

Linking Study Report: Predicting Performance on the Performance Evaluation for Alaska's Schools (PEAKS) based on NWEA MAP Growth Scores

July 2020

NWEA Psychometric Solutions



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Executive Summary

To predict student achievement on the Performance Evaluation for Alaska’s Schools (PEAKS) assessments in Grades 3–8 English Language Arts (ELA) and Mathematics, NWEA® conducted a linking study using Spring 2017 data to derive Rasch Unit (RIT) cut scores on the MAP® Growth™ assessments that correspond to the PEAKS achievement levels. With this information, educators can identify students at risk of failing to meet state proficiency standards early in the year and provide tailored educational interventions. The linking study has been updated since the previous version published in June 2018 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020).

Table E.1 presents the PEAKS *Proficient* achievement level cut scores and the corresponding MAP Growth RIT cut scores that allow teachers to identify students who are on track for proficiency on the state summative test and those who are not. For example, the *Proficient* cut score on the PEAKS Grade 3 ELA test is 500. A Grade 3 student with a MAP Growth Reading RIT score of 193 in the fall is likely to meet proficiency on the PEAKS ELA test in the spring, whereas a Grade 3 student with a MAP Growth Reading RIT score lower than 193 in the fall is in jeopardy of not meeting proficiency. MAP Growth cut scores for Grade 2 are also provided so educators can track early learners’ progress toward proficiency on the PEAKS test by Grade 3. These cut scores were derived based on the Grade 3 cuts and the 2020 NWEA growth norms for the adjacent grade (i.e., Grades 2 to 3).

Table E.1. MAP Growth Cut Scores for PEAKS Proficiency

Assessment		Proficient Cut Scores by Grade						
		2	3	4	5	6	7	8
ELA/Reading								
PEAKS Spring		–	500	500	500	500	500	500
MAP Growth	Fall	181	193	200	208	212	217	224
	Winter	189	200	206	212	216	220	226
	Spring	193	203	208	214	217	221	227
Mathematics								
PEAKS Spring		–	500	500	500	500	500	500
MAP Growth	Fall	176	189	202	213	220	230	239
	Winter	185	197	209	219	225	234	242
	Spring	190	202	213	223	228	237	244

Please note that the results in this report may differ from those found in the NWEA reporting system for individual districts. The typical growth scores from fall to spring or winter to spring used in this report are based on the default instructional weeks most commonly encountered for each term (i.e., Weeks 4, 20, and 32 for fall, winter, and spring, respectively). However, instructional weeks often vary by district, so the cut scores in this report may differ slightly from the MAP Growth score reports that reflect spring instructional weeks set by partners.

E.1. Assessment Overview

The PEAKS Grades 3–8 ELA and Mathematics tests are Alaska’s state summative assessments aligned to Alaska’s ELA and Mathematics Standards. Based on their test scores, students are placed into one of four achievement levels: *Far Below Proficient*, *Below Proficient*, *Proficient*, and *Advanced*. These tests are used to provide evidence of student achievement in ELA and Mathematics for various test score uses such as meeting the requirements of the state’s accountability program. The *Proficient* cut score demarks the minimum level of achievement considered to be proficient. MAP Growth tests are adaptive interim assessments aligned to state-specific content standards and administered in the fall, winter, and spring. Scores are reported on the RIT vertical scale with a range of 100–350.

E.2. Linking Methods

Based on scores from the Spring 2017 test administration, the equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring PEAKS achievement level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. MAP Growth fall and winter cut scores that predict proficiency on the spring PEAKS test were then projected using the 2020 NWEA growth norms that provide expected score gains across test administrations.

E.3. Student Sample

Only students who took both the MAP Growth and PEAKS assessments in Spring 2017 were included in the study sample. Table E.2 presents the number of Alaska students from 12 districts and 211 schools who were included in the linking study.

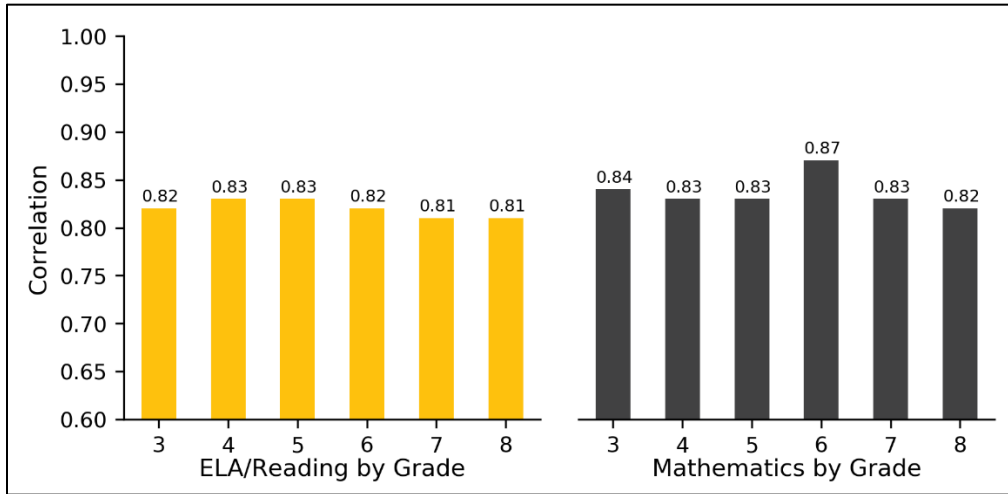
Table E.2. Linking Study Sample

Grade	#Students	
	ELA/Reading	Mathematics
3	3,342	3,358
4	3,418	3,415
5	6,411	6,399
6	6,028	6,038
7	5,803	5,790
8	5,512	5,488

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and PEAKS scores range from 0.81 to 0.87 across both content areas, as shown in Figure E.1. These values indicate a strong relationship among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the PEAKS assessments.

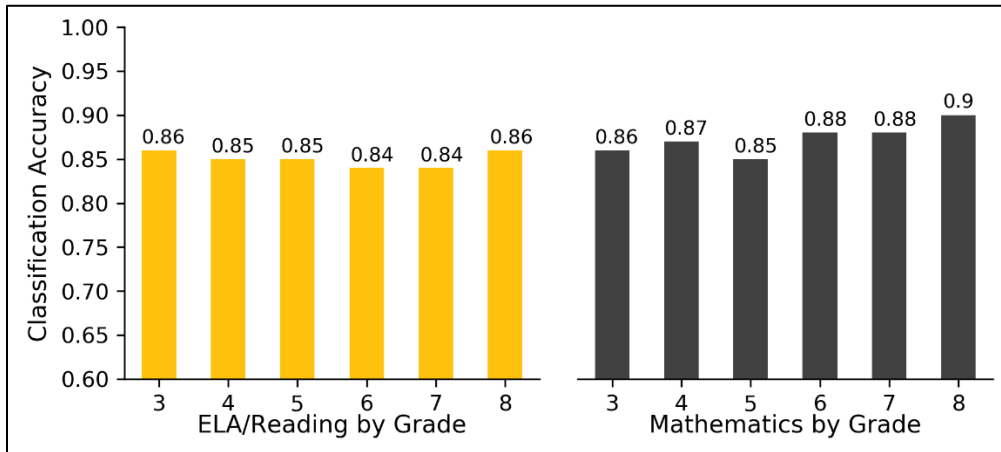
Figure E.1. Correlations between MAP Growth and PEAKS



E.5. Accuracy of MAP Growth Classifications

Figure E.2 presents the classification accuracy statistics that show the proportion of students correctly classified by their RIT scores as proficient or not proficient on the PEAKS tests. For example, the MAP Growth Reading Grade 3 *Proficient* cut score has a 0.86 accuracy rate, meaning it accurately classified student achievement on the state test for 86% of the sample. The results range from 0.84 to 0.90 across both content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the PEAKS tests.

Figure E.2. Accuracy of MAP Growth Classifications



1. Introduction

1.1. Purpose of the Study

NWEA® is committed to providing partners with useful tools to help make inferences about student learning from MAP® Growth™ test scores. One important use of MAP Growth results is to predict a student's performance on the state summative assessment at different times throughout the year. This allows educators and parents to determine if a student is on track in their learning to meet state standards by the end of the year or, given a student's learning profile, is on track to obtain rigorous, realistic growth in their content knowledge and skills.

This document presents results from a linking study conducted by NWEA in July 2020 to statistically connect the scores of the Performance Evaluation for Alaska's Schools (PEAKS) Grades 3–8 English Language Arts (ELA) and Mathematics assessments with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2017 term. The linking study has been updated since the previous version published in June 2018 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020). In this updated study, MAP Growth cut scores are also included for Grade 2 so educators can track early learners' progress toward proficiency on the PEAKS test by Grade 3. This report presents the following results:

1. Student sample demographics
2. Descriptive statistics of test scores
3. MAP Growth cut scores that correspond to the PEAKS achievement levels using the equipercentile linking procedure for the spring results and the 2020 norms for the fall and winter results
4. Classification accuracy statistics to determine the degree to which MAP Growth accurately predicts student proficiency status on the PEAKS tests
5. The probability of achieving grade-level proficiency on the PEAKS assessment based on MAP Growth RIT scores from fall, winter, and spring using the 2020 norms

1.2. Assessment Overview

The PEAKS Grades 3–8 ELA and Mathematics summative assessments are aligned to Alaska's ELA and Mathematics Standards. Each assessment has three cut scores (i.e., the minimum score a student must get on a test to be placed in a certain achievement level) that distinguish between the following achievement levels: *Far Below Proficient*, *Below Proficient*, *Proficient*, and *Advanced*. The *Proficient* cut score demarks the minimum level of performance considered to be proficient for accountability purposes.

MAP Growth interim assessments from NWEA are computer adaptive and aligned to state-specific content standards. Scores are reported on the RIT vertical scale with a range of 100–350. Each content area has its own scale. To aid the interpretation of scores, NWEA periodically conducts norming studies of student and school performance on MAP Growth. Achievement status norms show how well a student performed on the MAP Growth test compared to students in the norming group by associating the student's performance on the MAP Growth test, expressed as a RIT score, with a percentile ranking. Growth norms provide expected score gains across test administrations (e.g., the relative evaluation of a student's growth from fall to spring). The most recent norms study was conducted in 2020 (Thum & Kuhfeld, 2020).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2017 administrations of the MAP Growth and PEAKS assessments. NWEA recruited Alaska districts to participate in the study by sharing their student and score data for the target term. Districts also gave NWEA permission to access students' associated MAP Growth scores from the NWEA in-house database. Once Alaska state score information was received by NWEA, each student's state testing record was matched to their MAP Growth score by using the student's first and last names, date of birth, student ID, and other available identifying information. Only students who took both the MAP Growth and PEAKS assessments in Spring 2017 were included in the study sample.

2.2. MAP Growth Cut Scores

The equipercentile linking method (Kolen & Brennan, 2004) was used to identify the spring MAP Growth RIT scores that correspond to the spring PEAKS achievement level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. MAP Growth fall and winter cut scores that predict proficiency on the spring PEAKS test were then projected using the 2020 growth norms. Percentile ranks are also provided that show how a nationally representative sample of students in the same grade scored on MAP Growth for each administration, which is an important interpretation of RIT test scores. This is useful information for understanding (1) how student scores compare to peers nationwide and (2) the relative rigor of a state's achievement level designations for its summative assessment.

The MAP Growth spring cut scores for Grades 3–8 could be calculated using the equipercentile linking method because that data are directly connected to the PEAKS spring data used in the study. The equipercentile linking procedure matches scores on the two scales that have the same percentile rank (i.e., the proportion of tests at or below each score). For example, let x represent a score on Test X (e.g., PEAKS). Its equipercentile equivalent score on Test Y (e.g., MAP Growth), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined in Equation 1:

$$e_y(x) = G^{-1}[P(x)] \quad (1)$$

where $e_y(x)$ is the equipercentile equivalent of score x on PEAKS on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on PEAKS, and G^{-1} is the inverse of the percentile rank function for MAP Growth that indicates the score on MAP Growth corresponding to a given percentile. Polynomial loglinear pre-smoothing was applied to reduce irregularities of the score distributions and equipercentile linking curve.

The MAP Growth conditional growth norms provide students' expected score gains across terms, such as growth from fall or winter to spring within the same grade or from spring of a lower grade to the spring of the adjacent higher grade. This information can be used to calculate the fall and winter cut scores for Grades 3–8 and the fall, winter, and spring cut scores for Grade 2. Equation 2 was used to determine the previous term's or grade's MAP Growth score needed to reach the spring cut score, considering the expected growth associated with the previous RIT score:

$$RIT_{PredSpring} = RIT_{previous} + g \quad (2)$$

where:

- $RIT_{PredSpring}$ is the predicted MAP Growth spring score.
- $RIT_{previous}$ is the previous term's or grade's RIT score.
- g is the expected growth from the previous RIT (e.g., fall or winter) to the spring RIT.

To derive the spring cut scores for Grade 2, the growth score from spring of one year to the next was used (i.e., the growth score from spring Grade 2 to spring Grade 3). The calculation of fall and winter cuts for Grade 2 followed the same process as the other grades. For example, the growth score from fall to spring in Grade 2 was used to calculate the fall cuts for Grade 2.

2.3. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the PEAKS tests can be described using classification accuracy statistics based on the MAP Growth RIT spring cut scores that show the proportion of students correctly classified by their RIT scores as proficient (*Proficient* or *Advanced*) or not proficient (*Far Below Proficient* or *Below Proficient*). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich, Hanson, Harris, & Scoring, 2004). The results are based on the Spring 2017 MAP Growth and PEAKS data for the *Proficient* cut score.

Since Alaska students do not begin taking the PEAKS assessment until Grade 3, longitudinal data were collected for the 2016–2017 Grade 3 cohort in order to link the assessment to MAP Growth for Grade 2 to calculate the classification accuracy statistics. To accomplish this, 2016–2017 PEAKS Grade 3 results were linked to MAP Growth data from Grade 3 students in 2016–2017 and Grade 2 students in 2015–2016. In this way, the data came from the same cohort of students beginning when they were in Grade 2 and continuing through Grade 3.

Table 2.1. Description of Classification Accuracy Summary Statistics

Statistic	Description*	Interpretation
Overall Classification Accuracy Rate	$(TP + TN) / (\text{total sample size})$	Proportion of the study sample whose proficiency classification on the state test was correctly predicted by MAP Growth cut scores
False Negative (FN) Rate	$FN / (FN + TP)$	Proportion of not-proficient students identified by MAP Growth in those observed as proficient on the state test
False Positive (FP) Rate	$FP / (FP + TN)$	Proportion of proficient students identified by MAP Growth in those observed as not proficient on the state test
Sensitivity	$TP / (TP + FN)$	Proportion of proficient students identified by MAP Growth in those observed as such on the state test
Specificity	$TN / (TN + FP)$	Proportion of not-proficient students identified by MAP Growth in those observed as such on the state test
Precision	$TP / (TP + FP)$	Proportion of observed proficient students on the state test in those identified as such by the MAP Growth test
Area Under the Curve (AUC)	Area under the receiver operating characteristics (ROC) curve	How well MAP Growth cut scores separate the study sample into proficiency categories that match those from the state test cut scores. An AUC at or above 0.80 is considered “good” accuracy.

*FP = false positives. FN = false negatives. TP = true positives. TN = true negatives.

2.4. Proficiency Projection

In addition to calculating the MAP Growth fall and winter cut scores, the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the PEAKS test based on a student's RIT scores from fall, winter, and spring. Equation 3 was used to calculate the probability of a student achieving *Proficient* on the PEAKS test based on their fall or winter RIT score:

$$Pr(\text{Achieving Proficient in spring} | \text{starting RIT}) = \Phi\left(\frac{RIT_{previous} + g - RIT_{SpringCut}}{SD}\right) \quad (3)$$

where:

- Φ is a standardized normal cumulative distribution.
- $RIT_{previous}$ is the student's RIT score in fall or winter (or in spring of Grade 2).
- g is the expected growth from the previous RIT (e.g., fall or winter) to the spring RIT.
- $RIT_{SpringCut}$ is the MAP Growth *Proficient* cut score for spring. For Grade 2, this is the Grade 3 cut score for spring.
- SD is the conditional standard deviation of the expected growth, g .

Equation 4 was used to estimate the probability of a student achieving *Proficient* on the PEAKS test based on their spring RIT score (RIT_{Spring}):

$$Pr(\text{Achieving Proficient in spring} | \text{spring RIT}) = \Phi\left(\frac{RIT_{Spring} - RIT_{SpringCut}}{SE}\right) \quad (4)$$

where SE is the standard error of measurement for MAP Growth.

3. Results

3.1. Study Sample

Only students who took both the MAP Growth and PEAKS assessments in Spring 2017 were included in the study sample. Data used in this study were collected from 12 districts and 211 schools in Alaska. Table 3.1 presents the demographic distributions of race, sex, and achievement level in the study sample.

Table 3.1. Linking Study Sample Demographics

		Linking Study Sample					
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
	Total N	3,342	3,418	6,411	6,028	5,803	5,512
Race*	AI/AN	16.3	18.0	13.0	13.5	9.3	9.6
	Asian/PI	1.2	1.1	9.1	9.8	10.1	10.6
	Black	0.5	1.0	2.8	3.1	3.5	3.2
	Hispanic	4.5	4.3	7.5	7.4	6.6	7.4
	Not Specified	61.1	60.0	32.1	29.2	32.7	25.4
	Other/MR	6.3	6.0	10.8	10.5	10.5	9.3
	White	10.1	9.6	24.7	26.4	27.4	34.5
Sex	Female	49.7	47.8	49.1	49.3	49.0	48.9
	Male	50.3	52.2	50.9	50.7	51.0	51.1
Achievement Level	<i>Far Below Proficient</i>	31.5	29.5	23.2	25.6	26.2	28.3
	<i>Below Proficient</i>	33.6	29.6	34.9	27.6	29.7	32.8
	<i>Proficient</i>	29.6	30.8	35.8	39.0	33.9	29.5
	<i>Advanced</i>	5.3	10.1	6.1	7.8	10.2	9.4
Mathematics							
	Total N	3,358	3,415	6,399	6,038	5,790	5,488
Race*	AI/AN	16.1	18.2	12.9	13.5	9.3	9.4
	Asian/PI	1.2	1.1	9.1	9.8	10.0	10.5
	Black	0.5	1.0	2.8	3.1	3.4	3.2
	Hispanic	4.6	4.4	7.5	7.5	6.6	7.4
	Other/MR	6.3	6.1	10.7	10.4	10.5	9.3
	Not Specified	61.2	59.7	32.3	29.4	32.9	25.8
	White	10.2	9.6	24.7	26.3	27.2	34.5
Sex	Female	49.6	47.7	49.0	49.2	48.9	49.2
	Male	50.4	52.3	51.0	50.8	51.1	50.8
Achievement Level	<i>Far Below Proficient</i>	13.8	16.4	15.3	12.2	15.2	16.3
	<i>Below Proficient</i>	40.9	43.0	44.4	51.4	53.5	58.5
	<i>Proficient</i>	38.7	34.9	35.5	30.5	28.0	22.6
	<i>Advanced</i>	6.6	5.6	4.7	5.9	3.3	2.6

*AI/AN = American Indian/Alaskan Native. Asian/PI = Asian/Pacific Islander. MR = Multi-racial.

3.2. Descriptive Statistics

Table 3.2 presents descriptive statistics of the MAP Growth and PEAKS test scores from Spring 2017, including the correlation coefficient (r) between them. The correlation coefficients between the scores range from 0.81 to 0.83 for ELA/Reading and 0.82 to 0.87 for Mathematics. These values indicate a strong relationship among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the PEAKS tests.

Table 3.2. Descriptive Statistics of Test Scores

Grade	N	r	PEAKS*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA/Reading										
3	3,342	0.82	484.0	35.7	400	600	193.3	18.3	121	240
4	3,418	0.83	490.2	35.7	400	600	201.1	18.3	141	255
5	6,411	0.83	492.6	34.4	400	600	209.1	16.8	143	257
6	6,028	0.82	497.6	34.9	400	600	213.8	16.6	144	258
7	5,803	0.81	496.4	34.7	400	600	217.1	16.8	145	270
8	5,512	0.81	491.2	35.2	400	600	220.4	17.2	146	262
Mathematics										
3	3,358	0.84	495.1	35.7	400	600	197.9	15.0	142	261
4	3,415	0.83	494.4	35.9	403	600	207.6	16.5	125	265
5	6,399	0.83	494.6	36.1	400	600	217.2	17.0	146	272
6	6,038	0.87	490.9	34.8	400	600	220.8	17.6	146	284
7	5,790	0.83	483.2	35.5	400	600	225.7	18.2	147	286
8	5,488	0.82	478.4	35.4	400	600	230.4	19.5	162	297

*SD = standard deviation. Min. = minimum. Max. = maximum.

3.3. MAP Growth Cut Scores

Table 3.3 and Table 3.4 present the PEAKS scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges by content area and grade. These tables can be used to predict a student's likely achievement level on the PEAKS spring assessment when MAP Growth is taken in the fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Reading RIT score of 193 in the fall is likely to reach *Proficient* proficiency on the PEAKS ELA test. A Grade 3 student who obtained a MAP Growth Reading RIT score of 203 in the spring is also likely to reach *Proficient* proficiency on the PEAKS. The spring cut score is higher than the fall cut score because growth is expected between fall and spring as students receive more instruction during the school year.

Within this report, the cut scores for fall and winter are derived from the spring cuts and the typical growth scores from fall-to-spring or winter-to-spring. The typical growth scores are based on the default instructional weeks most commonly encountered for each term (Weeks 4, 20, and 32 for fall, winter, and spring, respectively). Since instructional weeks often vary by district, the cut scores in this report may differ slightly from the MAP Growth score reports that reflect instructional weeks set by partners. If the actual instructional weeks deviate from the default ones, a student's projected achievement level could be different from the generic projection presented in this document. Partners are therefore encouraged to use the projected achievement level in students' profile, classroom, and grade reports in the NWEA reporting system since they reflect the specific instructional weeks set by partners.

Table 3.3. MAP Growth Cut Scores—ELA/Reading

PEAKS ELA									
Grade	Far Below Proficient		Below Proficient		Proficient		Advanced		
3	400–463		464–499		500–541		542–600		
4	400–467		468–499		500–537		538–600		
5	400–463		464–499		500–547		548–600		
6	400–472		473–499		500–550		551–600		
7	400–470		471–499		500–545		546–600		
8	400–468		469–499		500–540		541–600		
MAP Growth Reading*									
Grade	Far Below Proficient		Below Proficient		Proficient		Advanced		
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	
Fall									
2	100–155	1–13	156–180	14–71	181–202	72–97	203–350	98–99	
3	100–172	1–20	173–192	21–64	193–212	65–93	213–350	94–99	
4	100–181	1–18	182–199	19–57	200–216	58–88	217–350	89–99	
5	100–187	1–15	188–207	16–58	208–228	59–92	229–350	93–99	
6	100–196	1–20	197–211	21–53	212–231	54–90	232–350	91–99	
7	100–200	1–20	201–216	21–56	217–235	57–90	236–350	91–99	
8	100–206	1–25	207–223	26–63	224–239	64–89	240–350	90–99	
Winter									
2	100–165	1–15	166–188	16–69	189–209	70–96	210–350	97–99	
3	100–180	1–20	181–199	21–64	200–217	65–92	218–350	93–99	
4	100–188	1–19	189–205	20–58	206–221	59–87	222–350	88–99	
5	100–193	1–16	194–211	17–56	212–230	57–91	231–350	92–99	
6	100–201	1–22	202–215	23–54	216–233	55–89	234–350	90–99	
7	100–204	1–22	205–219	23–56	220–236	57–88	237–350	89–99	
8	100–209	1–25	210–225	26–62	226–240	63–88	241–350	89–99	
Spring									
2	100–170	1–16	171–192	17–67	193–212	68–95	213–350	96–99	
3	100–184	1–22	185–202	23–63	203–219	64–91	220–350	92–99	
4	100–191	1–21	192–207	22–57	208–222	58–86	223–350	87–99	
5	100–196	1–18	197–213	19–56	214–231	57–90	232–350	91–99	
6	100–203	1–23	204–216	24–53	217–234	54–88	235–350	89–99	
7	100–206	1–23	207–220	24–55	221–237	56–87	238–350	88–99	
8	100–211	1–27	212–226	28–61	227–241	62–88	242–350	89–99	

*Cut scores for fall and winter are derived from the spring cuts and growth scores based on the typical instructional weeks. Spring cut scores for Grade 2 were derived from the Grade 3 cuts using the 2020 MAP Growth conditional growth norms. Bolded numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.4. MAP Growth Cut Scores—Mathematics

PEAKS Mathematics								
Grade	Far Below Proficient		Below Proficient		Proficient		Advanced	
3	400–457		458–499		500–553		554–600	
4	400–459		460–499		500–558		559–600	
5	400–461		462–499		500–567		568–600	
6	400–453		454–499		500–553		554–600	
7	400–450		451–499		500–558		559–600	
8	400–447		448–499		500–561		562–600	
MAP Growth Mathematics*								
Grade	Far Below Proficient		Below Proficient		Proficient		Advanced	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
2	100–153	1–4	154–175	5–52	176–196	53–94	197–350	95–99
3	100–168	1–6	169–188	7–51	189–206	52–91	207–350	92–99
4	100–180	1–9	181–201	10–56	202–220	57–92	221–350	93–99
5	100–192	1–13	193–212	14–59	213–233	60–94	234–350	95–99
6	100–194	1–10	195–219	11–62	220–238	63–92	239–350	93–99
7	100–203	1–17	204–229	18–70	230–249	71–95	250–350	96–99
8	100–207	1–18	208–238	19–76	239–260	77–96	261–350	97–99
Winter								
2	100–163	1–5	164–184	6–52	185–203	53–93	204–350	94–99
3	100–177	1–8	178–196	9–51	197–214	52–91	215–350	92–99
4	100–186	1–9	187–208	10–57	209–227	58–92	228–350	93–99
5	100–197	1–14	198–218	15–60	219–239	61–93	240–350	94–99
6	100–199	1–11	200–224	12–62	225–243	63–92	244–350	93–99
7	100–206	1–16	207–233	17–70	234–253	71–94	254–350	95–99
8	100–211	1–19	212–241	20–75	242–263	76–96	264–350	97–99
Spring								
2	100–169	1–6	170–189	7–51	190–208	52–92	209–350	93–99
3	100–182	1–9	183–201	10–52	202–218	53–89	219–350	90–99
4	100–191	1–11	192–212	12–55	213–231	56–91	232–350	92–99
5	100–201	1–15	202–222	16–59	223–243	60–92	244–350	93–99
6	100–202	1–12	203–227	13–61	228–246	62–91	247–350	92–99
7	100–209	1–17	210–236	18–70	237–256	71–94	257–350	95–99
8	100–213	1–20	214–243	21–74	244–265	75–95	266–350	96–99

*Cut scores for fall and winter are derived from the spring cuts and growth scores based on the typical instructional weeks. Spring cut scores for Grade 2 were derived from the Grade 3 cuts using the 2020 MAP Growth conditional growth norms. Bolded numbers indicate the cut scores considered to be at least proficient for accountability purposes.

3.4. Classification Accuracy

Table 3.5 presents the classification accuracy summary statistics, including the overall classification accuracy rate. These results indicate how well MAP Growth spring RIT scores predict proficiency on the PEAKS tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from 0.80 to 0.86 for ELA/Reading and 0.79 to 0.90 for Mathematics. These values suggest that the RIT cut scores are good at classifying students as proficient or not proficient on the PEAKS assessment. For Grade 2, the classification accuracy rate refers to how well the MAP Growth cuts can predict students' proficiency status on PEAKS in Grade 3.

Although the results show that MAP Growth scores can be used to accurately classify students as likely to be proficient on the PEAKS tests, there is a notable limitation to how these results should be used and interpreted. PEAKS and MAP Growth assessments are designed for different purposes and measure slightly different constructs even within the same content area. Therefore, scores on the two tests cannot be assumed to be interchangeable. MAP Growth may not be used as a substitute for the state tests and vice versa.

Table 3.5. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy*	Rate*		Sensitivity	Specificity	Precision	AUC*
		MAP Growth	PEAKS		FP	FN				
ELA/Reading										
2	1,617	193	500	0.80	0.15	0.28	0.72	0.85	0.75	0.88
3	3,342	203	500	0.86	0.10	0.22	0.78	0.90	0.80	0.93
4	3,418	208	500	0.85	0.13	0.19	0.81	0.87	0.81	0.92
5	6,411	214	500	0.85	0.14	0.16	0.84	0.86	0.82	0.93
6	6,028	217	500	0.84	0.16	0.16	0.84	0.84	0.82	0.93
7	5,803	221	500	0.84	0.16	0.15	0.85	0.84	0.81	0.93
8	5,512	227	500	0.86	0.12	0.17	0.83	0.88	0.82	0.93
Mathematics										
2	1,609	190	500	0.79	0.26	0.16	0.84	0.74	0.75	0.88
3	3,358	202	500	0.86	0.12	0.17	0.83	0.88	0.85	0.94
4	3,415	213	500	0.87	0.11	0.15	0.85	0.89	0.84	0.95
5	6,399	223	500	0.85	0.12	0.20	0.80	0.88	0.82	0.93
6	6,038	228	500	0.88	0.09	0.16	0.84	0.91	0.84	0.95
7	5,790	237	500	0.88	0.06	0.25	0.75	0.94	0.84	0.95
8	5,488	244	500	0.90	0.07	0.20	0.80	0.93	0.79	0.96

*Class. Accuracy = overall classification accuracy rate. FP = false positives. FN = false negatives. AUC = area under the ROC curve.

3.5. Proficiency Projection

Table 3.6 and Table 3.7 present the estimated probability of achieving *Proficient* performance on the PEAKS test based on RIT scores from fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Reading score of 204 in the fall has an 89% chance of reaching *Proficient* proficiency or higher on the PEAKS test. “Prob.” indicates the probability of obtaining proficient status on the PEAKS test in the spring.

Table 3.6. Proficiency Projection based on RIT Scores—ELA/Reading

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall		Winter			Spring			
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	193	147	No	<0.01	156	No	<0.01	160	No	<0.01
	10	193	153	No	<0.01	162	No	<0.01	166	No	<0.01
	15	193	157	No	<0.01	166	No	<0.01	170	No	<0.01
	20	193	160	No	0.01	169	No	<0.01	173	No	<0.01
	25	193	162	No	0.01	171	No	<0.01	175	No	<0.01
	30	193	164	No	0.02	173	No	<0.01	177	No	<0.01
	35	193	166	No	0.04	175	No	0.01	180	No	<0.01
	40	193	168	No	0.07	177	No	0.02	182	No	<0.01
	45	193	170	No	0.09	179	No	0.03	184	No	<0.01
	50	193	172	No	0.15	181	No	0.07	186	No	0.01
	55	193	174	No	0.21	183	No	0.13	188	No	0.06
	60	193	176	No	0.30	185	No	0.23	189	No	0.11
	65	193	178	No	0.40	187	No	0.35	192	No	0.38
	70	193	180	No	0.45	189	Yes	0.50	194	Yes	0.62
	75	193	183	Yes	0.60	191	Yes	0.65	196	Yes	0.83
	80	193	185	Yes	0.70	194	Yes	0.83	199	Yes	0.97
	85	193	188	Yes	0.79	197	Yes	0.93	202	Yes	>0.99
90	193	192	Yes	0.91	200	Yes	0.98	205	Yes	>0.99	
95	193	197	Yes	0.97	206	Yes	>0.99	211	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
3	5	203	159	No	<0.01	167	No	<0.01	170	No	<0.01
	10	203	165	No	<0.01	173	No	<0.01	176	No	<0.01
	15	203	169	No	<0.01	177	No	<0.01	180	No	<0.01
	20	203	173	No	0.01	180	No	<0.01	183	No	<0.01
	25	203	175	No	0.02	183	No	<0.01	186	No	<0.01
	30	203	178	No	0.04	185	No	<0.01	189	No	<0.01
	35	203	180	No	0.05	188	No	0.02	191	No	<0.01
	40	203	182	No	0.09	190	No	0.03	193	No	<0.01
	45	203	185	No	0.17	192	No	0.07	195	No	0.01
	50	203	187	No	0.21	194	No	0.13	197	No	0.03
	55	203	189	No	0.30	196	No	0.23	199	No	0.11
	60	203	191	No	0.39	198	No	0.35	201	No	0.27
	65	203	193	Yes	0.50	200	Yes	0.50	203	Yes	0.50
	70	203	195	Yes	0.55	202	Yes	0.65	206	Yes	0.83
	75	203	198	Yes	0.70	205	Yes	0.83	208	Yes	0.94
	80	203	201	Yes	0.83	207	Yes	0.91	211	Yes	0.99
	85	203	204	Yes	0.89	211	Yes	0.97	214	Yes	>0.99
90	203	208	Yes	0.96	215	Yes	>0.99	218	Yes	>0.99	
95	203	214	Yes	0.99	220	Yes	>0.99	224	Yes	>0.99	
4	5	208	169	No	<0.01	176	No	<0.01	178	No	<0.01
	10	208	175	No	<0.01	182	No	<0.01	184	No	<0.01
	15	208	179	No	<0.01	186	No	<0.01	188	No	<0.01
	20	208	183	No	0.02	189	No	<0.01	191	No	<0.01
	25	208	185	No	0.04	192	No	0.01	194	No	<0.01
	30	208	188	No	0.06	194	No	0.02	196	No	<0.01
	35	208	190	No	0.11	196	No	0.04	199	No	<0.01
	40	208	192	No	0.17	198	No	0.09	201	No	0.01
	45	208	195	No	0.24	200	No	0.13	203	No	0.06
	50	208	197	No	0.34	202	No	0.22	205	No	0.17
	55	208	199	No	0.44	205	No	0.42	207	No	0.38
	60	208	201	Yes	0.56	207	Yes	0.58	209	Yes	0.62
	65	208	203	Yes	0.61	209	Yes	0.72	211	Yes	0.83
	70	208	205	Yes	0.71	211	Yes	0.83	213	Yes	0.94
	75	208	208	Yes	0.83	213	Yes	0.91	216	Yes	0.99
	80	208	211	Yes	0.89	216	Yes	0.97	219	Yes	>0.99
	85	208	214	Yes	0.95	219	Yes	0.99	222	Yes	>0.99
90	208	218	Yes	0.98	223	Yes	>0.99	226	Yes	>0.99	
95	208	224	Yes	>0.99	229	Yes	>0.99	232	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
5	5	214	178	No	<0.01	183	No	<0.01	185	No	<0.01
	10	214	183	No	<0.01	189	No	<0.01	191	No	<0.01
	15	214	187	No	0.01	193	No	<0.01	194	No	<0.01
	20	214	191	No	0.02	196	No	<0.01	198	No	<0.01
	25	214	193	No	0.04	198	No	<0.01	200	No	<0.01
	30	214	196	No	0.08	201	No	0.02	203	No	<0.01
	35	214	198	No	0.11	203	No	0.04	205	No	<0.01
	40	214	200	No	0.17	205	No	0.09	207	No	0.01
	45	214	202	No	0.24	207	No	0.17	209	No	0.06
	50	214	204	No	0.34	209	No	0.28	211	No	0.17
	55	214	207	No	0.44	211	No	0.42	213	No	0.38
	60	214	209	Yes	0.56	213	Yes	0.58	215	Yes	0.62
	65	214	211	Yes	0.66	215	Yes	0.72	217	Yes	0.83
	70	214	213	Yes	0.71	217	Yes	0.78	219	Yes	0.94
	75	214	216	Yes	0.83	220	Yes	0.91	222	Yes	0.99
	80	214	218	Yes	0.89	222	Yes	0.96	224	Yes	>0.99
	85	214	221	Yes	0.94	226	Yes	0.99	228	Yes	>0.99
90	214	225	Yes	0.98	229	Yes	>0.99	231	Yes	>0.99	
95	214	231	Yes	>0.99	235	Yes	>0.99	237	Yes	>0.99	
6	5	217	183	No	<0.01	188	No	<0.01	189	No	<0.01
	10	217	189	No	<0.01	193	No	<0.01	195	No	<0.01
	15	217	193	No	0.01	197	No	<0.01	199	No	<0.01
	20	217	196	No	0.02	200	No	<0.01	202	No	<0.01
	25	217	199	No	0.06	203	No	0.01	205	No	<0.01
	30	217	202	No	0.10	205	No	0.03	207	No	<0.01
	35	217	204	No	0.16	208	No	0.09	209	No	0.01
	40	217	206	No	0.24	210	No	0.17	211	No	0.03
	45	217	208	No	0.28	212	No	0.28	213	No	0.11
	50	217	210	No	0.39	214	No	0.42	215	No	0.27
	55	217	212	Yes	0.50	216	Yes	0.50	217	Yes	0.50
	60	217	214	Yes	0.61	218	Yes	0.65	219	Yes	0.73
	65	217	217	Yes	0.72	220	Yes	0.78	222	Yes	0.94
	70	217	219	Yes	0.81	222	Yes	0.88	224	Yes	0.99
	75	217	221	Yes	0.87	225	Yes	0.96	226	Yes	>0.99
	80	217	224	Yes	0.92	227	Yes	0.98	229	Yes	>0.99
	85	217	227	Yes	0.97	230	Yes	>0.99	232	Yes	>0.99
90	217	231	Yes	0.99	234	Yes	>0.99	236	Yes	>0.99	
95	217	237	Yes	>0.99	240	Yes	>0.99	242	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
7	5	221	187	No	<0.01	190	No	<0.01	191	No	<0.01
	10	221	193	No	<0.01	196	No	<0.01	197	No	<0.01
	15	221	197	No	<0.01	200	No	<0.01	201	No	<0.01
	20	221	200	No	0.02	203	No	<0.01	205	No	<0.01
	25	221	203	No	0.03	206	No	0.01	207	No	<0.01
	30	221	206	No	0.08	209	No	0.03	210	No	<0.01
	35	221	208	No	0.12	211	No	0.06	212	No	<0.01
	40	221	210	No	0.19	213	No	0.09	214	No	0.01
	45	221	212	No	0.24	215	No	0.17	216	No	0.06
	50	221	214	No	0.33	217	No	0.28	218	No	0.17
	55	221	216	No	0.44	219	No	0.42	220	No	0.38
	60	221	218	Yes	0.56	221	Yes	0.58	223	Yes	0.73
	65	221	221	Yes	0.67	223	Yes	0.72	225	Yes	0.89
	70	221	223	Yes	0.76	226	Yes	0.88	227	Yes	0.97
	75	221	225	Yes	0.84	228	Yes	0.94	229	Yes	0.99
	80	221	228	Yes	0.92	231	Yes	0.98	232	Yes	>0.99
	85	221	231	Yes	0.96	234	Yes	>0.99	235	Yes	>0.99
90	221	235	Yes	0.99	238	Yes	>0.99	239	Yes	>0.99	
95	221	241	Yes	>0.99	244	Yes	>0.99	245	Yes	>0.99	
8	5	227	190	No	<0.01	193	No	<0.01	194	No	<0.01
	10	227	196	No	<0.01	199	No	<0.01	200	No	<0.01
	15	227	200	No	<0.01	203	No	<0.01	204	No	<0.01
	20	227	204	No	0.01	206	No	<0.01	207	No	<0.01
	25	227	207	No	0.02	209	No	<0.01	210	No	<0.01
	30	227	209	No	0.04	212	No	<0.01	213	No	<0.01
	35	227	211	No	0.05	214	No	0.01	215	No	<0.01
	40	227	214	No	0.11	216	No	0.03	217	No	<0.01
	45	227	216	No	0.17	218	No	0.06	220	No	0.01
	50	227	218	No	0.24	221	No	0.17	222	No	0.06
	55	227	220	No	0.29	223	No	0.28	224	No	0.17
	60	227	222	No	0.39	225	No	0.42	226	No	0.38
	65	227	225	Yes	0.55	227	Yes	0.58	228	Yes	0.62
	70	227	227	Yes	0.66	229	Yes	0.72	231	Yes	0.89
	75	227	230	Yes	0.76	232	Yes	0.87	233	Yes	0.97
	80	227	232	Yes	0.83	235	Yes	0.96	236	Yes	>0.99
	85	227	236	Yes	0.94	238	Yes	0.99	239	Yes	>0.99
90	227	240	Yes	0.98	242	Yes	>0.99	243	Yes	>0.99	
95	227	246	Yes	>0.99	248	Yes	>0.99	249	Yes	>0.99	

Table 3.7. Proficiency Projection based on RIT Scores—Mathematics

Mathematics											
Grade	Start %ile	Spring Cut	Fall		Winter			Spring			
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	190	154	No	<0.01	163	No	<0.01	167	No	<0.01
	10	190	158	No	0.01	167	No	<0.01	172	No	<0.01
	15	190	162	No	0.03	171	No	<0.01	175	No	<0.01
	20	190	164	No	0.04	173	No	0.01	178	No	<0.01
	25	190	166	No	0.08	175	No	0.03	180	No	<0.01
	30	190	168	No	0.14	177	No	0.07	182	No	<0.01
	35	190	170	No	0.22	179	No	0.15	184	No	0.02
	40	190	172	No	0.32	181	No	0.20	186	No	0.08
	45	190	173	No	0.38	182	No	0.26	188	No	0.25
	50	190	175	No	0.44	184	No	0.42	189	No	0.37
	55	190	177	Yes	0.56	186	Yes	0.58	191	Yes	0.63
	60	190	178	Yes	0.62	187	Yes	0.66	193	Yes	0.85
	65	190	180	Yes	0.73	189	Yes	0.80	195	Yes	0.96
	70	190	182	Yes	0.82	191	Yes	0.90	196	Yes	0.98
	75	190	184	Yes	0.89	193	Yes	0.95	198	Yes	>0.99
	80	190	186	Yes	0.92	195	Yes	0.98	201	Yes	>0.99
	85	190	188	Yes	0.96	198	Yes	>0.99	203	Yes	>0.99
90	190	192	Yes	0.99	201	Yes	>0.99	207	Yes	>0.99	
95	190	196	Yes	>0.99	205	Yes	>0.99	212	Yes	>0.99	
3	5	202	166	No	<0.01	174	No	<0.01	178	No	<0.01
	10	202	171	No	<0.01	179	No	<0.01	183	No	<0.01
	15	202	175	No	0.01	182	No	<0.01	186	No	<0.01
	20	202	177	No	0.03	185	No	0.01	189	No	<0.01
	25	202	179	No	0.05	187	No	0.02	192	No	<0.01
	30	202	181	No	0.10	189	No	0.04	194	No	<0.01
	35	202	183	No	0.17	191	No	0.10	196	No	0.02
	40	202	185	No	0.26	193	No	0.20	198	No	0.08
	45	202	187	No	0.37	195	No	0.33	199	No	0.15
	50	202	188	No	0.44	196	No	0.42	201	No	0.37
	55	202	190	Yes	0.56	198	Yes	0.58	203	Yes	0.63
	60	202	192	Yes	0.63	200	Yes	0.74	205	Yes	0.85
	65	202	194	Yes	0.74	201	Yes	0.80	207	Yes	0.96
	70	202	196	Yes	0.83	203	Yes	0.90	208	Yes	0.98
	75	202	198	Yes	0.90	205	Yes	0.96	211	Yes	>0.99
	80	202	200	Yes	0.95	208	Yes	0.99	213	Yes	>0.99
	85	202	202	Yes	0.97	210	Yes	>0.99	216	Yes	>0.99
90	202	206	Yes	>0.99	214	Yes	>0.99	219	Yes	>0.99	
95	202	211	Yes	>0.99	219	Yes	>0.99	224	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
4	5	213	176	No	<0.01	182	No	<0.01	185	No	<0.01
	10	213	181	No	<0.01	187	No	<0.01	191	No	<0.01
	15	213	185	No	<0.01	191	No	<0.01	194	No	<0.01
	20	213	187	No	0.01	194	No	<0.01	197	No	<0.01
	25	213	190	No	0.03	196	No	<0.01	200	No	<0.01
	30	213	192	No	0.05	198	No	0.01	202	No	<0.01
	35	213	194	No	0.10	200	No	0.03	205	No	<0.01
	40	213	196	No	0.17	202	No	0.07	207	No	0.02
	45	213	198	No	0.26	204	No	0.14	209	No	0.08
	50	213	200	No	0.37	206	No	0.26	211	No	0.25
	55	213	201	No	0.44	208	No	0.42	212	No	0.37
	60	213	203	Yes	0.56	210	Yes	0.58	214	Yes	0.63
	65	213	205	Yes	0.68	212	Yes	0.74	217	Yes	0.92
	70	213	207	Yes	0.79	214	Yes	0.86	219	Yes	0.98
	75	213	209	Yes	0.87	216	Yes	0.93	221	Yes	>0.99
	80	213	212	Yes	0.95	219	Yes	0.98	224	Yes	>0.99
	85	213	214	Yes	0.97	221	Yes	0.99	227	Yes	>0.99
90	213	218	Yes	0.99	225	Yes	>0.99	230	Yes	>0.99	
95	213	223	Yes	>0.99	231	Yes	>0.99	236	Yes	>0.99	
5	5	223	184	No	<0.01	189	No	<0.01	191	No	<0.01
	10	223	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	223	193	No	<0.01	198	No	<0.01	201	No	<0.01
	20	223	196	No	<0.01	201	No	<0.01	205	No	<0.01
	25	223	199	No	0.01	204	No	<0.01	207	No	<0.01
	30	223	201	No	0.03	206	No	<0.01	210	No	<0.01
	35	223	203	No	0.06	209	No	0.02	212	No	<0.01
	40	223	205	No	0.11	211	No	0.05	215	No	<0.01
	45	223	207	No	0.18	213	No	0.10	217	No	0.02
	50	223	209	No	0.27	215	No	0.20	219	No	0.08
	55	223	211	No	0.38	217	No	0.34	221	No	0.25
	60	223	213	Yes	0.50	219	Yes	0.50	223	Yes	0.50
	65	223	215	Yes	0.62	221	Yes	0.66	225	Yes	0.75
	70	223	217	Yes	0.73	223	Yes	0.80	228	Yes	0.96
	75	223	219	Yes	0.82	225	Yes	0.90	230	Yes	0.99
	80	223	222	Yes	0.92	228	Yes	0.97	233	Yes	>0.99
	85	223	225	Yes	0.97	231	Yes	0.99	236	Yes	>0.99
90	223	229	Yes	0.99	235	Yes	>0.99	240	Yes	>0.99	
95	223	234	Yes	>0.99	241	Yes	>0.99	246	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
6	5	228	188	No	<0.01	192	No	<0.01	194	No	<0.01
	10	228	194	No	<0.01	198	No	<0.01	200	No	<0.01
	15	228	198	No	<0.01	202	No	<0.01	205	No	<0.01
	20	228	201	No	<0.01	205	No	<0.01	208	No	<0.01
	25	228	204	No	0.01	208	No	<0.01	211	No	<0.01
	30	228	206	No	0.01	211	No	<0.01	214	No	<0.01
	35	228	209	No	0.04	213	No	0.01	216	No	<0.01
	40	228	211	No	0.08	215	No	0.02	218	No	<0.01
	45	228	213	No	0.14	217	No	0.04	221	No	0.01
	50	228	215	No	0.22	220	No	0.14	223	No	0.04
	55	228	217	No	0.32	222	No	0.26	225	No	0.15
	60	228	219	No	0.44	224	No	0.42	227	No	0.37
	65	228	221	Yes	0.56	226	Yes	0.58	230	Yes	0.75
	70	228	223	Yes	0.68	228	Yes	0.74	232	Yes	0.92
	75	228	226	Yes	0.83	231	Yes	0.90	235	Yes	0.99
	80	228	228	Yes	0.90	234	Yes	0.97	238	Yes	>0.99
	85	228	231	Yes	0.96	237	Yes	0.99	241	Yes	>0.99
90	228	235	Yes	0.99	241	Yes	>0.99	245	Yes	>0.99	
95	228	241	Yes	>0.99	247	Yes	>0.99	252	Yes	>0.99	
7	5	237	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	237	198	No	<0.01	201	No	<0.01	203	No	<0.01
	15	237	202	No	<0.01	205	No	<0.01	207	No	<0.01
	20	237	206	No	<0.01	209	No	<0.01	211	No	<0.01
	25	237	208	No	<0.01	212	No	<0.01	214	No	<0.01
	30	237	211	No	<0.01	215	No	<0.01	217	No	<0.01
	35	237	213	No	<0.01	217	No	<0.01	220	No	<0.01
	40	237	216	No	0.01	219	No	<0.01	222	No	<0.01
	45	237	218	No	0.03	222	No	<0.01	224	No	<0.01
	50	237	220	No	0.05	224	No	0.02	227	No	<0.01
	55	237	222	No	0.10	226	No	0.04	229	No	<0.01
	60	237	225	No	0.21	229	No	0.14	231	No	0.02
	65	237	227	No	0.31	231	No	0.26	234	No	0.15
	70	237	229	No	0.44	233	No	0.42	236	No	0.37
	75	237	232	Yes	0.63	236	Yes	0.67	239	Yes	0.75
	80	237	235	Yes	0.79	239	Yes	0.86	242	Yes	0.96
	85	237	238	Yes	0.90	243	Yes	0.97	246	Yes	>0.99
90	237	243	Yes	0.98	247	Yes	>0.99	251	Yes	>0.99	
95	237	249	Yes	>0.99	254	Yes	>0.99	257	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
8	5	244	194	No	<0.01	196	No	<0.01	197	No	<0.01
	10	244	201	No	<0.01	203	No	<0.01	205	No	<0.01
	15	244	205	No	<0.01	208	No	<0.01	210	No	<0.01
	20	244	209	No	<0.01	212	No	<0.01	214	No	<0.01
	25	244	212	No	<0.01	215	No	<0.01	217	No	<0.01
	30	244	215	No	<0.01	218	No	<0.01	220	No	<0.01
	35	244	218	No	<0.01	221	No	<0.01	223	No	<0.01
	40	244	220	No	<0.01	223	No	<0.01	225	No	<0.01
	45	244	223	No	0.01	226	No	<0.01	228	No	<0.01
	50	244	225	No	0.02	228	No	<0.01	230	No	<0.01
	55	244	227	No	0.04	231	No	0.01	233	No	<0.01
	60	244	230	No	0.10	233	No	0.03	235	No	<0.01
	65	244	232	No	0.16	236	No	0.11	238	No	0.02
	70	244	235	No	0.28	238	No	0.20	241	No	0.15
	75	244	238	No	0.44	241	No	0.42	244	Yes	0.50
	80	244	241	Yes	0.61	244	Yes	0.66	247	Yes	0.85
	85	244	245	Yes	0.81	248	Yes	0.89	251	Yes	0.99
90	244	249	Yes	0.93	253	Yes	0.99	256	Yes	>0.99	
95	244	256	Yes	0.99	260	Yes	>0.99	263	Yes	>0.99	

References

- Kolen, M. J., & Brennan, R. L. (2004). *Test equating, scaling, and linking*. New York: Springer.
- Pommerich, M., Hanson, B., Harris, D., & Sconing, J. (2004). Issues in conducting linkage between distinct tests. *Applied Psychological Measurement, 28*(4), 247–273.
- Thum, Y. M., & Kuhfeld, M. (2020). *NWEA 2020 MAP Growth achievement status and growth norms for students and schools*. NWEA Research Report. Portland, OR: NWEA.