 for fall MAP-R and PARCC ELA. For the winter sample, the correlation coefficients ranged from 0.77 to 0.82. The correlation coefficient between MAP-R and PARCC ELA ranged from 0.78 to 0.83 for the spring sample. See Table 4. As can be expected, the correlation with the PARCC scale scores was slightly higher for spring than for fall and winter MAP RIT scores across grade levels. The correlations were also slightly higher for the early elementary grades cross the MAP testing period. All these correlations indicate a strong relationship between MAP-R and PARCC ELA test scores.

Table 4–Correlation between MAP-R RIT scores and PARCC ELA Scale Scores by Grade, SY18

Grade Level Test	Correlation with fall MAP R	Correlation with winter MAP R	Correlation with spring MAP R
ELA 3	.81**	.82**	.83**
ELA 4	.81*	.81**	.82**
ELA 5	.79**	.80**	.81**
ELA 6	.77**	.77**	.78**
ELA 7	.78**	.79**	.80**
ELA 8	.78**	.78**	.79**

** Correlation significant at the 0.01 level

B. Concordance between MAP-R and PARCC ELA

Q2. *How did fall/winter/spring MAP-R RIT scores correspond to summative PARCC ELA scale scores?*

Estimated MAP-R RIT scores associated with the college and career readiness benchmark score on PARCC (750) across grade levels are presented in Table 5. The concordance tables can be used to convert MAP-R RIT scores to PARCC ELA scores. A RIT score of 194 on the fall MAP-R corresponded to the PARCC benchmark score of 750 among the third-grade students in the first sample. This linking is interpreted as third-grade students who achieve a RIT score of 194 on the fall MAP-R will most likely earn a score of 750 on the PARCC

when it is administered the following spring. The remaining corresponding MAP-R scores for the fall assessment are 202 for Grade 4, 210 for Grade 5, 215 for Grade 6, 217 for Grade 7, and 222 for Grade 8.

The MAP-R RIT score for the winter administration that corresponds to the PARCC benchmark score of 750 is 201 for Grade 3, 207 for Grade 4, 214 for Grade 5, 219 for Grades 6 and 7, and 225 for Grade 8. In the spring assessment period, the MAP-R RIT score corresponding to the PARCC benchmark score of 750 is 203 for Grade 3, 208 for Grade 4, 215 for Grade 5, 219 for Grades 6, 220 for Grades 7, and 226 for Grade 8. See Table 5.

Table 5–Concordance Table for MAP RIT Scores Corresponding to the College and Career Readiness Benchmark Score (750) on PARCC Assessment by assessment period

Grade Level Test	Fall MAP-R corresponding score	Winter MAP-R corresponding score	Spring MAP-R corresponding score	PARCC Readiness benchmark score
ELA 3	194	201	203	750
ELA 4	202	207	208	750
ELA 5	210	214	215	750
ELA 6	215	219	219	750
ELA 7	217	219	220	750
ELA 8	222	225	226	750

Complete concordance tables for MAP and PARCC are presented in Appendix A. For each grade level, the MAP-R RIT scores that correspond to the PARCC ELA scale scores related to performance level 4 (750) are highlighted in green. The tables can also be used to correspond other performance levels; for example, an ELA 3 performance level 3 (725) corresponding score for the spring assessment period would be a MAP-R RIT score of 193.

C. Accuracy of MAP-R cut scores Associated with PARCC Readiness Levels

Q3. *How accurately did MAP-R RIT cut scores predict college and career readiness on PARCC?*

The results of the accuracy of classification analysis are presented in Table 6. With MAP-R RIT cut scores that predicted whether or not a student met the PARCC college and career readiness benchmark, the correct classification ranged from 79.2% for Grade 6 during winter assessment period to 81.8% for Grade 4 in spring assessment period. The prediction accuracy of MAP-R cut scores, thus, remained consistent across assessment periods for all grade levels. The prediction accuracy rates meet the 80% threshold for good accuracy.

Therefore, the concordance tables can be interpreted as accurate representations of the relationships between MAP-R RIT scores and PARCC ELA scores.

Table 6–Accuracy Rates of MAP-R cut scores in Predicting PARCC College Readiness

PARCC ELA	Fall MAP-R			Winter MAP-R			Spring MAP-R		
	Sensitivity	Specificity	Correctly Classified	Sensitivity	Specificity	Correctly Classified	Sensitivity	Specificity	Correctly Classified
ELA 3	70.3%	90.0%	80.2%	69.5%	90.8%	80.1%	70.7%	91.0%	80.9%
ELA 4	73.5%	88.5%	81.0%	73.0%	89.6%	81.3%	74.4%	89.2%	81.8%
ELA 5	70.5%	89.8%	80.1%	70.9%	89.6%	80.3%	71.6%	89.8%	80.7%
ELA 6	72.4%	88.7%	80.6%	68.7%	89.7%	79.2%	73.2%	89.1%	81.2%
ELA 7	72.9%	86.6%	79.7%	77.5%	85.9%	81.7%	77.6%	85.5%	81.6%
ELA 8	75.3%	87.2%	81.3%	73.9%	88.1%	81.0%	72.8%	89.5%	81.2%

The results in Table 6 demonstrate that on average, MAP reading scores can consistently classify students' proficiency status on PARCC ELA tests approximately 80% of the time. Such accuracy rates suggest that the MAP-R assessment is a reliable predictor of students' college readiness status on the PARCC ELA test for all grades across assessment periods during the school year.

III. Summary and Discussion

This study produced a set of cut scores on MAP reading tests for Grades 3 through 8 that correspond to PARCC performance levels. The study also tested the classification accuracy of the cut scores. Results from the correlation analyses indicate a strong positive relationship between MAP-R and PARCC ELA test scores across assessment periods in Grades 3 through 8. Results from the linking study produced concordance tables for all scale scores in MAP-R and PARCC ELA across assessment periods in Grades 3 through 8. The concordance tables can be used to convert any MAP-R RIT scores to PARCC ELA scores. For each grade level, the study also identified MAP-R cut scores that correspond to the PARCC ELA score benchmark for college and career readiness (performance level 4 or a scale score of 750) across the fall, winter and spring MAP-R assessment periods. Finally, the study demonstrated that MAP reading scores can consistently and accurately classify students' proficiency status on PARCC ELA for interim periods of assessments.

As an interim assessment, MAP-R can be used to predict PARCC summative outcomes and serve as a source for ongoing analysis of student progress. The predictive value of MAP-R allows teachers and school leaders to adjust instructional practices so that struggling students may be given the additional support they need to meet benchmarks of college and career readiness on the PARCC ELA test. The NWEA MAP-R report also includes information on growth norms in reading and thus teachers and school leaders can use the information on expected growth and the cut-scores from the concordance tables needed to be on-track for college on the table to make decisions about additional supports and interventions needed to achieve readiness for individuals or groups of students.

The concordance tables are informative and the scale scores are linked with confidence and predictive accuracy; however, users are cautioned from treating the scores from different tests as equivalent or interchangeable. The linking approach used here merely asserts an association between the scores but does not connote that these paired scores have the same substantive meaning. (Ryan and Brockman, 2018). The tests cannot be equated and used interchangeably since MAP and PARCC assessments do not exactly measure the same content. PARCC contains a reading and writing component, MAP-R is primarily a reading assessment and analysis of data in this study also demonstrates that the correlation of MAP-R is higher for the reading component of PARCC ELA than it is for the writing component of PARCC ELA (see Appendix B).

REFERENCES

Albano, A. D. (2014). *equate: an R Package for Observed-Score Linking and Equating*.

Kolen, M.J. & Brennan, R.L. (2004). *Test equating, scaling, and linking: Methods and practice.* New York: Springer.

NWEA (2016). Linking the PARCC Assessments to NWEA MAP Tests for Illinois. March 2016

Ryan, J., & Brockman, F. (2018). *A Practitioner's Introduction to Equating*. The Council of Chief State School Officers.

Wang, H. Y., Zhao, H., & Addison, K. L. (2016). Linking PARCC and MAP Assessments for Students in Montgomery County Public Schools. Rockville MD: Montgomery County Public Schools.

Appendix A

Table A 1–Concordance Table for fall MAP-R RIT Scores and PARCC ELA Scale Scores

Fall MAP-R RIT score	ELA 3	ELA 4	ELA 5	ELA 6	ELA 7	ELA 8
134	650					
135	650		650			
136	650		650			
137	650		650			
138	650	650	651			
139	650	650	651			
140	650	651	651			
141	651	652	652	651		
142	651	652	652	653		650
143	651	653	653	654	650	650
144	652	654	653	656	650	650
145	652	655	654	657	650	650
146	653	656	655	658	650	650
147	653	658	655	659	650	650
148	654	659	656	661	650	650
149	655	660	657	662	650	650
150	656	662	658	663	651	651
151	657	663	659	664	651	651
152	659	664	659	665	651	651
153	660	666	660	666	651	651
154	662	667	661	667	652	652
155	663	669	662	668	652	652
156	665	670	663	668	652	652
157	667	672	664	669	653	652
158	669	674	665	670	653	653
159	671	675	666	671	653	653
160	673	677	667	672	654	653
161	676	678	669	673	654	654
162	678	680	670	674	655	654
163	680	681	671	675	655	655
164	683	683	672	676	656	655
165	685	684	673	677	656	656
166	688	686	674	678	657	656
167	690	687	675	679	658	657
168	693	689	677	679	659	658
169	695	690	678	680	659	658
170	698	692	679	681	660	659
171	700	694	680	682	661	660
172	702	695	682	683	662	660
173	705	697	683	684	663	661
174	707	698	684	685	664	662
175	709	700	686	686	665	663
176	712	701	687	687	666	664

177	714	703	688	688	668	665
178	716	705	690	689	669	666
179	718	706	691	690	670	667
180	720	708	693	691	672	668
181	723	709	694	693	673	669
182	725	711	696	694	675	670
183	727	713	697	695	676	671
184	729	714	699	696	678	673
185	731	716	701	697	680	674
186	733	718	702	698	682	675
187	736	720	704	700	683	677
188	738	721	705	701	685	678
189	740	723	707	702	687	680
190	742	725	709	704	689	681
191	744	727	711	705	691	683
192	747	729	713	706	693	684
193	749	731	714	708	695	686
194	751	733	716	709	697	688
195	754	735	718	711	699	689
196	756	737	720	712	702	691
197	759	739	722	714	704	693
198	761	741	724	715	706	695
199	764	743	726	717	708	697
200	766	745	728	719	710	698
201	769	748	730	721	713	700
202	772	750	733	722	715	702
203	774	752	735	724	717	704
204	777	755	737	726	720	707
205	780	757	739	728	722	709
206	783	760	742	730	724	711
207	787	762	744	732	727	713
208	790	765	746	734	729	715
209	793	767	749	736	732	717
210	797	770	751	738	734	720
211	800	773	754	741	737	722
212	804	775	756	743	739	724
213	808	778	759	745	742	727
214	812	781	761	748	744	729
215	816	784	764	750	747	732
216	820	787	766	753	749	734
217	825	790	769	755	752	737
218	829	793	771	758	755	739
219	833	796	774	760	757	742
220	836	799	777	763	760	745
221	839	802	779	766	763	747
222	842	806	782	768	766	750
223	844	809	785	771	769	753
224	846	812	787	774	772	756
225	847	815	790	776	775	759
226	848	819	793	779	778	762

227	849	822	795	782	781	765
228	850	825	798	785	784	768
229	850	828	801	787	787	771
230	850	831	804	790	791	774
231	850	834	806	793	794	777
232	850	837	809	796	798	780
233	850	840	812	799	801	783
234	850	842	814	801	805	787
235	850	844	817	804	809	790
236		846	820	807	812	793
237		848	823	809	816	797
238		849	825	812	820	800
239		850	828	815	824	804
240		850	830	817	828	807
241		850	833	820	831	811
242			835	823	835	815
243			838	825	838	818
244			840	828	841	822
245			842	830	843	825
246			844	833	845	829
247			845	835	847	832
248			846	838	848	835
249			847	840	849	838
250			847	842	849	841
251				844	850	843
252				846	850	845
253				848	850	846
254				850	850	848
255					850	849
256					850	849
257					850	850
258					850	850
259					850	850
260					850	850
261					850	850
262						850
263						850
264						850
265						850

Notes: the row for the MAP scores corresponding to the PARCC ELA scores related to performance level 4 (750) fof each grade are highlighted in green.

Table A 2–Concordance Table for Winter MAP-R RIT Scores and PARCC ELA Scale Scores

Winter MAP-R RIT score	ELA 3	ELA 4	ELA 5	ELA 6	ELA 7	ELA 8
136	650					
137	650					
138	650			650		650
139	650			651		650
140	650			653		650
141	650	650		654		650
142	650	651		655		650
143	650	652	650	656		650
144	650	653	651	657		650
145	651	654	652	657	650	650
146	651	655	652	658	650	650
147	651	656	653	659	650	650
148	652	657	654	660	650	650
149	652	658	655	661	650	651
150	652	659	656	662	650	651
151	653	660	656	663	651	651
152	653	661	657	663	651	651
153	654	662	658	664	651	651
154	655	663	659	665	651	652
155	656	664	660	666	652	652
156	656	666	660	667	652	652
157	657	667	661	667	652	652
158	658	668	662	668	652	653
159	660	669	663	669	653	653
160	661	670	664	670	653	653
161	662	671	665	670	654	654
162	663	673	666	671	654	654
163	665	674	666	672	654	654
164	666	675	667	673	655	655
165	668	676	668	674	655	655
166	670	678	669	674	656	656
167	672	679	670	675	656	656
168	674	680	671	676	657	657
169	676	681	672	677	657	657
170	678	683	673	678	658	658
171	680	684	674	679	659	658
172	682	685	675	679	659	659
173	684	687	676	680	660	660
174	686	688	678	681	661	660
175	689	690	679	682	662	661
176	691	691	680	683	663	662
177	693	692	681	684	664	663
178	696	694	682	685	665	664
179	698	695	683	686	666	664
180	700	697	685	687	667	665
181	703	698	686	688	668	666

182	705	700	687	689	669	667
183	707	702	689	690	671	668
184	710	703	690	691	672	669
185	712	705	692	692	673	671
186	715	707	693	693	675	672
187	717	708	695	694	677	673
188	719	710	696	695	678	674
189	722	712	698	696	680	675
190	724	714	699	698	682	677
191	727	715	701	699	684	678
192	729	717	703	700	686	680
193	731	719	704	701	688	681
194	734	721	706	703	690	683
195	736	723	708	704	692	684
196	739	725	710	706	694	686
197	742	728	712	707	696	687
198	744	730	714	708	698	689
199	747	732	716	710	701	691
200	749	734	718	712	703	693
201	752	737	720	713	705	694
202	755	739	722	715	707	696
203	758	741	724	717	710	698
204	761	744	727	718	712	700
205	764	746	729	720	714	702
206	766	749	731	722	717	704
207	770	751	734	724	719	706
208	773	754	736	726	722	708
209	776	757	738	728	724	711
210	779	759	741	730	727	713
211	783	762	743	732	729	715
212	786	765	746	734	732	717
213	790	768	748	737	734	720
214	794	771	751	739	737	722
215	798	774	754	741	739	725
216	802	777	756	744	742	727
217	806	780	759	746	744	729
218	810	783	762	749	747	732
219	815	786	765	751	750	735
220	819	789	767	754	752	737
221	824	792	770	757	755	740
222	828	796	773	759	758	743
223	832	799	776	762	761	745
224	836	802	778	765	763	748
225	840	805	781	768	766	751
226	842	809	784	771	769	754
227	845	812	787	773	772	757
228	846	815	790	776	775	760
229	848	818	793	779	778	763
230	849	822	795	782	781	766
231	849	825	798	785	784	769

232	850	828	801	788	787	772
233	850	831	804	791	791	775
234	850	834	807	794	794	779
235	850	837	810	797	797	782
236		840	812	800	801	785
237		842	815	802	804	789
238		844	818	805	808	792
239		846	821	808	811	796
240		847	824	811	815	799
241		848	826	814	819	803
242		849	829	816	822	806
243		850	832	819	826	810
244		850	835	822	830	814
245		850	837	824	833	818
246		850	840	827	836	821
247		850	843	830	839	825
248		850	846	832	842	828
249		850		835	844	832
250		850		837	846	835
251		850		840	847	838
252		850		842	848	841
253		850		844	849	843
254		850		846	849	845
255		850		847	850	847
256		850		848	850	848
257		850		849	850	849
258		850		850	850	849
259				850		850
260				850		850
261						850
262						850
263						850
264						850
265						850

Notes: the row for the MAP scores corresponding to the PARCC ELA scores related to performance level 4 (750) fof each grade are highlighted in green

Table A 3–Concordance Table between Spring MAP-R RIT scores and PARCC ELA Scale Scores

Spring MAP-R RIT score	ELA 3	ELA 4	ELA 5	ELA 6	ELA 7	ELA 8
136	650					
137	650					
138	650					
139	650					
140	650					
141	650					
142	650					
143	650			651		650
144	650	650		653		650
145	650	651	650	655		650
146	650	652	651	656		650
147	651	653	652	658		650
148	651	654	652	659	650	650
149	651	655	653	660	650	650
150	652	656	654	661	650	650
151	652	657	655	662	650	651
152	652	658	656	663	651	651
153	653	659	657	664	651	651
154	654	661	658	665	651	651
155	654	662	659	666	651	651
156	655	663	659	666	652	652
157	656	664	660	667	652	652
158	656	665	661	668	652	652
159	657	666	662	669	653	653
160	658	668	663	670	653	653
161	659	669	664	670	653	653
162	661	670	665	671	654	654
163	662	671	666	672	654	654
164	663	673	667	673	655	654
165	665	674	668	673	655	655
166	666	675	669	674	656	655
167	668	676	670	675	656	656
168	669	678	671	676	657	657
169	671	679	672	677	657	657
170	673	680	673	677	658	658
171	675	682	674	678	659	658
172	677	683	675	679	659	659
173	679	684	676	680	660	660
174	681	686	677	681	661	660
175	683	687	678	682	662	661
176	685	688	680	682	663	662
177	688	690	681	683	664	663
178	690	691	682	684	665	664
179	692	693	683	685	666	665
180	695	694	685	686	667	666
181	697	696	686	687	668	667

182	699	697	687	688	669	668
183	702	699	688	689	670	669
184	704	700	690	690	672	670
185	706	702	691	691	673	671
186	709	704	693	692	675	672
187	711	705	694	693	676	673
188	713	707	696	694	678	674
189	716	709	697	696	679	676
190	718	711	699	697	681	677
191	721	712	700	698	683	678
192	723	714	702	699	685	680
193	726	716	704	701	687	681
194	728	718	705	702	689	683
195	731	720	707	703	691	684
196	733	722	709	705	693	686
197	736	724	711	706	695	687
198	738	726	713	708	697	689
199	741	729	715	709	699	691
200	743	731	717	711	701	693
201	746	733	719	712	703	694
202	749	735	721	714	706	696
203	751	738	723	716	708	698
204	754	740	725	717	710	700
205	757	742	727	719	712	702
206	760	745	729	721	715	704
207	763	747	732	723	717	706
208	766	750	734	725	720	708
209	769	753	736	727	722	710
210	772	755	739	729	724	712
211	776	758	741	731	727	714
212	779	761	743	733	729	717
213	783	764	746	735	732	719
214	786	767	749	737	734	721
215	790	770	751	740	737	724
216	794	773	754	742	740	726
217	798	776	756	745	742	728
218	802	779	759	747	745	731
219	806	782	762	750	747	733
220	811	785	764	752	750	736
221	815	788	767	755	753	739
222	820	791	770	757	755	741
223	824	794	773	760	758	744
224	829	798	775	763	761	747
225	833	801	778	766	764	749
226	837	804	781	768	767	752
227	840	808	784	771	770	755
228	843	811	787	774	773	758
229	845	814	789	777	775	761
230	847	818	792	780	779	764
231	848	821	795	782	782	767

232	849	824	798	785	785	770
233	849	827	801	788	788	773
234	850	830	804	791	791	777
235	850	834	807	794	794	780
236	850	836	809	797	798	783
237	850	839	812	799	801	787
238	850	842	815	802	805	790
239	850	844	818	805	808	794
240	850	846	821	808	812	797
241		847	824	811	815	801
242		848	826	813	819	804
243		849	829	816	823	808
244		850	832	819	826	812
245		850	835	821	830	816
246		850	838	824	833	819
247			840	827	836	823
248			843	829	839	827
249			846	832	842	830
250				834	844	834
251				836	845	837
252				839	847	840
253				841	848	842
254				843	849	844
255				845	849	846
256				847	850	847
257				849	850	848
258				850	850	849
259					850	850
260					850	850
261					850	850
262					850	850
263					850	850
264					850	850
265					850	
266					850	
267					850	
268					850	
269					850	
270					850	
271					850	
272					850	

Notes: the row for the MAP scores corresponding to the PARCC ELA scores related to performance level 4 (750) for each grade are highlighted in green

Appendix B

Table B 1–Correlation between MAP-R RIT scores and PARCC ELA Claims Scale Scores by Grade, SY18

PARCC ELA		fall MAP RIT scores	winter MAP RIT scores	spring MAP RIT scores
ELA 3	Reading Claim	**.802****	**.811****	**.813****
	Writing Claim	**.696****	**.707****	**.718****
ELA 4	Reading Claim	**.798****	**.791****	**.804****
	Writing Claim	**.694****	**.699****	**.708****
ELA 5	Reading Claim	**.787****	**.792****	**.803****
	Writing Claim	**.657****	**.668****	**.675****
ELA 6	Reading Claim	**.775****	**.772****	**.782****
	Writing Claim	**.634****	**.631****	**.639****
ELA 7	Reading Claim	**.781****	**.789****	**.800****
	Writing Claim	**.675****	**.676****	**.688****
ELA 8	Reading Claim	**.782****	**.783****	**.791****
	Writing Claim	**.673****	**.682****	**.688****