

Predicting Proficiency on the Maryland Comprehensive Assessment Program for ELA/Literacy 10 Based on NWEA MAP Growth Scores

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NWEA Psychometrics and Analytics

Linking Study Updates

Date	Description
2025-12	Conducted the linking study for MCAP ELA/Literacy 10 based on the 2025 norms and Spring 2024 data.

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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 Maryland Comprehensive Assessment Program (MCAP) ELA/Literacy 10 assessment described in this report provides RIT cut scores for the fall, winter, and spring MAP Growth administrations that correspond to the MCAP ELA/Literacy 10 assessment performance levels. The MCAP ELA/Literacy 10 assessment is typically administered after students have completed most of the required coursework. While the majority of test takers are in grade 10, students in other grades may also take the assessment if they have met the coursework requirement. This linking study report focuses on providing RIT cut scores for grades 9–12. 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 both the MAP Growth reading and MCAP ELA/Literacy 10 assessments in Spring 2024. In total, this study included 1,922 students from 21 schools within 4 districts in Maryland.

Prior to initiating the linking study, NWEA’s content team confirmed that the content standards used to construct the MAP Growth reading interim assessment were aligned with those of the MCAP ELA/Literacy 10 summative assessment, thus warranting a connection. Further investigation into the relationship between the MAP Growth reading and MCAP ELA/Literacy 10 assessments involved calculating correlation coefficients to confirm the alignment between the MAP Growth reading scores and the summative test scores of the MCAP ELA/Literacy 10 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. The correlation between the MAP Growth reading test scores and the MCAP ELA/Literacy 10 assessment scores is 0.79, indicating that the MAP Growth reading test is a good assessment for predicting students’ performance on the MCAP ELA/Literacy 10 assessment.

The equipercntile linking method (Kolen & Brennan, 2004) was used to produce the RIT cut scores for the spring administration that correspond to performance levels on the MCAP ELA/Literacy 10 summative assessment. While RIT cut scores were generated for every performance level on the MCAP ELA/Literacy 10 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 MCAP ELA/Literacy 10 *Proficient Learner* Cut Scores

Assessment		<i>Proficient Learner</i> Cut Scores by Grade			
		9	10	11	12
MCAP ELA/Literacy 10 Spring		750			
MAP Growth Reading	Fall	221	221	221	221
	Winter	222	222	222	222
	Spring	223	223	223	223

Educators can use these cut scores to determine whether students are on track for proficiency on the state assessment. For example, the *Proficient Learner* cut score on the MCAP ELA/Literacy 10 summative test is 750. A grade 9 student with a MAP Growth reading RIT score of 221 in the fall is likely to meet proficiency on the MCAP ELA/Literacy 10 summative test in the spring, whereas a grade 9 student with a RIT score lower than 221 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 state tests, NWEA calculated classification accuracy statistics that show how well the RIT scores correctly classified, or predicted, students as proficient on the MCAP ELA/Literacy 10 summative test. The MAP Growth reading *Proficient Learner* cut score has a 0.82 accuracy rate, meaning it accurately predicted student performance on the state test for 82% of the sample. A high statistic indicates high accuracy. Overall, MAP Growth scores have a high accuracy rate of identifying student proficiency on the MCAP ELA/Literacy 10 summative test.

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 reading assessment with the results of the MCAP ELA/Literacy 10 spring summative assessment. The data utilized to generate this report are comprised of the MCAP ELA/Literacy 10 test scores collected during Spring 2024. Specifically, this report presents the following results:

1. Student sample demographics
2. Descriptive statistics of test scores
3. MAP Growth reading cut scores from fall, winter, and spring that correspond to the performance levels on the MCAP ELA/Literacy 10 spring summative assessment
4. Classification accuracy statistics to determine the degree to which MAP Growth reading accurately predicts student proficiency status on the MCAP ELA/Literacy 10 summative test
5. The probability of achieving proficiency on the MCAP ELA/Literacy 10 summative assessment based on MAP Growth reading RIT scores from fall, winter, and spring

1.2. Assessment Overview

The MCAP ELA/Literacy 10 test is Maryland's state summative assessment aligned to the Maryland College and Career Ready Standards. 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 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 2025 (NWEA, 2025).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2024 administration of the MAP Growth reading and MCAP ELA/Literacy 10 summative assessments. Each student's state testing record was matched to their MAP Growth score based on the student's first and last names, date of birth, student ID, and other available identifying information. Only students who have scores on both the MAP Growth reading and MCAP ELA/Literacy 10 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 the MAP Growth reading and MCAP ELA/Literacy 10 summative 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 reading (that reference the RIT scale) correlate to the scores obtained from the MCAP ELA/Literacy 10 summative test (that reference some other scale)?" 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 reading cut scores that predict student achievement on the MCAP ELA/Literacy 10 summative assessment are reported for grades 9–12. 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 reading RIT scores that correspond to the MCAP ELA/Literacy 10 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., MCAP ELA/Literacy 10 summative test). Its equipercentile equivalent score on Test Y (e.g., MAP Growth reading), $e_y(x)$, 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 MCAP ELA/Literacy 10 summative test on the scale of MAP Growth reading, $P(x)$ is the percentile rank of a given score on the MCAP ELA/Literacy 10 summative test, and G^{-1} is the inverse of the percentile rank function for MAP Growth reading that indicates the score on MAP Growth reading 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. This information was used to calculate the fall and winter cut scores for grades 9–12 in ELA/reading. The equation below was used to determine the previous term’s MAP Growth reading 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 reading spring score,
- $RIT_{previous}$ is the previous term’s RIT score, and
- g is the expected growth from the previous RIT (e.g., fall or winter) to the spring RIT score.

2.5. Classification Accuracy

The degree to which MAP Growth reading predicts student proficiency status on the MCAP ELA/Literacy 10 summative test can be described using classification accuracy statistics based on the MAP Growth reading spring RIT cut scores. The results show the proportion of students correctly classified by their RIT scores as proficient or not proficient on the MCAP ELA/Literacy 10 spring summative test. 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

Statistic	Description	Interpretation
False Positive (FP) Rate	FP / (FP + TN)	Proportion of students identified by MAP Growth as not proficient in those observed as not proficient on the state test
Sensitivity	TP / (TP + FN)	Proportion of students identified by MAP Growth as proficient in those observed as such on the state test
Specificity	TN / (TN + FP)	Proportion of students identified by MAP Growth as not proficient in those observed as such on the state test
Precision	TP / (TP + FP)	Proportion of students observed as proficient on the state test in those identified as such by the MAP Growth test
Area Under the Curve (AUC)	Area under the receiver operating characteristics (ROC) curve	How well MAP Growth cut scores separate the study sample into proficiency categories that match those from the state test cut scores. An AUC at or above 0.80 is considered “good” accuracy.

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

2.6. 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 on the state test, with their chances increasing the greater their score is from the cut score. The proficiency projections indicate these probabilities for various RIT scores throughout the year.

In addition to calculating the MAP Growth reading fall and winter cut scores, the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the MCAP ELA/Literacy 10 summative test 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 reading *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 MCAP ELA/Literacy 10 summative test 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 reading.

3. Results

3.1. Study Sample

Only students who have scores on both the MAP Growth reading and MCAP ELA/Literacy 10 summative assessments in Spring 2024 were included in the study sample. The data used in this study were collected from 21 schools within 4 districts in Maryland. Table 3.1 presents the distributions of students by race, sex, and performance level in three groups: the original unweighted study sample, the target population of students who took the MCAP ELA/Literacy 10 assessment (approximated using the full Maryland high school population from Spring 2024), and the sample after post-stratification weighting. The demographic distributions in the weighted sample are nearly identical to those of the target population. The analyses in this study were conducted using the weighted sample.

Table 3.1. Linking Study Sample Demographics

Demographic Subgroup		Unweighted Sample (%)	State Target Population (%)	Weighted Sample (%)
Total N-Count		1,922	58,431	1,922
Race	Asian	8.6	7.7	7.7
	Black/African American	20.2	32.4	32.4
	Hispanic/Latino of Any Race	42.2	18.8	18.8
	Other	10.0	4.9	4.9
	White	19.0	36.2	36.2
Sex	Female	48.6	50.0	50.0
	Male	51.4	50.0	50.0
Performance Level	<i>Beginning Learner</i>	9.1	6.3	6.3
	<i>Developing Learner</i>	39.2	38.4	38.4
	<i>Proficient Learner</i>	41.3	43.6	43.6
	<i>Distinguished Learner</i>	10.4	11.7	11.7

Note. "Other" includes students identified as American Indian, Native Hawaiian, Two or More Races, or Unknown.

3.2. Descriptive Statistics

Table 3.2 presents descriptive statistics of the MAP Growth reading and MCAP ELA/Literacy 10 summative test scores from Spring 2024, including the correlation coefficient (r) between them. The coefficient between the scores is 0.79. This value indicates a high positive correlation between the scores, which is important validity evidence for the claim that MAP Growth reading scores are good predictors of performance on the MCAP ELA/Literacy 10 spring summative assessment.

Table 3.2. Descriptive Statistics of Test Scores

Assessment	N	r	Mean	SD	Min.	Max.
MCAP ELA/Literacy 10	1,922	0.79	752.9	18.9	698	815
MAP Growth Reading			224.2	18.5	164	265

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

3.3. MAP Growth Cut Scores

Table 3.3 presents the MCAP ELA/Literacy 10 summative scale score ranges and the corresponding MAP Growth reading RIT cut scores and percentile ranges by grade. Bold numbers indicate the cut scores considered to be at least proficient for accountability purposes. This table can be used to predict a student's likely performance level based on the MCAP

ELA/Literacy 10 spring summative assessment when MAP Growth reading is taken in the fall and winter. For example, a grade 9 student who obtained a MAP Growth reading RIT score of 221 in the fall is likely to achieve the *Proficient Learner* performance on the MCAP ELA/Literacy 10 summative test. A grade 9 student who obtained a MAP Growth reading RIT score of 222 in the winter is also likely to achieve the *Proficient Learner* performance on the MCAP ELA/Literacy 10 spring summative assessment. The winter cut score is higher than the fall cut score because growth is expected between fall and winter as students receive more instruction during the school year.

Within this report, the cut scores for fall and winter are derived from the spring cuts and the typical growth scores from fall-to-spring or winter-to-spring. The typical growth scores are based on the default instructional weeks most encountered for each term (Weeks 4, 20, and 32 for fall, winter, and spring, respectively). Since instructional weeks often vary by district, the cut scores in this report may differ slightly from the MAP Growth score reports that reflect instructional weeks set by partners. If the actual instructional weeks deviate 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 3.3. MAP Growth Cut Scores

MCAP ELA/Literacy 10								
Term	<i>Beginning Learner</i>		<i>Developing Learner</i>		<i>Proficient Learner</i>		<i>Distinguished Learner</i>	
Spring	650–724		725–749		750–775		776–850	
MAP Growth ELA/Reading								
Grade	<i>Beginning Learner</i>		<i>Developing Learner</i>		<i>Proficient Learner</i>		<i>Distinguished Learner</i>	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
9	100–189	1–6	190–220	7–59	221–243	60–93	244–350	94–99
10	100–189	1–5	190–220	6–56	221–243	57–92	244–350	93–99
11	100–189	1–5	190–220	6–55	221–243	56–91	244–350	92–99
12	100–189	1–6	190–220	7–56	221–243	57–91	244–350	92–99
Winter								
9	100–190	1–7	191–221	8–60	222–244	61–93	245–350	94–99
10	100–190	1–6	191–221	7–57	222–244	58–92	245–350	93–99
11	100–190	1–6	191–221	7–58	222–244	59–92	245–350	93–99
12	100–190	1–8	191–221	9–60	222–244	61–92	245–350	93–99
Spring								
9	100–194	1–10	195–222	11–61	223–245	62–93	246–350	94–99
10	100–194	1–9	195–222	10–59	223–245	60–92	246–350	93–99
11	100–194	1–10	195–222	11–60	223–245	61–92	246–350	93–99
12	100–194	1–13	195–222	14–63	223–245	64–93	246–350	94–99

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

3.4. Classification Accuracy

Table 3.4 presents the classification accuracy summary statistics, including the overall classification accuracy rate. These results indicate how well MAP Growth reading spring RIT scores predict proficiency on the MCAP ELA/Literacy 10 spring summative test, providing insight into the predictive validity of MAP Growth reading. The overall classification accuracy

rate is 0.82, suggesting that the RIT cut scores are good at classifying students as proficient or not proficient on the MCAP ELA/Literacy 10 summative assessment.

Although the results show that MAP Growth reading scores can be used to predict student proficiency on the MCAP ELA/Literacy 10 summative test with relatively high accuracy, there is a notable limitation to how these results should be used and interpreted. The MAP Growth reading and MCAP ELA/Literacy 10 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 reading may not be used as a substitute for the state test and vice versa.

Table 3.4. Classification Accuracy Results

N	Proficient Cut		Class. Accuracy	Rate		Sensitivity	Specificity	Precision	AUC
	RIT	State		FP	FN				
1,922	223	750	0.82	0.21	0.15	0.85	0.79	0.83	0.82

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

3.5. Proficiency Projections

Table 3.5 presents the estimated probability of achieving proficiency on the MCAP ELA/Literacy 10 summative test based on RIT scores from fall, winter, or spring. Due to measurement error in all test scores, the *Proficient Learner* MAP Growth reading cuts do not guarantee that a student will reach proficiency on the MCAP ELA/Literacy 10 summative test. 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 MCAP ELA/Literacy 10 spring summative assessment at a given percentile throughout the year.

For example, a grade 9 student at percentile 85 who obtained a MAP Growth reading score of 235 in the fall has a 92% chance of reaching proficiency on the MCAP ELA/Literacy 10 test in spring. Additionally, an educator can also use the table to estimate that a grade 9 student who obtained a MAP Growth reading score of 240 in the winter has a 97% probability of reaching proficiency on the MCAP ELA/Literacy 10 spring summative assessment.

Table 3.5. Proficiency Projections Based on RIT Scores

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.
9	5	223	186	No	<0.01	187	No	<0.01	187	No	<0.01
	10	223	193	No	<0.01	194	No	<0.01	194	No	<0.01
	15	223	197	No	0.01	198	No	0.01	198	No	<0.01
	20	223	201	No	0.03	201	No	0.02	202	No	<0.01
	25	223	204	No	0.05	205	No	0.04	205	No	<0.01
	30	223	207	No	0.08	207	No	0.07	208	No	<0.01
	35	223	209	No	0.11	210	No	0.10	210	No	<0.01
	40	223	212	No	0.18	212	No	0.14	213	No	<0.01
	45	223	214	No	0.24	214	No	0.20	215	No	0.01
	50	223	216	No	0.31	217	No	0.30	217	No	0.04
	55	223	218	No	0.38	219	No	0.38	219	No	0.13
	60	223	221	Yes	0.50	221	No	0.46	222	No	0.39
	65	223	223	Yes	0.58	224	Yes	0.58	224	Yes	0.61
	70	223	226	Yes	0.69	226	Yes	0.66	227	Yes	0.87
	75	223	228	Yes	0.76	229	Yes	0.77	230	Yes	0.98
	80	223	231	Yes	0.85	232	Yes	0.86	233	Yes	>0.99
85	223	235	Yes	0.92	236	Yes	0.93	236	Yes	>0.99	
90	223	239	Yes	0.97	240	Yes	0.97	241	Yes	>0.99	
95	223	246	Yes	0.99	247	Yes	>0.99	247	Yes	>0.99	
10	5	223	188	No	<0.01	188	No	<0.01	188	No	<0.01
	10	223	195	No	0.01	195	No	0.01	195	No	<0.01
	15	223	199	No	0.03	199	No	0.02	200	No	<0.01
	20	223	203	No	0.05	203	No	0.04	203	No	<0.01
	25	223	206	No	0.09	206	No	0.06	206	No	<0.01
	30	223	208	No	0.11	209	No	0.11	209	No	<0.01
	35	223	211	No	0.17	211	No	0.13	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.
	40	223	213	No	0.22	214	No	0.21	214	No	0.01
	45	223	215	No	0.28	216	No	0.27	216	No	0.02
	50	223	218	No	0.39	218	No	0.34	218	No	0.08
	55	223	220	No	0.46	220	No	0.42	221	No	0.28
	60	223	222	Yes	0.54	223	Yes	0.54	223	Yes	0.50
	65	223	225	Yes	0.65	225	Yes	0.62	225	Yes	0.72
	70	223	227	Yes	0.72	228	Yes	0.73	228	Yes	0.92
	75	223	230	Yes	0.81	230	Yes	0.79	231	Yes	0.99
	80	223	233	Yes	0.88	233	Yes	0.87	234	Yes	>0.99
	85	223	236	Yes	0.93	237	Yes	0.94	237	Yes	>0.99
	90	223	241	Yes	0.97	241	Yes	0.97	242	Yes	>0.99
95	223	247	Yes	0.99	248	Yes	>0.99	248	Yes	>0.99	
11	5	223	188	No	<0.01	188	No	<0.01	187	No	<0.01
	10	223	195	No	0.02	194	No	0.01	194	No	<0.01
	15	223	199	No	0.03	199	No	0.03	198	No	<0.01
	20	223	203	No	0.06	203	No	0.05	202	No	<0.01
	25	223	206	No	0.10	206	No	0.08	205	No	<0.01
	30	223	209	No	0.15	208	No	0.10	208	No	<0.01
	35	223	211	No	0.19	211	No	0.15	211	No	<0.01
	40	223	214	No	0.27	213	No	0.20	213	No	<0.01
	45	223	216	No	0.33	216	No	0.29	215	No	0.01
	50	223	218	No	0.40	218	No	0.36	218	No	0.08
	55	223	220	No	0.47	220	No	0.43	220	No	0.20
	60	223	223	Yes	0.57	223	Yes	0.54	223	Yes	0.50
	65	223	225	Yes	0.64	225	Yes	0.61	225	Yes	0.72
	70	223	228	Yes	0.73	228	Yes	0.71	228	Yes	0.92
75	223	230	Yes	0.78	230	Yes	0.77	230	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	223	233	Yes	0.85	233	Yes	0.85	234	Yes	>0.99
	85	223	237	Yes	0.92	237	Yes	0.92	237	Yes	>0.99
	90	223	241	Yes	0.96	242	Yes	0.97	242	Yes	>0.99
	95	223	248	Yes	0.99	248	Yes	0.99	249	Yes	>0.99
12	5	223	187	No	0.01	186	No	<0.01	184	No	<0.01
	10	223	193	No	0.02	192	No	0.01	191	No	<0.01
	15	223	198	No	0.04	197	No	0.03	196	No	<0.01
	20	223	202	No	0.07	201	No	0.05	200	No	<0.01
	25	223	205	No	0.10	204	No	0.08	203	No	<0.01
	30	223	208	No	0.15	207	No	0.10	206	No	<0.01
	35	223	210	No	0.19	210	No	0.15	209	No	<0.01
	40	223	213	No	0.27	212	No	0.20	211	No	<0.01
	45	223	215	No	0.32	214	No	0.25	214	No	0.01
	50	223	218	No	0.41	217	No	0.34	216	No	0.02
	55	223	220	No	0.47	219	No	0.40	219	No	0.13
	60	223	222	Yes	0.53	222	Yes	0.50	221	No	0.28
	65	223	225	Yes	0.62	224	Yes	0.57	224	Yes	0.61
	70	223	228	Yes	0.71	227	Yes	0.66	226	Yes	0.80
	75	223	230	Yes	0.76	230	Yes	0.75	229	Yes	0.96
	80	223	234	Yes	0.85	233	Yes	0.82	233	Yes	>0.99
	85	223	237	Yes	0.90	237	Yes	0.90	236	Yes	>0.99
90	223	242	Yes	0.95	241	Yes	0.95	241	Yes	>0.99	
95	223	249	Yes	0.99	248	Yes	0.99	248	Yes	>0.99	

Note. Prob. = Probability.

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