Predicting Proficiency on the Florida Benchmarks for Excellent Student Thinking (B.E.S.T.) End-of-Course (EOC) Assessments Based on NWEA MAP Growth Scores

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Linking Study Updates

Date	Description
2025-01-22	Initial study was conducted for Florida B.E.S.T. End-of-Course (EOC) assessments in Algebra 1 and Geometry using Spring 2024 data, incorporating the 2020 MAP Growth norms.

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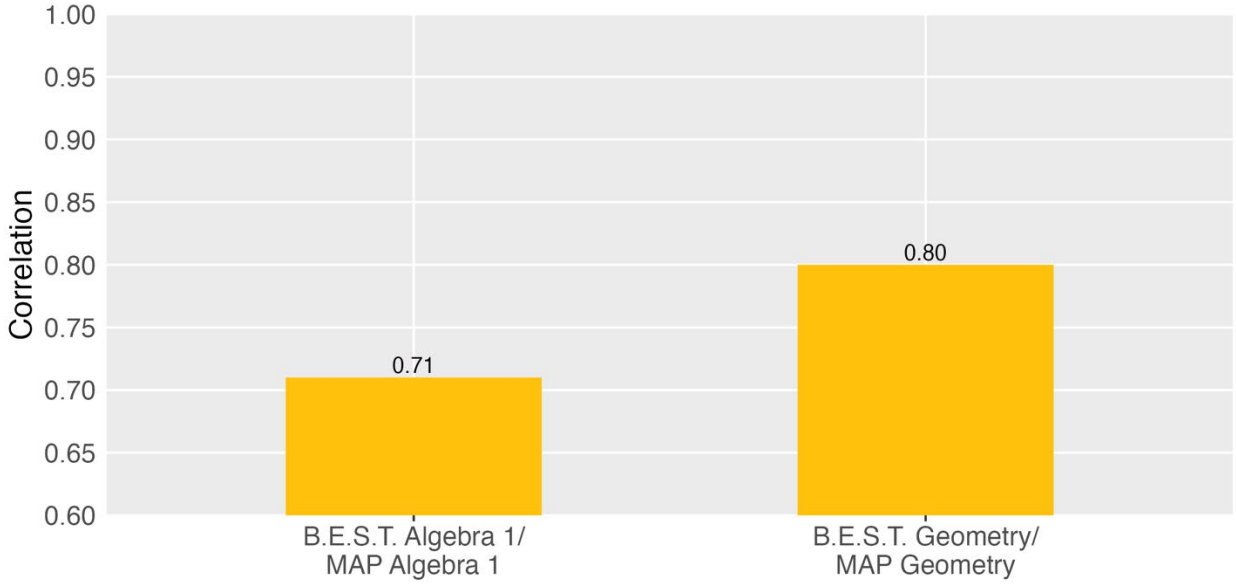
Executive Summary

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 Florida Benchmarks for Excellent Student Thinking (B.E.S.T.) End-of-Course (EOC) assessments described in this report provides RIT cut scores for the fall, winter, and spring MAP Growth administrations that correspond to the performance levels of the B.E.S.T. EOC assessments in Algebra 1 and Geometry. 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 took the MAP Growth Algebra 1 and Geometry assessments along with the corresponding B.E.S.T. Algebra 1 and Geometry tests in Spring 2024. In total, this study included 5,542 students from 13 schools within Pasco County in Florida.

Prior to initiating the linking analyses, NWEA confirmed that the content standards used to construct the MAP Growth interim assessments were aligned with those of the B.E.S.T. EOC assessments, thus warranting a connection. Further investigation into the relationship between MAP Growth and B.E.S.T. EOC assessments involved calculating correlation coefficients to illustrate the association between the MAP Growth scores and the summative test scores of the B.E.S.T. EOC assessments. 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. The correlations between the MAP Growth and B.E.S.T. EOC test scores in both Algebra 1 and Geometry are higher than 0.70, indicating that MAP Growth tests are good assessments for predicting performance on the B.E.S.T. EOC spring summative assessments.

Figure E.1. Correlations Between B.E.S.T. EOC and MAP Growth Tests



The equipercentile linking method and the most recent MAP Growth norms (He, 2022; Thum & Kuhfeld, 2020) were then used to produce the RIT cut scores that correspond to performance levels on the B.E.S.T. EOC assessments for each subject. While RIT cut scores were generated for every performance level on the B.E.S.T. EOC assessments, Table E.1 presents the Level 3 cut scores that indicate the minimum score a student must obtain to be considered proficient per this linking study. Details regarding RIT cut scores for other performance levels are provided in Section 3.3 of this report.

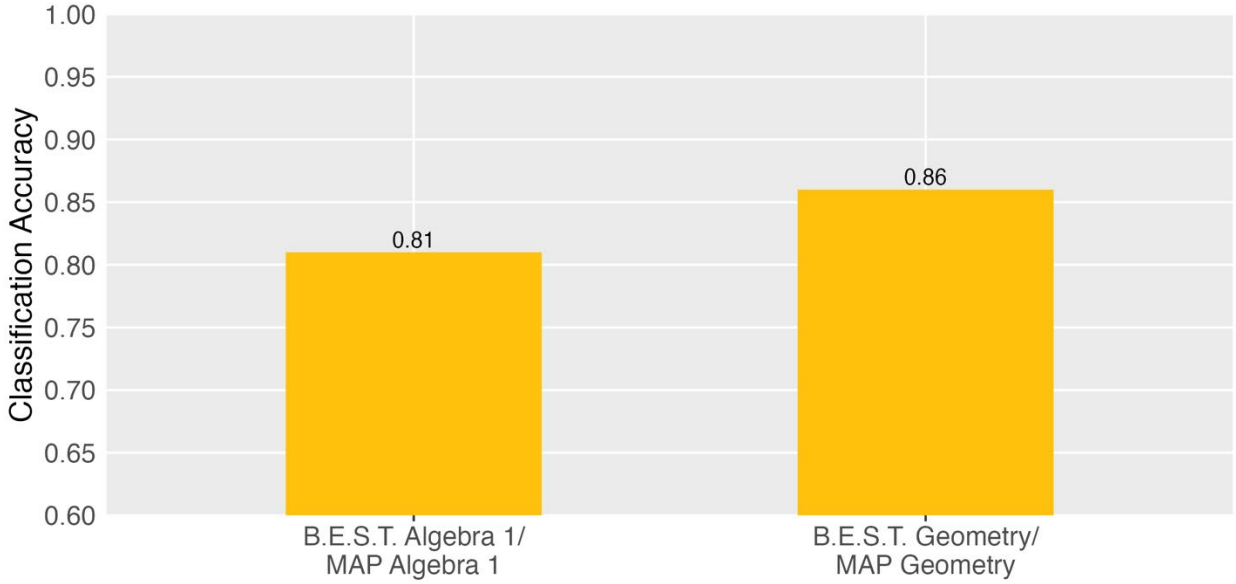
Table E.1. MAP Growth RIT Cut Scores for B.E.S.T. EOC Level 3 or higher

Assessment	Term	Cut Score
B.E.S.T. Algebra 1	Spring	400
MAP Growth Algebra 1	Fall	227
	Winter	231
	Spring	235
B.E.S.T. Geometry	Spring	404
MAP Growth Geometry	Fall	231
	Winter	235
	Spring	239

Educators can use these cut scores to determine whether students are on track for proficiency (Level 3 or higher) on the state assessments. For example, the Level 3 cut score on the B.E.S.T. Algebra 1 test is 400. A student with a MAP Growth Algebra 1 RIT score of 227 in the fall is likely to meet proficiency on the B.E.S.T. Algebra 1 test in the spring, whereas a student with a RIT score lower than 227 in the fall is in jeopardy of not meeting proficiency.

As further evidence that MAP Growth scores can be used to predict students' proficiency on the state tests, NWEA calculated classification accuracy statistics that show how well the RIT scores correctly classified, or predicted, students as Level 3 or higher on the B.E.S.T. EOC tests. A high statistic indicates high accuracy. Across the subject areas, the MAP Growth assessments have at least a 0.80 classification accuracy rate, meaning they accurately predicted student proficiency on the state tests for 80% or more of the sample. These results indicate that MAP Growth scores have a high accuracy rate of identifying student proficiency on the B.E.S.T. Algebra 1 and Geometry tests that are the focus of this report, as illustrated in Figure E.2.

Figure E.2. Classification Accuracy of MAP Growth Tests



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 the 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 outlines findings from a linking study performed by NWEA aiming to statistically connect the Rasch Unit (RIT) scores obtained from the MAP Growth assessments with the results of the B.E.S.T. EOC spring summative assessments in Algebra 1 and Geometry. The data utilized to generate this report are comprised of the B.E.S.T. EOC test scores collected during Spring 2024. Specifically, this report presents the following results:

1. Student demographics
2. Descriptive statistics of test scores
3. MAP Growth cut scores from fall, winter, and spring that correspond to the performance levels on the spring B.E.S.T. EOC assessments
4. Classification accuracy statistics to determine the degree to which MAP Growth accurately predicts student proficiency status on the B.E.S.T. EOC tests
5. The probability of achieving proficiency on the B.E.S.T. EOC assessments based on MAP Growth RIT scores from fall, winter, and spring

1.2. Assessment Overview

Florida's statewide standardized end-of-course (EOC) assessments in Algebra 1 and Geometry are aligned to the Benchmarks for Excellent Student Thinking (B.E.S.T.) Standards for Mathematics that were adopted by the State Board of Education on February 12, 2020. Based on their test scores, students are placed into one of five performance levels, ranging from Level 1 to Level 5. The Level 3 cut score demarks the minimum level of performance considered to be proficient for accountability purposes.

MAP Growth tests are adaptive interim assessments aligned to state-specific content standards and administered in the fall, winter, and spring. Scores are reported on the RIT vertical scale with a range of 100 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 2020 (Thum & Kuhfeld, 2020) for the general mathematics and reading tests. The norms study for the MAP Growth course-specific tests was conducted and published in December 2022 (He, 2022).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2024 administration of the MAP Growth and B.E.S.T. EOC assessments. Each student's state testing record was matched to their MAP Growth score based on the student's state identifiers. Only students who have scores on both the MAP Growth and B.E.S.T. EOC summative assessments in Spring 2024 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 both the MAP Growth and B.E.S.T. EOC assessments, including the 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 between the MAP Growth RIT scores and B.E.S.T. EOC scores are also provided to answer the question "How well do the test scores from MAP Growth (that reference the RIT scale) correlate to the scores obtained from the B.E.S.T. EOC tests (that reference some other scale) in the same subject?" 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 Generation

MAP Growth cut scores that predict student achievement on the B.E.S.T. Algebra 1 and Geometry assessments are reported. Since the state EOC tests are not grade dependent (i.e., any student can potentially take the assessment once they finish the course), the spring RIT cuts were established based on all the students in the study sample regardless of their grade. Fall and winter RIT cut scores were then projected using the most recent NWEA norms and the spring RIT cuts. Percentile ranks based on the 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 in Algebra 1 and Geometry that correspond to the B.E.S.T. EOC 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., B.E.S.T. EOC tests). Its equipercentile equivalent score on Test Y (e.g., MAP Growth tests), $e_y(x)$, 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 B.E.S.T. EOC tests on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on B.E.S.T. EOC 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 EOC subject. This information was used to calculate the fall and winter cut scores for each EOC subject. 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.

2.5. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the B.E.S.T. EOC 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 (i.e., Level 3 or higher) or not proficient on the B.E.S.T. EOC 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) / (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 Level 3 RIT cut does not guarantee that the student is proficient on the state test. Instead, it can be claimed that a student meeting the RIT cut score has a 50% chance of reaching proficiency on the state test, with their chances increasing the greater their score is from the cut. The proficiency projections indicate these probabilities for various RIT scores throughout the year.

In addition to calculating the MAP Growth fall and winter cut scores, the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the B.E.S.T. EOC tests based on a student's RIT scores from fall and winter:

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

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 score (e.g., fall or winter) to the spring RIT score,
- $RIT_{SpringCut}$ is the MAP Growth at Level 3 cut score for spring, and
- SD is the conditional standard deviation of the expected growth, g.

The equation below was used to estimate the probability of a student achieving proficiency (Level 3 or higher) performance on the B.E.S.T. EOC tests based on their spring RIT score (RIT_{Spring}):

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

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

3. Results

3.1. Study Sample

The data for this study were collected in Spring 2024 from 13 schools within Pasco County, Florida. Only students who took both the MAP Growth and B.E.S.T. EOC assessments were included in the study sample. 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 B.E.S.T. EOC tests. Since the student distributions in the original study sample are different from the target B.E.S.T. EOC population, post-stratification weights were applied to improve the sample representativeness. Table 3.3 presents the demographic distributions of the sample after weighting, which are almost identical to the B.E.S.T. EOC student population distributions. The analyses in this study were conducted using the weighted sample.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Demographic Subgroup	Assessment	Percentage of Students by Sample (%)	
	B.E.S.T. EOC	Algebra 1	Geometry
	MAP Growth	Algebra 1	Geometry
	Total N–Count	**2,209**	**3,342**
Race	Asian	3.6	4.8
	Black	15.8	13.0
	Hispanic	30.1	29.1
	Other	1.5	1.4
	White	49.1	51.6
Sex	Female	47.8	47.8
	Male	52.2	52.2
Performance Level	Level 1	29.3	21.2
	Level 2	35.4	26.7
	Level 3	24.8	32.6
	Level 4	8.9	10.2
	Level 5	1.6	9.2

Note. Other = American Indian or Not Reported or Pacific Islander or Two or More Races.

Table 3.2. Linking Study Population Demographics

Demographic Subgroup	Assessment	Percentage of Students by Sample (%)	
	B.E.S.T. EOC	Algebra 1	Geometry
	MAP Growth	Algebra 1	Geometry
	Total N–Count	**248,665**	**221,080**
Race	Asian	3.0	3.2
	Black	20.8	20.3
	Hispanic	38.4	37.4
	Other	5.6	4.9
	White	32.2	34.1
Sex	Female	49.2	49.4
	Male	50.8	50.6
	Level 1	22.8	24.3

Demographic Subgroup	Assessment	Percentage of Students by Sample (%)	
	B.E.S.T. EOC	Algebra 1	Geometry
	MAP Growth	Algebra 1	Geometry
Performance Level	Level 2	24.6	23.9
	Level 3	24.9	28.3
	Level 4	17.7	10.2
	Level 5	10.0	13.3

Note. Other = American Indian or Not Reported or Pacific Islander or Two or More Races.

Table 3.3. Linking Study Sample Demographics (Weighted)

Demographic Subgroup	Assessment	Percentage of Students by Sample (%)	
	B.E.S.T. EOC	Algebra 1	Geometry
	MAP Growth	Algebra 1	Geometry
	Total N–Count	**2,209**	**3,342**
Race	Asian	3.0	3.2
	Black	20.8	20.3
	Hispanic	38.4	37.4
	Other	5.6	4.9
	White	32.2	34.1
Sex	Female	49.2	49.4
	Male	50.8	50.6
Performance Level	Level 1	22.8	24.3
	Level 2	24.6	23.9
	Level 3	24.9	28.3
	Level 4	17.7	10.2
	Level 5	10.0	13.3

Note. Other = American Indian or Not Reported or Pacific Islander or Two or More Races.

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and B.E.S.T. EOC test scores from Spring 2024, including the correlation coefficients (*r*) between them. The coefficients between the scores are 0.71 for Algebra 1 and 0.80 for Geometry. 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 B.E.S.T. EOC assessments.

Table 3.4. Descriptive Statistics of Test Scores

Test	N	*r*	Mean	SD	Min.	Max.
B.E.S.T. Algebra 1	2,209	0.71	398.9	28.6	325	473
MAP Growth Algebra 1			236.3	16.8	181	290
B.E.S.T. Geometry	3,342	0.80	402.4	25.5	325	472
MAP Growth Geometry			240.8	18.0	198	303

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

3.3. MAP Growth Cut Scores

Table 3.5 presents the B.E.S.T. EOC scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges. Bold numbers indicate the cut scores considered to be proficient (Level 3 or higher). This table can be used to predict a student's likely performance level on the B.E.S.T. EOC spring assessments when MAP Growth is taken in the fall, winter, or spring. For example, a student who obtained a MAP Growth Algebra 1 RIT score of 227 in the fall is likely to achieve Level 3 performance on the B.E.S.T. Algebra 1 test. 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 (i.e., 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. State and RIT Cut Scores for B.E.S.T. Algebra 1 and Geometry

B.E.S.T. Algebra 1										
Level	**Level 1**		**Level 2**		**Level 3**		**Level 4**		**Level 5**	
Scale Score	325–378		379–399		**400**–417		418–434		435–475	
MAP Growth Algebra 1										
Term	**Level 1**		**Level 2**		**Level 3**		**Level 4**		**Level 5**	
	RIT	**Pct**	**RIT**	**Pct**	**RIT**	**Pct**	**RIT**	**Pct**	**RIT**	**Pct**
Fall	100–216	1–22	217–226	23–44	**227**–237	45–70	238–249	71–89	250–350	90–99
Winter	100–219	1–22	220–230	23–44	**231**–241	45–68	242–254	69–88	255–350	89–99
Spring	100–223	1–25	224–234	26–45	**235**–245	46–67	246–258	68–86	259–350	87–99
B.E.S.T. Geometry										
Level	**Level 1**		**Level 2**		**Level 3**		**Level 4**		**Level 5**	
Scale Score	325–384		385–403		**404**–422		423–431		432–475	
MAP Growth Geometry										
Term	**Level 1**		**Level 2**		**Level 3**		**Level 4**		**Level 5**	
	RIT	**Pct**	**RIT**	**Pct**	**RIT**	**Pct**	**RIT**	**Pct**	**RIT**	**Pct**
Fall	100–219	1–11	220–230	12–29	**231**–245	30–63	246–253	64–79	254–350	80–99
Winter	100–222	1–12	223–234	13–30	**235**–250	31–63	251–258	64–77	259–350	78–99
Spring	100–226	1–14	227–238	15–33	**239**–254	34–65	255–263	66–80	264–350	81–99

Note. Pct = Percentile

3.4. Classification Accuracy

Table 3.6 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 B.E.S.T. EOC tests, providing insight into the predictive validity of MAP Growth. The classification accuracy rates are 0.81 for Algebra 1 and 0.86 for Geometry.

These values suggest that the RIT cut scores are good at classifying students as proficient (Level 3 or higher) or not proficient on the B.E.S.T. EOC assessments.

Although the results show that MAP Growth scores can be used to accurately classify students as likely to be proficient on the B.E.S.T. EOC tests, there is a notable limitation to how these results should be used and interpreted. The B.E.S.T. EOC 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.

Table 3.6. Classification Accuracy Results

N	Proficient Cut		Class. Accuracy	Rate		Sensitivity	Specificity	Precision	AUC
	RIT	State		FP	FN				
B.E.S.T. Algebra 1									
2,209	235	400	0.81	0.21	0.17	0.83	0.79	0.82	0.81
B.E.S.T. Geometry									
3,342	239	404	0.86	0.14	0.14	0.86	0.86	0.87	0.86

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

3.5. Proficiency Projections

Table 3.7 and Table 3.8 present the estimated probability of achieving Level 3 or higher performance on the B.E.S.T. EOC tests based on RIT scores from fall, winter, or spring. Due to measurement errors in all test scores, the Level 3 MAP Growth cuts do not guarantee that a student will reach proficiency on the B.E.S.T. EOC tests. Instead, they indicate a 50% chance that a student will achieve a particular performance level. Therefore, these projections further elucidate the Level 3 cut scores by providing the likelihood of reaching proficiency on the state tests in the spring at a given percentile throughout the year. For example, an educator can use Table 3.7 to estimate that a student who obtained a MAP Growth Algebra 1 RIT score of 227 in the fall has a 50% probability of reaching Level 3 or higher on the B.E.S.T. Algebra 1 test in the spring.

Table 3.7. Proficiency Projections Based on RIT Scores—Algebra 1

Pct	Spring RIT Cut	Fall			Winter			Spring		
		RIT	Projected Proficiency		RIT	Projected Proficiency		RIT	Projected Proficiency	
			Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
5	235	202	No	0.01	204	No	<0.01	204	No	<0.01
10	235	208	No	0.02	210	No	0.01	212	No	<0.01
15	235	212	No	0.06	214	No	0.03	216	No	<0.01
20	235	215	No	0.1	218	No	0.07	220	No	<0.01
25	235	218	No	0.16	221	No	0.13	224	No	<0.01
30	235	220	No	0.25	224	No	0.21	227	No	0.01
35	235	223	No	0.35	226	No	0.29	229	No	0.04
40	235	225	No	0.42	228	No	0.37	232	No	0.2
45	235	227	Yes	0.5	231	Yes	0.5	234	No	0.39
50	235	229	Yes	0.58	233	Yes	0.59	237	Yes	0.72
55	235	231	Yes	0.65	235	Yes	0.67	239	Yes	0.87
60	235	233	Yes	0.72	238	Yes	0.79	242	Yes	0.98
65	235	235	Yes	0.78	240	Yes	0.85	245	Yes	>0.99

Pct	Spring RIT Cut	Fall			Winter			Spring		
		RIT	Projected Proficiency		RIT	Projected Proficiency		RIT	Projected Proficiency	
			Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
70	235	237	Yes	0.84	242	Yes	0.89	247	Yes	>0.99
75	235	240	Yes	0.92	245	Yes	0.94	250	Yes	>0.99
80	235	243	Yes	0.95	248	Yes	0.97	254	Yes	>0.99
85	235	246	Yes	0.98	252	Yes	0.99	257	Yes	>0.99
90	235	250	Yes	0.99	256	Yes	>0.99	262	Yes	>0.99
95	235	256	Yes	>0.99	263	Yes	>0.99	269	Yes	>0.99

Note. Pct = percentile; Prob. = probability.

Table 3.8. Proficiency Projections Based on RIT Scores—Geometry

Pct	Spring RIT Cut	Fall			Winter			Spring		
		RIT	Projected Proficiency		RIT	Projected Proficiency		RIT	Projected Proficiency	
			Level 3	Prob.		Level 3	Prob.		Level 3	Prob.
5	239	212	No	0.01	213	No	<0.01	215	No	<0.01
10	239	218	No	0.06	220	No	0.03	222	No	<0.01
15	239	222	No	0.13	225	No	0.1	227	No	<0.01
20	239	225	No	0.25	228	No	0.18	231	No	0.01
25	239	228	No	0.37	232	No	0.35	234	No	0.08
30	239	231	Yes	0.5	234	No	0.45	237	No	0.28
35	239	233	Yes	0.59	237	Yes	0.6	240	Yes	0.61
40	239	235	Yes	0.67	239	Yes	0.7	242	Yes	0.8
45	239	238	Yes	0.81	242	Yes	0.82	245	Yes	0.96
50	239	240	Yes	0.87	244	Yes	0.88	247	Yes	0.99
55	239	242	Yes	0.91	247	Yes	0.94	249	Yes	>0.99
60	239	244	Yes	0.94	249	Yes	0.97	252	Yes	>0.99
65	239	246	Yes	0.96	251	Yes	0.98	254	Yes	>0.99
70	239	249	Yes	0.99	254	Yes	0.99	257	Yes	>0.99
75	239	251	Yes	0.99	257	Yes	>0.99	260	Yes	>0.99
80	239	254	Yes	>0.99	260	Yes	>0.99	263	Yes	>0.99
85	239	257	Yes	>0.99	264	Yes	>0.99	267	Yes	>0.99
90	239	262	Yes	>0.99	268	Yes	>0.99	272	Yes	>0.99
95	239	268	Yes	>0.99	275	Yes	>0.99	279	Yes	>0.99

Note. Pct = percentile; Prob. = probability.

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