Predicting Proficiency on the Virginia Standards of Learning (SOL) Assessments in Grades 3–8 based on NWEA MAP Growth Scores

March 2022

NWEA Psychometric Solutions

nwea

Linking Study Updates

Date	Description
2014-09	Initial study conducted for Virginia in reading and mathematics in grades 3–8 using Spring 2014 data.
2016-03	Incorporated the 2015 MAP Growth norms using Spring 2014 data.
2020-07-23	New study using Spring 2019 data for the mathematics 3–8 assessments administered for the first time in Spring 2019 based on new standards adopted in September 2016 by the Virginia Board of Education.
2022-03-10	New study using Spring 2021 data for the reading 3–8 assessments administered for the first time in Spring 2021 based on new standards adopted in January 2017 by the Virginia Board of Education. The mathematics 3–8 results from July 2020 remain the same but are included in this report so all Virginia SOL linking study results are in one document.
2022-03-25	Amended a clerical error.

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Executive Summary

To predict student achievement on the Virginia Standards of Learning (SOL) Reading and Mathematics assessments in grades 3–8, NWEA® conducted a linking study using Spring 2021 data for reading and Spring 2019 data for mathematics to derive Rasch Unit (RIT) cut scores on the MAP® Growth™ assessments that correspond to the Virginia SOL performance levels. Educators can use this information to identify students at risk of not meeting state proficiency standards early in the year and provide tailored educational interventions.[1] The linking study for reading has been updated since the previous version published in March 2016 to keep up with the state's new reading assessment standards. Results from the July 2020 mathematics linking study remain the same and are included in this report so all Virginia SOL linking study results are in one document.

E.1. Proficiency Cut Scores

Table E.1 presents the Virginia SOL *Pass/Proficient* performance level cut scores and the corresponding MAP Growth RIT cut scores that allow teachers to determine whether students are on track for proficiency on the state summative test. For example, the *Pass/Proficient* cut score on the third-grade Virginia SOL Reading test is 400. A third-grader with a MAP Growth Reading RIT score of 184 in the fall is likely to meet proficiency on the Virginia SOL Reading test in the spring, whereas a third-grader with a MAP Growth Reading RIT score lower than 184 in the fall is in jeopardy of not meeting proficiency.

MAP Growth cut scores for second grade are also provided for mathematics so educators can track early learners' progress toward proficiency on the Virginia SOL test by third grade. Not enough third-graders took the MAP Growth Reading assessment in second grade to be able to assess the classification accuracy of the second-grade cuts. The second-grade cut scores for reading are therefore not reported.

Table E.1. MAP Growth Cut Scores for Virginia SOL Proficiency

Assessment		*Pass/Proficient* Cut Scores by Grade						
		2	3	4	5	6	7	8
Reading								
Virginia SOL Spring		–	400	400	400	400	400	400
MAP Growth	Fall	–	184	192	201	204	209	212
	Winter	–	192	198	206	208	213	215
	Spring	–	195	201	208	210	214	216
Mathematics								
Virginia SOL Spring		–	400	400	400	400	400	400
MAP Growth	Fall	167	181	191	203	207	215	218
	Winter	176	189	198	209	212	218	221
	Spring	182	194	202	213	215	221	223

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[1] This study provides MAP Growth cut scores that predict proficiency on the Virginia SOL assessments for grades 2–8 only. They represent a higher level of achievement than universal screening cut scores designed to identify students with the most severe learning difficulties who may need intensive intervention. MAP Growth universal screening cut scores for grades K–8 in reading and mathematics are available in a separate report (He & Meyer, 2021).

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 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 the specific instructional weeks set by partners.

E.2. Assessment Overview

Virginia's SOL summative assessments in reading and mathematics are aligned to the Virginia Standards of Learning and administered in grades 3–8. Based on their test scores, students are placed into one of four performance levels: *Fail/Below Basic*, *Fail/Basic*, *Pass/Proficient*, and *Pass/Advanced*. The *Pass/Proficient* cut score demarks the minimum level of achievement considered to be passing on the Virginia SOL assessment. 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 to 350.

E.3. Linking Methods

The equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring Virginia SOL performance level cut scores. MAP Growth fall and winter cut scores that predict proficiency on the spring Virginia SOL test were then projected using the 2020 NWEA growth norms that provide expected score gains across test administrations. The second-grade cuts were derived based on the cuts for third grade and the 2020 NWEA growth norms.

E.4. Student Sample

Table E.2 presents the number of Virginia students from three districts and 51 schools for reading and 13 districts and 104 schools for mathematics who were included in the linking study sample. Only students who took both the MAP Growth and Virginia SOL assessments in Spring 2021 for reading and Spring 2019 for mathematics were included.

Table E.2. Linking Study Sample

	#Students	
Grade	Reading	Mathematics
3	3,021	4,078
4	2,700	3,542
5	2,833	3,599
6	2,633	4,171
7	2,654	3,406
8	2,610	1,492

The linking study sample is voluntary and can only include student scores from partners who share their data. Also, not all students in a state take MAP Growth. The sample may therefore be different from the general student population in important characteristics. To ensure that the linking study sample represents the state student population in terms of race, sex, and performance level distributions, post-stratification weighting was applied to statistically adjust the sample so it reflects the target population on these variables. As a result, the RIT cuts derived from the study sample can be generalized to any student from the target population. All analyses in this study for grades 3–8 were conducted based on the weighted sample.

E.5. Test Score Relationships

Correlations between MAP Growth RIT scores and Virginia SOL scores range from 0.75 to 0.85 across subjects, as shown in Figure E.1. These values indicate a high positive correlation among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the Virginia SOL assessments.

Figure E.1. Correlations between MAP Growth and Virginia SOL Test Scores
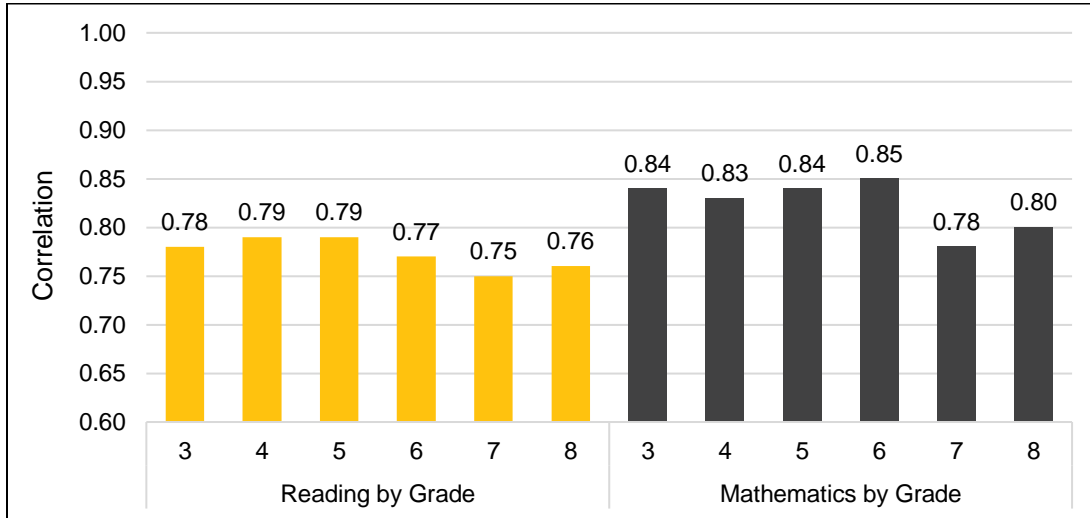
E.6. Accuracy of MAP Growth Classifications

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 Virginia SOL tests. For example, the third-grade MAP Growth Reading *Pass/Proficient* cut score has a 0.83 accuracy rate, meaning it accurately classified student achievement on the state test for 83% of the sample. The results range from 0.83 to 0.91 across subjects, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the Virginia SOL tests.

Figure E.2. Accuracy of MAP Growth Classifications
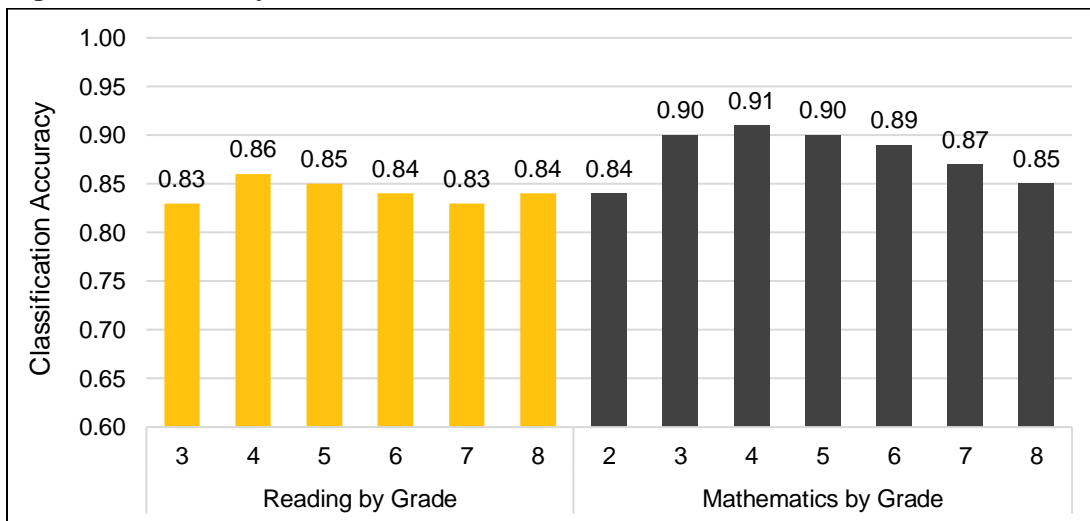
1. Introduction

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 to statistically connect the scores of the Virginia Standards of Learning (SOL) Reading and Mathematics assessments in grades 3–8 with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2021 term for reading and Spring 2019 for mathematics. MAP Growth cut scores are also included for second grade so educators can track early learners' progress toward proficiency on the Virginia SOL test by third grade. Specifically, this report presents the following results:

1. Student sample demographics
2. Descriptive statistics of test scores
3. MAP Growth cut scores from fall, winter, and spring that correspond to the performance levels on the spring Virginia SOL assessment
4. Classification accuracy statistics to determine the degree to which MAP Growth accurately predicts student proficiency status on the Virginia SOL tests
5. The probability of achieving grade-level proficiency on the Virginia SOL assessment based on MAP Growth RIT scores from fall, winter, and spring

The linking study for reading has been updated since the previous version published in March 2016 to keep up with the state's new reading assessment standards. Results from the July 2020 linking study for mathematics remain the same but are included in this report so all up-to-date Virginia SOL linking study results are in one document.

1.2. Assessment Overview

Virginia's SOL summative assessments in reading and mathematics are aligned to the Virginia Standards of Learning and administered in grades 3–8. Each Virginia SOL assessment has three cut scores that distinguish between the *Fail/Below Basic*, *Fail/Basic*, *Pass/Proficient*, and *Pass/Advanced* performance levels. *Pass/Proficient* demarks the minimum level of achievement considered to be passing on the Virginia SOL assessment.

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 to 350. To aid the interpretation of scores, NWEA conducts norming studies of student and school performance on MAP Growth. Achievement status norms show how well a student performed on MAP Growth compared to students in the norming group. It does this by associating the student's 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 2021 administrations of the MAP Growth and Virginia SOL assessments for reading and the Spring 2019 administrations for mathematics. NWEA recruited Virginia districts to participate in the study by sharing their student and score data for the target term. Districts also gave NWEA permission to use their students' MAP Growth scores from the NWEA in-house database. Once state score information was received by NWEA, each student's state testing record was matched to their MAP Growth score based on 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 Virginia SOL assessments in either Spring 2021 or Spring 2019 were included in the study sample.

2.2. Post-Stratification Weighting

Post-stratification weights were applied to the calculations to ensure that the linking study sample represented the state's test-taking student population in terms of race, sex, and performance level. These variables were selected because they are known to be correlated with students' academic achievement and are often available in state summative assessment reports. The weighted sample will match the target population as closely as possible on the key demographics and performance characteristics as defined by the state.

A raking procedure was used to calculate the post-stratification weights that either compensate for the underrepresentation of certain groups or attenuate the overrepresentation of certain groups. Raking uses iterative procedures to obtain weights that match sample marginal distributions to known population margins. The following steps were taken during this process:

1. Calculate marginal distributions of race, sex, and performance level for the sample and population.
2. Calculate post-stratification weights with the rake function from the survey package in R (Lumley, 2019).
3. Trim the weights that are outside the range of 0.3 to 3.0.
4. Apply the weights to the sample before conducting the linking study analyses.

2.3. MAP Growth Cut Scores

MAP Growth cut scores that predict student achievement on the Virginia SOL assessment are reported for grades 3–8, as well as for second grade so educators can track early learners' progress toward proficiency on the Virginia SOL test by third grade. Percentile ranks based on the 2020 NWEA norms are also provided. These are useful for understanding how students' scores compare to peers nationwide and the relative rigor of a state's performance level designations for its summative assessment.

The equipercentile linking method (Kolen & Brennan, 2004) was used to identify the spring MAP Growth RIT scores for grades 3–8 that correspond to the spring Virginia SOL performance level cut scores. 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., Virginia SOL). 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:

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

where $e_y(x)$ is the equipercentile equivalent of score x on Virginia SOL on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on Virginia SOL, 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 to spring within the same grade or from spring of a lower grade to spring of the adjacent higher grade. This information was used to calculate the fall and winter cut scores for grades 3–8. Equation 2 was used to determine the previous term's MAP Growth score needed to reach the spring cut score, considering the expected growth associated with the previous RIT score:

$$RIT_{PredSpring} = RIT_{previous} + g \tag{2}$$

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

The MAP Growth conditional growth norms were also used to calculate the fall, winter, and spring cuts for second grade. Students do not begin taking the Virginia SOL assessment until third grade. Thus, cut scores for second grade were interpolated by obtaining longitudinal data for the third-grade cohort. For each third-grader in the study sample, their MAP Growth data from the prior year when they were in second grade were obtained. In this way, the data came from the same cohort of students beginning when they were in second grade and continuing through third grade. To derive the spring cut scores for second grade, the growth score from spring of one year to the next was used (i.e., the growth score from spring of second grade to spring of third grade). The calculation of fall and winter cuts for second grade followed the same process as above for grades 3–8. For example, the growth score from fall to spring in second grade was used to calculate the fall cuts for second grade.

Second-grade cut scores are only provided for the Virginia SOL Mathematics assessment. Not enough third-graders took the MAP Growth Reading assessment in second grade to be able to assess the classification accuracy of the estimated second-grade cuts. Without knowing how well the RIT cuts could predict proficiency on the state assessment, the second-grade cut scores for reading are not reported.

2.4. Classification Accuracy
The degree to which MAP Growth predicts student proficiency status on the Virginia SOL tests can be described using classification accuracy statistics based on the MAP Growth spring RIT cut scores. The results show the proportion of students correctly classified by their RIT scores as proficient or not proficient on the Virginia SOL test. A summary of how well the interpolated second-grade cuts predict third-grade proficiency status is also reported in the classification accuracy statistics. Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich et al., 2004).

Table 2.1. Description of Classification Accuracy Summary Statistics

Statistic	Description*	Interpretation
Overall Classification Accuracy Rate	(TP + TN) / (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.

2.5. Proficiency Projections

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

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

where:
- Φ is the standard normal cumulative distribution function.
- $RIT_{previous}$ is the student's RIT score in fall or winter (or in spring of second grade).
- 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 second grade, this is the third-grade 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* performance on the Virginia SOL test based on their spring RIT score (RIT_{Spring}):

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

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 Virginia SOL assessments in Spring 2021 for reading and Spring 2019 for mathematics were included in the study sample. Data used in this study were collected from three districts and 51 schools for reading and 13 districts and 104 schools for mathematics. Table 3.1 presents the demographic distributions of race, sex, and performance level in the original unweighted study sample. Table 3.2 presents the distributions of the target population of students who took either the Spring 2021 or Spring 2019 Virginia SOL tests. Since the original study sample is different from the target Virginia SOL population, post-stratification weights were applied to the linking study sample to improve its representativeness. Table 3.3 presents the demographic distributions of the sample after weighting, which are almost identical to the Virginia SOL student population distributions. The analyses in this study were conducted using the weighted sample.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Linking Study Sample (Unweighted)							
		%Students by Grade					
Demographic Subgroup		**3**	**4**	**5**	**6**	**7**	**8**
Reading							
	Total N	3,021	2,700	2,833	2,633	2,654	2,610
Race*	American Indian	1.5	1.5	1.7	1.4	1.1	1.6
	Asian	2.5	2.6	3.2	3.2	4.0	3.8
	Black	35.1	32.2	33.0	29.8	32.7	31.5
	Hispanic	7.1	6.4	7.0	6.7	6.6	6.9
	Native Hawaiian/Pacific Islander	0.4	0.4	0.5	0.3	0.5	0.4
	Non-Hispanic, Two or More	9.2	10.6	9.5	9.6	10.0	9.8
	White	44.2	46.4	45.0	48.9	45.0	46.1
Sex	Female	49.8	49.9	49.8	48.2	48.1	49.3
	Male	50.2	50.1	50.2	51.8	51.9	50.7
Performance Level	*Fail/Below Basic*	2.8	2.4	1.2	3.4	2.4	2.6
	Fail/Basic	31.4	26.6	30.8	25.2	24.2	22.3
	Pass/Proficient	56.2	57.6	59.4	59.5	62.2	63.8
	Pass/Advanced	9.6	13.4	8.6	11.9	11.2	11.3
Mathematics							
	Total N	4,078	3,542	3,599	4,167	3,406	1,492
Race*	Asian	2.2	1.8	1.7	2.2	1.5	1.1
	Black	19.5	23.6	24.3	20.7	22.9	27.3
	Hispanic	6.7	6.4	6.5	7.3	7.6	9.3
	Multi-Race	0.5	0.5	0.3	0.4	0.3	0.1
	Other	16.9	20.1	20.1	16.5	19.0	26.8
	White	54.2	47.6	47.1	52.9	48.7	35.4
Sex	Female	48.5	49.2	50.5	49.3	49.6	45.7
	Male	51.5	50.8	49.5	50.7	50.4	54.3

Linking Study Sample (Unweighted)							
		%Students by Grade					
Demographic Subgroup		**3**	**4**	**5**	**6**	**7**	**8**
Performance Level	*Fail/Below Basic*	3.2	2.7	4.4	6.1	4.5	7.0
	Fail/Basic	16.3	16.6	16.9	16.6	21.7	27.7
	Pass/Proficient	61.8	61.2	63.5	62.0	62.9	58.6
	Pass/Advanced	18.7	19.5	15.3	15.3	10.9	6.7

*The race categories reflect the Virginia SOL performance reports by term. As such, the categories for reading based on Spring 2021 data differ from those reported for mathematics based on Spring 2019 data.

Table 3.2. Virginia SOL Student Population Demographics

Virginia SOL Student Population							
		%Students by Grade					
Demographic Subgroup		**3**	**4**	**5**	**6**	**7**	**8**
Reading (Spring 2021)							
Total N		72,061	72,083	71,421	67,578	66,690	65,327
Race*	American Indian	0.3	0.3	0.2	0.3	0.2	0.2
	Asian	7.7	7.6	7.7	8.1	8.2	7.5
	Black	18.9	19.0	19.6	19.1	19.0	19.6
	Hispanic	18.0	17.8	17.7	17.1	16.4	16.1
	Native Hawaiian/Pacific Islander	0.2	0.2	0.2	0.2	0.1	0.1
	Non-Hispanic, Two or More	6.7	6.7	6.5	6.1	5.9	5.7
	White	48.2	48.4	48.1	49.3	50.1	50.8
Sex	Female	48.9	49.0	48.8	48.8	48.7	48.0
	Male	51.1	51.0	51.2	51.2	51.3	52.0
Performance Level**	*Fail/Below Basic* *Fail/Basic*	38.9	32.3	33.9	31.2	29.7	30.9
	Pass/Proficient	52.2	54.7	56.4	55.3	58.3	56.7
	Pass/Advanced	9.0	13.1	9.8	13.5	12.0	12.4
Mathematics (Spring 2019)							
Total N		92,898	94,931	90,365	77,826	57,725	44,839
Race*	Asian	7.4	7.2	6.2	4.4	4.2	3.2
	Black	22.0	21.9	23.2	25.5	24.2	27.8
	Hispanic	16.4	16.9	17.2	18.5	19.2	19.3
	Multi-Race	6.4	6.1	5.9	5.5	5.3	5.2
	Other	0.4	0.5	0.4	0.4	0.4	0.4
	White	47.3	47.4	47.2	45.7	46.8	44.1
Sex	Female	48.9	49.0	49.5	49.5	48.7	46.0
	Male	51.1	51.0	50.5	50.5	51.3	54.0
Performance Level**	*Fail/Below Basic* *Fail/Basic*	17.8	16.8	19.0	24.7	27.5	32.4
	Pass/Proficient	63.7	63.8	64.7	65.0	66.3	65.1
	Pass/Advanced	18.5	19.4	16.	10.4	6.2	2.5

*The race categories reflect the Virginia SOL performance reports by term. As such, the categories for reading based on Spring 2021 data differ from those reported for mathematics based on Spring 2019 data.
**In Virginia's testing results, the percentage of students in *Below Basic* and *Basic* were reported as one category, *Fail*. Therefore, the aggregated percentages for the two lower levels were used as the target to weight the study sample.

Table 3.3. Linking Study Sample Demographics (Weighted)

Linking Study Sample (Weighted)							
		%Students by Grade					
Demographic Subgroup		3	4	5	6	7	8
Reading							
	Total N	3,021	2,700	2,833	2,633	2,654	2,610
Race*	American Indian	0.3	0.3	0.2	0.3	0.2	0.2
	Asian	7.7	7.6	7.7	8.1	8.2	7.5
	Black	18.9	19.0	19.6	19.1	19.1	19.6
	Hispanic	18.0	17.8	17.7	17.1	16.4	16.1
	Native Hawaiian/Pacific Islander	0.2	0.2	0.2	0.2	0.1	0.1
	Non-Hispanic, Two or More	6.7	6.7	6.5	6.1	5.9	5.7
	White	48.2	48.4	48.1	49.3	50.1	50.8
Sex	Female	48.9	49.0	48.8	48.8	48.7	48.0
	Male	51.1	51.0	51.2	51.2	51.3	52.0
Performance Level**	*Fail/Below Basic* *Fail/Basic*	38.9	32.3	33.8	31.2	29.7	30.9
	Pass/Proficient	52.2	54.7	56.4	55.3	58.3	56.7
	Pass/Advanced	9.0	13.0	9.8	13.5	12.0	12.4
Mathematics							
	Total N	4,078	3,542	3,599	4,171	3,406	1,492
Race*	Asian	7.4	7.2	6.2	4.4	4.2	3.2
	Black	22.0	21.9	23.2	25.5	24.2	27.8
	Hispanic	16.4	16.9	17.2	18.5	19.2	19.3
	Multi-Race	6.4	6.1	5.9	5.5	5.3	5.2
	Other	0.4	0.5	0.4	0.4	0.4	0.4
	White	47.3	47.4	47.2	45.7	46.8	44.1
Sex	Female	48.9	49.0	49.5	49.5	48.7	46.0
	Male	51.1	51.0	50.5	50.5	51.3	54.0
Performance Level**	*Fail/Below Basic* *Fail/Basic*	17.8	16.8	19.0	24.6	27.5	32.4
	Pass/Proficient	63.7	63.8	64.7	64.9	66.3	65.1
	Pass/Advanced	18.5	19.4	16.3	10.4	6.2	2.5

*The race categories reflect the Virginia SOL performance reports by term. As such, the categories for reading based on Spring 2021 data differ from those reported for mathematics based on Spring 2019 data.
**In Virginia's testing results, the percentage of students in *Below Basic* and *Basic* were reported as one category, *Fail*. Therefore, the aggregated percentages for the two lower levels were used as the target to weight the study sample.

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and Virginia SOL test scores from Spring 2021 for reading and Spring 2019 for mathematics, including the correlation coefficient (r) between them. The coefficients between the scores range from 0.75 to 0.79 for reading and 0.78 to 0.85 for mathematics. These values indicate a high positive correlation among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the Virginia SOL assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	r	Virginia SOL*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Reading										
3	3,021	0.78	419.6	60.8	239	600	197.5	15.6	146	238
4	2,700	0.79	428.8	66.0	130	600	205.2	15.8	144	239
5	2,833	0.79	424.2	59.9	244	600	212.2	15.2	146	256
6	2,633	0.77	430.6	63.2	176	600	215.7	16.0	149	253
7	2,654	0.75	432.6	59.2	150	600	220.4	15.4	156	266
8	2,610	0.76	431.9	59.7	202	600	223.0	16.7	156	261
Mathematics										
3	4,078	0.84	447.8	59.6	0	600	204.1	12.8	138	247
4	3,542	0.83	450.4	60.8	0	600	214.1	13.9	153	263
5	3,599	0.84	444.4	60.5	0	600	223.8	15.4	142	280
6	4,171	0.85	434.2	56.5	0	600	224.8	16.6	144	278
7	3,406	0.78	426.1	56.5	0	600	228.1	16.2	146	292
8	1,492	0.80	413.0	48.2	0	600	227.4	17.4	142	310

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

3.3. MAP Growth Cut Scores

Table 3.5 and Table 3.6 present the Virginia SOL scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges by subject and grade. Bolded numbers indicate the cut scores considered to be at least proficient for accountability purposes. Second-grade cut scores are only provided for mathematics because there were not enough students in the reading sample to assess the predictive accuracy of the estimated second-grade cuts.

These tables can be used to predict a student's likely performance level on the Virginia SOL spring assessment when MAP Growth is taken in the fall, winter, or spring. For example, a third-grader who obtained a MAP Growth Reading RIT score of 184 in the fall is likely to achieve *Pass/Proficient* performance on the Virginia SOL Reading test. A third-grader who obtained a MAP Growth Reading RIT score of 195 in the spring is also likely to achieve *Pass/Proficient* performance on the Virginia SOL assessment. 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 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 substantially from the default ones, a student's expected performance level could be different from the projections presented in this report. Partners are therefore encouraged to use the projected performance level in students' score reports since they reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—Reading

	Virginia SOL Reading							
	Fail				*Pass*			
Grade	*Below Basic*		*Basic*		*Proficient*		*Advanced*	
3	0–309		310–399		**400**–499		500–600	
4	0–302		303–399		**400**–499		500–600	
5	0–294		295–399		**400**–499		500–600	
6	0–316		317–399		**400**–499		500–600	
7	0–314		315–399		**400**–499		500–600	
8	0–316		317–399		**400**–499		500–600	
	MAP Growth Reading							
	Below Basic		*Basic*		*Proficient*		*Advanced*	
Grade	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**
Fall								
3	100–146	<1	147–183	1–43	**184**–207	44–89	208–350	90–99
4	100–156	<1	157–191	1–38	**192**–214	39–85	215–350	86–99
5	100–157	<1	158–200	1–41	**201**–224	42–88	225–350	89–99
6	100–173	<1	174–203	1–34	**204**–228	35–86	229–350	87–99
7	100–176	<1	177–208	1–37	**209**–233	38–87	234–350	88–99
8	100–177	<1	178–211	1–35	**212**–237	36–87	238–350	88–99
Winter								
3	100–157	<1	158–191	1–44	**192**–213	45–88	214–350	89–99
4	100–165	<1	166–197	1–38	**198**–218	39–84	219–350	85–99
5	100–166	<1	167–205	1–41	**206**–227	42–87	228–350	88–99
6	100–180	≤1	181–207	2–35	**208**–230	36–85	231–350	86–99
7	100–181	≤1	182–212	2–39	**213**–234	40–86	235–350	87–99
8	100–182	<1	183–214	1–36	**215**–238	37–86	239–350	87–99
Spring								
3	100–162	≤1	163–194	2–44	**195**–215	45–87	216–350	88–99
4	100–169	≤1	170–200	2–40	**201**–220	41–83	221–350	84–99
5	100–170	<1	171–207	1–42	**208**–228	43–86	229–350	87–99
6	100–183	1–2	184–209	3–36	**210**–231	37–84	232–350	85–99
7	100–184	≤1	185–213	2–38	**214**–235	39–85	236–350	86–99
8	100–185	≤1	186–215	2–36	**216**–239	37–85	240–350	86–99

Table 3.6. MAP Growth Cut Scores—Mathematics

	Virginia SOL Mathematics			
	Fail		Pass	
Grade	Below Basic	Basic	Proficient	Advanced
3	0–330	331–399	**400**–499	500–600
4	0–330	331–399	**400**–499	500–600
5	0–335	336–399	**400**–499	500–600
6	0–349	350–399	**400**–499	500–600
7	0–328	329–399	**400**–499	500–600
8	0–340	341–399	**400**–499	500–600

	MAP Growth Mathematics							
	Below Basic		Basic		Proficient		Advanced	
Grade	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
2	100–147	1–1	148–166	2–26	**167**–191	27–89	192–350	90–99
3	100–164	1–3	165–180	4–28	**181**–202	29–85	203–350	86–99
4	100–175	1–4	176–190	5–27	**191**–213	28–83	214–350	84–99
5	100–186	1–6	187–202	7–33	**203**–227	34–88	228–350	89–99
6	100–191	1–7	192–206	8–31	**207**–235	32–90	236–350	91–99
7	100–194	1–6	195–214	7–37	**215**–241	38–88	242-–350	89–99
8	100–194	1–5	195–217	6–35	**218**–252	36–92	253–350	93–99
Winter								
2	100–158	1–2	159–175	3–26	**176**–199	27–88	200–350	89–99
3	100–173	1–4	174–188	5–29	**189**–209	30–83	210–350	84–99
4	100–181	1–4	182–197	5–28	**198**–220	29–83	221–350	84–99
5	100–191	1–7	192–208	8–35	**209**–233	36–88	234–350	89–99
6	100–196	1–8	197–211	9–32	**212**–240	33–89	241–350	90–99
7	100–197	1–6	198–217	7–36	**218**–245	37–88	246–350	89–99
8	100–198	1–6	199–220	7–35	**221**–255	36–92	256–350	93–99
Spring								
2	100–164	1–2	165–181	3–28	**182**–204	29–87	205–350	88–99
3	100–178	1–5	179–193	6–30	**194**–214	31–83	215–350	84–99
4	100–186	1–6	187–201	7–28	**202**–224	29–81	225–350	82–99
5	100–195	1–8	196–212	9–36	**213**–237	37–87	238–350	88–99
6	100–199	1–9	200–214	10–32	**215**–243	33–88	244–350	89–99
7	100–200	1–7	201–220	8–37	**221**–248	38–87	249–350	88–99
8	100–200	1–6	201–222	7–35	**223**–257	36–91	258–350	92–99

3.4. Classification Accuracy

Table 3.7 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 Virginia SOL tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from 0.83 to 0.86 for reading and 0.84 to 0.91 for mathematics. These values suggest that the RIT cut scores are good at classifying students as proficient or not proficient on the Virginia SOL assessment.

For second grade, the classification accuracy rate refers to how well the MAP Growth cuts can predict students' proficiency status on the Virginia SOL assessment in third grade. Classification accuracy statistics for second grade are provided for mathematics only. Not enough third-graders took the MAP Growth Reading assessment in second grade to be able to assess the classification accuracy of the estimated second-grade cuts.

Although the results show that MAP Growth scores can be used to predict student proficiency on the Virginia SOL tests with relatively high accuracy, there is a notable limitation to how these results should be used and interpreted. The Virginia SOL and MAP Growth assessments are designed for different purposes and measure slightly different constructs even within the same subject. 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 3.7. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy*	Rate*		Sensitivity	Specificity	Precision	AUC*
		MAP Growth	Virginia SOL		FP	FN				
Reading										
3	3,021	195	400	0.83	0.24	0.13	0.87	0.76	0.85	0.90
4	2,700	201	400	0.86	0.24	0.10	0.90	0.76	0.89	0.92
5	2,833	208	400	0.85	0.27	0.09	0.91	0.73	0.87	0.91
6	2,633	210	400	0.84	0.29	0.11	0.89	0.71	0.87	0.90
7	2,654	214	400	0.83	0.33	0.10	0.90	0.67	0.87	0.89
8	2,610	216	400	0.84	0.31	0.09	0.91	0.69	0.87	0.91
Mathematics										
2	2,849	182	400	0.84	0.21	0.15	0.85	0.79	0.95	0.89
3	4,078	194	400	0.90	0.28	0.06	0.94	0.72	0.94	0.94
4	3,542	202	400	0.91	0.29	0.05	0.95	0.71	0.94	0.95
5	3,599	213	400	0.90	0.20	0.07	0.93	0.80	0.95	0.95
6	4,171	215	400	0.89	0.26	0.06	0.94	0.74	0.92	0.94
7	3,406	221	400	0.87	0.25	0.09	0.91	0.75	0.91	0.93
8	1,492	223	400	0.85	0.20	0.12	0.88	0.80	0.90	0.92

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

3.5. Proficiency Projections

Table 3.8 and Table 3.9 present the estimated probability of achieving *Pass/Proficient* performance on the Virginia SOL test based on RIT scores from fall, winter, or spring. "Prob." indicates the probability of obtaining proficiency status on the Virginia SOL test in the spring. For example, a third-grader who obtained a MAP Growth Reading score of 201 in the fall has a 98% chance of reaching *Pass/Proficient* or higher on the Virginia SOL test in the spring.

Table 3.8. Proficiency Projections based on RIT Scores—Reading

			Fall			Winter			Spring		
				Projected Proficiency			Projected Proficiency			Projected Proficiency	
Grade	Start %ile	Spring Cut	Fall RIT	*Proficient*	Prob.	Winter RIT	*Proficient*	Prob.	Spring RIT	*Proficient*	Prob.
3	5	195	159	No	<0.01	167	No	<0.01	170	No	<0.01
	10	195	165	No	0.01	173	No	<0.01	176	No	<0.01
	15	195	169	No	0.04	177	No	<0.01	180	No	<0.01
	20	195	173	No	0.09	180	No	0.02	183	No	<0.01
	25	195	175	No	0.14	183	No	0.07	186	No	<0.01
	30	195	178	No	0.25	185	No	0.13	189	No	0.03
	35	195	180	No	0.30	188	No	0.29	191	No	0.11
	40	195	182	No	0.39	190	No	0.35	193	No	0.27
	45	195	185	Yes	0.55	192	Yes	0.50	195	Yes	0.50
	50	195	187	Yes	0.61	194	Yes	0.65	197	Yes	0.73
	55	195	189	Yes	0.70	196	Yes	0.77	199	Yes	0.89
	60	195	191	Yes	0.79	198	Yes	0.87	201	Yes	0.97
	65	195	193	Yes	0.86	200	Yes	0.93	203	Yes	0.99
	70	195	195	Yes	0.89	202	Yes	0.97	206	Yes	>0.99
	75	195	198	Yes	0.95	205	Yes	0.99	208	Yes	>0.99
	80	195	201	Yes	0.98	207	Yes	>0.99	211	Yes	>0.99
	85	195	204	Yes	0.99	211	Yes	>0.99	214	Yes	>0.99
	90	195	208	Yes	>0.99	215	Yes	>0.99	218	Yes	>0.99
	95	195	214	Yes	>0.99	220	Yes	>0.99	224	Yes	>0.99
4	5	201	169	No	<0.01	176	No	<0.01	178	No	<0.01
	10	201	175	No	0.02	182	No	<0.01	184	No	<0.01
	15	201	179	No	0.05	186	No	0.01	188	No	<0.01
	20	201	183	No	0.13	189	No	0.04	191	No	<0.01
	25	201	185	No	0.20	192	No	0.13	194	No	0.01
	30	201	188	No	0.29	194	No	0.22	196	No	0.06
	35	201	190	No	0.39	196	No	0.35	199	No	0.27
	40	201	192	Yes	0.50	198	Yes	0.50	201	Yes	0.50
	45	201	195	Yes	0.61	200	Yes	0.58	203	Yes	0.73
	50	201	197	Yes	0.71	202	Yes	0.72	205	Yes	0.89
	55	201	199	Yes	0.80	205	Yes	0.87	207	Yes	0.97
	60	201	201	Yes	0.87	207	Yes	0.94	209	Yes	0.99
	65	201	203	Yes	0.89	209	Yes	0.97	211	Yes	>0.99
	70	201	205	Yes	0.94	211	Yes	0.99	213	Yes	>0.99
	75	201	208	Yes	0.97	213	Yes	>0.99	216	Yes	>0.99
	80	201	211	Yes	0.99	216	Yes	>0.99	219	Yes	>0.99
	85	201	214	Yes	>0.99	219	Yes	>0.99	222	Yes	>0.99
	90	201	218	Yes	>0.99	223	Yes	>0.99	226	Yes	>0.99
	95	201	224	Yes	>0.99	229	Yes	>0.99	232	Yes	>0.99

Reading												
			Fall			Winter			Spring			
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency		
Grade	Start %ile	Spring Cut		*Proficient*	Prob.		*Proficient*	Prob.		*Proficient*	Prob.	
5	5	208	178	No	<0.01	183	No	<0.01	185	No	<0.01	
	10	208	183	No	0.01	189	No	<0.01	191	No	<0.01	
	15	208	187	No	0.05	193	No	0.01	194	No	<0.01	
	20	208	191	No	0.11	196	No	0.04	198	No	<0.01	
	25	208	193	No	0.17	198	No	0.06	200	No	0.01	
	30	208	196	No	0.29	201	No	0.17	203	No	0.06	
	35	208	198	No	0.34	203	No	0.28	205	No	0.17	
	40	208	200	No	0.44	205	No	0.42	207	No	0.38	
	45	208	202	Yes	0.56	207	Yes	0.58	209	Yes	0.62	
	50	208	204	Yes	0.66	209	Yes	0.72	211	Yes	0.83	
	55	208	207	Yes	0.76	211	Yes	0.83	213	Yes	0.94	
	60	208	209	Yes	0.83	213	Yes	0.91	215	Yes	0.99	
	65	208	211	Yes	0.89	215	Yes	0.96	217	Yes	>0.99	
	70	208	213	Yes	0.92	217	Yes	0.97	219	Yes	>0.99	
	75	208	216	Yes	0.96	220	Yes	0.99	222	Yes	>0.99	
	80	208	218	Yes	0.98	222	Yes	>0.99	224	Yes	>0.99	
	85	208	221	Yes	0.99	226	Yes	>0.99	228	Yes	>0.99	
	90	208	225	Yes	>0.99	229	Yes	>0.99	231	Yes	>0.99	
	95	208	231	Yes	>0.99	235	Yes	>0.99	237	Yes	>0.99	
6	5	210	183	No	<0.01	188	No	<0.01	189	No	<0.01	
	10	210	189	No	0.03	193	No	<0.01	195	No	<0.01	
	15	210	193	No	0.08	197	No	0.02	199	No	<0.01	
	20	210	196	No	0.16	200	No	0.06	202	No	0.01	
	25	210	199	No	0.28	203	No	0.17	205	No	0.06	
	30	210	202	No	0.39	205	No	0.28	207	No	0.17	
	35	210	204	Yes	0.50	208	Yes	0.50	209	No	0.38	
	40	210	206	Yes	0.61	210	Yes	0.65	211	Yes	0.62	
	45	210	208	Yes	0.67	212	Yes	0.78	213	Yes	0.83	
	50	210	210	Yes	0.76	214	Yes	0.88	215	Yes	0.94	
	55	210	212	Yes	0.84	216	Yes	0.91	217	Yes	0.99	
	60	210	214	Yes	0.90	218	Yes	0.96	219	Yes	>0.99	
	65	210	217	Yes	0.94	220	Yes	0.98	222	Yes	>0.99	
	70	210	219	Yes	0.97	222	Yes	0.99	224	Yes	>0.99	
	75	210	221	Yes	0.98	225	Yes	>0.99	226	Yes	>0.99	
	80	210	224	Yes	0.99	227	Yes	>0.99	229	Yes	>0.99	
	85	210	227	Yes	>0.99	230	Yes	>0.99	232	Yes	>0.99	
	90	210	231	Yes	>0.99	234	Yes	>0.99	236	Yes	>0.99	
	95	210	237	Yes	>0.99	240	Yes	>0.99	242	Yes	>0.99	

			Reading								
			Fall			**Winter**			**Spring**		
Grade	**Start %ile**	**Spring Cut**	**Fall RIT**	**Projected Proficiency**		**Winter RIT**	**Projected Proficiency**		**Spring RIT**	**Projected Proficiency**	
				Proficient	**Prob.**		*Proficient*	**Prob.**		*Proficient*	**Prob.**
7	5	214	187	No	<0.01	190	No	<0.01	191	No	<0.01
	10	214	193	No	0.02	196	No	<0.01	197	No	<0.01
	15	214	197	No	0.06	200	No	0.01	201	No	<0.01
	20	214	200	No	0.12	203	No	0.04	205	No	<0.01
	25	214	203	No	0.19	206	No	0.12	207	No	0.01
	30	214	206	No	0.33	209	No	0.28	210	No	0.11
	35	214	208	No	0.44	211	No	0.42	212	No	0.27
	40	214	210	Yes	0.56	213	Yes	0.50	214	Yes	0.50
	45	214	212	Yes	0.61	215	Yes	0.65	216	Yes	0.73
	50	214	214	Yes	0.72	217	Yes	0.78	218	Yes	0.89
	55	214	216	Yes	0.81	219	Yes	0.88	220	Yes	0.97
	60	214	218	Yes	0.88	221	Yes	0.94	223	Yes	>0.99
	65	214	221	Yes	0.92	223	Yes	0.97	225	Yes	>0.99
	70	214	223	Yes	0.96	226	Yes	0.99	227	Yes	>0.99
	75	214	225	Yes	0.98	228	Yes	>0.99	229	Yes	>0.99
	80	214	228	Yes	0.99	231	Yes	>0.99	232	Yes	>0.99
	85	214	231	Yes	>0.99	234	Yes	>0.99	235	Yes	>0.99
	90	214	235	Yes	>0.99	238	Yes	>0.99	239	Yes	>0.99
	95	214	241	Yes	>0.99	244	Yes	>0.99	245	Yes	>0.99
8	5	216	190	No	<0.01	193	No	<0.01	194	No	<0.01
	10	216	196	No	0.03	199	No	<0.01	200	No	<0.01
	15	216	200	No	0.08	203	No	0.02	204	No	<0.01
	20	216	204	No	0.17	206	No	0.06	207	No	<0.01
	25	216	207	No	0.29	209	No	0.17	210	No	0.03
	30	216	209	No	0.39	212	No	0.28	213	No	0.17
	35	216	211	No	0.45	214	No	0.42	215	No	0.38
	40	216	214	Yes	0.61	216	Yes	0.58	217	Yes	0.62
	45	216	216	Yes	0.71	218	Yes	0.72	220	Yes	0.89
	50	216	218	Yes	0.80	221	Yes	0.87	222	Yes	0.97
	55	216	220	Yes	0.83	223	Yes	0.94	224	Yes	0.99
	60	216	222	Yes	0.89	225	Yes	0.97	226	Yes	>0.99
	65	216	225	Yes	0.95	227	Yes	0.99	228	Yes	>0.99
	70	216	227	Yes	0.97	229	Yes	>0.99	231	Yes	>0.99
	75	216	230	Yes	0.99	232	Yes	>0.99	233	Yes	>0.99
	80	216	232	Yes	0.99	235	Yes	>0.99	236	Yes	>0.99
	85	216	236	Yes	>0.99	238	Yes	>0.99	239	Yes	>0.99
	90	216	240	Yes	>0.99	242	Yes	>0.99	243	Yes	>0.99
	95	216	246	Yes	>0.99	248	Yes	>0.99	249	Yes	>0.99

Table 3.9. Proficiency Projections based on RIT Scores—Mathematics

Grade	Start %ile	Spring Cut	Fall RIT	Proficient	Prob.	Winter RIT	Proficient	Prob.	Spring RIT	Proficient	Prob.
				Fall			**Winter**			**Spring**	
				Projected Proficiency			Projected Proficiency			Projected Proficiency	
2	5	182	154	No	0.03	163	No	<0.01	167	No	<0.01
	10	182	158	No	0.11	167	No	0.03	172	No	<0.01
	15	182	162	No	0.27	171	No	0.15	175	No	0.01
	20	182	164	No	0.32	173	No	0.26	178	No	0.08
	25	182	166	No	0.44	175	No	0.42	180	No	0.25
	30	182	168	Yes	0.56	177	Yes	0.58	182	Yes	0.50
	35	182	170	Yes	0.68	179	Yes	0.74	184	Yes	0.75
	40	182	172	Yes	0.78	181	Yes	0.80	186	Yes	0.92
	45	182	173	Yes	0.82	182	Yes	0.85	188	Yes	0.98
	50	182	175	Yes	0.86	184	Yes	0.93	189	Yes	0.99
	55	182	177	Yes	0.92	186	Yes	0.97	191	Yes	>0.99
	60	182	178	Yes	0.94	187	Yes	0.98	193	Yes	>0.99
	65	182	180	Yes	0.97	189	Yes	0.99	195	Yes	>0.99
	70	182	182	Yes	0.99	191	Yes	>0.99	196	Yes	>0.99
	75	182	184	Yes	0.99	193	Yes	>0.99	198	Yes	>0.99
	80	182	186	Yes	>0.99	195	Yes	>0.99	201	Yes	>0.99
	85	182	188	Yes	>0.99	198	Yes	>0.99	203	Yes	>0.99
	90	182	192	Yes	>0.99	201	Yes	>0.99	207	Yes	>0.99
	95	182	196	Yes	>0.99	205	Yes	>0.99	212	Yes	>0.99
3	5	194	166	No	0.01	174	No	<0.01	178	No	<0.01
	10	194	171	No	0.07	179	No	0.02	183	No	<0.01
	15	194	175	No	0.17	182	No	0.07	186	No	<0.01
	20	194	177	No	0.26	185	No	0.20	189	No	0.04
	25	194	179	No	0.37	187	No	0.33	192	No	0.25
	30	194	181	Yes	0.50	189	Yes	0.50	194	Yes	0.50
	35	194	183	Yes	0.63	191	Yes	0.67	196	Yes	0.75
	40	194	185	Yes	0.74	193	Yes	0.80	198	Yes	0.92
	45	194	187	Yes	0.83	195	Yes	0.90	199	Yes	0.96
	50	194	188	Yes	0.87	196	Yes	0.93	201	Yes	0.99
	55	194	190	Yes	0.93	198	Yes	0.97	203	Yes	>0.99
	60	194	192	Yes	0.95	200	Yes	0.99	205	Yes	>0.99
	65	194	194	Yes	0.97	201	Yes	0.99	207	Yes	>0.99
	70	194	196	Yes	0.99	203	Yes	>0.99	208	Yes	>0.99
	75	194	198	Yes	>0.99	205	Yes	>0.99	211	Yes	>0.99
	80	194	200	Yes	>0.99	208	Yes	>0.99	213	Yes	>0.99
	85	194	202	Yes	>0.99	210	Yes	>0.99	216	Yes	>0.99
	90	194	206	Yes	>0.99	214	Yes	>0.99	219	Yes	>0.99
	95	194	211	Yes	>0.99	219	Yes	>0.99	224	Yes	>0.99

			Mathematics								
			Fall			**Winter**			**Spring**		
			Fall RIT	**Projected Proficiency**		Winter RIT	**Projected Proficiency**		Spring RIT	**Projected Proficiency**	
Grade	Start %ile	Spring Cut		*Proficient*	Prob.		*Proficient*	Prob.		*Proficient*	Prob.
	5	202	176	No	0.01	182	No	<0.01	185	No	<0.01
	10	202	181	No	0.05	187	No	0.02	191	No	<0.01
	15	202	185	No	0.17	191	No	0.10	194	No	<0.01
	20	202	187	No	0.26	194	No	0.26	197	No	0.04
	25	202	190	No	0.44	196	No	0.33	200	No	0.25
	30	202	192	Yes	0.56	198	Yes	0.50	202	Yes	0.50
	35	202	194	Yes	0.68	200	Yes	0.67	205	Yes	0.85
	40	202	196	Yes	0.79	202	Yes	0.80	207	Yes	0.96
	45	202	198	Yes	0.87	204	Yes	0.90	209	Yes	0.99
4	50	202	200	Yes	0.93	206	Yes	0.96	211	Yes	>0.99
	55	202	201	Yes	0.95	208	Yes	0.98	212	Yes	>0.99
	60	202	203	Yes	0.97	210	Yes	0.99	214	Yes	>0.99
	65	202	205	Yes	0.99	212	Yes	>0.99	217	Yes	>0.99
	70	202	207	Yes	0.99	214	Yes	>0.99	219	Yes	>0.99
	75	202	209	Yes	>0.99	216	Yes	>0.99	221	Yes	>0.99
	80	202	212	Yes	>0.99	219	Yes	>0.99	224	Yes	>0.99
	85	202	214	Yes	>0.99	221	Yes	>0.99	227	Yes	>0.99
	90	202	218	Yes	>0.99	225	Yes	>0.99	230	Yes	>0.99
	95	202	223	Yes	>0.99	231	Yes	>0.99	236	Yes	>0.99
	5	213	184	No	<0.01	189	No	<0.01	191	No	<0.01
	10	213	190	No	0.02	194	No	<0.01	197	No	<0.01
	15	213	193	No	0.05	198	No	0.01	201	No	<0.01
	20	213	196	No	0.11	201	No	0.05	205	No	<0.01
	25	213	199	No	0.22	204	No	0.15	207	No	0.02
	30	213	201	No	0.38	206	No	0.26	210	No	0.15
	35	213	203	Yes	0.50	209	Yes	0.50	212	No	0.37
	40	213	205	Yes	0.62	211	Yes	0.66	215	Yes	0.75
	45	213	207	Yes	0.73	213	Yes	0.80	217	Yes	0.92
5	50	213	209	Yes	0.82	215	Yes	0.90	219	Yes	0.98
	55	213	211	Yes	0.89	217	Yes	0.95	221	Yes	>0.99
	60	213	213	Yes	0.94	219	Yes	0.98	223	Yes	>0.99
	65	213	215	Yes	0.97	221	Yes	0.99	225	Yes	>0.99
	70	213	217	Yes	0.98	223	Yes	>0.99	228	Yes	>0.99
	75	213	219	Yes	0.99	225	Yes	>0.99	230	Yes	>0.99
	80	213	222	Yes	>0.99	228	Yes	>0.99	233	Yes	>0.99
	85	213	225	Yes	>0.99	231	Yes	>0.99	236	Yes	>0.99
	90	213	229	Yes	>0.99	235	Yes	>0.99	240	Yes	>0.99
	95	213	234	Yes	>0.99	241	Yes	>0.99	246	Yes	>0.99

Mathematics											
			Fall			Winter			Spring		
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
6	5	215	188	No	<0.01	192	No	<0.01	194	No	<0.01
	10	215	194	No	0.02	198	No	<0.01	200	No	<0.01
	15	215	198	No	0.08	202	No	0.02	205	No	<0.01
	20	215	201	No	0.17	205	No	0.07	208	No	0.01
	25	215	204	No	0.32	208	No	0.20	211	No	0.08
	30	215	206	No	0.44	211	No	0.42	214	No	0.37
	35	215	209	Yes	0.62	213	Yes	0.58	216	Yes	0.63
	40	215	211	Yes	0.73	215	Yes	0.74	218	Yes	0.85
	45	215	213	Yes	0.83	217	Yes	0.86	221	Yes	0.98
	50	215	215	Yes	0.90	220	Yes	0.96	223	Yes	>0.99
	55	215	217	Yes	0.94	222	Yes	0.98	225	Yes	>0.99
	60	215	219	Yes	0.97	224	Yes	0.99	227	Yes	>0.99
	65	215	221	Yes	0.99	226	Yes	>0.99	230	Yes	>0.99
	70	215	223	Yes	0.99	228	Yes	>0.99	232	Yes	>0.99
	75	215	226	Yes	>0.99	231	Yes	>0.99	235	Yes	>0.99
	80	215	228	Yes	>0.99	234	Yes	>0.99	238	Yes	>0.99
	85	215	231	Yes	>0.99	237	Yes	>0.99	241	Yes	>0.99
	90	215	235	Yes	>0.99	241	Yes	>0.99	245	Yes	>0.99
	95	215	241	Yes	>0.99	247	Yes	>0.99	252	Yes	>0.99
7	5	221	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	221	198	No	<0.01	201	No	<0.01	203	No	<0.01
	15	221	202	No	0.02	205	No	<0.01	207	No	<0.01
	20	221	206	No	0.07	209	No	0.03	211	No	<0.01
	25	221	208	No	0.13	212	No	0.10	214	No	0.01
	30	221	211	No	0.26	215	No	0.26	217	No	0.08
	35	221	213	No	0.37	217	No	0.42	220	No	0.37
	40	221	216	Yes	0.56	219	Yes	0.58	222	Yes	0.63
	45	221	218	Yes	0.74	222	Yes	0.80	224	Yes	0.85
	50	221	220	Yes	0.83	224	Yes	0.90	227	Yes	0.98
	55	221	222	Yes	0.90	226	Yes	0.96	229	Yes	>0.99
	60	221	225	Yes	0.96	229	Yes	0.99	231	Yes	>0.99
	65	221	227	Yes	0.98	231	Yes	>0.99	234	Yes	>0.99
	70	221	229	Yes	0.99	233	Yes	>0.99	236	Yes	>0.99
	75	221	232	Yes	>0.99	236	Yes	>0.99	239	Yes	>0.99
	80	221	235	Yes	>0.99	239	Yes	>0.99	242	Yes	>0.99
	85	221	238	Yes	>0.99	243	Yes	>0.99	246	Yes	>0.99
	90	221	243	Yes	>0.99	247	Yes	>0.99	251	Yes	>0.99
	95	221	249	Yes	>0.99	254	Yes	>0.99	257	Yes	>0.99

Mathematics												
			Fall			Winter			Spring			
				Projected Proficiency			Projected Proficiency			Projected Proficiency		
	Start	Spring	Fall			Winter			Spring			
Grade	%ile	Cut	RIT	*Proficient*	Prob.	RIT	*Proficient*	Prob.	RIT	*Proficient*	Prob.	
	5	223	194	No	<0.01	196	No	<0.01	197	No	<0.01	
	10	223	201	No	0.01	203	No	<0.01	205	No	<0.01	
	15	223	205	No	0.04	208	No	<0.01	210	No	<0.01	
	20	223	209	No	0.12	212	No	0.03	214	No	<0.01	
	25	223	212	No	0.24	215	No	0.11	217	No	0.02	
	30	223	215	No	0.39	218	No	0.27	220	No	0.15	
	35	223	218	Yes	0.50	221	Yes	0.50	223	Yes	0.50	
	40	223	220	Yes	0.61	223	Yes	0.66	225	Yes	0.75	
	45	223	223	Yes	0.76	226	Yes	0.85	228	Yes	0.96	
8	50	223	225	Yes	0.84	228	Yes	0.93	230	Yes	0.99	
	55	223	227	Yes	0.90	231	Yes	0.98	233	Yes	>0.99	
	60	223	230	Yes	0.96	233	Yes	0.99	235	Yes	>0.99	
	65	223	232	Yes	0.98	236	Yes	>0.99	238	Yes	>0.99	
	70	223	235	Yes	0.99	238	Yes	>0.99	241	Yes	>0.99	
	75	223	238	Yes	>0.99	241	Yes	>0.99	244	Yes	>0.99	
	80	223	241	Yes	>0.99	244	Yes	>0.99	247	Yes	>0.99	
	85	223	245	Yes	>0.99	248	Yes	>0.99	251	Yes	>0.99	
	90	223	249	Yes	>0.99	253	Yes	>0.99	256	Yes	>0.99	
	95	223	256	Yes	>0.99	260	Yes	>0.99	263	Yes	>0.99	

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