

# **Linking Study Report: Predicting Performance on the California Smarter Balanced Summative Assessments based on NWEA MAP Growth Scores**

March 2021

NWEA Psychometric Solutions





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## Executive Summary

To predict student achievement on the California Smarter Balanced Assessment Consortium (CA SBAC) summative assessments in Grades 3–8 and 11 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 CA SBAC achievement levels. With this information, educators can identify students at risk of failing to meet state proficiency standards early in the year and provide tailored educational interventions.<sup>1</sup> The linking study has been updated since the previous SBAC version published in June 2017 based on multiple states’ data to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020) and to report the results for California only.

Table E.1 presents the CA 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 CA SBAC Grade 3 ELA test is 2432. A Grade 3 student with a MAP Growth Reading RIT score of 189 in the fall is likely to meet proficiency on the CA SBAC ELA test in the spring, whereas a Grade 3 student with a MAP Growth Reading RIT score lower than 189 in the fall is in jeopardy of not meeting proficiency. MAP Growth cut scores for Grade 2 are also provided so educators can track early learners’ progress toward proficiency on the CA SBAC test by Grade 3. These cut scores were derived based on the Grade 3 cuts and the 2020 NWEA growth norms for the adjacent grade (i.e., Grades 2 to 3).

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

Assessment		Level 3 Cut Scores by Grade							
		2	3	4	5	6	7	8	11
<b>ELA/Reading</b>									
CA SBAC Spring		–	2432	2473	2502	2531	2552	2567	2583
MAP Growth	Fall	175	189	198	204	211	213	218	223
	Winter	184	196	204	209	214	216	221	224
	Spring	188	199	206	211	216	217	222	225
<b>Mathematics</b>									
CA SBAC Spring		–	2436	2485	2528	2552	2567	2586	2628
MAP Growth	Fall	175	188	202	214	218	224	232	245
	Winter	184	196	209	220	223	228	235	246
	Spring	189	201	213	224	226	231	237	247

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.

<sup>1</sup> This study provides MAP Growth cut scores that predict proficiency on the CA SBAC 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 are available in a separate report (He & Meyer, 2021).

### E.1. Assessment Overview

The CA SBAC Grades 3–8 and 11 ELA and Mathematics tests are California’s state summative assessments aligned to the Common Core State Standards (CCSS). Based on their test scores, students are placed into one of four achievement levels: *Level 1: Standard Not Met*, *Level 2: Standard Nearly Met*, *Level 3: Standard Met*, and *Level 4: Standard Exceeded*. The *Level 3* cut score demarks the minimum level of achievement considered to be proficient. MAP Growth tests are adaptive interim assessments aligned to state-specific content standards and administered in the fall, winter, and spring. Scores are reported on the RIT vertical scale with a range of 100–350.

### E.2. Linking Methods

Based on scores from the Spring 2019 test administration, the equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring CA SBAC achievement level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. MAP Growth fall and winter cut scores that predict proficiency on the spring CA SBAC test were then projected using the 2020 NWEA conditional growth norms that provide expected score gains across test administrations.

### E.3. Student Sample

Only students who took both the MAP Growth and CA SBAC assessments in Spring 2019 were included in the study sample. Table E.2 presents the weighted number of California students from 35 districts and 234 schools 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 state student population in terms of race, sex, and achievement level, 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 and 11 were conducted based on the weighted sample.

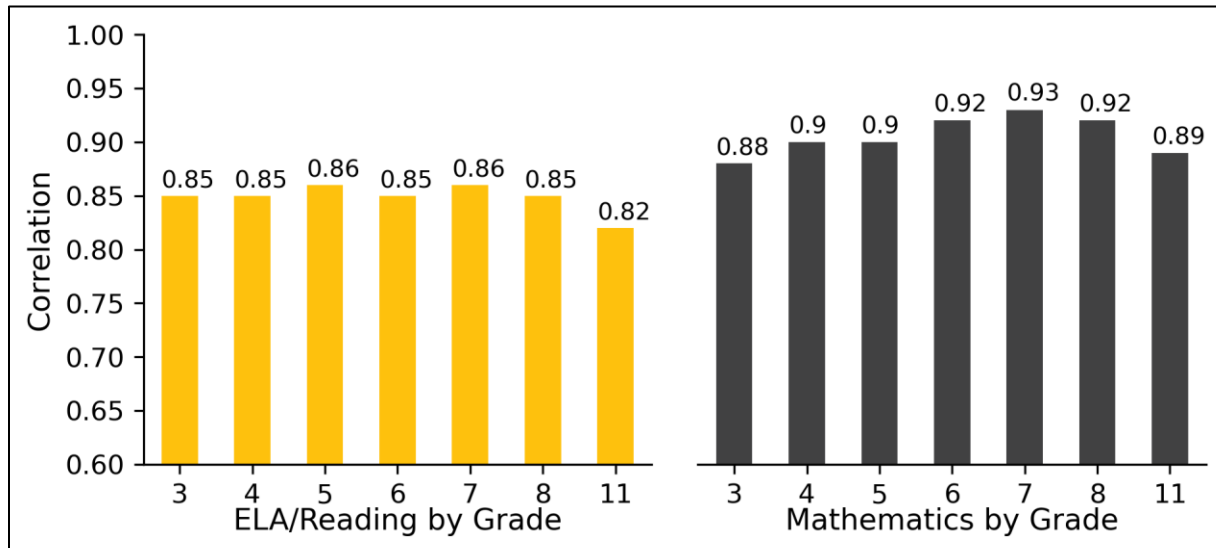
**Table E.2. Linking Study Sample**

Grade	#Students	
	ELA/Reading	Mathematics
3	7,350	7,024
4	7,025	6,956
5	6,588	6,717
6	5,774	5,203
7	5,628	5,591
8	5,002	4,647
11	1,324	1,530

#### E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and CA SBAC scores range from 0.82 to 0.93 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 CA SBAC summative assessments.

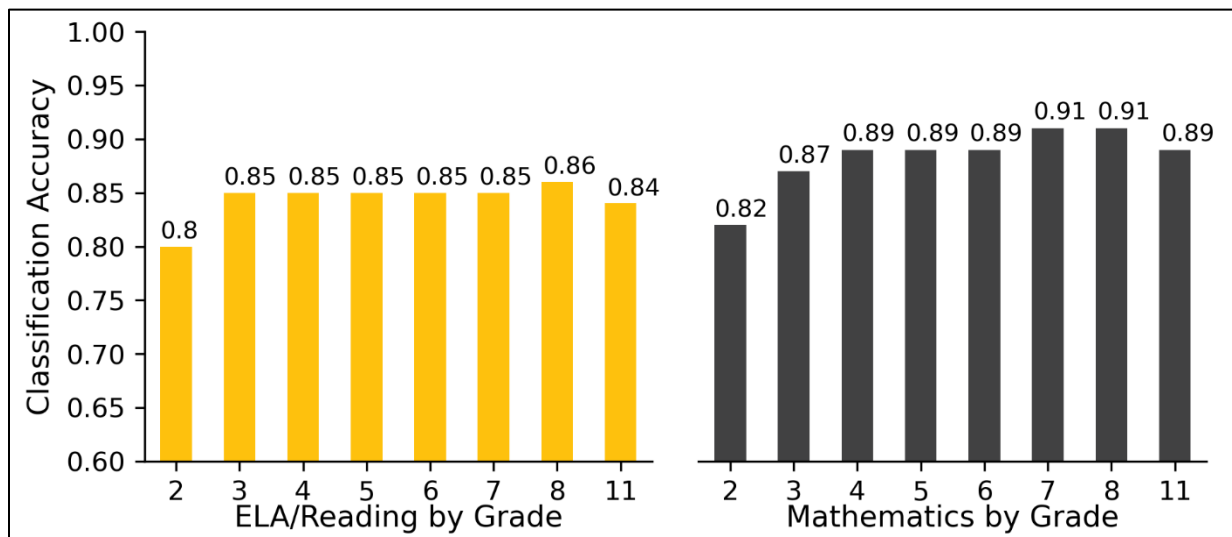
Figure E.1. Correlations between MAP Growth and CA SBAC Test Scores



#### 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 CA SBAC summative tests. For example, the MAP Growth Reading Grade 3 *Level 3* cut score has a 0.85 accuracy rate, meaning it accurately classified student achievement on the state test for 85% of the sample. The results range from 0.80 to 0.91 across content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the CA SBAC summative tests.

Figure E.2. Accuracy of MAP Growth Classifications



# 1. Introduction

## 1.1. Purpose of the Study

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

This document presents results from a linking study conducted by NWEA in March 2021 to statistically connect the scores of the California Smarter Balanced Assessment Consortium (CA SBAC) summative assessments in Grades 3–8 and 11 English Language Arts/Literacy (ELA) and Mathematics with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2019 term. The linking study has been updated since the previous SBAC version published in June 2017 based on multiple states' data to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020) and to report the results for California only. In this updated study, MAP Growth cut scores are also included for Grade 2 so educators can track early learners' progress toward proficiency on the CA 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 CA SBAC achievement levels using the equipercentile linking procedure for the spring results and the 2020 norms for the fall and winter results
4. Classification accuracy statistics to determine the degree to which MAP Growth accurately predicts student proficiency status on the CA SBAC summative tests
5. The probability of achieving grade-level proficiency on the CA SBAC assessment based on MAP Growth RIT scores from fall, winter, and spring using the 2020 norms

## 1.2. Assessment Overview

The CA SBAC Grades 3–8 and 11 ELA and Mathematics summative assessments are aligned to the Common Core State Standards (CCSS). 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: Standard Not Met*, *Level 2: Standard Nearly Met*, *Level 3: Standard Met*, and *Level 4: Standard Exceeded*. 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 to students in the norming group by associating the student's performance on the MAP Growth test, expressed as a RIT score, with a percentile ranking. Growth norms provide expected score gains across test administrations (e.g., the relative evaluation of a student's growth from fall to spring). The most recent norms study was conducted in 2020 (Thum & Kuhfeld, 2020).

## 2. Methods

### 2.1. Data Collection

This linking study is based on data from the Spring 2019 administrations of the MAP Growth and CA SBAC assessments. NWEA recruited California districts to participate in the study by sharing their student and score data for the target term. Districts also gave NWEA permission to access students' associated MAP Growth scores from the NWEA in-house database. Once state score information was received by NWEA, each student's state testing record was matched to their MAP Growth score by using the student's first and last names, date of birth, student ID, and other available identifying information. Only students who took both the MAP Growth and CA 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, and achievement level. 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 on 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:

- Calculate marginal distributions of race, sex, and achievement level for the sample and population.
- Calculate post-stratification weights with the rake function from the survey package in R (Lumley, 2019).
- Trim the weight if it is not in the range of 0.3 to 3.0.
- Apply the weights to the sample before conducting the linking study analyses.

### 2.3. MAP Growth Cut Scores

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

The MAP Growth spring cut scores for Grades 3–8 and 11 could be calculated using the equipercntile linking method because that data are directly connected to the CA SBAC spring data used in the study. The equipercntile 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., CA SBAC). Its equipercntile equivalent score on Test  $Y$  (e.g., MAP Growth),  $e_y(x)$ , can be obtained through a cumulative-distribution-based linking function defined in Equation 1:



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

where  $e_y(x)$  is the equipercentile equivalent of score  $x$  on CA SBAC on the scale of MAP Growth,  $P(x)$  is the percentile rank of a given score on CA SBAC, 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 11 and the fall, winter, and spring cut scores for Grade 2. Equation 2 was used to determine the previous term's or grade's MAP Growth score needed to reach the spring cut score, considering the expected growth associated with the previous RIT score:

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

where:

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

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

#### 2.4. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the CA 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 CA SBAC data for the *Level 3* cut score.

California students do not begin taking the CA SBAC assessment until Grade 3, so longitudinal data were collected for the Grade 3 cohort to link the CA SBAC summative assessment to MAP Growth for Grade 2 to calculate the classification accuracy statistics. To accomplish this, 2018–2019 CA SBAC Grade 3 results were linked to MAP Growth data from Grade 3 students in 2018–2019 and Grade 2 students in 2017–2018. In this way, the data came from the same cohort of students beginning when they were in Grade 2 and continuing through Grade 3.

**Table 2.1. Description of Classification Accuracy Summary Statistics**

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

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

## 2.5. Proficiency Projection

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

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

where:

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

Equation 4 was used to estimate the probability of a student achieving *Level 3* performance on the CA SBAC summative test based on their spring RIT score ( $RIT_{Spring}$ ):

$$Pr(\text{Achieving Level 3 in spring} | \text{spring RIT}) = \Phi \left( \frac{RIT_{Spring} - RIT_{SpringCut}}{SE} \right) \quad (4)$$

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

### 3. Results

#### 3.1. Study Sample

Only students who took both the MAP Growth and CA SBAC assessments in Spring 2019 were included in the study sample. Data used in this study were collected from 35 districts and 234 schools in California. Table 3.1 presents the demographic distributions of race, sex, and achievement level in the original unweighted study sample. Table 3.2 presents the distributions of the student population that took the Spring 2019 CA SBAC summative assessments. Since the unweighted data are different from the general CA SBAC 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 CA 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)**

Linking Study Sample (Unweighted)								
Demographic Subgroup		%Students by Grade						
		3	4	5	6	7	8	11
<b>ELA/Reading</b>								
Total N		7,350	7,026	6,588	5,774	5,629	5,002	1,324
Race*	AI/AN	11.8	12.7	14.8	17.0	19.0	18.2	0.4
	Asian	8.5	9.4	10.3	9.0	8.2	9.7	1.4
	Black	3.8	3.8	3.5	3.3	3.7	3.6	6.7
	Filipino	1.6	1.6	2.2	2.5	2.8	3.4	0.8
	Hispanic	50.1	47.4	40.6	40.1	37.3	35.0	70.4
	Multi-Race	1.2	1.3	1.8	1.7	1.3	1.1	4.2
	NH/PI	0.5	0.5	0.6	0.5	0.7	0.7	0.2
	White	22.5	23.3	26.1	25.9	27.0	28.2	15.9
Sex	Female	49.3	49.2	48.6	48.1	48.8	49.2	53.5
	Male	50.7	50.8	51.4	51.9	51.2	50.8	46.5
Achievement Level	Level 1	34.8	37.2	33.1	31.2	30.6	29.0	36.3
	Level 2	25.8	21.5	20.7	27.8	25.2	27.6	29.9
	Level 3	20.1	21.4	26.2	28.5	30.5	29.5	24.9
	Level 4	19.2	19.8	19.9	12.5	13.6	13.9	8.8
<b>Mathematics</b>								
Total N		7,024	6,955	6,718	5,203	5,592	4,647	1,530
Race*	AI/AN	12.4	12.7	14.7	16.5	17.7	17.0	1.2
	Asian	7.2	9.0	10.1	7.0	10.2	9.8	2.0
	Black	4.0	3.9	3.5	2.2	2.1	2.0	8.0
	Filipino	1.7	1.7	2.1	1.5	2.6	2.2	2.4
	Hispanic	50.1	47.6	41.6	44.4	37.1	41.4	65.3
	Multi-Race	1.1	1.3	1.7	1.7	1.8	1.8	3.7
	NH/PI	0.5	0.5	0.6	0.2	0.4	0.2	0.8
	White	23.1	23.2	25.7	26.4	28.2	25.5	16.7

Linking Study Sample (Unweighted)								
Demographic Subgroup		%Students by Grade						
		3	4	5	6	7	8	11
Sex	Female	49.4	49.3	48.7	47.8	49.3	49.1	51.9
	Male	50.6	50.7	51.3	52.2	50.7	50.9	48.1
Achievement Level	Level 1	33.1	29.1	38.9	39.9	38.8	46.4	75.1
	Level 2	23.6	32.6	27.1	27.9	24.9	21.4	17.9
	Level 3	25.8	22.3	15.2	16.1	17.8	13.7	5.8
	Level 4	17.4	16.1	18.8	16.2	18.5	18.5	1.2

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

**Table 3.2. Spring 2019 CA SBAC Student Population Demographics**

Spring 2019 CA SBAC Population								
Demographic Subgroup		%Students by Grade						
		3	4	5	6	7	8	11
<b>ELA</b>								
Total N		442,660	435,323	454,564	457,431	471,504	461,481	439,947
Race*	AI/AN	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Asian	9.3	9.2	9.3	9.2	9.2	9.5	9.8
	Black	5.3	5.3	5.4	5.3	5.3	5.3	5.3
	Filipino	2.0	2.0	2.0	2.0	2.2	2.4	2.9
	Hispanic	55.5	55.6	55.9	55.8	55.8	55.2	54.3
	Multi-Race	4.5	4.4	4.1	4.0	3.9	3.7	3.2
	NH/PI	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	White	22.6	22.5	22.3	22.6	22.6	22.9	23.5
Sex	Female	49.1	48.8	48.6	48.8	48.9	49.0	49.3
	Male	50.9	51.2	51.4	51.2	51.1	51.0	50.7
Achievement Level	Level 1	28.0	31.2	28.4	25.4	26.4	25.7	21.4
	Level 2	23.4	19.4	19.9	24.6	22.2	24.9	21.4
	Level 3	22.2	22.6	28.0	31.2	33.2	32.4	30.2
	Level 4	26.4	26.9	23.7	18.9	18.2	17.0	27.1
<b>Mathematics</b>								
Total N		444,866	437,414	456,345	459,016	472,985	462,238	438,107
Race*	AI/AN	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Asian	9.4	9.3	9.4	9.3	9.3	9.5	9.8
	Black	5.3	5.3	5.4	5.3	5.2	5.3	5.3
	Filipino	2.0	2.0	2.0	2.0	2.2	2.4	2.9
	Hispanic	55.5	55.7	55.9	55.9	55.9	55.3	54.3
	Multi-Race	4.5	4.4	4.1	4.0	3.8	3.7	3.2
	NH/PI	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	White	22.5	22.5	22.2	22.5	22.5	22.9	23.4
Sex	Female	49.1	48.7	48.6	48.8	48.9	49.0	49.2
	Male	50.9	51.3	51.4	51.2	51.1	51.0	50.8

Spring 2019 CA SBAC Population								
Demographic Subgroup		%Students by Grade						
		3	4	5	6	7	8	11
Achievement Level	Level 1	26.8	24.8	35.3	34.2	36.5	40.8	45.5
	Level 2	23.0	30.3	26.7	27.3	25.7	22.6	22.3
	Level 3	27.7	24.9	16.8	18.6	18.5	15.8	18.4
	Level 4	22.5	20.0	21.2	19.9	19.4	20.8	13.9

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

**Table 3.3. Linking Study Sample Demographics (Weighted)**

Linking Study Sample (Weighted)								
Demographic Subgroup		%Students by Grade						
		3	4	5	6	7	8	11
<b>ELA/Reading</b>								
	Total N	7,350	7,025	6,588	5,774	5,628	5,002	1,324
Race*	AI/AN	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Asian	9.3	9.2	9.3	9.2	9.2	9.5	9.8
	Black	5.3	5.3	5.4	5.3	5.3	5.3	5.3
	Filipino	2.0	2.0	2.0	2.0	2.2	2.4	2.9
	Hispanic	55.5	55.6	55.9	55.8	55.8	55.2	54.3
	Multi-Race	4.5	4.4	4.2	4.0	3.9	3.7	3.2
	NH/PI	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	White	22.6	22.5	22.3	22.6	22.6	22.9	23.5
Sex	Female	49.1	48.8	48.7	48.8	48.9	49.0	49.3
	Male	50.9	51.2	51.3	51.2	51.1	51.0	50.7
Achievement Level	Level 1	28.0	31.2	28.4	25.4	26.4	25.7	21.4
	Level 2	23.4	19.4	19.9	24.6	22.2	24.9	21.4
	Level 3	22.2	22.6	28.0	31.2	33.2	32.4	30.2
	Level 4	26.3	26.9	23.7	18.8	18.2	17.0	27.1
<b>Mathematics</b>								
	Total N	7,024	6,956	6,717	5,203	5,591	4,647	1,530
Race*	AI/AN	0.5	0.5	0.5	0.5	0.5	0.5	0.5
	Asian	9.4	9.3	9.4	9.3	9.3	9.5	9.8
	Black	5.3	5.3	5.3	5.3	5.2	5.3	5.3
	Filipino	2.0	2.0	2.0	2.0	2.3	2.4	2.9
	Hispanic	55.5	55.7	55.9	55.9	55.9	55.3	54.3
	Multi-Race	4.5	4.4	4.1	4.0	3.8	3.7	3.2
	NH/PI	0.4	0.4	0.5	0.5	0.5	0.5	0.5
	White	22.5	22.5	22.2	22.5	22.5	22.9	23.5
Sex	Female	49.1	48.7	48.6	48.8	48.9	49.0	49.2
	Male	50.9	51.3	51.4	51.2	51.1	51.0	50.8
Achievement Level	Level 1	26.8	24.7	35.3	34.2	36.5	40.8	45.5
	Level 2	23.0	30.3	26.7	27.3	25.7	22.6	22.3
	Level 3	27.7	24.9	16.8	18.6	18.5	15.8	18.4
	Level 4	22.5	20.0	21.2	19.9	19.4	20.8	13.8

\*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 CA SBAC test scores from Spring 2019, including the correlation coefficient ( $r$ ) between them. The coefficients between the scores range from 0.82 to 0.86 for ELA/reading and 0.88 to 0.93 for mathematics, indicating a strong relationship among the scores. This is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the CA SBAC summative assessments.

**Table 3.4. Descriptive Statistics of Test Scores**

Grade	N	$r$	CA SBAC*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
<b>ELA/Reading</b>										
3	7,350	0.85	2424.3	92.4	2114	2623	196.5	16.8	138	251
4	7,025	0.85	2465.6	97.4	2131	2663	203.6	16.4	145	246
5	6,588	0.86	2501.5	99.6	2201	2701	209.3	16.1	145	259
6	5,774	0.85	2523.8	99.8	2210	2724	213.8	16.5	154	267
7	5,628	0.86	2546.2	104.9	2258	2745	215.2	17.4	151	260
8	5,002	0.85	2560.4	103.4	2288	2769	219.2	17.2	153	285
11	1,324	0.82	2593.7	114.8	2299	2795	225.0	16.9	153	258
<b>Mathematics</b>										
3	7,024	0.88	2434.3	84.5	2189	2621	200.1	15.2	133	275
4	6,956	0.90	2472.3	85.9	2204	2659	209.6	16.5	136	273
5	6,717	0.90	2495.1	96.1	2219	2700	217.0	18.5	134	288
6	5,203	0.92	2513.5	111.0	2235	2748	220.6	18.8	157	317
7	5,591	0.93	2525.3	119.6	2250	2778	224.0	21.2	152	302
8	4,647	0.92	2538.7	127.4	2265	2802	228.8	22.1	153	304
11	1,530	0.89	2557.9	130.8	2280	2862	235.1	23.1	153	295

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

### 3.3. MAP Growth Cut Scores

Table 3.5 and Table 3.6 present the CA 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 CA SBAC spring assessment when MAP Growth is taken in the fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Reading RIT score of 189 in the fall is likely to achieve *Level/ 3* performance on the CA SBAC ELA test. A Grade 3 student who obtained a MAP Growth Reading RIT score of 199 in the spring is also likely to achieve *Level/ 3* performance on the CA SBAC summative 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 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**

CA SBAC ELA								
Grade	Level 1		Level 2		Level 3		Level 4	
3	2114–2366		2367–2431		<b>2432–2489</b>		2490–2623	
4	2131–2415		2416–2472		<b>2473–2532</b>		2533–2663	
5	2201–2441		2442–2501		<b>2502–2581</b>		2582–2701	
6	2210–2456		2457–2530		<b>2531–2617</b>		2618–2724	
7	2258–2478		2479–2551		<b>2552–2648</b>		2649–2745	
8	2288–2486		2487–2566		<b>2567–2667</b>		2668–2769	
11	2299–2492		2493–2582		<b>2583–2681</b>		2682–2795	
MAP Growth Reading*								
Grade	Level 1		Level 2		Level 3		Level 4	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
<b>Fall</b>								
2	100–159	1–20	160–174	21–56	<b>175–186</b>	57–82	187–350	83–99
3	100–175	1–25	176–188	26–55	<b>189–198</b>	56–76	199–350	77–99
4	100–187	1–29	188–197	30–52	<b>198–206</b>	53–72	207–350	73–99
5	100–193	1–25	194–203	26–48	<b>204–215</b>	49–75	216–350	76–99
6	100–196	1–20	197–210	21–51	<b>211–224</b>	52–81	225–350	82–99
7	100–199	1–18	200–212	19–46	<b>213–227</b>	47–79	228–350	80–99
8	100–203	1–20	204–217	21–49	<b>218–232</b>	50–80	233–350	81–99
11	100–210	1–23	211–222	24–48	<b>223–234</b>	49–73	235–350	74–99
<b>Winter</b>								
2	100–169	1–22	170–183	23–56	<b>184–194</b>	57–81	195–350	82–99
3	100–183	1–26	184–195	27–54	<b>196–204</b>	55–74	205–350	75–99
4	100–193	1–29	194–203	30–53	<b>204–211</b>	54–71	212–350	72–99
5	100–199	1–27	200–208	28–49	<b>209–219</b>	50–74	220–350	75–99
6	100–201	1–22	202–213	23–49	<b>214–226</b>	50–79	227–350	80–99
7	100–203	1–20	204–215	21–46	<b>216–229</b>	47–78	230–350	79–99
8	100–206	1–20	207–220	21–50	<b>221–233</b>	51–78	234–350	79–99
11	100–211	1–23	212–223	24–48	<b>224–235</b>	49–73	236–350	74–99
<b>Spring</b>								
2	100–174	1–24	175–187	25–55	<b>188–198</b>	56–80	199–350	81–99
3	100–187	1–28	188–198	29–54	<b>199–207</b>	55–74	208–350	75–99
4	100–196	1–31	197–205	32–52	<b>206–213</b>	53–70	214–350	71–99
5	100–201	1–28	202–210	29–49	<b>211–220</b>	50–72	221–350	73–99
6	100–203	1–23	204–215	24–51	<b>216–227</b>	52–77	228–350	78–99
7	100–205	1–22	206–216	23–46	<b>217–230</b>	47–77	231–350	78–99
8	100–208	1–22	209–221	23–50	<b>222–234</b>	51–78	235–350	79–99
11	100–212	1–25	213–224	26–50	<b>225–236</b>	51–74	237–350	75–99

\*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. Bolded numbers indicate the cut scores considered to be at least proficient for accountability purposes.

**Table 3.6. MAP Growth Cut Scores—Mathematics**

CA SBAC Mathematics								
Grade	Level 1		Level 2		Level 3		Level 4	
3	2189–2380		2381–2435		<b>2436–2500</b>		2501–2621	
4	2204–2410		2411–2484		<b>2485–2548</b>		2549–2659	
5	2219–2454		2455–2527		<b>2528–2578</b>		2579–2700	
6	2235–2472		2473–2551		<b>2552–2609</b>		2610–2748	
7	2250–2483		2484–2566		<b>2567–2634</b>		2635–2778	
8	2265–2503		2504–2585		<b>2586–2652</b>		2653–2802	
11	2280–2542		2543–2627		<b>2628–2717</b>		2718–2862	
MAP Growth Mathematics*								
Grade	Level 1		Level 2		Level 3		Level 4	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
<b>Fall</b>								
2	100–164	1–21	165–174	22–49	<b>175–186</b>	50–81	187–350	82–99
3	100–178	1–23	179–187	24–48	<b>188–198</b>	49–77	199–350	78–99
4	100–187	1–20	188–201	21–56	<b>202–211</b>	57–80	212–350	81–99
5	100–200	1–29	201–213	30–62	<b>214–221</b>	63–79	222–350	80–99
6	100–205	1–28	206–217	29–57	<b>218–227</b>	58–78	228–350	79–99
7	100–211	1–31	212–223	32–58	<b>224–234</b>	59–79	235–350	80–99
8	100–218	1–37	219–231	38–64	<b>232–241</b>	65–81	242–350	82–99
11	100–229	1–46	230–244	47–73	<b>245–259</b>	74–90	260–350	91–99
<b>Winter</b>								
2	100–173	1–21	174–183	22–49	<b>184–194</b>	50–79	195–350	80–99
3	100–186	1–24	187–195	25–48	<b>196–205</b>	49–75	206–350	76–99
4	100–193	1–20	194–208	21–57	<b>209–218</b>	58–80	219–350	81–99
5	100–206	1–30	207–219	31–62	<b>220–227</b>	63–79	228–350	80–99
6	100–210	1–29	211–222	30–57	<b>223–232</b>	58–78	233–350	79–99
7	100–214	1–30	215–227	31–58	<b>228–238</b>	59–79	239–350	80–99
8	100–221	1–37	222–234	38–63	<b>235–244</b>	64–80	245–350	81–99
11	100–231	1–46	232–245	47–72	<b>246–260</b>	73–90	261–350	91–99
<b>Spring</b>								
2	100–179	1–23	180–188	24–48	<b>189–199</b>	49–77	200–350	78–99
3	100–191	1–25	192–200	26–49	<b>201–210</b>	50–75	211–350	76–99
4	100–198	1–22	199–212	23–55	<b>213–222</b>	56–78	223–350	79–99
5	100–210	1–31	211–223	32–61	<b>224–231</b>	62–78	232–350	79–99
6	100–213	1–30	214–225	31–56	<b>226–235</b>	57–76	236–350	77–99
7	100–217	1–31	218–230	32–58	<b>231–241</b>	59–78	242–350	79–99
8	100–223	1–37	224–236	38–62	<b>237–246</b>	63–79	247–350	80–99
11	100–232	1–47	233–246	48–71	<b>247–261</b>	72–89	262–350	90–99

\*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. Bolded 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 rate. These results indicate how well MAP Growth spring RIT scores predict proficiency on the CA SBAC summative tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from 0.80 to 0.86 for ELA/reading and 0.82 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 CA SBAC summative assessment. For Grade 2, the classification accuracy rate refers to how well the MAP Growth cuts can predict students' proficiency status on CA SBAC in Grade 3.

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

**Table 3.7. Classification Accuracy Results**

Grade	N	Cut Score		Class. Accuracy*	Rate*		Sensitivity	Specificity	Precision	AUC*
		MAP Growth	CA SBAC		FP	FN				
<b>ELA/Reading</b>										
2	5,993	188	2432	0.80	0.16	0.27	0.73	0.84	0.73	0.88
3	7,350	199	2432	0.85	0.15	0.14	0.86	0.85	0.84	0.93
4	7,025	206	2473	0.85	0.15	0.14	0.86	0.85	0.84	0.93
5	6,588	211	2502	0.85	0.15	0.15	0.85	0.85	0.86	0.93
6	5,774	216	2531	0.85	0.15	0.15	0.85	0.85	0.85	0.93
7	5,628	217	2552	0.85	0.16	0.14	0.86	0.84	0.85	0.93
8	5,002	222	2567	0.86	0.13	0.16	0.84	0.87	0.86	0.94
11	1,324	225	2583	0.84	0.18	0.14	0.86	0.82	0.87	0.92
<b>Mathematics</b>										
2	5,777	189	2436	0.82	0.16	0.21	0.79	0.84	0.78	0.90
3	7,024	201	2436	0.87	0.17	0.10	0.90	0.83	0.84	0.95
4	6,956	213	2485	0.89	0.11	0.12	0.88	0.89	0.87	0.95
5	6,717	224	2528	0.89	0.09	0.15	0.85	0.91	0.86	0.96
6	5,203	226	2552	0.89	0.11	0.11	0.89	0.89	0.84	0.96
7	5,591	231	2567	0.91	0.09	0.10	0.90	0.91	0.86	0.97
8	4,647	237	2586	0.91	0.07	0.11	0.89	0.93	0.88	0.97
11	1,530	247	2628	0.89	0.08	0.17	0.83	0.92	0.83	0.95

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

### 3.5. Proficiency Projection

Table 3.8 and Table 3.9 present the estimated probability of achieving *Level/3* performance on the CA SBAC summative test based on RIT scores from fall, winter, or spring. "Prob." indicates the probability of obtaining proficient status on the CA SBAC summative test in the spring. For example, a Grade 3 student who obtained a MAP Growth Reading score of 201 in the fall has a 93% chance of reaching the *Level/3* level or higher on the CA SBAC summative test.

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

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
2	5	188	147	No	<0.01	156	No	<0.01	160	No	<0.01
	10	188	153	No	<0.01	162	No	<0.01	166	No	<0.01
	15	188	157	No	0.02	166	No	<0.01	170	No	<0.01
	20	188	160	No	0.04	169	No	<0.01	173	No	<0.01
	25	188	162	No	0.06	171	No	0.01	175	No	<0.01
	30	188	164	No	0.09	173	No	0.03	177	No	<0.01
	35	188	166	No	0.15	175	No	0.07	180	No	0.01
	40	188	168	No	0.21	177	No	0.13	182	No	0.03
	45	188	170	No	0.25	179	No	0.17	184	No	0.11
	50	188	172	No	0.35	181	No	0.29	186	No	0.27
	55	188	174	No	0.45	183	No	0.43	188	Yes	0.50
	60	188	176	Yes	0.55	185	Yes	0.57	189	Yes	0.62
	65	188	178	Yes	0.65	187	Yes	0.71	192	Yes	0.89
	70	188	180	Yes	0.70	189	Yes	0.83	194	Yes	0.97
	75	188	183	Yes	0.82	191	Yes	0.90	196	Yes	0.99
	80	188	185	Yes	0.88	194	Yes	0.97	199	Yes	>0.99
	85	188	188	Yes	0.93	197	Yes	0.99	202	Yes	>0.99
90	188	192	Yes	0.98	200	Yes	>0.99	205	Yes	>0.99	
95	188	197	Yes	0.99	206	Yes	>0.99	211	Yes	>0.99	
3	5	199	159	No	<0.01	167	No	<0.01	170	No	<0.01
	10	199	165	No	<0.01	173	No	<0.01	176	No	<0.01
	15	199	169	No	0.01	177	No	<0.01	180	No	<0.01
	20	199	173	No	0.03	180	No	<0.01	183	No	<0.01
	25	199	175	No	0.05	183	No	0.01	186	No	<0.01
	30	199	178	No	0.11	185	No	0.03	189	No	<0.01
	35	199	180	No	0.14	188	No	0.09	191	No	0.01
	40	199	182	No	0.21	190	No	0.13	193	No	0.03
	45	199	185	No	0.34	192	No	0.23	195	No	0.11
	50	199	187	No	0.39	194	No	0.35	197	No	0.27
	55	199	189	Yes	0.50	196	Yes	0.50	199	Yes	0.50
	60	199	191	Yes	0.61	198	Yes	0.65	201	Yes	0.73
	65	199	193	Yes	0.70	200	Yes	0.77	203	Yes	0.89
	70	199	195	Yes	0.75	202	Yes	0.87	206	Yes	0.99
	75	199	198	Yes	0.86	205	Yes	0.95	208	Yes	>0.99
	80	199	201	Yes	0.93	207	Yes	0.98	211	Yes	>0.99
	85	199	204	Yes	0.96	211	Yes	>0.99	214	Yes	>0.99
90	199	208	Yes	0.99	215	Yes	>0.99	218	Yes	>0.99	
95	199	214	Yes	>0.99	220	Yes	>0.99	224	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
4	5	206	169	No	<0.01	176	No	<0.01	178	No	<0.01
	10	206	175	No	<0.01	182	No	<0.01	184	No	<0.01
	15	206	179	No	0.01	186	No	<0.01	188	No	<0.01
	20	206	183	No	0.04	189	No	<0.01	191	No	<0.01
	25	206	185	No	0.06	192	No	0.02	194	No	<0.01
	30	206	188	No	0.11	194	No	0.04	196	No	<0.01
	35	206	190	No	0.17	196	No	0.09	199	No	0.01
	40	206	192	No	0.24	198	No	0.17	201	No	0.06
	45	206	195	No	0.34	200	No	0.22	203	No	0.17
	50	206	197	No	0.44	202	No	0.35	205	No	0.38
	55	206	199	Yes	0.56	205	Yes	0.58	207	Yes	0.62
	60	206	201	Yes	0.66	207	Yes	0.72	209	Yes	0.83
	65	206	203	Yes	0.71	209	Yes	0.83	211	Yes	0.94
	70	206	205	Yes	0.80	211	Yes	0.91	213	Yes	0.99
	75	206	208	Yes	0.89	213	Yes	0.96	216	Yes	>0.99
	80	206	211	Yes	0.94	216	Yes	0.99	219	Yes	>0.99
85	206	214	Yes	0.97	219	Yes	>0.99	222	Yes	>0.99	
90	206	218	Yes	0.99	223	Yes	>0.99	226	Yes	>0.99	
95	206	224	Yes	>0.99	229	Yes	>0.99	232	Yes	>0.99	
5	5	211	178	No	<0.01	183	No	<0.01	185	No	<0.01
	10	211	183	No	<0.01	189	No	<0.01	191	No	<0.01
	15	211	187	No	0.02	193	No	<0.01	194	No	<0.01
	20	211	191	No	0.05	196	No	0.01	198	No	<0.01
	25	211	193	No	0.08	198	No	0.02	200	No	<0.01
	30	211	196	No	0.17	201	No	0.06	203	No	0.01
	35	211	198	No	0.20	203	No	0.13	205	No	0.03
	40	211	200	No	0.29	205	No	0.22	207	No	0.11
	45	211	202	No	0.39	207	No	0.35	209	No	0.27
	50	211	204	Yes	0.50	209	Yes	0.50	211	Yes	0.50
	55	211	207	Yes	0.61	211	Yes	0.65	213	Yes	0.73
	60	211	209	Yes	0.71	213	Yes	0.78	215	Yes	0.89
	65	211	211	Yes	0.80	215	Yes	0.87	217	Yes	0.97
	70	211	213	Yes	0.83	217	Yes	0.91	219	Yes	0.99
	75	211	216	Yes	0.92	220	Yes	0.97	222	Yes	>0.99
	80	211	218	Yes	0.95	222	Yes	0.99	224	Yes	>0.99
85	211	221	Yes	0.97	226	Yes	>0.99	228	Yes	>0.99	
90	211	225	Yes	0.99	229	Yes	>0.99	231	Yes	>0.99	
95	211	231	Yes	>0.99	235	Yes	>0.99	237	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
6	5	216	183	No	<0.01	188	No	<0.01	189	No	<0.01
	10	216	189	No	<0.01	193	No	<0.01	195	No	<0.01
	15	216	193	No	0.01	197	No	<0.01	199	No	<0.01
	20	216	196	No	0.03	200	No	<0.01	202	No	<0.01
	25	216	199	No	0.08	203	No	0.02	205	No	<0.01
	30	216	202	No	0.13	205	No	0.04	207	No	<0.01
	35	216	204	No	0.19	208	No	0.12	209	No	0.01
	40	216	206	No	0.28	210	No	0.22	211	No	0.06
	45	216	208	No	0.33	212	No	0.35	213	No	0.17
	50	216	210	No	0.44	214	Yes	0.50	215	No	0.38
	55	216	212	Yes	0.56	216	Yes	0.58	217	Yes	0.62
	60	216	214	Yes	0.67	218	Yes	0.72	219	Yes	0.83
	65	216	217	Yes	0.76	220	Yes	0.83	222	Yes	0.97
	70	216	219	Yes	0.84	222	Yes	0.91	224	Yes	0.99
	75	216	221	Yes	0.90	225	Yes	0.97	226	Yes	>0.99
80	216	224	Yes	0.94	227	Yes	0.99	229	Yes	>0.99	
85	216	227	Yes	0.98	230	Yes	>0.99	232	Yes	>0.99	
90	216	231	Yes	>0.99	234	Yes	>0.99	236	Yes	>0.99	
95	216	237	Yes	>0.99	240	Yes	>0.99	242	Yes	>0.99	
7	5	217	187	No	<0.01	190	No	<0.01	191	No	<0.01
	10	217	193	No	<0.01	196	No	<0.01	197	No	<0.01
	15	217	197	No	0.02	200	No	<0.01	201	No	<0.01
	20	217	200	No	0.06	203	No	0.01	205	No	<0.01
	25	217	203	No	0.10	206	No	0.04	207	No	<0.01
	30	217	206	No	0.19	209	No	0.12	210	No	0.01
	35	217	208	No	0.28	211	No	0.22	212	No	0.06
	40	217	210	No	0.39	213	No	0.28	214	No	0.17
	45	217	212	No	0.44	215	No	0.42	216	No	0.38
	50	217	214	Yes	0.56	217	Yes	0.58	218	Yes	0.62
	55	217	216	Yes	0.67	219	Yes	0.72	220	Yes	0.83
	60	217	218	Yes	0.76	221	Yes	0.83	223	Yes	0.97
	65	217	221	Yes	0.84	223	Yes	0.91	225	Yes	0.99
	70	217	223	Yes	0.90	226	Yes	0.97	227	Yes	>0.99
	75	217	225	Yes	0.94	228	Yes	0.99	229	Yes	>0.99
80	217	228	Yes	0.98	231	Yes	>0.99	232	Yes	>0.99	
85	217	231	Yes	0.99	234	Yes	>0.99	235	Yes	>0.99	
90	217	235	Yes	>0.99	238	Yes	>0.99	239	Yes	>0.99	
95	217	241	Yes	>0.99	244	Yes	>0.99	245	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
8	5	222	190	No	<0.01	193	No	<0.01	194	No	<0.01
	10	222	196	No	<0.01	199	No	<0.01	200	No	<0.01
	15	222	200	No	0.01	203	No	<0.01	204	No	<0.01
	20	222	204	No	0.04	206	No	<0.01	207	No	<0.01
	25	222	207	No	0.08	209	No	0.02	210	No	<0.01
	30	222	209	No	0.13	212	No	0.04	213	No	<0.01
	35	222	211	No	0.17	214	No	0.09	215	No	0.01
	40	222	214	No	0.29	216	No	0.17	217	No	0.06
	45	222	216	No	0.39	218	No	0.28	220	No	0.27
	50	222	218	Yes	0.50	221	Yes	0.50	222	Yes	0.50
	55	222	220	Yes	0.55	223	Yes	0.65	224	Yes	0.73
	60	222	222	Yes	0.66	225	Yes	0.78	226	Yes	0.89
	65	222	225	Yes	0.80	227	Yes	0.87	228	Yes	0.97
	70	222	227	Yes	0.87	229	Yes	0.94	231	Yes	>0.99
	75	222	230	Yes	0.92	232	Yes	0.98	233	Yes	>0.99
80	222	232	Yes	0.95	235	Yes	>0.99	236	Yes	>0.99	
85	222	236	Yes	0.99	238	Yes	>0.99	239	Yes	>0.99	
90	222	240	Yes	>0.99	242	Yes	>0.99	243	Yes	>0.99	
95	222	246	Yes	>0.99	248	Yes	>0.99	249	Yes	>0.99	
11	5	225	194	No	<0.01	195	No	<0.01	194	No	<0.01
	10	225	201	No	0.01	202	No	<0.01	201	No	<0.01
	15	225	205	No	0.02	206	No	<0.01	206	No	<0.01
	20	225	209	No	0.05	210	No	0.01	209	No	<0.01
	25	225	212	No	0.10	213	No	0.03	212	No	<0.01
	30	225	214	No	0.15	215	No	0.05	215	No	<0.01
	35	225	217	No	0.24	218	No	0.14	218	No	0.01
	40	225	219	No	0.32	220	No	0.24	220	No	0.06
	45	225	221	No	0.41	222	No	0.36	222	No	0.17
	50	225	224	Yes	0.55	225	Yes	0.57	225	Yes	0.50
	55	225	226	Yes	0.64	227	Yes	0.70	227	Yes	0.73
	60	225	228	Yes	0.72	229	Yes	0.81	229	Yes	0.89
	65	225	230	Yes	0.79	231	Yes	0.89	232	Yes	0.99
	70	225	233	Yes	0.88	234	Yes	0.96	234	Yes	>0.99
	75	225	235	Yes	0.92	237	Yes	0.99	237	Yes	>0.99
80	225	238	Yes	0.96	240	Yes	>0.99	240	Yes	>0.99	
85	225	242	Yes	0.99	243	Yes	>0.99	244	Yes	>0.99	
90	225	246	Yes	>0.99	247	Yes	>0.99	248	Yes	>0.99	
95	225	253	Yes	>0.99	254	Yes	>0.99	255	Yes	>0.99	

**Table 3.9. Proficiency Projection based on RIT Scores—Mathematics**

Mathematics											
Grade	Start %ile	Spring Cut	Fall		Winter		Spring				
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
2	5	189	154	No	<0.01	163	No	<0.01	167	No	<0.01
	10	189	158	No	0.01	167	No	<0.01	172	No	<0.01
	15	189	162	No	0.04	171	No	0.01	175	No	<0.01
	20	189	164	No	0.06	173	No	0.02	178	No	<0.01
	25	189	166	No	0.11	175	No	0.05	180	No	<0.01
	30	189	168	No	0.18	177	No	0.10	182	No	0.01
	35	189	170	No	0.27	179	No	0.20	184	No	0.04
	40	189	172	No	0.38	181	No	0.26	186	No	0.15
	45	189	173	No	0.44	182	No	0.34	188	No	0.37
	50	189	175	Yes	0.50	184	Yes	0.50	189	Yes	0.50
	55	189	177	Yes	0.62	186	Yes	0.66	191	Yes	0.75
	60	189	178	Yes	0.68	187	Yes	0.74	193	Yes	0.92
	65	189	180	Yes	0.78	189	Yes	0.85	195	Yes	0.98
	70	189	182	Yes	0.86	191	Yes	0.93	196	Yes	0.99
	75	189	184	Yes	0.92	193	Yes	0.97	198	Yes	>0.99
	80	189	186	Yes	0.94	195	Yes	0.99	201	Yes	>0.99
	85	189	188	Yes	0.97	198	Yes	>0.99	203	Yes	>0.99
90	189	192	Yes	0.99	201	Yes	>0.99	207	Yes	>0.99	
95	189	196	Yes	>0.99	205	Yes	>0.99	212	Yes	>0.99	
3	5	201	166	No	<0.01	174	No	<0.01	178	No	<0.01
	10	201	171	No	<0.01	179	No	<0.01	183	No	<0.01
	15	201	175	No	0.02	182	No	<0.01	186	No	<0.01
	20	201	177	No	0.04	185	No	0.01	189	No	<0.01
	25	201	179	No	0.07	187	No	0.03	192	No	<0.01
	30	201	181	No	0.13	189	No	0.07	194	No	0.01
	35	201	183	No	0.21	191	No	0.14	196	No	0.04
	40	201	185	No	0.31	193	No	0.26	198	No	0.15
	45	201	187	No	0.44	195	No	0.42	199	No	0.25
	50	201	188	Yes	0.50	196	Yes	0.50	201	Yes	0.50
	55	201	190	Yes	0.63	198	Yes	0.67	203	Yes	0.75
	60	201	192	Yes	0.69	200	Yes	0.80	205	Yes	0.92
	65	201	194	Yes	0.79	201	Yes	0.86	207	Yes	0.98
	70	201	196	Yes	0.87	203	Yes	0.93	208	Yes	0.99
	75	201	198	Yes	0.93	205	Yes	0.97	211	Yes	>0.99
	80	201	200	Yes	0.96	208	Yes	0.99	213	Yes	>0.99
	85	201	202	Yes	0.98	210	Yes	>0.99	216	Yes	>0.99
90	201	206	Yes	>0.99	214	Yes	>0.99	219	Yes	>0.99	
95	201	211	Yes	>0.99	219	Yes	>0.99	224	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
4	5	213	176	No	<0.01	182	No	<0.01	185	No	<0.01
	10	213	181	No	<0.01	187	No	<0.01	191	No	<0.01
	15	213	185	No	<0.01	191	No	<0.01	194	No	<0.01
	20	213	187	No	0.01	194	No	<0.01	197	No	<0.01
	25	213	190	No	0.03	196	No	<0.01	200	No	<0.01
	30	213	192	No	0.05	198	No	0.01	202	No	<0.01
	35	213	194	No	0.10	200	No	0.03	205	No	<0.01
	40	213	196	No	0.17	202	No	0.07	207	No	0.02
	45	213	198	No	0.26	204	No	0.14	209	No	0.08
	50	213	200	No	0.37	206	No	0.26	211	No	0.25
	55	213	201	No	0.44	208	No	0.42	212	No	0.37
	60	213	203	Yes	0.56	210	Yes	0.58	214	Yes	0.63
	65	213	205	Yes	0.68	212	Yes	0.74	217	Yes	0.92
	70	213	207	Yes	0.79	214	Yes	0.86	219	Yes	0.98
	75	213	209	Yes	0.87	216	Yes	0.93	221	Yes	>0.99
	80	213	212	Yes	0.95	219	Yes	0.98	224	Yes	>0.99
	85	213	214	Yes	0.97	221	Yes	0.99	227	Yes	>0.99
90	213	218	Yes	0.99	225	Yes	>0.99	230	Yes	>0.99	
95	213	223	Yes	>0.99	231	Yes	>0.99	236	Yes	>0.99	
5	5	224	184	No	<0.01	189	No	<0.01	191	No	<0.01
	10	224	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	224	193	No	<0.01	198	No	<0.01	201	No	<0.01
	20	224	196	No	<0.01	201	No	<0.01	205	No	<0.01
	25	224	199	No	0.01	204	No	<0.01	207	No	<0.01
	30	224	201	No	0.02	206	No	<0.01	210	No	<0.01
	35	224	203	No	0.05	209	No	0.01	212	No	<0.01
	40	224	205	No	0.08	211	No	0.03	215	No	<0.01
	45	224	207	No	0.14	213	No	0.07	217	No	0.01
	50	224	209	No	0.22	215	No	0.15	219	No	0.04
	55	224	211	No	0.32	217	No	0.26	221	No	0.15
	60	224	213	No	0.44	219	No	0.42	223	No	0.37
	65	224	215	Yes	0.56	221	Yes	0.58	225	Yes	0.63
	70	224	217	Yes	0.68	223	Yes	0.74	228	Yes	0.92
	75	224	219	Yes	0.78	225	Yes	0.85	230	Yes	0.98
	80	224	222	Yes	0.89	228	Yes	0.95	233	Yes	>0.99
	85	224	225	Yes	0.95	231	Yes	0.99	236	Yes	>0.99
90	224	229	Yes	0.99	235	Yes	>0.99	240	Yes	>0.99	
95	224	234	Yes	>0.99	241	Yes	>0.99	246	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
6	5	226	188	No	<0.01	192	No	<0.01	194	No	<0.01
	10	226	194	No	<0.01	198	No	<0.01	200	No	<0.01
	15	226	198	No	<0.01	202	No	<0.01	205	No	<0.01
	20	226	201	No	<0.01	205	No	<0.01	208	No	<0.01
	25	226	204	No	0.01	208	No	<0.01	211	No	<0.01
	30	226	206	No	0.03	211	No	0.01	214	No	<0.01
	35	226	209	No	0.08	213	No	0.02	216	No	<0.01
	40	226	211	No	0.14	215	No	0.04	218	No	<0.01
	45	226	213	No	0.22	217	No	0.10	221	No	0.04
	50	226	215	No	0.32	220	No	0.26	223	No	0.15
	55	226	217	No	0.44	222	No	0.42	225	No	0.37
	60	226	219	Yes	0.56	224	Yes	0.58	227	Yes	0.63
	65	226	221	Yes	0.68	226	Yes	0.74	230	Yes	0.92
	70	226	223	Yes	0.78	228	Yes	0.86	232	Yes	0.98
	75	226	226	Yes	0.90	231	Yes	0.96	235	Yes	>0.99
	80	226	228	Yes	0.94	234	Yes	0.99	238	Yes	>0.99
	85	226	231	Yes	0.98	237	Yes	>0.99	241	Yes	>0.99
90	226	235	Yes	>0.99	241	Yes	>0.99	245	Yes	>0.99	
95	226	241	Yes	>0.99	247	Yes	>0.99	252	Yes	>0.99	
7	5	231	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	231	198	No	<0.01	201	No	<0.01	203	No	<0.01
	15	231	202	No	<0.01	205	No	<0.01	207	No	<0.01
	20	231	206	No	<0.01	209	No	<0.01	211	No	<0.01
	25	231	208	No	<0.01	212	No	<0.01	214	No	<0.01
	30	231	211	No	0.01	215	No	<0.01	217	No	<0.01
	35	231	213	No	0.03	217	No	0.01	220	No	<0.01
	40	231	216	No	0.07	219	No	0.03	222	No	<0.01
	45	231	218	No	0.17	222	No	0.10	224	No	0.01
	50	231	220	No	0.26	224	No	0.20	227	No	0.08
	55	231	222	No	0.37	226	No	0.33	229	No	0.25
	60	231	225	Yes	0.56	229	Yes	0.58	231	Yes	0.50
	65	231	227	Yes	0.69	231	Yes	0.74	234	Yes	0.85
	70	231	229	Yes	0.79	233	Yes	0.86	236	Yes	0.96
	75	231	232	Yes	0.90	236	Yes	0.96	239	Yes	>0.99
	80	231	235	Yes	0.96	239	Yes	0.99	242	Yes	>0.99
	85	231	238	Yes	0.99	243	Yes	>0.99	246	Yes	>0.99
90	231	243	Yes	>0.99	247	Yes	>0.99	251	Yes	>0.99	
95	231	249	Yes	>0.99	254	Yes	>0.99	257	Yes	>0.99	



Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
8	5	237	194	No	<0.01	196	No	<0.01	197	No	<0.01
	10	237	201	No	<0.01	203	No	<0.01	205	No	<0.01
	15	237	205	No	<0.01	208	No	<0.01	210	No	<0.01
	20	237	209	No	<0.01	212	No	<0.01	214	No	<0.01
	25	237	212	No	<0.01	215	No	<0.01	217	No	<0.01
	30	237	215	No	0.01	218	No	<0.01	220	No	<0.01
	35	237	218	No	0.02	221	No	<0.01	223	No	<0.01
	40	237	220	No	0.04	223	No	0.01	225	No	<0.01
	45	237	223	No	0.10	226	No	0.03	228	No	<0.01
	50	237	225	No	0.16	228	No	0.07	230	No	0.01
	55	237	227	No	0.24	231	No	0.20	233	No	0.08
	60	237	230	No	0.39	233	No	0.34	235	No	0.25
	65	237	232	Yes	0.50	236	Yes	0.58	238	Yes	0.63
	70	237	235	Yes	0.67	238	Yes	0.73	241	Yes	0.92
	75	237	238	Yes	0.81	241	Yes	0.89	244	Yes	0.99
	80	237	241	Yes	0.90	244	Yes	0.97	247	Yes	>0.99
85	237	245	Yes	0.97	248	Yes	>0.99	251	Yes	>0.99	
90	237	249	Yes	0.99	253	Yes	>0.99	256	Yes	>0.99	
95	237	256	Yes	>0.99	260	Yes	>0.99	263	Yes	>0.99	
11	5	247	198	No	<0.01	199	No	<0.01	199	No	<0.01
	10	247	205	No	<0.01	207	No	<0.01	207	No	<0.01
	15	247	210	No	<0.01	212	No	<0.01	212	No	<0.01
	20	247	214	No	<0.01	216	No	<0.01	216	No	<0.01
	25	247	218	No	<0.01	219	No	<0.01	220	No	<0.01
	30	247	221	No	<0.01	223	No	<0.01	223	No	<0.01
	35	247	224	No	0.01	225	No	<0.01	226	No	<0.01
	40	247	227	No	0.02	228	No	<0.01	229	No	<0.01
	45	247	229	No	0.04	231	No	<0.01	232	No	<0.01
	50	247	232	No	0.08	233	No	0.01	234	No	<0.01
	55	247	234	No	0.09	236	No	0.03	237	No	<0.01
	60	247	237	No	0.17	239	No	0.09	240	No	0.01
	65	247	240	No	0.27	242	No	0.22	243	No	0.08
	70	247	243	No	0.41	244	No	0.35	246	No	0.37
	75	247	246	Yes	0.55	248	Yes	0.65	249	Yes	0.75
	80	247	249	Yes	0.68	251	Yes	0.83	252	Yes	0.96
85	247	253	Yes	0.83	255	Yes	0.96	257	Yes	>0.99	
90	247	258	Yes	0.94	260	Yes	>0.99	262	Yes	>0.99	
95	247	266	Yes	0.99	268	Yes	>0.99	270	Yes	>0.99	

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