Predicting Performance on the Smarter Balanced Summative Assessments Based on NWEA MAP Growth Scores

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NWEA Psychometrics and Analytics

Linking Study Updates

Date	Description
2021-03	Conducted a linking study for grades 3–8 in mathematics and ELA/literacy based on the 2020 norms and Spring 2019 data.
2025-07	Updated the linking study based on the 2025 norms.

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Executive Summary

To predict student achievement on the Smarter Balanced Assessment Consortium (SBAC) summative assessments in grades 3–8 in English language arts/literacy (ELA) and mathematics, NWEA® conducted a linking study using Spring 2019 data to derive Rasch Unit (RIT) cut scores on the MAP® Growth™ assessments that correspond to the SBAC achievement levels. Educators can use the RIT score cuts to identify students at risk of not meeting state proficiency standards early in the year and provide tailored educational interventions. The linking study has been updated since the previous version published in March 2021 to incorporate the most recent 2025 NWEA MAP Growth norms (NWEA, 2025).

This linking study is based on data from the following nine states: California, Connecticut, Delaware, Hawaii, Idaho, Nevada, Oregon, South Dakota, and Washington. Although any of these nine states could use the results of this report, it is recommended for states to reference their state-specific linking study results if available (i.e., California, Nevada, Oregon, South Dakota, and Washington). Caution should be taken when applying the results to SBAC states that had no data included in this study (e.g., Montana, Vermont).[1] The accuracy of using the cut scores in this report for states not included in the study is unknown.

Table E.1 presents the SBAC Level 3 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 Level 3 cut score on the SBAC grade 3 ELA test is 2432. A grade 3 student with a MAP Growth reading RIT score of 191 in the fall is likely to meet proficiency on the SBAC ELA test in the spring, whereas a grade 3 student with a MAP Growth reading RIT score lower than 191 in the fall is in jeopardy of not meeting proficiency. MAP Growth cut scores for grade 2 are also provided so that educators can track early learners' progress toward proficiency on the SBAC test by grade 3.

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

Assessment		Level 3 Cut Scores by Grade						
		2	3	4	5	6	7	8
ELA/Reading								
Grades 3–8 SBAC Spring		–	2432	2473	2502	2531	2552	2567
MAP Growth Reading	Fall	176	191	200	207	213	216	220
	Winter	183	196	204	209	215	217	221
	Spring	187	199	206	211	216	218	222
Mathematics								
Grades 3–8 SBAC Spring		–	2436	2485	2528	2552	2567	2586
MAP Growth Mathematics	Fall	177	188	205	217	220	227	234
	Winter	185	197	213	223	226	232	239
	Spring	191	203	218	227	230	234	241

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

[1] The data collected from Michigan could not be used in this study because the state scale scores are not on the SBAC scale. As a result, Michigan should refer to its own linking study results.

(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.1. Assessment Overview

The SBAC grades 3–8 ELA and mathematics summative tests are aligned to the Common Core State Standards (CCSS) and are administered in multiple states as their end-of-year state summative assessment. Based on their test scores, students are placed into one of four achievement levels: Level 1, Level 2, Level 3, and Level 4. The Level 3 cut score demarks the minimum level of achievement considered to be proficient for accountability purposes. 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 2019 test administration, the equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring SBAC achievement level cut scores. MAP Growth spring cut scores for grade 2 were then derived from the spring cuts for grade 3 and the growth norms for the adjacent grade (i.e., grades 2 to 3). Similarly, the MAP Growth cut scores for the fall and winter administrations of all grades were derived from the spring administration cuts and the growth norms for either fall to spring or winter to spring, respectively. The spring cuts[2] for mathematics were adjusted for score alignment before deriving the cuts for grade 2 spring and for all grades' fall and winter administrations.

E.3. Student Sample

Only students who took both the MAP Growth and SBAC assessments in Spring 2019 were included in the study sample. Table E.2 presents the weighted numbers of students from 59 districts and 465 schools across states who were included in the linking study. 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 not represent the general student population as well as it should. To ensure that the linking study sample represents the student population in terms of race, sex, achievement level, and state student participation distributions, weighting (i.e., a statistical method that matches the distributions of the variables of interest to those of the target population) was applied to the sample. 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.

[2] To enhance content validity, NWEA developed an Enhanced Item-Selection Algorithm (EISA) for the MAP Growth assessment to prioritize grade-level content. A pilot study (Meyer et al., 2023) showed that students taking MAP Growth with EISA demonstrated higher average math scores compared with those taking traditional MAP Growth. To improve score comparability, NWEA (Lewis & Kuhfeld, 2024) developed concordance tables to adjust mathematics scores from traditional assessments to align with scores from MAP Growth with EISA, or vice versa. Given that the data for this study were collected from traditional MAP Growth tests but that the results will be used for MAP Growth with EISA, the spring cuts for mathematics were adjusted using the concordance tables before being used to derive other cut scores. This score adjustment will become unnecessary for future linking studies once the new data from EISA tests are collected.

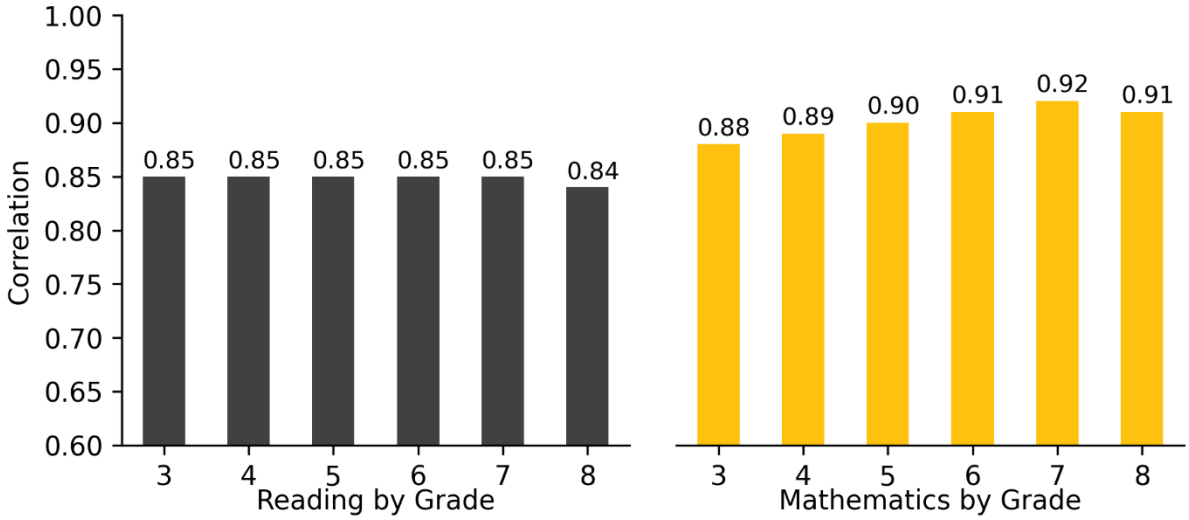
Table E.2. MAP Growth RIT Linking Study Sample

Grade	# Students	
	ELA/Reading	Mathematics
3	17,349	18,496
4	17,013	18,616
5	17,538	19,276
6	16,029	17,857
7	15,414	17,371
8	13,865	14,981

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and SBAC scores range from 0.84 to 0.92 across 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 SBAC summative assessments.

Figure E.1. Correlations Between MAP Growth and SBAC Test Scores

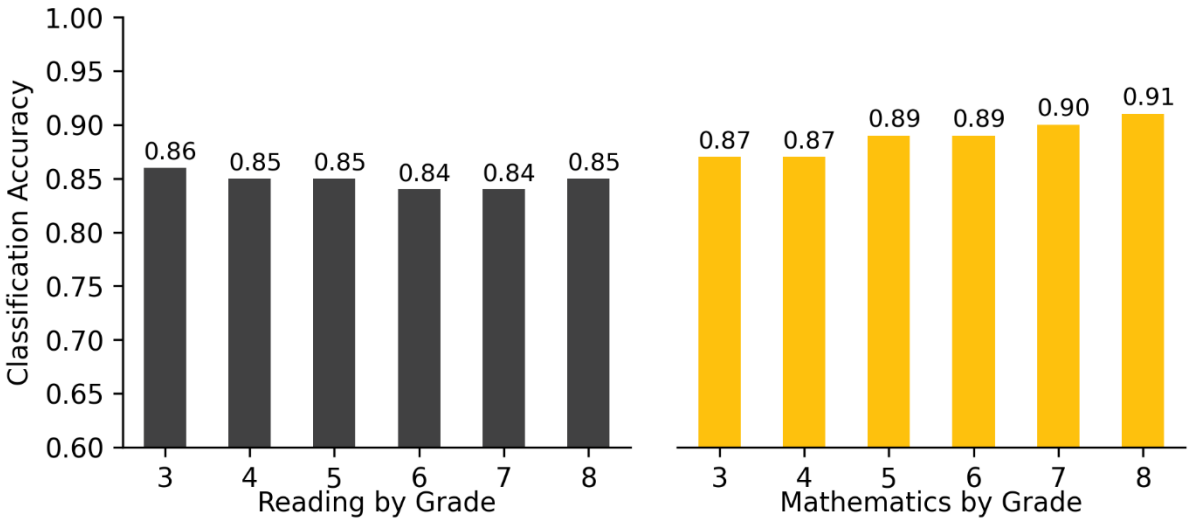


E.5. Accuracy of MAP Growth Classifications

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 SBAC summative tests.[3] For example, the MAP Growth reading grade 3 Level 3 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 0.91 across content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the SBAC summative tests.

[3] The classification accuracy calculations for the mathematics spring cuts were based on the concorded cut scores.

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 report presents results from a linking study conducted by NWEA in March 2021 to statistically connect the scores of the Smarter Balanced Assessment Consortium (SBAC) grades 3–8 English language arts/literacy (ELA) and mathematics summative assessments with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2019 term. This is a multi-state study that includes data from California, Connecticut, Delaware, Hawaii, Idaho, Nevada, Oregon, South Dakota, and Washington. The linking study has been updated to incorporate the most recent 2025 NWEA MAP Growth norms (NWEA, 2025). In this updated study, MAP Growth cut scores are also included for grade 2 so that educators can track early learners' progress toward proficiency on the SBAC summative assessment 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 SBAC achievement levels using the equipercentile linking procedure for the spring results and the 2025 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 SBAC summative tests
5. The probability of achieving grade-level proficiency on the SBAC assessments based on MAP Growth RIT scores from fall, winter, and spring using the 2025 norms

1.2. Assessment Overview

The SBAC grades 3–8 ELA and mathematics summative assessments are aligned to the Common Core State Standards (CCSS) and are administered in multiple states. 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: Level 1, Level 2, Level 3, and Level 4. The Level 3 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 with 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 2025 (NWEA, 2025).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2019 administrations of the MAP Growth and SBAC assessments. NWEA requested that districts recruited to participate in the study share their student and score data for the target term. Districts also permitted NWEA to access students' associated MAP Growth scores from the NWEA in-house database.[4] Once state score information was available to 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 SBAC assessments in 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 population in terms of race, sex, achievement level, and state student participation. These variables were selected because they are correlated with the student's academic achievement within this study and are often provided in the data for the state population. The weighted sample matches the target population as closely as possible for the key demographics and test score characteristics. Specifically, a raking procedure was used to calculate the post-stratification weights and improve the representativeness of the sample. 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, achievement level, and state student participation for the sample and population.
2. Calculate post-stratification weights with the rake function from the survey package in R (Lumley, 2019).
3. Apply the weights to the sample before conducting the linking study analyses.

2.3. 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 SBAC achievement level cut scores. Spring cuts for grade 2 were derived based on the cuts for grade 3 and the 2025 NWEA growth norms. RIT fall and winter cut scores that predict proficiency on the spring SBAC summative test were then projected using the 2025 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 for understanding (1) how student scores compare with 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 SBAC 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., SBAC). Its equipercentile equivalent score on Test Y (e.g.,

[4] The exception is Clark County in Nevada that did its own matching and provided NWEA with the merged data file.

MAP Growth), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined as:

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

where $e_y(x)$ is the equipercentile equivalent of score x on the SBAC tests on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on the SBAC tests, 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. The equation below 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:

$$RIT_{PredSpring} = RIT_{previous} + g$$

where:

- $RIT_{PredSpring}$ is the predicted MAP Growth spring score,
- $RIT_{previous}$ is the previous term's or grade's RIT score, and
- 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.

2.4. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the SBAC tests can be described using classification accuracy statistics based on the MAP Growth spring RIT cut scores that show the proportion of students correctly classified by their RIT scores as proficient (Level 3 or Level 4) or not proficient (Level 1 or Level 2). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich et al., 2004). The results are based on the Spring 2019 MAP Growth and SBAC data for the Level 3 cut score.

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 students identified by MAP Growth as not proficient in those observed as proficient on the state test

Statistic	Description	Interpretation
False Positive (FP) Rate	FP / (FP + TN)	Proportion of students identified by MAP Growth as not proficient in those observed as not proficient on the state test
Sensitivity	TP / (TP + FN)	Proportion of students identified by MAP Growth as proficient in those observed as such on the state test
Specificity	TN / (TN + FP)	Proportion of students identified by MAP Growth as not proficient in those observed as such on the state test
Precision	TP / (TP + FP)	Proportion of students observed as proficient 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.

Note. FP = false positives; FN = false negatives; TP = true positives; TN = true negatives.

2.5. Proficiency Projections

Given that all test scores contain measurement errors, reaching the Level 3 RIT cut does not guarantee that a student is proficient on the state test. Instead, it can be claimed that a student meeting the RIT cut score has a 50% chance of reaching proficiency on the state test, with their chances increasing the greater their score is from the cut. The proficiency projections indicate these probabilities for various RIT scores throughout the year.

In addition to calculating the MAP Growth fall and winter cut scores (and the projected grade 2 cut scores), the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the SBAC summative test based on a student's RIT scores from fall and winter:

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

where:

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

The equation below was used to estimate the probability of a student achieving Level 3 performance on the SBAC summative assessment based on their spring RIT score (RIT_{Spring}):

$$Pr(Achieving\ Level\ 3\ in\ spring\ |\ spring\ RIT) = \Phi\left(\frac{RIT_{Spring} - RIT_{SpringCut}}{SE}\right)$$

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 SBAC assessments in Spring 2019 were included in the study sample. Data used in this study were collected from 59 districts and 465 schools across 9 SBAC states. Table 3.1 presents the demographic distributions of race, sex, achievement level, and state student participation in the original unweighted study sample. Table 3.2 presents the distributions of the student population from 9 states who took the Spring 2019 SBAC summative assessments. Since the unweighted data are different from the SBAC student 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 SBAC student population distributions. The analyses in this study were therefore conducted based on the weighted sample.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
	Total N	17,349	17,013	17,538	16,029	15,414	13,865
Race	AI/AN	6.3	6.5	6.9	7.5	8.4	8.0
	Asian	5.9	5.9	6.1	5.4	5.3	5.8
	Black	7.2	7.4	6.8	6.7	6.9	6.8
	Hispanic	32.1	32.3	28.5	29.3	29.1	28.5
	Multi-Race	5.8	5.5	5.5	5.0	4.9	4.4
	NH/PI	1.7	1.6	1.8	1.8	2.0	2.3
	White	41.0	40.9	44.5	44.2	43.3	44.3
Sex	Female	49.2	49.2	48.8	48.8	48.5	48.9
	Male	50.8	50.8	51.2	51.2	51.5	51.1
Achievement Level	Level 1	30.1	33.3	28.3	25.8	24.9	23.7
	Level 2	24.8	20.8	20.2	27.3	24.5	27.1
	Level 3	22.0	23.3	29.2	31.5	34.5	33.7
	Level 4	23.1	22.6	22.3	15.4	16.1	15.5
State Student Participation	California	42.4	41.3	37.6	36.0	36.5	36.1
	Connecticut	0.7	0.6	0.6	0.4	0.8	0.7
	Delaware	0.4	0.5	1.3	1.5	1.4	1.5
	Hawaii	0.1	0.1	0.1	0.1	0.0	0.1
	Idaho	0.9	3.4	3.4	4.2	3.3	3.7
	Nevada	17.3	16.1	17.6	19.1	19.2	18.9
	Oregon	11.3	11.8	10.4	8.2	8.1	7.6
	South Dakota	16.8	17.2	16.4	17.5	17.7	18.1
	Washington	10.1	9.1	12.7	13.0	13.0	13.3

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Mathematics							
	Total N	18,496	18,616	19,276	17,857	17,371	14,981
Race	AI/AN	6.0	6.0	6.4	6.1	7.0	6.7
	Asian	6.0	6.6	6.9	5.7	6.6	5.9
	Black	8.0	8.3	7.6	6.2	6.1	6.1
	Hispanic	30.1	29.7	26.9	28.1	26.9	28.4
	Multi-Race	6.3	6.2	6.1	6.0	5.9	5.4
	NH/PI	1.4	1.5	1.7	1.2	1.7	1.5
	White	42.1	41.8	44.4	46.7	45.8	46.0
Sex	Female	49.1	49.2	48.7	48.7	48.4	48.5
	Male	50.9	50.8	51.3	51.3	51.6	51.5
Achievement Level	Level 1	27.8	25.0	33.5	32.1	31.9	37.1
	Level 2	23.6	31.7	27.6	29.2	25.8	23.4
	Level 3	28.	26.0	18.3	19.4	21.6	17.5
	Level 4	20.6	17.3	20.6	19.3	20.6	22.0
State Student Participation	California	38.0	37.4	34.9	29.1	32.2	31.0
	Connecticut	0.7	0.6	0.5	0.4	0.7	0.7
	Delaware	0.3	0.4	1.2	1.4	1.3	1.4
	Hawaii	0.1	0.1	0.1	0.1	0.0	0.1
	Idaho	0.8	0.6	0.9	3.7	2.9	3.4
	Nevada	13.7	14.8	16.0	17.6	17.3	17.0
	Oregon	18.3	18.6	17.4	18.3	16.6	17.5
	South Dakota	16.0	15.7	14.8	15.8	15.7	15.9
	Washington	12.2	11.8	14.2	13.6	13.3	13.0

Note. AI/AN = American Indian/Alaska Native; NH/PI = Native Hawaiian or Other Pacific Islander.

Table 3.2. Spring 2019 SBAC Linking Study Sample Student Population Demographics

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA							
	Total N	698,462	694,712	724,149	726,791	733,493	717,832
Race	AI/AN	0.8	0.9	0.9	0.9	0.9	0.9
	Asian	8.1	7.9	8.2	8.1	8.2	8.5
	Black	5.8	5.9	5.9	5.8	5.8	5.8
	Hispanic	44.2	44.3	44.4	44.5	44.8	44.1
	Multi-Race	5.6	5.4	5.2	5.0	4.8	4.4
	NH/PI	2.2	2.2	2.3	2.3	2.5	2.7
	White	32.7	33.0	32.7	33.0	32.7	33.2
Sex	Female	49.0	48.8	48.7	48.8	49.0	48.9
	Male	51.0	51.2	51.3	51.2	51.0	51.1
Achievement Level	Level 1	26.9	29.9	26.7	24.1	24.7	24.1
	Level 2	23.4	19.3	19.6	24.5	22.1	24.6

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
	Level 3	22.7	23.1	29.1	32.0	34.4	33.6
	Level 4	27.0	27.8	24.6	19.3	18.9	17.7
State Student Participation	California	63.4	62.7	62.8	62.9	64.3	64.3
	Connecticut	5.2	5.4	5.3	5.4	5.3	5.5
	Delaware	1.5	1.5	1.5	1.5	1.4	1.4
	Hawaii	2.0	1.6	2.0	1.9	1.8	1.7
	Idaho	3.3	3.4	3.4	3.4	3.3	3.3
	Nevada	5.2	5.3	5.3	5.4	5.1	5.1
	Oregon	6.1	6.3	6.2	6.1	5.9	5.8
	South Dakota	1.6	1.6	1.6	1.6	1.5	1.5
	Washington	11.8	12.2	12.0	11.8	11.4	11.3
Mathematics							
	Total N	700,790	696,880	725,859	728,323	734,697	718,210
Race	AI/AN	0.8	0.9	0.9	0.9	0.9	0.9
	Asian	8.2	8.0	8.2	8.2	8.2	8.6
	Black	5.8	5.9	5.9	5.8	5.8	5.8
	Hispanic	44.3	44.3	44.5	44.5	44.8	44.2
	Multi-Race	5.5	5.4	5.2	5.0	4.8	4.4
	NH/PI	2.2	2.2	2.3	2.3	2.5	2.7
	White	32.6	32.9	32.6	32.9	32.7	33.1
Sex	Female	49.0	48.8	48.7	48.8	48.9	48.9
	Male	51.0	51.2	51.3	51.2	51.1	51.1
Achievement Level	Level 1	25.8	23.3	33.1	32.6	34.2	38.7
	Level 2	22.7	29.9	26.7	27.6	25.8	23.1
	Level 3	28.1	25.9	17.7	19.4	19.7	16.7
	Level 4	23.3	20.9	22.5	20.5	20.2	21.5
State Student Participation	California	63.5	62.8	62.9	63.0	64.4	64.4
	Connecticut	5.2	5.4	5.3	5.4	5.3	5.5
	Delaware	1.5	1.5	1.5	1.5	1.4	1.4
	Hawaii	2.0	1.6	2.0	1.9	1.8	1.7
	Idaho	3.3	3.4	3.4	3.4	3.3	3.3
	Nevada	5.2	5.3	5.3	5.4	5.1	5.1
	Oregon	6.0	6.2	6.2	6.1	5.8	5.8
	South Dakota	1.6	1.6	1.6	1.6	1.5	1.5
	Washington	11.8	12.2	11.9	11.8	11.3	11.3

Note. AI/AN = American Indian/Alaska Native; NH/PI = Native Hawaiian or Other Pacific Islander.

Table 3.3. Linking Study Sample Demographics (Weighted)

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
	Total N	17,349	17,013	17,538	16,029	15,414	13,865
Race	AI/AN	0.8	0.9	0.9	0.9	0.9	0.9
	Asian	8.2	8.0	8.2	8.1	8.2	8.5
	Black	5.9	6.0	6.0	5.9	5.8	5.8
	Hispanic	44.4	44.5	44.5	44.6	44.9	44.3
	Multi-Race	5.6	5.4	5.3	5.1	4.8	4.4
	NH/PI	2.3	2.2	2.3	2.3	2.5	2.7
	White	32.8	33.2	32.8	33.1	32.9	33.3
Sex	Female	49.0	48.8	48.7	48.8	49.0	48.9
	Male	51.0	51.2	51.3	51.2	51.0	51.1
Achievement Level	Level 1	26.9	29.9	26.7	24.1	24.7	24.1
	Level 2	23.4	19.3	19.6	24.5	22.1	24.6
	Level 3	22.7	23.1	29.1	32.0	34.4	33.6
	Level 4	27.0	27.8	24.6	19.3	18.9	17.7
State Student Participation	California	63.4	62.7	62.8	62.9	64.3	64.3
	Connecticut	5.2	5.4	5.3	5.4	5.3	5.5
	Delaware	1.5	1.5	1.5	1.5	1.4	1.4
	Hawaii	2.0	1.6	2.0	1.9	1.8	1.7
	Idaho	3.3	3.4	3.4	3.4	3.3	3.3
	Nevada	5.2	5.3	5.3	5.4	5.1	5.1
	Oregon	6.1	6.3	6.2	6.1	5.9	5.8
	South Dakota	1.6	1.6	1.6	1.6	1.5	1.5
	Washington	11.8	12.2	12.0	11.8	11.4	11.3
Mathematics							
	Total N	18,496	18,616	19,276	17,857	17,371	14,981
Race	AI/AN	0.8	0.9	0.9	0.9	0.9	0.9
	Asian	8.2	8.1	8.3	8.2	8.3	8.6
	Black	5.9	5.9	5.9	5.9	5.8	5.8
	Hispanic	44.5	44.5	44.6	44.7	45.0	44.4
	Multi-Race	5.6	5.4	5.2	5.0	4.8	4.4
	NH/PI	2.3	2.2	2.3	2.3	2.5	2.7
	White	32.7	33.1	32.7	33.0	32.8	33.3
Sex	Female	49.0	48.8	48.7	48.8	48.9	48.9
	Male	51.0	51.2	51.3	51.2	51.1	51.1
Achievement Level	Level 1	25.8	23.3	33.1	32.6	34.3	38.7
	Level 2	22.8	29.9	26.7	27.6	25.8	23.1
	Level 3	28.1	25.9	17.7	19.4	19.7	16.7
	Level 4	23.3	20.9	22.5	20.5	20.2	21.5
State Student Participation	California	63.5	62.8	62.9	63.0	64.4	64.4
	Connecticut	5.2	5.4	5.3	5.4	5.3	5.5

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
	Delaware	1.5	1.5	1.5	1.5	1.4	1.4
	Hawaii	2.0	1.6	2.0	1.9	1.8	1.7
	Idaho	3.3	3.4	3.4	3.4	3.3	3.3
	Nevada	5.2	5.3	5.3	5.4	5.1	5.1
	Oregon	6.0	6.2	6.2	6.1	5.8	5.8
	South Dakota	1.6	1.6	1.6	1.6	1.5	1.5
	Washington	11.8	12.2	11.9	11.8	11.3	11.3

Note. AI/AN = American Indian/Alaska Native; NH/PI = Native Hawaiian or Other Pacific Islander.

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and SBAC test scores from Spring 2019, including the correlation coefficients (*r*) between them. The correlation coefficients between the scores range from 0.84 to 0.85 for ELA/reading and 0.88 to 0.92 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 SBAC summative assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	*r*	SBAC				MAP Growth			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA/Reading										
3	17,349	0.85	2426.7	90.9	2114	2702	197.4	16.5	138	251
4	17,013	0.85	2469.0	95.8	2131	2761	204.5	16.1	144	256
5	17,538	0.85	2505.5	99.2	2142	2787	210.2	16.0	145	266
6	16,029	0.85	2526.2	99.5	2135	2891	214.4	16.6	154	267
7	15,414	0.85	2551.1	103.8	1941	2879	216.6	17.3	151	266
8	13,865	0.84	2564.4	103.4	1225	2874	220.3	17.2	147	285
Mathematics										
3	18,496	0.88	2436.6	83.7	2097	2762	200.6	14.7	133	275
4	18,616	0.89	2475.3	85.0	2090	2796	210.2	16.0	131	275
5	19,276	0.90	2499.6	95.6	1623	2871	217.8	18.2	128	288
6	17,857	0.91	2516.1	111.9	1985	2924	221.1	18.4	157	317
7	17,371	0.92	2530.9	117.7	1232	3042	225.1	20.5	152	302
8	14,981	0.91	2544.4	125.4	2113	2993	230.0	21.4	153	304

Note. SD = standard deviation; Min. = minimum; Max. = maximum.

3.3. MAP Growth Cut Scores

Table 3.5 and Table 3.6 present the SBAC 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 SBAC spring summative 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 191 in the fall is likely to achieve Level 3 performance on the SBAC ELA summative test. A grade 3 student who obtained a MAP Growth reading RIT score of 196 in the winter is also likely to achieve Level 3 performance on the SBAC spring summative assessment. The winter cut score is higher than the fall cut score because growth is expected between fall and winter 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 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' score reports since they reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—ELA/Reading

SBAC ELA								
Grade	**Level 1**		**Level 2**		**Level 3**		**Level 4**	
3	≤2366		2367–2431		**2432**–2489		≥2490	
4	≤2415		2416–2472		**2473**–2532		≥2533	
5	≤2441		2442–2501		**2502**–2581		≥2582	
6	≤2456		2457–2530		**2531**–2617		≥2618	
7	≤2478		2479–2551		**2552**–2648		≥2649	
8	≤2486		2487–2566		**2567**–2667		≥2668	
MAP Growth Reading								
Grade	**Level 1**		**Level 2**		**Level 3**		**Level 4**	
	RIT	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**
Fall								
2	100–160	1–29	161–175	30–63	**176**–190	64–88	191–350	89–99
3	100–177	1–35	178–190	36–62	**191**–201	63–82	202–350	83–99
4	100–189	1–36	190–199	37–58	**200**–210	59–79	211–350	80–99
5	100–194	1–30	195–206	31–57	**207**–218	58–80	219–350	81–99
6	100–199	1–29	200–212	30–59	**213**–226	60–85	227–350	86–99
7	100–201	1–26	202–215	27–58	**216**–229	59–84	230–350	85–99
8	100–204	1–25	205–219	26–59	**220**–234	60–86	235–350	87–99
Winter								
2	100–167	1–30	168–182	31–63	**183**–196	64–87	197–350	88–99
3	100–182	1–34	183–195	35–62	**196**–206	63–82	207–350	83–99
4	100–193	1–37	194–203	38–59	**204**–213	60–78	214–350	79–99
5	100–197	1–30	198–208	31–55	**209**–220	56–79	221–350	80–99
6	100–201	1–29	202–214	30–59	**215**–227	60–84	228–350	85–99
7	100–203	1–27	204–216	28–57	**217**–230	58–84	231–350	85–99
8	100–206	1–27	207–220	28–58	**221**–235	59–86	236–350	87–99
Spring								
2	100–173	1–32	174–186	33–61	**187**–199	62–84	200–350	85–99
3	100–187	1–36	188–198	37–60	**199**–208	61–79	209–350	80–99
4	100–196	1–38	197–205	39–58	**206**–214	59–76	215–350	77–99
5	100–200	1–32	201–210	33–55	**211**–221	56–78	222–350	79–99
6	100–203	1–30	204–215	31–58	**216**–228	59–84	229–350	85–99
7	100–205	1–29	206–217	30–56	**218**–231	57–83	232–350	84–99
8	100–208	1–29	209–221	30–59	**222**–236	60–86	237–350	87–99

Note. Cut scores for fall and winter are derived from the spring cuts and growth norms based on the typical instructional weeks. Spring cut scores for grade 2 were derived from the grade 3 cuts using the growth norms. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.6. MAP Growth Cut Scores—Mathematics

SBAC Mathematics				
Grade	**Level 1**	**Level 2**	**Level 3**	**Level 4**
3	≤2380	2381–2435	**2436**–2500	≥2501
4	≤2410	2411–2484	**2485**–2548	≥2549
5	≤2454	2455–2527	**2528**–2578	≥2579
6	≤2472	2473–2551	**2552**–2609	≥2610
7	≤2483	2484–2566	**2567**–2634	≥2635
8	≤2503	2504–2585	**2586**–2652	≥2653

MAP Growth Mathematics								
Grade	**Level 1**		**Level 2**		**Level 3**		**Level 4**	
	RIT	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**
Fall								
2	100–163	1–27	164–176	28–60	**177**–191	61–88	192–350	89–99
3	100–177	1–34	178–187	35–59	**188**–199	60–84	200–350	85–99
4	100–189	1–32	190–204	33–68	**205**–216	69–89	217–350	90–99
5	100–201	1–39	202–216	40–74	**217**–225	75–88	226–350	89–99
6	100–206	1–41	207–219	42–72	**220**–229	73–88	230–350	89–99
7	100–211	1–37	212–226	38–71	**227**–238	72–89	239–350	90–99
8	100–219	1–45	220–233	46–73	**234**–245	74–89	246–350	90–99
Winter								
2	100–172	1–29	173–184	30–59	**185**–200	60–89	201–350	90–99
3	100–185	1–33	186–196	34–59	**197**–208	60–83	209–350	84–99
4	100–196	1–32	197–212	33–68	**213**–224	69–88	225–350	89–99
5	100–207	1–40	208–222	41–73	**223**–231	74–87	232–350	88–99
6	100–212	1–42	213–225	43–71	**226**–236	72–88	237–350	89–99
7	100–215	1–38	216–231	39–72	**232**–243	73–88	244–350	89–99
8	100–223	1–45	224–238	46–74	**239**–250	75–89	251–350	90–99
Spring								
2	100–179	1–31	180–190	32–58	**191**–204	59–85	205–350	86–99
3	100–192	1–35	193–202	36–58	**203**–214	59–81	215–350	82–99
4	100–202	1–34	203–217	35–66	**218**–229	67–86	230–350	87–99
5	103–211	1–40	212–226	41–71	**227**–235	72–85	236–350	86–99
6	102–216	1–42	217–229	43–69	**230**–240	70–86	241–350	87–99
7	105–218	1–39	219–233	40–69	**234**–245	70–86	246–350	87–99
8	105–226	1–45	227–240	46–72	**241**–252	73–87	253–350	88–99

Note. Cut scores for fall and winter are derived from the spring cuts and growth norms based on the typical instructional weeks. Spring cut scores for grade 2 were derived from the grade 3 cuts using the growth norms. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

3.4. Classification Accuracy

Table 3.7 presents the classification accuracy summary statistics, including the overall classification accuracy rates. These results indicate how well MAP Growth spring RIT scores predict proficiency on the SBAC summative tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rates range from 0.84 to 0.86 for ELA/reading and 0.87 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 SBAC summative assessment.

Although the results show that MAP Growth scores can be used to accurately classify students as likely to be proficient on the SBAC summative tests, there is a notable limitation to how these results should be used and interpreted. The SBAC 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 summative tests and vice versa.

Table 3.7. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy	Rate		Sensitivity	Specificity	Precision	AUC
		MAP Growth	SBAC		FP	FN				
ELA/Reading										
3	17,349	199	2432	0.86	0.16	0.12	0.88	0.84	0.84	0.94
4	17,013	206	2473	0.85	0.17	0.13	0.87	0.83	0.84	0.93
5	17,538	211	2502	0.85	0.17	0.13	0.87	0.83	0.86	0.93
6	16,029	216	2531	0.84	0.17	0.15	0.85	0.83	0.84	0.93
7	15,414	218	2552	0.84	0.16	0.15	0.85	0.84	0.86	0.93
8	13,865	222	2567	0.85	0.16	0.15	0.85	0.84	0.85	0.93
Mathematics										
3	18,496	201	2436	0.87	0.17	0.10	0.90	0.83	0.85	0.95
4	18,616	213	2485	0.87	0.12	0.14	0.86	0.88	0.86	0.95
5	19,276	224	2528	0.89	0.09	0.14	0.86	0.91	0.87	0.96
6	17,857	227	2552	0.89	0.09	0.12	0.88	0.91	0.86	0.96
7	17,371	232	2567	0.90	0.07	0.13	0.87	0.93	0.89	0.97
8	14,981	237	2586	0.91	0.08	0.12	0.88	0.92	0.87	0.97

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

3.5. Post-Hoc Analyses

A post-hoc analysis was conducted to evaluate the sensitivity of the results to different post-stratification weighting methods given that NWEA did not have data for 3 of the 12 SBAC states (i.e., Montana, Vermont, and Michigan).[5] Results were compared across three scenarios. One scenario involved student demographics and state student participation. A second used no post-stratification weighting and relied on sample data only. A third scenario used post-stratification weights for student demographics but not for state student participation. More specifically, cut scores and classification accuracy statistics derived from the following scenarios were compared: (1) the sample weighted to population data for the 9 participating states by race, sex, achievement level, and state student participation; (2) the unweighted sample; and (3) the sample weighted to population data for the 12 SBAC states from Spring 2019 by race, sex, and achievement level without considering state student participation. In the third scenario, population data were available for 3 states, but there were no corresponding sample data.

The comparison of cut scores among the different scenarios showed that any differences were within 1 RIT unit. Results from the first scenario are reported for this linking study because student participation for each state was considered to be an important characteristic of the target population and because the sample included data from these 9 states only. Although SBAC states not included in this study could use the results for predicting proficiency on the SBAC assessment, the accuracy of using the results for their students is unknown because no sample data existed for them in the linking procedure or the classification analysis study. However, the small differences across the three scenarios suggest that the cut scores in this study are suitably approximate for all SBAC states. This study provides context for predicting proficiency for the entire SBAC population, but the most accurate results for an individual state can be found in the state-specific SBAC linking studies.

3.6. Proficiency Projections

Table 3.8 and Table 3.9 present the estimated probability of achieving Level 3 performance on the SBAC summative test based on RIT scores from fall, winter, or spring. “Prob.” indicates the probability of obtaining proficient status on the SBAC summative test in the spring. For example, a grade 3 student who obtained a MAP Growth reading score of 192 in the fall has a 54% chance of reaching Level 3 or higher on the SBAC summative test.

[5] The 12 states included California, Connecticut, Delaware, Hawaii, Idaho, Michigan, Montana, Nevada, Oregon, South Dakota, Vermont, and Washington. The data collected from Michigan could not be used in this study because the state scale scores are not on the SBAC scale. As a result, Michigan should refer to its own linking study results.

Table 3.8. Proficiency Projection Based on RIT Scores—ELA/Reading

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
2	5	187	142	No	<0.01	149	No	<0.01	153	No	<0.01
	10	187	148	No	<0.01	155	No	<0.01	159	No	<0.01
	15	187	152	No	0.01	159	No	0.01	164	No	<0.01
	20	187	156	No	0.03	162	No	0.02	167	No	<0.01
	25	187	159	No	0.05	165	No	0.03	170	No	<0.01
	30	187	161	No	0.07	168	No	0.06	173	No	<0.01
	35	187	163	No	0.11	170	No	0.09	175	No	<0.01
	40	187	166	No	0.16	172	No	0.14	177	No	<0.01
	45	187	168	No	0.22	175	No	0.2	180	No	0.02
	50	187	170	No	0.29	177	No	0.27	182	No	0.08
	55	187	172	No	0.33	179	No	0.36	184	No	0.2
	60	187	174	No	0.41	181	No	0.41	186	No	0.39
	65	187	177	Yes	0.54	183	Yes	0.5	188	Yes	0.61
	70	187	179	Yes	0.59	186	Yes	0.64	191	Yes	0.87
	75	187	182	Yes	0.71	188	Yes	0.73	193	Yes	0.96
	80	187	184	Yes	0.78	191	Yes	0.8	196	Yes	0.99
	85	187	188	Yes	0.87	194	Yes	0.89	200	Yes	>0.99
	90	187	192	Yes	0.94	199	Yes	0.95	204	Yes	>0.99
	95	187	198	Yes	0.98	205	Yes	0.99	210	Yes	>0.99
3	5	199	155	No	<0.01	160	No	<0.01	164	No	<0.01
	10	199	161	No	<0.01	167	No	<0.01	171	No	<0.01
	15	199	166	No	0.01	171	No	<0.01	175	No	<0.01
	20	199	169	No	0.02	175	No	0.02	179	No	<0.01
	25	199	172	No	0.04	178	No	0.03	182	No	<0.01
	30	199	175	No	0.06	180	No	0.05	184	No	<0.01
	35	199	178	No	0.11	183	No	0.09	187	No	<0.01
	40	199	180	No	0.16	185	No	0.12	189	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	45	199	182	No	0.18	188	No	0.2	192	No	0.02
	50	199	185	No	0.29	190	No	0.27	194	No	0.08
	55	199	187	No	0.37	192	No	0.36	196	No	0.2
	60	199	189	No	0.46	194	No	0.41	198	No	0.39
	65	199	192	Yes	0.54	197	Yes	0.55	201	Yes	0.72
	70	199	194	Yes	0.63	199	Yes	0.64	203	Yes	0.87
	75	199	197	Yes	0.71	202	Yes	0.76	206	Yes	0.98
	80	199	200	Yes	0.82	205	Yes	0.83	209	Yes	>0.99
	85	199	204	Yes	0.89	209	Yes	0.92	213	Yes	>0.99
	90	199	208	Yes	0.95	213	Yes	0.96	217	Yes	>0.99
	95	199	215	Yes	0.99	220	Yes	>0.99	224	Yes	>0.99
4	5	206	166	No	<0.01	170	No	<0.01	173	No	<0.01
	10	206	173	No	<0.01	177	No	<0.01	179	No	<0.01
	15	206	177	No	0.01	181	No	0.01	184	No	<0.01
	20	206	181	No	0.02	184	No	0.01	187	No	<0.01
	25	206	184	No	0.05	187	No	0.03	190	No	<0.01
	30	206	186	No	0.06	190	No	0.07	193	No	<0.01
	35	206	189	No	0.12	193	No	0.1	195	No	<0.01
	40	206	191	No	0.17	195	No	0.16	198	No	0.01
	45	206	194	No	0.24	197	No	0.23	200	No	0.04
	50	206	196	No	0.32	199	No	0.31	202	No	0.13
	55	206	198	No	0.41	202	No	0.4	204	No	0.28
	60	206	200	Yes	0.5	204	Yes	0.5	207	Yes	0.61
	65	206	203	Yes	0.59	206	Yes	0.6	209	Yes	0.8
	70	206	205	Yes	0.68	209	Yes	0.73	211	Yes	0.92
	75	206	208	Yes	0.8	211	Yes	0.77	214	Yes	0.99
	80	206	211	Yes	0.86	214	Yes	0.87	217	Yes	>0.99
	85	206	215	Yes	0.94	218	Yes	0.95	220	Yes	>0.99

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	90	206	219	Yes	0.97	222	Yes	0.98	225	Yes	>0.99
	95	206	226	Yes	>0.99	229	Yes	>0.99	231	Yes	>0.99
5	5	211	175	No	<0.01	178	No	<0.01	180	No	<0.01
	10	211	181	No	<0.01	184	No	<0.01	186	No	<0.01
	15	211	186	No	0.01	189	No	0.01	191	No	<0.01
	20	211	189	No	0.03	192	No	0.03	194	No	<0.01
	25	211	192	No	0.06	195	No	0.05	197	No	<0.01
	30	211	195	No	0.11	197	No	0.08	199	No	<0.01
	35	211	197	No	0.16	200	No	0.15	202	No	0.01
	40	211	199	No	0.2	202	No	0.22	204	No	0.02
	45	211	201	No	0.27	204	No	0.26	206	No	0.08
	50	211	204	No	0.4	206	No	0.35	208	No	0.2
	55	211	206	No	0.45	209	Yes	0.5	211	Yes	0.5
	60	211	208	Yes	0.55	211	Yes	0.55	213	Yes	0.72
	65	211	210	Yes	0.64	213	Yes	0.65	215	Yes	0.87
	70	211	213	Yes	0.73	215	Yes	0.74	217	Yes	0.96
	75	211	215	Yes	0.8	218	Yes	0.85	220	Yes	0.99
	80	211	218	Yes	0.89	221	Yes	0.92	223	Yes	>0.99
	85	211	222	Yes	0.94	224	Yes	0.96	226	Yes	>0.99
	90	211	226	Yes	0.98	228	Yes	0.99	230	Yes	>0.99
	95	211	232	Yes	>0.99	235	Yes	>0.99	237	Yes	>0.99
6	5	216	181	No	<0.01	183	No	<0.01	185	No	<0.01
	10	216	187	No	<0.01	189	No	<0.01	191	No	<0.01
	15	216	191	No	0.01	193	No	0.01	195	No	<0.01
	20	216	195	No	0.03	197	No	0.02	198	No	<0.01
	25	216	198	No	0.06	199	No	0.04	201	No	<0.01
	30	216	200	No	0.07	202	No	0.06	203	No	<0.01
	35	216	202	No	0.11	204	No	0.1	206	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	40	216	205	No	0.2	206	No	0.16	208	No	0.01
	45	216	207	No	0.23	209	No	0.26	210	No	0.04
	50	216	209	No	0.31	211	No	0.31	212	No	0.13
	55	216	211	No	0.4	213	No	0.4	214	No	0.28
	60	216	213	Yes	0.5	215	Yes	0.5	216	Yes	0.5
	65	216	215	Yes	0.55	217	Yes	0.6	218	Yes	0.72
	70	216	218	Yes	0.69	219	Yes	0.69	221	Yes	0.92
	75	216	220	Yes	0.77	222	Yes	0.81	223	Yes	0.98
	80	216	223	Yes	0.86	225	Yes	0.9	226	Yes	>0.99
	85	216	226	Yes	0.93	228	Yes	0.95	229	Yes	>0.99
	90	216	231	Yes	0.98	232	Yes	0.98	233	Yes	>0.99
	95	216	237	Yes	>0.99	238	Yes	>0.99	239	Yes	>0.99
7	5	218	185	No	<0.01	186	No	<0.01	187	No	<0.01
	10	218	191	No	0.01	192	No	<0.01	193	No	<0.01
	15	218	195	No	0.02	196	No	0.01	197	No	<0.01
	20	218	198	No	0.03	200	No	0.03	201	No	<0.01
	25	218	201	No	0.06	202	No	0.04	203	No	<0.01
	30	218	204	No	0.12	205	No	0.09	206	No	<0.01
	35	218	206	No	0.15	207	No	0.14	208	No	<0.01
	40	218	208	No	0.21	210	No	0.23	211	No	0.02
	45	218	210	No	0.28	212	No	0.27	213	No	0.08
	50	218	212	No	0.36	214	No	0.36	215	No	0.2
	55	218	214	No	0.41	216	No	0.45	217	No	0.39
	60	218	217	Yes	0.55	218	Yes	0.55	219	Yes	0.61
	65	218	219	Yes	0.64	220	Yes	0.64	221	Yes	0.8
	70	218	221	Yes	0.72	223	Yes	0.77	224	Yes	0.96
	75	218	224	Yes	0.82	225	Yes	0.84	226	Yes	0.99
	80	218	226	Yes	0.88	228	Yes	0.91	229	Yes	>0.99

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	85	218	230	Yes	0.95	231	Yes	0.96	232	Yes	>0.99
	90	218	234	Yes	0.98	235	Yes	0.99	237	Yes	>0.99
	95	218	240	Yes	>0.99	241	Yes	>0.99	243	Yes	>0.99
8	5	222	188	No	<0.01	189	No	<0.01	190	No	<0.01
	10	222	194	No	<0.01	195	No	<0.01	196	No	<0.01
	15	222	198	No	0.02	199	No	0.01	200	No	<0.01
	20	222	201	No	0.03	203	No	0.03	203	No	<0.01
	25	222	204	No	0.06	205	No	0.04	206	No	<0.01
	30	222	207	No	0.09	208	No	0.08	209	No	<0.01
	35	222	209	No	0.13	210	No	0.12	211	No	<0.01
	40	222	211	No	0.18	213	No	0.17	213	No	0.01
	45	222	214	No	0.25	215	No	0.24	216	No	0.04
	50	222	216	No	0.33	217	No	0.32	218	No	0.13
	55	222	218	No	0.41	219	No	0.41	220	No	0.28
	60	222	220	Yes	0.5	221	Yes	0.5	222	Yes	0.5
	65	222	222	Yes	0.59	223	Yes	0.59	224	Yes	0.72
	70	222	225	Yes	0.71	226	Yes	0.72	227	Yes	0.92
	75	222	227	Yes	0.79	228	Yes	0.8	229	Yes	0.98
	80	222	230	Yes	0.87	231	Yes	0.88	232	Yes	>0.99
	85	222	233	Yes	0.93	235	Yes	0.95	236	Yes	>0.99
	90	222	238	Yes	0.98	239	Yes	0.98	240	Yes	>0.99
	95	222	244	Yes	>0.99	245	Yes	>0.99	246	Yes	>0.99

Table 3.9. Proficiency Projection Based on RIT Scores—Mathematics

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
2	5	191	147	No	<0.01	155	No	<0.01	161	No	<0.01
	10	191	153	No	0.01	161	No	<0.01	167	No	<0.01
	15	191	157	No	0.01	165	No	0.01	171	No	<0.01
	20	191	160	No	0.03	168	No	0.02	174	No	<0.01
	25	191	162	No	0.06	171	No	0.04	177	No	<0.01
	30	191	165	No	0.09	173	No	0.07	179	No	<0.01
	35	191	167	No	0.14	175	No	0.12	181	No	<0.01
	40	191	169	No	0.2	177	No	0.18	183	No	0.01
	45	191	171	No	0.27	179	No	0.21	185	No	0.04
	50	191	173	No	0.36	181	No	0.3	187	No	0.13
	55	191	175	No	0.4	183	No	0.4	189	No	0.28
	60	191	177	Yes	0.5	185	Yes	0.5	192	Yes	0.61
	65	191	179	Yes	0.6	187	Yes	0.6	194	Yes	0.8
	70	191	181	Yes	0.69	189	Yes	0.65	196	Yes	0.92
	75	191	183	Yes	0.77	192	Yes	0.79	198	Yes	0.98
	80	191	186	Yes	0.84	194	Yes	0.86	201	Yes	>0.99
	85	191	189	Yes	0.91	197	Yes	0.93	204	Yes	>0.99
	90	191	193	Yes	0.96	201	Yes	0.97	208	Yes	>0.99
	95	191	198	Yes	0.99	207	Yes	>0.99	214	Yes	>0.99
3	5	203	158	No	<0.01	166	No	<0.01	171	No	<0.01
	10	203	164	No	<0.01	172	No	<0.01	177	No	<0.01
	15	203	168	No	0.01	176	No	<0.01	181	No	<0.01
	20	203	171	No	0.01	179	No	0.01	185	No	<0.01
	25	203	174	No	0.04	182	No	0.03	188	No	<0.01
	30	203	176	No	0.06	184	No	0.05	190	No	<0.01
	35	203	178	No	0.1	186	No	0.08	193	No	<0.01
	40	203	180	No	0.15	189	No	0.17	195	No	0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	45	203	182	No	0.22	191	No	0.24	197	No	0.04
	50	203	184	No	0.3	193	No	0.29	199	No	0.13
	55	203	186	No	0.4	195	No	0.39	201	No	0.28
	60	203	188	Yes	0.5	197	Yes	0.5	203	Yes	0.5
	65	203	190	Yes	0.6	199	Yes	0.61	206	Yes	0.8
	70	203	192	Yes	0.7	201	Yes	0.71	208	Yes	0.92
	75	203	195	Yes	0.81	204	Yes	0.83	211	Yes	0.99
	80	203	197	Yes	0.87	206	Yes	0.89	213	Yes	>0.99
	85	203	200	Yes	0.94	210	Yes	0.95	217	Yes	>0.99
	90	203	204	Yes	0.98	214	Yes	0.99	221	Yes	>0.99
	95	203	210	Yes	>0.99	220	Yes	>0.99	227	Yes	>0.99
4	5	218	171	No	<0.01	176	No	<0.01	180	No	<0.01
	10	218	177	No	<0.01	183	No	<0.01	187	No	<0.01
	15	218	181	No	<0.01	187	No	<0.01	191	No	<0.01
	20	218	184	No	<0.01	190	No	<0.01	195	No	<0.01
	25	218	186	No	0.01	193	No	<0.01	198	No	<0.01
	30	218	189	No	0.02	196	No	0.01	201	No	<0.01
	35	218	191	No	0.04	198	No	0.02	203	No	<0.01
	40	218	193	No	0.07	200	No	0.04	206	No	<0.01
	45	218	195	No	0.11	202	No	0.08	208	No	<0.01
	50	218	197	No	0.16	204	No	0.13	210	No	0.01
	55	218	199	No	0.23	207	No	0.24	212	No	0.04
	60	218	201	No	0.31	209	No	0.28	215	No	0.2
	65	218	203	No	0.4	211	No	0.39	217	No	0.39
	70	218	205	Yes	0.5	213	Yes	0.5	220	Yes	0.72
	75	218	208	Yes	0.65	216	Yes	0.67	222	Yes	0.87
	80	218	210	Yes	0.73	219	Yes	0.8	225	Yes	0.98
	85	218	214	Yes	0.87	222	Yes	0.9	229	Yes	>0.99

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	90	218	217	Yes	0.93	226	Yes	0.97	233	Yes	>0.99
	95	218	223	Yes	0.99	232	Yes	>0.99	240	Yes	>0.99
5	5	227	180	No	<0.01	183	No	<0.01	186	No	<0.01
	10	227	185	No	<0.01	189	No	<0.01	192	No	<0.01
	15	227	189	No	<0.01	194	No	<0.01	197	No	<0.01
	20	227	193	No	<0.01	197	No	<0.01	200	No	<0.01
	25	227	195	No	<0.01	200	No	<0.01	204	No	<0.01
	30	227	198	No	0.01	203	No	<0.01	206	No	<0.01
	35	227	200	No	0.01	205	No	0.01	209	No	<0.01
	40	227	202	No	0.03	207	No	0.01	211	No	<0.01
	45	227	204	No	0.05	210	No	0.03	214	No	<0.01
	50	227	206	No	0.08	212	No	0.06	216	No	<0.01
	55	227	208	No	0.12	214	No	0.1	218	No	0.01
	60	227	210	No	0.19	216	No	0.16	221	No	0.04
	65	227	212	No	0.26	219	No	0.28	223	No	0.13
	70	227	215	No	0.4	221	No	0.39	226	No	0.39
	75	227	217	Yes	0.5	224	Yes	0.56	228	Yes	0.61
	80	227	220	Yes	0.65	226	Yes	0.67	232	Yes	0.92
	85	227	223	Yes	0.78	230	Yes	0.84	235	Yes	0.99
	90	227	227	Yes	0.9	234	Yes	0.94	240	Yes	>0.99
	95	227	233	Yes	0.99	240	Yes	0.99	246	Yes	>0.99
6	5	230	184	No	<0.01	187	No	<0.01	190	No	<0.01
	10	230	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	230	194	No	<0.01	198	No	<0.01	201	No	<0.01
	20	230	197	No	<0.01	201	No	<0.01	205	No	<0.01
	25	230	199	No	<0.01	204	No	<0.01	208	No	<0.01
	30	230	202	No	0.01	207	No	0.01	211	No	<0.01
	35	230	204	No	0.02	209	No	0.01	213	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	40	230	206	No	0.04	212	No	0.03	216	No	<0.01
	45	230	208	No	0.07	214	No	0.05	218	No	<0.01
	50	230	210	No	0.11	216	No	0.09	220	No	<0.01
	55	230	212	No	0.16	218	No	0.14	223	No	0.02
	60	230	214	No	0.23	220	No	0.21	225	No	0.08
	65	230	216	No	0.31	223	No	0.34	227	No	0.2
	70	230	219	No	0.45	225	No	0.45	230	Yes	0.5
	75	230	221	Yes	0.6	228	Yes	0.61	233	Yes	0.8
	80	230	224	Yes	0.73	231	Yes	0.75	236	Yes	0.96
	85	230	227	Yes	0.84	234	Yes	0.86	239	Yes	0.99
	90	230	231	Yes	0.93	238	Yes	0.95	244	Yes	>0.99
	95	230	237	Yes	0.99	245	Yes	>0.99	251	Yes	>0.99
7	5	234	189	No	<0.01	191	No	<0.01	192	No	<0.01
	10	234	195	No	<0.01	197	No	<0.01	199	No	<0.01
	15	234	199	No	<0.01	202	No	<0.01	204	No	<0.01
	20	234	203	No	<0.01	206	No	<0.01	208	No	<0.01
	25	234	206	No	0.01	209	No	<0.01	211	No	<0.01
	30	234	208	No	0.01	211	No	<0.01	214	No	<0.01
	35	234	211	No	0.03	214	No	0.01	216	No	<0.01
	40	234	213	No	0.04	216	No	0.02	219	No	<0.01
	45	234	215	No	0.07	219	No	0.06	221	No	<0.01
	50	234	217	No	0.11	221	No	0.1	224	No	<0.01
	55	234	219	No	0.17	223	No	0.15	226	No	0.01
	60	234	222	No	0.27	226	No	0.26	229	No	0.08
	65	234	224	No	0.36	228	No	0.35	231	No	0.2
	70	234	226	No	0.45	231	No	0.45	234	Yes	0.5
	75	234	229	Yes	0.6	233	Yes	0.55	237	Yes	0.8
	80	234	232	Yes	0.73	236	Yes	0.7	240	Yes	0.96

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
	85	234	235	Yes	0.83	240	Yes	0.85	244	Yes	>0.99
	90	234	239	Yes	0.93	245	Yes	0.96	249	Yes	>0.99
	95	234	246	Yes	0.99	251	Yes	0.99	256	Yes	>0.99
8	5	241	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	241	199	No	<0.01	201	No	<0.01	203	No	<0.01
	15	241	203	No	<0.01	206	No	<0.01	208	No	<0.01
	20	241	207	No	<0.01	210	No	<0.01	212	No	<0.01
	25	241	210	No	<0.01	213	No	<0.01	215	No	<0.01
	30	241	212	No	0.01	216	No	<0.01	218	No	<0.01
	35	241	215	No	0.01	219	No	0.01	221	No	<0.01
	40	241	217	No	0.03	221	No	0.02	224	No	<0.01
	45	241	220	No	0.05	224	No	0.04	226	No	<0.01
	50	241	222	No	0.08	226	No	0.07	229	No	<0.01
	55	241	224	No	0.13	228	No	0.1	231	No	<0.01
	60	241	227	No	0.21	231	No	0.19	234	No	0.02
	65	241	229	No	0.28	233	No	0.26	237	No	0.13
	70	241	232	No	0.41	236	No	0.4	239	No	0.28
	75	241	234	Yes	0.5	239	Yes	0.5	242	Yes	0.61
	80	241	237	Yes	0.63	242	Yes	0.65	246	Yes	0.92
	85	241	241	Yes	0.79	246	Yes	0.81	250	Yes	0.99
	90	241	246	Yes	0.92	251	Yes	0.93	255	Yes	>0.99
	95	241	252	Yes	0.98	258	Yes	0.99	262	Yes	>0.99

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