

Predicting Proficiency on the Georgia Milestones End-of-Grade Assessment Based on NWEA MAP Growth Scores

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NWEA Psychometrics and Analytics

Linking Study Updates

Date	Description
2020-07	Conducted a linking study for grades 3–8 in mathematics and ELA/reading based on the 2020 norms and Spring 2019 data.
2025-07	Updated the linking study based on the 2025 norms.
2025-12	Conducted new linking studies for grades 3–8 in mathematics and ELA/reading, grades 5 and 8 in science, and grade 8 in high school physical science using the 2025 norms with Spring 2024 data for mathematics, science, and high school physical science and Spring 2025 data for ELA/reading.

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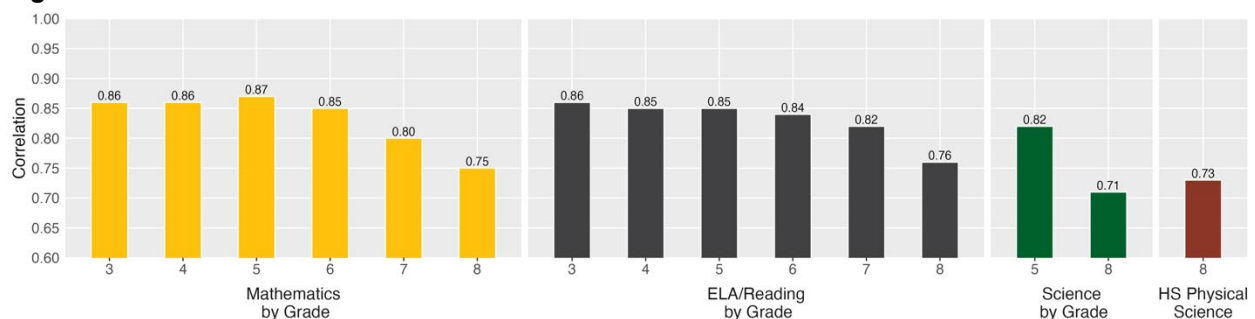
Executive Summary

Linking studies allow partners to use MAP® Growth™ Rasch Unit (RIT) scores throughout the year to predict students' performance levels on state summative assessments. This is accomplished through statistical analyses that produce RIT cut scores that correspond to state summative performance levels. A “cut score” is the minimum score a student must get on a test to be placed at a certain performance level. The linking study for the Georgia (GA) Milestones End-of-Grade (EOG) assessment described in this report provides RIT cut scores for the fall, winter, and spring MAP Growth administrations that correspond to the GA Milestones EOG performance levels for each subject and grade. Educators can use the RIT cut scores to identify students at risk of not meeting state proficiency standards and provide targeted instruction to improve academic outcomes.

The linking study is based on test scores from students who participated in both the MAP Growth and GA Milestones EOG assessments. Specifically, it includes mathematics in grades 3–8, science in grades 5 and 8, and high school physical science in grade 8 (grade 8 students who are enrolled in a high school physical science course are administered the grade 8 high school physical science test in lieu of the grade 8 science test) from Spring 2024, as well as English language arts (ELA) in grades 3–8 from Spring 2025. In total, this study included 168,291 students from 386 schools within 25 districts in Georgia.

Prior to initiating the linking study, NWEA's content team confirmed that the content standards used to construct the MAP Growth interim assessment were aligned with those of the GA Milestones EOG summative assessment, thus warranting a connection. Further investigation into the relationship between the MAP Growth and GA Milestones EOG assessments involved calculating correlation coefficients to confirm the alignment between the MAP Growth scores and the summative test scores of the GA Milestones EOG assessment. A high positive correlation (e.g., ≥ 0.70) shows that students who perform well on one assessment also tend to perform well on the other, and vice versa, with 1.00 being a perfect positive correlation. As shown in Figure E.1, the correlations between the MAP Growth and GA Milestones EOG test scores in all subjects and grades are higher than 0.70, indicating that MAP Growth is a good assessment for predicting performance on the GA Milestones EOG spring summative assessment.

Figure E.1. Correlations Between MAP Growth and State Summative Assessment Scores



The equipercentile linking method (Kolen & Brennan, 2004) was used to produce the RIT cut scores for the spring administration that correspond to performance levels on the GA Milestones EOG summative assessment for every subject and grade. MAP Growth cut scores for grade 2, as well as those for the fall and winter administrations of all grades, are also provided so that

educators can track grade 2 students' progress on the GA Milestones EOG tests by grade 3, alongside all other students, early in the year. These cut scores were derived from the spring cuts and the growth norms for the adjacent grades (i.e., grades 2 to 3), or fall and winter administrations to the spring administration. While RIT cut scores were generated for every performance level on the GA Milestones EOG summative assessment, Table E.1 presents the *Proficient Learner* cut scores that indicate the minimum score a student must get to be considered proficient for accountability purposes.

Table E.1. MAP Growth RIT Cut Scores Linked to GA Milestones EOG *Proficient Learner* Cut Scores

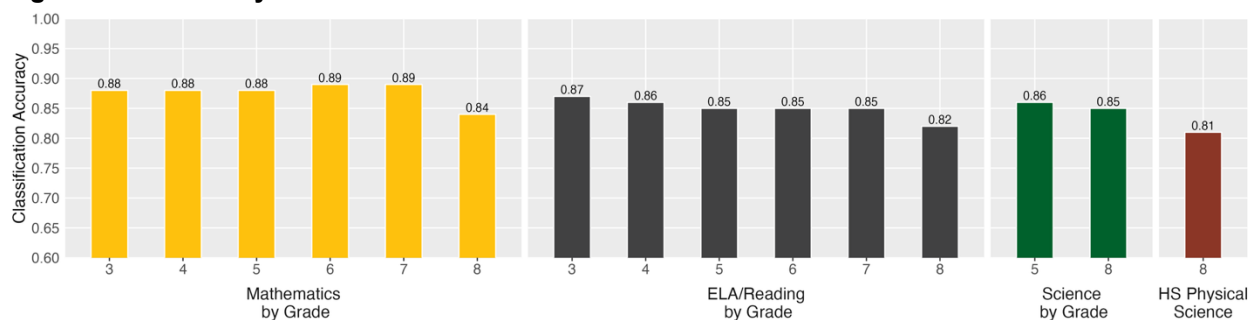
Assessment		Proficient Learner Cut Scores by Grade						
		2	3	4	5	6	7	8
Mathematics								
GA Milestones EOG Spring		–	525	525	525	525	525	525
MAP Growth Mathematics	Fall	178	189	202	212	219	224	227
	Winter	186	198	210	218	225	228	231
	Spring	192	204	215	222	229	231	234
ELA/Reading								
GA Milestones EOG Spring		–	525	525	525	525	525	525
MAP Growth Reading	Fall	182	195	204	209	216	220	223
	Winter	188	200	207	212	217	221	224
	Spring	192	203	209	213	218	222	225
Science								
GA Milestones EOG Spring		–	–	–	525	–	–	525
MAP Growth Science	Fall	–	–	–	206	–	–	221
	Winter	–	–	–	209	–	–	222
	Spring	–	–	–	211	–	–	223
High School Physical Science								
GA Milestones EOG Spring		–	–	–	–	–	–	525
MAP Growth Science	Fall	–	–	–	–	–	–	223
	Winter	–	–	–	–	–	–	224
	Spring	–	–	–	–	–	–	225

Educators can use these cut scores to determine whether students are on track for proficiency (*Proficient Learner* or higher) on the state assessment. For example, the *Proficient Learner* cut score on the grade 3 GA Milestones EOG mathematics summative test is 525. A grade 3 student with a MAP Growth mathematics RIT score of 189 in the fall is likely to meet proficiency on the GA Milestones EOG mathematics summative test in the spring, whereas a grade 3 student with a 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 that educators can track early learners' progress toward proficiency on the GA Milestones EOG spring summative assessment by grade 3.

As further evidence that MAP Growth scores can be used to predict students' proficiency on state tests, NWEA calculated classification accuracy statistics that show how well the RIT scores correctly classified, or predicted, students as proficient (*Proficient Learner* or higher) on

the GA Milestones EOG summative tests. For example, the grade 3 MAP Growth mathematics *Proficient Learner* cut score has a 0.88 accuracy rate, meaning it accurately predicted student performance on the state test for 88% of the sample. A high statistic indicates high accuracy. Overall, MAP Growth scores have a high accuracy rate of identifying student proficiency on the GA Milestones EOG summative tests, as illustrated in Figure E.2.

Figure E.2. Accuracy of MAP Growth Classifications



Please note that the purpose of this report is to explain NWEA's linking study methodology. It is not meant as the main reference for determining a student's likely performance on state summative assessments. The cut scores 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), whereas instructional weeks often vary by district. The cut scores in this report may therefore differ from the results in the NWEA reporting system that reflect the specific instructional weeks set by partners. Partners should therefore reference their MAP Growth score reports instead.

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 state summative assessments 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 school 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 findings from a linking study performed by NWEA aiming to statistically connect the Rasch Unit (RIT) scores obtained from the MAP Growth assessment with the results of the GA Milestones EOG spring summative assessment. These tests cover mathematics and ELA/reading for grades 3–8, science for grades 5 and 8, and high school physical science for grade 8. The data utilized to generate this report are comprised of the GA Milestones EOG test scores collected during Spring 2024 for mathematics, science, and high school physical science as well as Spring 2025 scores for ELA/reading. MAP Growth cut scores are also included for grade 2 so that educators can track early learners' progress toward proficiency on the GA Milestones EOG summative tests by grade 3. Specifically, this report presents the following results:

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

1.2. Assessment Overview

The GA Milestones EOG tests are Georgia's state summative assessment aligned to the Georgia Standards of Excellence. Based on their test scores, students are placed into one of four performance levels: *Beginning Learner*, *Developing Learner*, *Proficient Learner*, and *Distinguished Learner*. The *Proficient Learner* cut score demarks the minimum level of performance considered to be proficient for accountability purposes.

MAP Growth tests are an adaptive interim assessment aligned to state-specific content standards and administered in the fall, winter, and spring. Scores are reported on the RIT vertical scale with a range of 100 to 350. To aid the interpretation of scores, NWEA conducts norming studies of student and school performance on MAP Growth. Growth norms provide expected score gains across test administrations (e.g., the relative evaluation of a student's growth from fall to spring), which are used to conduct the linking studies. 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 2024 and 2025 administrations of the MAP Growth and GA Milestones EOG summative assessments. Each student's state testing record was matched to their MAP Growth scores based on the student's first and last names, date of birth, student ID, and other available identifying information. Only students who have scores on both the MAP Growth and GA Milestones EOG summative assessments in Spring 2024 for mathematics, science, and high school physical science, as well as in Spring 2025 for ELA/reading, were included in the study sample.

2.2. Post-Stratification Weighting

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

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

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

2.3. Descriptive Statistics

Descriptive statistics are provided to summarize the test scores for the MAP Growth and GA Milestones EOG assessments, including test score mean, standard deviation (SD), minimum, and maximum. The mean presents the average test scores across all students in the study sample, and the SD indicates the variability of test scores, revealing how students' scores are distributed around the average score, or mean. Correlation coefficients are also provided to answer the question "How well do the test scores from MAP Growth (that references the RIT scale) correlate to the scores obtained from the GA Milestones EOG summative tests (that reference some other scale) in the same subject and grade?" The correlations were calculated as:

$$r = \frac{\sum (x_i - \bar{x})(y_i - \bar{y})}{\sqrt{\sum (x_i - \bar{x})^2 \sum (y_i - \bar{y})^2}}$$

where r is the correlation coefficient, x_i and y_i are the values of the x- and y-variables in a sample, and $\bar{x}$ and $\bar{y}$ are the mean of the values of the x- and y-variables.

2.4. MAP Growth Cut Scores

MAP Growth cut scores that predict student achievement on the GA Milestones EOG summative assessment are reported for mathematics and ELA/reading in grades 3–8, science in grades 5 and 8, and high school physical science in grade 8 as well as for grade 2 in mathematics and ELA/reading so that educators can track early learners' progress toward proficiency on the GA Milestones EOG summative tests by grade 3. Percentile ranks based on the most recent NWEA norms are also provided. These are useful for understanding how students' scores compare with peers nationwide and the relative rigor of a state's performance level designations for its summative assessment.

The equipercentile linking method (Kolen & Brennan, 2004) was used to identify the spring MAP Growth RIT scores for mathematics and ELA/reading in grades 3–8, science in grades 5 and 8, and high school physical science in grade 8 that correspond to the GA Milestones EOG spring summative performance level cut scores. The equipercentile linking procedure matches scores on the two scales that have the same percentile rank (i.e., the proportion of tests at or below each score). For example, let x represent a score on Test X (e.g., GA Milestones EOG summative tests). Its equipercentile equivalent score on Test Y (e.g., MAP Growth), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined as:

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

where $e_y(x)$ is the equipercentile equivalent of score x on the GA Milestones EOG summative tests on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on the GA Milestones EOG summative 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 to spring within the same grade or from spring of a lower grade to spring of the adjacent higher grade. This information was used to calculate the fall and winter cut scores for mathematics and ELA/reading in grades 3–8, science in grades 5 and 8, and high school physical science in grade 8. The equation below was used to determine the previous term's MAP Growth score needed to reach the spring cut score, considering the expected growth associated with the previous RIT score:

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

where:

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

The most recent MAP Growth conditional growth norms were used to calculate the fall, winter, and spring cuts for grade 2. Students do not begin taking the GA Milestones EOG summative assessment until grade 3. Therefore, the cut scores for grade 2 were derived from the most recent growth norms across grades and terms. To determine the spring cut scores for grade 2,

the growth scores from the spring of grade 2 through the spring of grade 3 were used. The calculation of fall and winter cuts for grade 2 followed the same process as for the other grades. For example, the growth score from fall to spring in grade 2 was used to calculate the fall cuts for this grade.

2.5. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the GA Milestones EOG summative tests can be described using classification accuracy statistics based on the MAP Growth spring RIT cut scores. The results show the proportion of students correctly classified by their RIT scores as proficient (*Proficient Learner* or higher) or not proficient (lower than *Proficient Learner*) on the GA Milestones EOG spring summative tests. Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich et al., 2004).

Table 2.1. Description of Classification Accuracy Summary Statistics

Statistic	Description	Interpretation
Overall Classification Accuracy Rate	$(TP + TN) / (\text{total sample size})$	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 students identified by MAP Growth as not proficient in those observed as proficient on the state test
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.

2.6. Proficiency Projections

Given that all test scores contain measurement errors, reaching the *Proficient Learner* 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 (*Proficient Learner* or higher) 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 GA Milestones EOG summative tests based on a student’s RIT scores from fall and winter:

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

where:

- Φ is the standard normal cumulative distribution function,
- $RIT_{previous}$ 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 *Proficient Learner* 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 proficiency performance on the GA Milestones EOG summative tests based on their spring RIT score (RIT_{Spring}):

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

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

3. Results

3.1. Study Sample

Only students who have scores on both the MAP Growth and GA Milestones EOG summative assessments in Spring 2024 for mathematics, science, and high school physical science and 2025 for ELA/reading were included in the study sample. The mathematics, ELA/reading, science, and high school physical science data used in this study were collected from 386 schools within 25 districts in Georgia. Table 3.1 presents the distributions of students by race, sex, and performance level in the original unweighted study sample. Table 3.2 presents the distributions of the target population of students who took the GA Milestones EOG tests. Since the original study sample is different from the target GA Milestones EOG population, post-stratification weights were applied. Table 3.3 presents the demographic distributions of the sample after weighting, which are almost identical to the GA Milestones EOG student population distributions.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		23,000	23,281	23,589	20,958	21,855	21,166
Race	Asian/PI ^a	3.8	3.9	3.8	3.6	3.4	3.6
	Black, Non-Hispanic	47.2	48.6	49.0	52.5	53.0	54.0
	Hispanic	23.1	21.4	22.1	19.8	20.0	20.0
	Other ^b	4.8	5.0	4.4	4.8	4.5	4.5
	White, Non-Hispanic	21.1	21.2	20.7	19.3	19.2	18.0
Sex	Female	49.5	49.2	49.5	49.8	49.5	49.2
	Male	50.5	50.8	50.5	50.2	50.5	50.8
Performance Level	<i>Beginning Learner</i>	27.0	25.9	36.3	37.2	34.6	29.9
	<i>Developing Learner</i>	37.9	36.4	32.0	39.3	39.2	38.0
	<i>Proficient Learner</i>	24.8	24.4	21.3	16.4	18.8	19.3
	<i>Distinguished Learner</i>	10.2	13.3	10.4	7.1	7.5	12.8
ELA/Reading							
Total N		17,803	16,968	17,528	17,282	17,661	18,236
Race	Asian/PI ^a	4.3	4.2	4.4	4.2	4.1	3.6
	Black, Non-Hispanic	45.6	46.5	47.9	48.0	47.6	49.3
	Hispanic	27.1	26.8	25.2	25.8	25.9	25.2
	Other ^b	4.9	4.5	4.4	3.8	3.9	4.0
	White, Non-Hispanic	18.0	18.0	18.1	18.2	18.4	17.9
Sex	Female	49.6	50.0	49.6	49.5	49.6	49.7
	Male	50.4	50.0	50.4	50.5	50.4	50.3
Performance Level	<i>Beginning Learner</i>	46.0	40.0	31.6	42.9	38.8	32.1
	<i>Developing Learner</i>	26.7	29.8	34.0	25.8	29.9	36.9
	<i>Proficient Learner</i>	19.0	20.9	26.6	24.0	24.6	23.5
	<i>Distinguished Learner</i>	8.3	9.3	7.8	7.3	6.6	7.5
Science							

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Total N		—	—	12,049	—	—	9,686
Race	Asian/PI ^a	—	—	5.0	—	—	4.3
	Black, Non-Hispanic	—	—	59.9	—	—	61.2
	Hispanic	—	—	22.4	—	—	25.6
	Other ^b	—	—	3.6	—	—	3.1
	White, Non-Hispanic	—	—	9.1	—	—	5.7
Sex	Female	—	—	49.1	—	—	48.1
	Male	—	—	50.9	—	—	51.9
Performance Level	<i>Beginning Learner</i>	—	—	49.6	—	—	57.6
	<i>Developing Learner</i>	—	—	20.6	—	—	23.3
	<i>Proficient Learner</i>	—	—	20.0	—	—	14.9
	<i>Distinguished Learner</i>	—	—	9.7	—	—	4.1
High School Physical Science							
Total N		—	—	—	—	—	992 ^c
Race	Asian/PI ^a	—	—	—	—	—	6.5
	Black, Non-Hispanic	—	—	—	—	—	46.5
	Hispanic	—	—	—	—	—	19.1
	Other ^b	—	—	—	—	—	3.8
	White, Non-Hispanic	—	—	—	—	—	24.2
Sex	Female	—	—	—	—	—	55.3
	Male	—	—	—	—	—	44.7
Performance Level	<i>Beginning Learner</i>	—	—	—	—	—	17.3
	<i>Developing Learner</i>	—	—	—	—	—	25.5
	<i>Proficient Learner</i>	—	—	—	—	—	36.6
	<i>Distinguished Learner</i>	—	—	—	—	—	20.6

^a The “PI” indicates Pacific Islander.

^b The “Other” category includes races of Multi-Racial, Native American, Alaskan Native, and Not Reported.

^c To ensure valid linking study results, NWEA generally requires a minimum of 1,000 students per subject and grade. The grade 8 high school physical science sample included 992 students—slightly below the threshold—but NWEA determined that this was close enough to proceed.

Table 3.2. Linking Study Population Demographics

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		124,085	125,441	126,699	127,070	128,403	130,335
Race	Asian/PI ^a	5.3	5.4	5.6	5.6	5.3	5.2
	Black, Non-Hispanic	34.7	35.5	35.7	35.8	36.7	36.5
	Hispanic	19.5	19.1	19.1	19.4	19.6	19.8
	Other ^b	5.5	5.4	5.0	4.9	4.7	4.7
	White, Non-Hispanic	34.9	34.6	34.6	34.3	33.8	33.8
Sex	Female	49.4	49.1	49.3	49.2	49.0	48.9

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
	Male	50.6	50.9	50.7	50.8	51.0	51.1
Performance Level	<i>Beginning Learner</i>	19.5	18.9	27.3	27.3	26.3	22.4
	<i>Developing Learner</i>	35.1	33.0	31.7	38.1	36.0	33.9
	<i>Proficient Learner</i>	30.2	29.4	26.6	22.8	24.8	23.1
	<i>Distinguished Learner</i>	15.2	18.7	14.4	11.8	12.8	20.6
ELA/Reading							
Total N		127,234	124,377	126,582	126,180	127,701	129,674
Race	Asian/PI ^a	5.4	5.6	5.7	5.8	5.9	5.5
	Black, Non-Hispanic	34.8	34.7	35.4	35.8	35.8	36.7
	Hispanic	19.9	19.9	19.6	19.6	19.8	19.9
	Other ^b	5.7	5.6	5.4	5.0	4.9	4.6
	White, Non-Hispanic	34.1	34.3	34.0	33.8	33.7	33.3
Sex	Female	49.4	49.4	49.1	49.2	49.2	49.1
	Male	50.6	50.6	50.9	50.8	50.8	50.9
Performance Level	<i>Beginning Learner</i>	36.9	31.1	24.3	33.3	30.9	25.9
	<i>Developing Learner</i>	28.2	29.6	32.7	25.4	28.5	34.4
	<i>Proficient Learner</i>	23.6	25.8	32.1	29.7	30.4	28.0
	<i>Distinguished Learner</i>	11.3	13.6	10.9	11.6	10.2	11.8
Science							
Total N		—	—	126,562	—	—	88,915
Race	Asian/PI ^a	—	—	5.6	—	—	2.3
	Black, Non-Hispanic	—	—	35.6	—	—	41.7
	Hispanic	—	—	19.1	—	—	19.1
	Other ^b	—	—	5.0	—	—	4.5
	White, Non-Hispanic	—	—	34.6	—	—	32.4
Sex	Female	—	—	49.3	—	—	48.4
	Male	—	—	50.7	—	—	51.6
Performance Level	<i>Beginning Learner</i>	—	—	36.2	—	—	49.0
	<i>Developing Learner</i>	—	—	22.1	—	—	25.3
	<i>Proficient Learner</i>	—	—	27.5	—	—	20.2
	<i>Distinguished Learner</i>	—	—	14.2	—	—	5.4
High School Physical Science							
Total N		—	—	—	—	—	41,074
Race	Asian/PI ^a	—	—	—	—	—	11.6
	Black, Non-Hispanic	—	—	—	—	—	25.0
	Hispanic	—	—	—	—	—	21.3
	Other ^b	—	—	—	—	—	5.0
	White, Non-Hispanic	—	—	—	—	—	37.1
Sex	Female	—	—	—	—	—	50.1
	Male	—	—	—	—	—	49.9
Performance Level	<i>Beginning Learner</i>	—	—	—	—	—	25.6
	<i>Developing Learner</i>	—	—	—	—	—	23.5

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
	<i>Proficient Learner</i>	–	–	–	–	–	34.7
	<i>Distinguished Learner</i>	–	–	–	–	–	16.2

^a The “PI” indicates Pacific Islander.

^b The “Other” category includes races of Multi-Racial, Native American, Alaskan Native, and Not Reported.

Table 3.3. Linking Study Sample Demographics (Weighted)

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
Mathematics							
Total N		23,000	23,281	23,589	20,958	21,855	21,166
Race	Asian/PI ^a	5.3	5.4	5.6	5.6	5.3	5.2
	Black, Non-Hispanic	34.7	35.5	35.7	35.8	36.7	36.5
	Hispanic	19.5	19.1	19.1	19.4	19.6	19.8
	Other ^b	5.5	5.4	5.0	4.9	4.7	4.7
	White, Non-Hispanic	34.9	34.6	34.6	34.3	33.8	33.8
Sex	Female	49.4	49.1	49.3	49.2	49.0	48.9
	Male	50.6	50.9	50.7	50.8	51.0	51.1
Performance Level	<i>Beginning Learner</i>	19.5	18.9	27.3	27.3	26.3	22.4
	<i>Developing Learner</i>	35.1	33.0	31.7	38.1	36.0	33.9
	<i>Proficient Learner</i>	30.2	29.4	26.6	22.8	24.8	23.1
	<i>Distinguished Learner</i>	15.2	18.7	14.4	11.8	12.8	20.6
ELA/Reading							
Total N		17,803	16,968	17,528	17,282	17,661	18,236
Race	Asian/PI ^a	5.4	5.6	5.7	5.8	5.9	5.5
	Black, Non-Hispanic	34.8	34.7	35.4	35.8	35.8	36.7
	Hispanic	19.9	19.9	19.6	19.6	19.8	19.9
	Other ^b	5.7	5.6	5.4	5.0	4.9	4.6
	White, Non-Hispanic	34.1	34.3	34.0	33.8	33.7	33.3
Sex	Female	49.4	49.4	49.1	49.2	49.2	49.1
	Male	50.6	50.6	50.9	50.8	50.8	50.9
Performance Level	<i>Beginning Learner</i>	36.9	31.1	24.3	33.3	30.9	25.9
	<i>Developing Learner</i>	28.2	29.6	32.7	25.4	28.5	34.4
	<i>Proficient Learner</i>	23.6	25.8	32.1	29.7	30.4	28.0
	<i>Distinguished Learner</i>	11.3	13.6	10.9	11.6	10.2	11.8
Science							
Total N		–	–	12,049	–	–	9,686
Race	Asian/PI ^a	–	–	5.6	–	–	2.3
	Black, Non-Hispanic	–	–	35.7	–	–	41.7
	Hispanic	–	–	19.1	–	–	19.1
	Other ^b	–	–	5.0	–	–	4.5
	White, Non-Hispanic	–	–	34.6	–	–	32.4
Sex	Female	–	–	49.3	–	–	48.4

Demographic Subgroup		% Students by Grade					
		3	4	5	6	7	8
	Male	–	–	50.7	–	–	51.6
Performance Level	<i>Beginning Learner</i>	–	–	36.2	–	–	49.0
	<i>Developing Learner</i>	–	–	22.1	–	–	25.3
	<i>Proficient Learner</i>	–	–	27.5	–	–	20.2
	<i>Distinguished Learner</i>	–	–	14.2	–	–	5.4
High School Physical Science							
	Total N	–	–	–	–	–	992 ^c
Race	Asian/PI ^a	–	–	–	–	–	11.6
	Black, Non-Hispanic	–	–	–	–	–	25.1
	Hispanic	–	–	–	–	–	21.3
	Other ^b	–	–	–	–	–	5.0
	White, Non-Hispanic	–	–	–	–	–	37.1
Sex	Female	–	–	–	–	–	50.1
	Male	–	–	–	–	–	49.9
Performance Level	<i>Beginning Learner</i>	–	–	–	–	–	25.6
	<i>Developing Learner</i>	–	–	–	–	–	23.5
	<i>Proficient Learner</i>	–	–	–	–	–	34.7
	<i>Distinguished Learner</i>	–	–	–	–	–	16.2

^a The “PI” indicates Pacific Islander.

^b The “Other” category includes races of Multi-Racial, Native American, Alaskan Native, and Not Reported.

^c To ensure valid linking study results, NWEA generally requires a minimum of 1,000 students per subject and grade. The grade 8 high school physical science sample included 992 students—slightly below the threshold—but NWEA determined that this was close enough to proceed.

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and GA Milestones EOG summative test scores from Spring 2024 and 2025, including the correlation coefficients (r) between them. The coefficients between the scores range from 0.80 to 0.87 for mathematics, 0.78 to 0.87 for ELA/reading, 0.76 to 0.84 for science, and is 0.73 for high school physical science. These values indicate a high positive correlation among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the GA Milestones EOG spring summative assessment.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	<i>r</i>	GA Milestones EOG				MAP Growth			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
Mathematics										
3	23,000	0.87	521.5	50.3	390	705	200.7	17.1	127	276
4	23,281	0.87	525.7	56.2	360	715	211.8	18.9	130	281
5	23,589	0.87	513.9	57.8	335	725	216.3	18.4	135	291
6	20,958	0.87	509.5	53.2	342	700	221.1	19.0	155	304
7	21,855	0.84	515.1	59.1	329	740	224.6	20.5	151	304
8	21,166	0.80	522.6	60.0	313	755	230.5	21.8	150	308

Grade	N	r	GA Milestones EOG				MAP Growth			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA/Reading										
3	17,803	0.87	499.0	65.6	301	830	193.4	18.6	134	247
4	16,968	0.85	507.3	61.9	312	775	201.6	18.5	139	265
5	17,528	0.85	514.0	56.1	345	760	207.9	18.3	140	263
6	17,282	0.85	507.7	71.9	195	820	212.1	16.8	154	266
7	17,661	0.83	507.7	65.4	276	785	215.5	17.6	156	268
8	18,236	0.78	511.3	56.3	303	730	219.4	17.3	157	269
9	17,803	0.87	499.0	65.6	301	830	193.4	18.6	134	247
10	16,968	0.85	507.3	61.9	312	775	201.6	18.5	139	265
Science										
5	12,049	0.84	511.8	79.2	312	780	205.8	15.5	150	254
8	9,686	0.76	486.0	63.3	306	785	210.6	16.9	154	275
High School Physical Science										
8	992	0.73	534.5	71.9	373	815	224.7	13.3	178	261

Note. SD = standard deviation; Min. = minimum; Max. = maximum. To ensure valid linking study results, NWEA generally requires a minimum of 1,000 students per subject and grade. The grade 8 high school physical science sample included 992 students—slightly below the threshold—but NWEA determined that this was close enough to proceed.

3.3. MAP Growth Cut Scores

Table 3.5 to Table 3.9 present the GA Milestones EOG summative scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges by content area and grade. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes. These tables can be used to predict a student's likely performance level on the GA Milestones EOG spring summative assessment when MAP Growth is taken in the fall, winter, and spring. For example, a grade 3 student who obtained a MAP Growth mathematics RIT score of 189 in the fall is likely to achieve *Proficient Learner* performance on the GA Milestones EOG summative mathematics test. A grade 3 student who obtained a MAP Growth mathematics RIT score of 198 in the winter is also likely to achieve *Proficient Learner* performance on the GA Milestones EOG spring summative mathematics test. 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 substantially from the default ones, a student's expected performance level could be different from the projections presented in this report. Partners are therefore encouraged to use the projected performance level in students' score reports, since these reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—Mathematics

GA Milestones EOG Summative Mathematics									
Grade	Beginning Learner		Developing Learner		Proficient Learner		Distinguished Learner		
3	290–474		475–524		525–574		575–705		
4	270–474		475–524		525–576		577–715		
5	265–474		475–524		525–577		578–725		
6	285–474		475–524		525–577		578–700		
7	265–474		475–524		525–589		590–740		
8	275–474		475–524		525–570		571–755		
MAP Growth Mathematics									
Grade	Beginning Learner		Developing Learner		Proficient Learner		Distinguished Learner		
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	
Fall									
2	100–152	1–9	153–177	10–62	178–195	63–92	196–350	93–99	
3	100–169	1–17	170–188	18–61	189–202	62–88	203–350	89–99	
4	100–182	1–18	183–201	19–61	202–215	62–87	216–350	88–99	
5	100–195	1–25	196–211	26–63	212–226	64–89	227–350	90–99	
6	100–198	1–23	199–218	24–70	219–233	71–92	234–350	93–99	
7	100–204	1–23	205–223	24–64	224–243	65–93	244–350	94–99	
8	100–205	1–18	206–226	19–60	227–244	61–88	245–350	89–99	
Winter									
2	100–161	1–10	162–185	11–61	186–203	62–92	204–350	93–99	
3	100–177	1–17	178–197	18–62	198–212	63–88	213–350	89–99	
4	100–189	1–19	190–209	20–62	210–223	63–86	224–350	87–99	
5	100–200	1–26	201–217	27–63	218–232	64–88	233–350	89–99	
6	100–203	1–23	204–224	24–69	225–240	70–92	241–350	93–99	
7	100–207	1–23	208–227	24–64	228–248	65–93	249–350	94–99	
8	100–208	1–18	209–230	19–59	231–249	60–88	250–350	89–99	
Spring									
2	100–169	1–13	170–191	14–60	192–207	61–89	208–350	90–99	
3	100–184	1–19	185–203	20–60	204–217	61–86	218–350	87–99	
4	100–195	1–21	196–214	22–60	215–228	61–84	229–350	85–99	
5	100–204	1–27	205–221	28–62	222–236	63–86	237–350	87–99	
6	100–208	1–26	209–228	27–67	229–244	68–90	245–350	91–99	
7	100–210	1–24	211–230	25–63	231–250	64–91	251–350	92–99	
8	100–212	1–21	213–233	22–59	234–251	60–86	252–350	87–99	

Note. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.6. MAP Growth Cut Scores—ELA/Reading

GA Milestones EOG Summative ELA/Reading								
Grade	Beginning Learner		Developing Learner		Proficient Learner		Distinguished Learner	
3	180–474		475–524		525–580		581–830	
4	210–474		475–524		525–573		574–775	
5	210–474		475–524		525–586		587–760	
6	140–474		475–524		525–598		599–820	
7	165–474		475–524		525–591		592–785	
8	225–474		475–524		525–580		581–730	
MAP Growth ELA/Reading								
Grade	Beginning Learner		Developing Learner		Proficient Learner		Distinguished Learner	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
2	100–161	1–31	162–181	32–75	182–198	76–94	199–350	95–99
3	100–178	1–37	179–194	38–70	195–208	71–90	209–350	91–99
4	100–187	1–32	188–203	33–66	204–216	67–87	217–350	88–99
5	100–191	1–24	192–208	25–61	209–226	62–90	227–350	91–99
6	100–201	1–33	202–215	34–65	216–229	66–88	230–350	89–99
7	100–205	1–34	206–219	35–67	220–233	68–89	234–350	90–99
8	100–207	1–32	208–222	33–66	223–236	67–88	237–350	89–99
Winter								
2	100–168	1–32	169–187	33–74	188–204	75–94	205–350	95–99
3	100–183	1–36	184–199	37–70	200–213	71–90	214–350	91–99
4	100–190	1–31	191–206	32–65	207–218	66–85	219–350	86–99
5	100–194	1–24	195–211	25–62	212–227	63–89	228–350	90–99
6	100–203	1–33	204–216	34–64	217–230	65–88	231–350	89–99
7	100–206	1–33	207–220	34–66	221–234	67–89	235–350	90–99
8	100–208	1–31	209–223	32–65	224–237	66–88	238–350	89–99
Spring								
2	100–174	1–34	175–191	35–71	192–206	72–92	207–350	93–99
3	100–188	1–39	189–202	40–68	203–214	69–87	215–350	88–99
4	100–194	1–33	195–208	34–64	209–219	65–83	220–350	84–99
5	100–197	1–26	198–212	27–60	213–228	61–88	229–350	89–99
6	100–205	1–35	206–217	36–63	218–231	64–87	232–350	88–99
7	100–208	1–36	209–221	37–65	222–235	66–88	236–350	89–99
8	100–210	1–34	211–224	35–65	225–238	66–88	239–350	89–99

Note. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.7. MAP Growth Cut Scores—Science

GA Milestones EOG Summative Science									
Grade	Beginning Learner			Developing Learner		Proficient Learner		Distinguished Learner	
5	160–474			475–524		525–594		595–780	
8	165–474			475–524		525–592		593–785	
MAP Growth Science									
Grade	Beginning Learner			Developing Learner		Proficient Learner		Distinguished Learner	
	RIT	Percentile		RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall									
5	100–194	1–32		195–205	33–64	206–217	65–89	218–350	90–99
8	100–205	1–39		206–220	40–78	221–234	79–95	235–350	96–99
Winter									
5	100–197	1–31		198–208	32–63	209–220	64–88	221–350	89–99
8	100–207	1–40		208–221	41–75	222–235	76–94	236–350	95–99
Spring									
5	100–200	1–33		201–210	34–61	211–221	62–86	222–350	87–99
8	100–209	1–42		210–222	43–74	223–236	75–94	237–350	95–99

Note. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

Table 3.8. MAP Growth Cut Scores—High School Physical Science

GA Milestones EOG Summative High School Physical Science									
Grade	Beginning Learner		Developing Learner		Proficient Learner		Distinguished Learner		
8	145–474		475–524		525–603		604–815		
MAP Growth Science									
Grade	Beginning Learner		Developing Learner		Proficient Learner		Distinguished Learner		
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	
Fall									
8	100–210	1–53	211–222	54–82	223–235	83–96	236–350	97–99	
Winter									
8	100–212	1–53	213–223	54–79	224–236	80–95	237–350	96–99	
Spring									
8	100–213	1–52	214–224	53–78	225–237	79–94	238–350	95–99	

Note. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes.

3.4. Classification Accuracy

Table 3.9 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 GA Milestones EOG spring summative tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rates range from 0.84 to 0.89 for mathematics, 0.82 to 0.87 for ELA/reading, and 0.85 to 0.86 for science, and is 0.81 for high school physical science. These values suggest that the RIT cut scores are good at classifying students as proficient (*Proficient Learner* or higher) or not proficient (lower than *Proficient Learner*) on the GA Milestones EOG summative assessment for all subjects and grades.

Although the results show that MAP Growth scores can be used to predict student proficiency on the GA Milestones EOG summative tests with relatively high accuracy, there is a notable limitation to how these results should be used and interpreted. The MAP Growth and GA Milestones EOG summative assessments are designed for different purposes and measure slightly different constructs even within the same content area. Therefore, scores on these tests cannot be assumed to be interchangeable. MAP Growth may not be used as a substitute for the state tests and vice versa.

Table 3.9. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy	Rate		Sensitivity	Specificity	Precision	AUC
		MAP Growth	GA Milestones EOG		FP	FN				
Mathematics										
3	23,000	204	525	0.88	0.12	0.12	0.88	0.88	0.85	0.88
4	23,281	215	525	0.88	0.13	0.11	0.89	0.87	0.86	0.88
5	23,589	222	525	0.88	0.11	0.14	0.86	0.89	0.85	0.88
6	20,958	229	525	0.89	0.09	0.16	0.84	0.91	0.83	0.87
7	21,855	231	525	0.89	0.09	0.14	0.86	0.91	0.85	0.88
8	21,166	234	525	0.84	0.13	0.18	0.82	0.87	0.83	0.84
ELA/Reading										
3	17,803	203	525	0.87	0.10	0.19	0.81	0.90	0.82	0.86
4	16,968	209	525	0.86	0.12	0.16	0.84	0.88	0.81	0.86
5	17,528	213	525	0.85	0.16	0.13	0.87	0.84	0.80	0.86
6	17,282	218	525	0.85	0.13	0.19	0.81	0.87	0.81	0.84
7	17,661	222	525	0.85	0.12	0.19	0.81	0.88	0.82	0.84
8	18,236	225	525	0.82	0.17	0.18	0.82	0.83	0.76	0.82
9	17,803	203	525	0.87	0.10	0.19	0.81	0.90	0.82	0.86
10	16,968	209	525	0.86	0.12	0.16	0.84	0.88	0.81	0.86
Science										
5	12,049	211	525	0.86	0.12	0.17	0.83	0.88	0.84	0.86
8	9,686	223	525	0.85	0.09	0.31	0.69	0.91	0.72	0.80
High School Physical Science										
8	992	225	525	0.81	0.22	0.16	0.84	0.78	0.80	0.81

Note. Class. Accuracy = overall classification accuracy rate; FP = false positives; FN = false negatives; AUC = area under the ROC curve. To ensure valid linking study results, NWEA generally requires a minimum of 1,000 students per subject and grade. The grade 8 high school physical science sample included 992 students—slightly below the threshold—but NWEA determined that this was close enough to proceed.

3.5. Proficiency Projections

Table 3.10 to Table 3.13 present the estimated probabilities of achieving proficiency performance (*Proficient Learner* or higher) on the GA Milestones EOG summative tests based on RIT scores from fall, winter, or spring. Due to measurement error in all test scores, the *Proficient Learner* MAP Growth cuts do not guarantee that a student will reach proficiency on the GA Milestones EOG summative tests. Instead, they indicate a 50% chance that a student will reach a particular performance level. Therefore, these projections further elucidate the *Proficient Learner* cut scores by providing the likelihood of reaching proficiency on the GA Milestones EOG spring summative assessment at a given percentile throughout the year.

For example, a grade 3 student at percentile 85 who obtained a MAP Growth mathematics score of 200 in the fall has a 92% chance of reaching proficiency on the GA Milestones EOG mathematics test in spring. Additionally, an educator can also use the table to estimate that a grade 3 student who obtained a MAP Growth mathematics score of 210 in the winter has a 94% probability of reaching proficiency on the GA Milestones EOG mathematics spring summative test.

Table 3.10. Proficiency Projections 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	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	192	147	No	<0.01	155	No	<0.01	161	No	<0.01
	10	192	153	No	<0.01	161	No	<0.01	167	No	<0.01
	15	192	157	No	0.01	165	No	0.01	171	No	<0.01
	20	192	160	No	0.03	168	No	0.02	174	No	<0.01
	25	192	162	No	0.04	171	No	0.03	177	No	<0.01
	30	192	165	No	0.07	173	No	0.06	179	No	<0.01
	35	192	167	No	0.11	175	No	0.09	181	No	<0.01
	40	192	169	No	0.16	177	No	0.14	183	No	0.01
	45	192	171	No	0.23	179	No	0.18	185	No	0.02
	50	192	173	No	0.31	181	No	0.25	187	No	0.08
	55	192	175	No	0.36	183	No	0.35	189	No	0.20
	60	192	177	No	0.45	185	No	0.45	192	Yes	0.50
	65	192	179	Yes	0.55	187	Yes	0.55	194	Yes	0.72
	70	192	181	Yes	0.64	189	Yes	0.60	196	Yes	0.87
	75	192	183	Yes	0.73	192	Yes	0.75	198	Yes	0.96
	80	192	186	Yes	0.80	194	Yes	0.82	201	Yes	0.99
	85	192	189	Yes	0.89	197	Yes	0.91	204	Yes	>0.99
	90	192	193	Yes	0.94	201	Yes	0.96	208	Yes	>0.99
	95	192	198	Yes	0.99	207	Yes	0.99	214	Yes	>0.99
3	5	204	158	No	<0.01	166	No	<0.01	171	No	<0.01
	10	204	164	No	<0.01	172	No	<0.01	177	No	<0.01
	15	204	168	No	<0.01	176	No	<0.01	181	No	<0.01
	20	204	171	No	0.01	179	No	0.01	185	No	<0.01
	25	204	174	No	0.03	182	No	0.02	188	No	<0.01
	30	204	176	No	0.05	184	No	0.04	190	No	<0.01
	35	204	178	No	0.08	186	No	0.06	193	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	40	204	180	No	0.13	189	No	0.13	195	No	0.01
	45	204	182	No	0.19	191	No	0.20	197	No	0.02
	50	204	184	No	0.26	193	No	0.24	199	No	0.08
	55	204	186	No	0.35	195	No	0.34	201	No	0.20
	60	204	188	No	0.45	197	No	0.45	203	No	0.39
	65	204	190	Yes	0.55	199	Yes	0.55	206	Yes	0.72
	70	204	192	Yes	0.65	201	Yes	0.66	208	Yes	0.87
	75	204	195	Yes	0.78	204	Yes	0.80	211	Yes	0.98
	80	204	197	Yes	0.85	206	Yes	0.87	213	Yes	0.99
	85	204	200	Yes	0.92	210	Yes	0.94	217	Yes	>0.99
	90	204	204	Yes	0.97	214	Yes	0.98	221	Yes	>0.99
	95	204	210	Yes	0.99	220	Yes	>0.99	227	Yes	>0.99
4	5	215	171	No	<0.01	176	No	<0.01	180	No	<0.01
	10	215	177	No	<0.01	183	No	<0.01	187	No	<0.01
	15	215	181	No	<0.01	187	No	<0.01	191	No	<0.01
	20	215	184	No	0.01	190	No	<0.01	195	No	<0.01
	25	215	186	No	0.02	193	No	0.01	198	No	<0.01
	30	215	189	No	0.05	196	No	0.03	201	No	<0.01
	35	215	191	No	0.09	198	No	0.06	203	No	<0.01
	40	215	193	No	0.13	200	No	0.10	206	No	0.01
	45	215	195	No	0.19	202	No	0.16	208	No	0.02
	50	215	197	No	0.27	204	No	0.24	210	No	0.08
	55	215	199	No	0.35	207	No	0.39	212	No	0.20
	60	215	201	No	0.45	209	No	0.44	215	Yes	0.50
	65	215	203	Yes	0.55	211	Yes	0.56	217	Yes	0.72
	70	215	205	Yes	0.65	213	Yes	0.67	220	Yes	0.92
	75	215	208	Yes	0.77	216	Yes	0.80	222	Yes	0.98

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	80	215	210	Yes	0.84	219	Yes	0.90	225	Yes	>0.99
	85	215	214	Yes	0.93	222	Yes	0.96	229	Yes	>0.99
	90	215	217	Yes	0.97	226	Yes	0.99	233	Yes	>0.99
	95	215	223	Yes	>0.99	232	Yes	>0.99	240	Yes	>0.99
5	5	222	180	No	<0.01	183	No	<0.01	186	No	<0.01
	10	222	185	No	<0.01	189	No	<0.01	192	No	<0.01
	15	222	189	No	<0.01	194	No	<0.01	197	No	<0.01
	20	222	193	No	0.01	197	No	<0.01	200	No	<0.01
	25	222	195	No	0.01	200	No	0.01	204	No	<0.01
	30	222	198	No	0.04	203	No	0.02	206	No	<0.01
	35	222	200	No	0.06	205	No	0.03	209	No	<0.01
	40	222	202	No	0.10	207	No	0.06	211	No	<0.01
	45	222	204	No	0.15	210	No	0.13	214	No	0.01
	50	222	206	No	0.22	212	No	0.20	216	No	0.04
	55	222	208	No	0.30	214	No	0.28	218	No	0.13
	60	222	210	No	0.40	216	No	0.39	221	No	0.39
	65	222	212	Yes	0.50	219	Yes	0.56	223	Yes	0.61
	70	222	215	Yes	0.65	221	Yes	0.67	226	Yes	0.87
	75	222	217	Yes	0.74	224	Yes	0.80	228	Yes	0.96
	80	222	220	Yes	0.85	226	Yes	0.87	232	Yes	>0.99
	85	222	223	Yes	0.92	230	Yes	0.96	235	Yes	>0.99
	90	222	227	Yes	0.97	234	Yes	0.99	240	Yes	>0.99
	95	222	233	Yes	>0.99	240	Yes	>0.99	246	Yes	>0.99
6	5	229	184	No	<0.01	187	No	<0.01	190	No	<0.01
	10	229	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	229	194	No	<0.01	198	No	<0.01	201	No	<0.01
	20	229	197	No	<0.01	201	No	<0.01	205	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	25	229	199	No	0.01	204	No	<0.01	208	No	<0.01
	30	229	202	No	0.02	207	No	0.01	211	No	<0.01
	35	229	204	No	0.03	209	No	0.01	213	No	<0.01
	40	229	206	No	0.05	212	No	0.04	216	No	<0.01
	45	229	208	No	0.09	214	No	0.07	218	No	<0.01
	50	229	210	No	0.13	216	No	0.11	220	No	0.01
	55	229	212	No	0.19	218	No	0.17	223	No	0.04
	60	229	214	No	0.27	220	No	0.25	225	No	0.13
	65	229	216	No	0.36	223	No	0.39	227	No	0.28
	70	229	219	Yes	0.50	225	Yes	0.50	230	Yes	0.61
	75	229	221	Yes	0.64	228	Yes	0.66	233	Yes	0.87
	80	229	224	Yes	0.77	231	Yes	0.79	236	Yes	0.98
	85	229	227	Yes	0.87	234	Yes	0.89	239	Yes	>0.99
	90	229	231	Yes	0.95	238	Yes	0.96	244	Yes	>0.99
	95	229	237	Yes	0.99	245	Yes	>0.99	251	Yes	>0.99
7	5	231	189	No	<0.01	191	No	<0.01	192	No	<0.01
	10	231	195	No	<0.01	197	No	<0.01	199	No	<0.01
	15	231	199	No	<0.01	202	No	<0.01	204	No	<0.01
	20	231	203	No	<0.01	206	No	<0.01	208	No	<0.01
	25	231	206	No	0.01	209	No	0.01	211	No	<0.01
	30	231	208	No	0.03	211	No	0.01	214	No	<0.01
	35	231	211	No	0.06	214	No	0.03	216	No	<0.01
	40	231	213	No	0.09	216	No	0.06	219	No	<0.01
	45	231	215	No	0.14	219	No	0.12	221	No	<0.01
	50	231	217	No	0.20	221	No	0.18	224	No	0.02
	55	231	219	No	0.27	223	No	0.26	226	No	0.08
	60	231	222	No	0.40	226	No	0.40	229	No	0.28

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	65	231	224	Yes	0.50	228	Yes	0.50	231	Yes	0.50
	70	231	226	Yes	0.60	231	Yes	0.60	234	Yes	0.80
	75	231	229	Yes	0.73	233	Yes	0.70	237	Yes	0.96
	80	231	232	Yes	0.83	236	Yes	0.82	240	Yes	0.99
	85	231	235	Yes	0.91	240	Yes	0.93	244	Yes	>0.99
	90	231	239	Yes	0.97	245	Yes	0.98	249	Yes	>0.99
	95	231	246	Yes	>0.99	251	Yes	>0.99	256	Yes	>0.99
8	5	234	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	234	199	No	<0.01	201	No	<0.01	203	No	<0.01
	15	234	203	No	<0.01	206	No	<0.01	208	No	<0.01
	20	234	207	No	0.01	210	No	0.01	212	No	<0.01
	25	234	210	No	0.03	213	No	0.01	215	No	<0.01
	30	234	212	No	0.04	216	No	0.03	218	No	<0.01
	35	234	215	No	0.08	219	No	0.07	221	No	<0.01
	40	234	217	No	0.13	221	No	0.10	224	No	<0.01
	45	234	220	No	0.21	224	No	0.19	226	No	0.01
	50	234	222	No	0.28	226	No	0.26	229	No	0.08
	55	234	224	No	0.37	228	No	0.35	231	No	0.20
	60	234	227	Yes	0.50	231	Yes	0.50	234	Yes	0.50
	65	234	229	Yes	0.59	233	Yes	0.60	237	Yes	0.80
	70	234	232	Yes	0.72	236	Yes	0.74	239	Yes	0.92
	75	234	234	Yes	0.79	239	Yes	0.81	242	Yes	0.99
	80	234	237	Yes	0.87	242	Yes	0.90	246	Yes	>0.99
	85	234	241	Yes	0.95	246	Yes	0.96	250	Yes	>0.99
	90	234	246	Yes	0.99	251	Yes	0.99	255	Yes	>0.99
	95	234	252	Yes	>0.99	258	Yes	>0.99	262	Yes	>0.99

Note. Prob. = Probability.

Table 3.11. Proficiency Projections 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	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
2	5	192	142	No	<0.01	149	No	<0.01	153	No	<0.01
	10	192	148	No	<0.01	155	No	<0.01	159	No	<0.01
	15	192	152	No	<0.01	159	No	<0.01	164	No	<0.01
	20	192	156	No	0.01	162	No	<0.01	167	No	<0.01
	25	192	159	No	0.01	165	No	0.01	170	No	<0.01
	30	192	161	No	0.02	168	No	0.02	173	No	<0.01
	35	192	163	No	0.04	170	No	0.03	175	No	<0.01
	40	192	166	No	0.06	172	No	0.05	177	No	<0.01
	45	192	168	No	0.09	175	No	0.07	180	No	<0.01
	50	192	170	No	0.13	177	No	0.11	182	No	<0.01
	55	192	172	No	0.16	179	No	0.17	184	No	0.01
	60	192	174	No	0.22	181	No	0.20	186	No	0.04
	65	192	177	No	0.33	183	No	0.27	188	No	0.13
	70	192	179	No	0.37	186	No	0.41	191	No	0.39
	75	192	182	Yes	0.50	188	Yes	0.50	193	Yes	0.61
	80	192	184	Yes	0.59	191	Yes	0.59	196	Yes	0.87
	85	192	188	Yes	0.71	194	Yes	0.73	200	Yes	0.99
	90	192	192	Yes	0.84	199	Yes	0.86	204	Yes	>0.99
	95	192	198	Yes	0.94	205	Yes	0.96	210	Yes	>0.99
3	5	203	155	No	<0.01	160	No	<0.01	164	No	<0.01
	10	203	161	No	<0.01	167	No	<0.01	171	No	<0.01
	15	203	166	No	<0.01	171	No	<0.01	175	No	<0.01
	20	203	169	No	<0.01	175	No	<0.01	179	No	<0.01
	25	203	172	No	0.01	178	No	0.01	182	No	<0.01
	30	203	175	No	0.02	180	No	0.02	184	No	<0.01
	35	203	178	No	0.05	183	No	0.04	187	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	40	203	180	No	0.07	185	No	0.05	189	No	<0.01
	45	203	182	No	0.09	188	No	0.09	192	No	<0.01
	50	203	185	No	0.16	190	No	0.14	194	No	0.01
	55	203	187	No	0.22	192	No	0.20	196	No	0.02
	60	203	189	No	0.29	194	No	0.24	198	No	0.08
	65	203	192	No	0.37	197	No	0.36	201	No	0.28
	70	203	194	No	0.46	199	No	0.45	203	Yes	0.50
	75	203	197	Yes	0.54	202	Yes	0.59	206	Yes	0.80
	80	203	200	Yes	0.67	205	Yes	0.68	209	Yes	0.96
	85	203	204	Yes	0.78	209	Yes	0.83	213	Yes	>0.99
	90	203	208	Yes	0.89	213	Yes	0.91	217	Yes	>0.99
	95	203	215	Yes	0.97	220	Yes	0.98	224	Yes	>0.99
4	5	209	166	No	<0.01	170	No	<0.01	173	No	<0.01
	10	209	173	No	<0.01	177	No	<0.01	179	No	<0.01
	15	209	177	No	<0.01	181	No	<0.01	184	No	<0.01
	20	209	181	No	0.01	184	No	<0.01	187	No	<0.01
	25	209	184	No	0.02	187	No	0.01	190	No	<0.01
	30	209	186	No	0.03	190	No	0.03	193	No	<0.01
	35	209	189	No	0.06	193	No	0.05	195	No	<0.01
	40	209	191	No	0.10	195	No	0.08	198	No	<0.01
	45	209	194	No	0.14	197	No	0.13	200	No	0.01
	50	209	196	No	0.20	199	No	0.19	202	No	0.02
	55	209	198	No	0.28	202	No	0.27	204	No	0.08
	60	209	200	No	0.36	204	No	0.35	207	No	0.28
	65	209	203	No	0.45	206	No	0.45	209	Yes	0.50
	70	209	205	Yes	0.55	209	Yes	0.60	211	Yes	0.72
	75	209	208	Yes	0.68	211	Yes	0.65	214	Yes	0.92

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	80	209	211	Yes	0.76	214	Yes	0.77	217	Yes	0.99
	85	209	215	Yes	0.88	218	Yes	0.90	220	Yes	>0.99
	90	209	219	Yes	0.94	222	Yes	0.96	225	Yes	>0.99
	95	209	226	Yes	0.99	229	Yes	>0.99	231	Yes	>0.99
5	5	213	175	No	<0.01	178	No	<0.01	180	No	<0.01
	10	213	181	No	<0.01	184	No	<0.01	186	No	<0.01
	15	213	186	No	0.01	189	No	0.01	191	No	<0.01
	20	213	189	No	0.02	192	No	0.01	194	No	<0.01
	25	213	192	No	0.03	195	No	0.03	197	No	<0.01
	30	213	195	No	0.07	197	No	0.05	199	No	<0.01
	35	213	197	No	0.11	200	No	0.10	202	No	<0.01
	40	213	199	No	0.14	202	No	0.15	204	No	0.01
	45	213	201	No	0.20	204	No	0.18	206	No	0.02
	50	213	204	No	0.31	206	No	0.26	208	No	0.08
	55	213	206	No	0.36	209	No	0.40	211	No	0.28
	60	213	208	No	0.45	211	No	0.45	213	Yes	0.50
	65	213	210	Yes	0.55	213	Yes	0.55	215	Yes	0.72
	70	213	213	Yes	0.64	215	Yes	0.65	217	Yes	0.87
	75	213	215	Yes	0.73	218	Yes	0.78	220	Yes	0.98
	80	213	218	Yes	0.84	221	Yes	0.88	223	Yes	>0.99
	85	213	222	Yes	0.91	224	Yes	0.94	226	Yes	>0.99
	90	213	226	Yes	0.97	228	Yes	0.98	230	Yes	>0.99
	95	213	232	Yes	0.99	235	Yes	>0.99	237	Yes	>0.99
6	5	218	181	No	<0.01	183	No	<0.01	185	No	<0.01
	10	218	187	No	<0.01	189	No	<0.01	191	No	<0.01
	15	218	191	No	0.01	193	No	<0.01	195	No	<0.01
	20	218	195	No	0.01	197	No	0.01	198	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	25	218	198	No	0.03	199	No	0.02	201	No	<0.01
	30	218	200	No	0.04	202	No	0.04	203	No	<0.01
	35	218	202	No	0.07	204	No	0.06	206	No	<0.01
	40	218	205	No	0.14	206	No	0.10	208	No	<0.01
	45	218	207	No	0.16	209	No	0.19	210	No	0.01
	50	218	209	No	0.23	211	No	0.22	212	No	0.04
	55	218	211	No	0.31	213	No	0.31	214	No	0.13
	60	218	213	No	0.40	215	No	0.40	216	No	0.28
	65	218	215	No	0.45	217	Yes	0.50	218	Yes	0.50
	70	218	218	Yes	0.60	219	Yes	0.60	221	Yes	0.80
	75	218	220	Yes	0.69	222	Yes	0.74	223	Yes	0.92
	80	218	223	Yes	0.80	225	Yes	0.84	226	Yes	0.99
	85	218	226	Yes	0.89	228	Yes	0.92	229	Yes	>0.99
	90	218	231	Yes	0.97	232	Yes	0.97	233	Yes	>0.99
	95	218	237	Yes	0.99	238	Yes	>0.99	239	Yes	>0.99
7	5	222	185	No	<0.01	186	No	<0.01	187	No	<0.01
	10	222	191	No	<0.01	192	No	<0.01	193	No	<0.01
	15	222	195	No	0.01	196	No	<0.01	197	No	<0.01
	20	222	198	No	0.01	200	No	0.01	201	No	<0.01
	25	222	201	No	0.02	202	No	0.01	203	No	<0.01
	30	222	204	No	0.05	205	No	0.03	206	No	<0.01
	35	222	206	No	0.06	207	No	0.06	208	No	<0.01
	40	222	208	No	0.10	210	No	0.11	211	No	<0.01
	45	222	210	No	0.15	212	No	0.14	213	No	0.01
	50	222	212	No	0.21	214	No	0.20	215	No	0.02
	55	222	214	No	0.24	216	No	0.27	217	No	0.08
	60	222	217	No	0.36	218	No	0.36	219	No	0.20

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	65	222	219	No	0.45	220	No	0.45	221	No	0.39
	70	222	221	Yes	0.55	223	Yes	0.60	224	Yes	0.72
	75	222	224	Yes	0.68	225	Yes	0.69	226	Yes	0.87
	80	222	226	Yes	0.76	228	Yes	0.80	229	Yes	0.98
	85	222	230	Yes	0.88	231	Yes	0.89	232	Yes	>0.99
	90	222	234	Yes	0.95	235	Yes	0.96	237	Yes	>0.99
	95	222	240	Yes	0.99	241	Yes	0.99	243	Yes	>0.99
8	5	225	188	No	<0.01	189	No	<0.01	190	No	<0.01
	10	225	194	No	<0.01	195	No	<0.01	196	No	<0.01
	15	225	198	No	0.01	199	No	<0.01	200	No	<0.01
	20	225	201	No	0.01	203	No	0.01	203	No	<0.01
	25	225	204	No	0.03	205	No	0.02	206	No	<0.01
	30	225	207	No	0.04	208	No	0.04	209	No	<0.01
	35	225	209	No	0.07	210	No	0.06	211	No	<0.01
	40	225	211	No	0.11	213	No	0.10	213	No	<0.01
	45	225	214	No	0.15	215	No	0.14	216	No	0.01
	50	225	216	No	0.21	217	No	0.20	218	No	0.02
	55	225	218	No	0.29	219	No	0.28	220	No	0.08
	60	225	220	No	0.37	221	No	0.36	222	No	0.20
	65	225	222	No	0.45	223	No	0.45	224	No	0.39
	70	225	225	Yes	0.59	226	Yes	0.59	227	Yes	0.72
	75	225	227	Yes	0.67	228	Yes	0.68	229	Yes	0.87
	80	225	230	Yes	0.79	231	Yes	0.80	232	Yes	0.98
	85	225	233	Yes	0.87	235	Yes	0.90	236	Yes	>0.99
	90	225	238	Yes	0.96	239	Yes	0.96	240	Yes	>0.99
	95	225	244	Yes	0.99	245	Yes	0.99	246	Yes	>0.99

Note. Prob. = Probability.

Table 3.12. Proficiency Projections Based on RIT Scores—Science

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
5	5	211	179	No	<0.01	182	No	<0.01	184	No	<0.01
	10	211	184	No	<0.01	187	No	<0.01	189	No	<0.01
	15	211	187	No	0.01	190	No	0.01	192	No	<0.01
	20	211	190	No	0.03	193	No	0.02	195	No	<0.01
	25	211	192	No	0.05	195	No	0.03	197	No	<0.01
	30	211	194	No	0.07	197	No	0.05	199	No	<0.01
	35	211	196	No	0.11	199	No	0.09	201	No	<0.01
	40	211	198	No	0.17	201	No	0.15	203	No	0.01
	45	211	199	No	0.21	203	No	0.23	205	No	0.04
	50	211	201	No	0.29	204	No	0.23	207	No	0.13
	55	211	203	No	0.34	206	No	0.33	208	No	0.20
	60	211	204	No	0.39	208	No	0.44	210	No	0.39
	65	211	206	Yes	0.50	209	Yes	0.50	212	Yes	0.61
	70	211	208	Yes	0.61	211	Yes	0.62	214	Yes	0.80
	75	211	210	Yes	0.71	213	Yes	0.72	216	Yes	0.92
	80	211	212	Yes	0.79	216	Yes	0.81	218	Yes	0.98
	85	211	215	Yes	0.86	218	Yes	0.88	221	Yes	>0.99
	90	211	218	Yes	0.93	221	Yes	0.95	224	Yes	>0.99
	95	211	223	Yes	0.98	226	Yes	0.99	229	Yes	>0.99
8	5	223	186	No	<0.01	187	No	<0.01	188	No	<0.01
	10	223	191	No	<0.01	193	No	<0.01	194	No	<0.01
	15	223	195	No	<0.01	196	No	<0.01	197	No	<0.01
	20	223	198	No	<0.01	199	No	<0.01	200	No	<0.01
	25	223	200	No	0.01	202	No	0.01	203	No	<0.01
	30	223	202	No	0.02	204	No	0.01	205	No	<0.01
	35	223	204	No	0.03	206	No	0.02	207	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	40	223	206	No	0.05	208	No	0.04	209	No	<0.01
	45	223	208	No	0.06	210	No	0.07	211	No	<0.01
	50	223	210	No	0.10	211	No	0.07	213	No	<0.01
	55	223	211	No	0.13	213	No	0.11	215	No	0.01
	60	223	213	No	0.19	215	No	0.17	217	No	0.04
	65	223	215	No	0.26	217	No	0.25	219	No	0.13
	70	223	217	No	0.31	219	No	0.34	221	No	0.28
	75	223	219	No	0.40	221	No	0.45	223	Yes	0.50
	80	223	222	Yes	0.55	224	Yes	0.61	226	Yes	0.80
	85	223	224	Yes	0.65	227	Yes	0.75	228	Yes	0.92
	90	223	228	Yes	0.81	230	Yes	0.86	232	Yes	0.99
	95	223	233	Yes	0.94	236	Yes	0.97	238	Yes	>0.99

Note. Prob. = Probability.

Table 3.13. Proficiency Projections Based on RIT Scores—High School Physical Science

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
8	5	225	186	No	<0.01	187	No	<0.01	188	No	<0.01
	10	225	191	No	<0.01	193	No	<0.01	194	No	<0.01
	15	225	195	No	<0.01	196	No	<0.01	197	No	<0.01
	20	225	198	No	<0.01	199	No	<0.01	200	No	<0.01
	25	225	200	No	<0.01	202	No	<0.01	203	No	<0.01
	30	225	202	No	0.01	204	No	0.01	205	No	<0.01
	35	225	204	No	0.02	206	No	0.01	207	No	<0.01
	40	225	206	No	0.03	208	No	0.02	209	No	<0.01
	45	225	208	No	0.04	210	No	0.04	211	No	<0.01

Grade	Start Percentile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		Proficient	Prob.		Proficient	Prob.
	50	225	210	No	0.06	211	No	0.04	213	No	<0.01
	55	225	211	No	0.08	213	No	0.07	215	No	<0.01
	60	225	213	No	0.13	215	No	0.11	217	No	0.01
	65	225	215	No	0.19	217	No	0.17	219	No	0.04
	70	225	217	No	0.22	219	No	0.25	221	No	0.13
	75	225	219	No	0.31	221	No	0.34	223	No	0.28
	80	225	222	No	0.45	224	Yes	0.50	226	Yes	0.61
	85	225	224	Yes	0.55	227	Yes	0.66	228	Yes	0.80
	90	225	228	Yes	0.74	230	Yes	0.79	232	Yes	0.98
	95	225	233	Yes	0.90	236	Yes	0.95	238	Yes	>0.99

Note. Prob. = Probability.

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