Linking Study Report: Predicting Performance on Arizona's Statewide Achievement Assessment (AzM2) based on NWEA MAP Growth Scores

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NWEA Psychometric Solutions

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Executive Summary

To predict student achievement on Arizona's Statewide Achievement Assessment (AzM2) in Grades 3–8 English Language Arts (ELA) and Mathematics (previously referred to as AzMERIT), NWEA® conducted a linking study using Spring 2019 data to derive Rasch Unit (RIT) cut scores on the MAP® Growth™ assessments that correspond to the AzM2 performance levels. With this information, educators can identify students at risk of failing to meet state proficiency standards early in the year and provide tailored educational interventions. The linking study has been updated since the previous version published in February 2016 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020).

Table E.1 presents the AzM2 *Proficient* performance level cut scores and the corresponding MAP Growth RIT cut scores that allow teachers to identify students who are on track for proficiency on the state summative test and those who are not. For example, the *Proficient* cut score on the AzM2 Grade 3 ELA test is 2509. A Grade 3 student with a MAP Growth Reading RIT score of 191 in the fall is likely to meet proficiency on the AzM2ELA test in the spring, whereas a Grade 3 student with a MAP Growth Reading RIT score lower than 191 in the fall is in jeopardy of not meeting proficiency. MAP Growth cut scores for Grade 2 are also provided so educators can track early learners' progress toward proficiency on the AzM2 test by Grade 3. These cut scores were derived based on the Grade 3 cuts and the 2020 NWEA growth norms for the adjacent grade (i.e., Grades 2 to 3).

Table E.1. MAP Growth Cut Scores for AzM2 Proficiency

Assessment		*Proficient* Cut Scores by Grade						
		2	**3**	**4**	**5**	**6**	**7**	**8**
ELA/Reading								
AzM2 Spring		–	2509	2523	2543	2553	2561	2572
MAP Growth	Fall	177	191	198	204	214	219	224
	Winter	186	198	204	209	218	222	226
	Spring	190	201	206	211	219	223	227
Mathematics								
AzM2 Spring		–	3531	3562	3595	3629	3652	3673
MAP Growth	Fall	180	193	203	213	222	229	235
	Winter	189	200	210	219	227	233	238
	Spring	194	205	214	223	230	236	240

Please note that the results in this report may differ from those found in the NWEA reporting system for individual districts. The typical growth scores from fall to spring or winter to spring used in this report are based on the default instructional weeks most commonly encountered for each term (i.e., Weeks 4, 20, and 32 for fall, winter, and spring, respectively). However, instructional weeks often vary by district, so the cut scores in this report may differ slightly from the MAP Growth score reports that reflect spring instructional weeks set by partners.

E.1. Assessment Overview

The AzM2 Grades 3–8 ELA and Mathematics tests are Arizona's state summative assessments aligned to the Arizona ELA and Mathematics Standards adopted in 2016. Based on their test scores, students are placed into one of four performance levels: *Minimally Proficient, Partially Proficient, Proficient,* and *Highly Proficient*. These tests are used to provide evidence of student achievement in ELA and Mathematics for various test score uses such as informing the state's accountability measures. The *Proficient* cut score demarks the minimum level of achievement considered to be proficient. MAP Growth tests are adaptive interim assessments aligned to state-specific content standards and administered in the fall, winter, and spring. Scores are reported on the RIT vertical scale with a range of 100–350.

E.2. Linking Methods

Based on scores from the Spring 2019 test administration, the equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring AzM2 performance level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. MAP Growth fall and winter cut scores that predict proficiency on the spring AzM2 test were then projected using the 2020 NWEA growth norms that provide expected score gains across test administrations.

E.3. Student Sample

Only students who took both the MAP Growth and AzM2 assessments in Spring 2019 were included in the study sample. Table E.2 presents the weighted number of Arizona students from 11 districts and 37 schools who were included in the linking study. The linking study sample is voluntary and can only include student scores from partners who share their data. Also, not all students in a state take MAP Growth. The sample may therefore not represent the general student population as well as it should. To ensure that the linking study sample represents the state student population in terms of race, sex, and performance level, weighting (i.e., a statistical method that matches the distributions of the variables of interest to those of the target population) was applied to the sample. As a result, the RIT cuts derived from the study sample can be generalized to any student from the target population. All analyses in this study for Grades 3–8 were conducted based on the weighted sample.

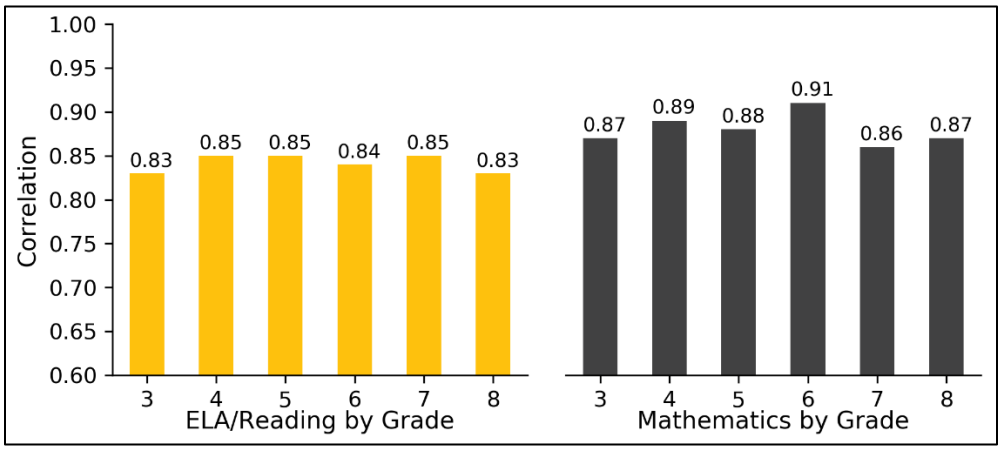
Table E.2. Linking Study Sample

	#Students	
Grade	ELA/Reading	Mathematics
3	2,726	2,725
4	2,687	2,690
5	2,772	2,801
6	2,736	2,892
7	2,365	2,513
8	2,078	1,998

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and AzM2 scores range from 0.83 to 0.91 across both content areas, as shown in Figure E.1. These values indicate a strong relationship among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the AzM2 assessments.

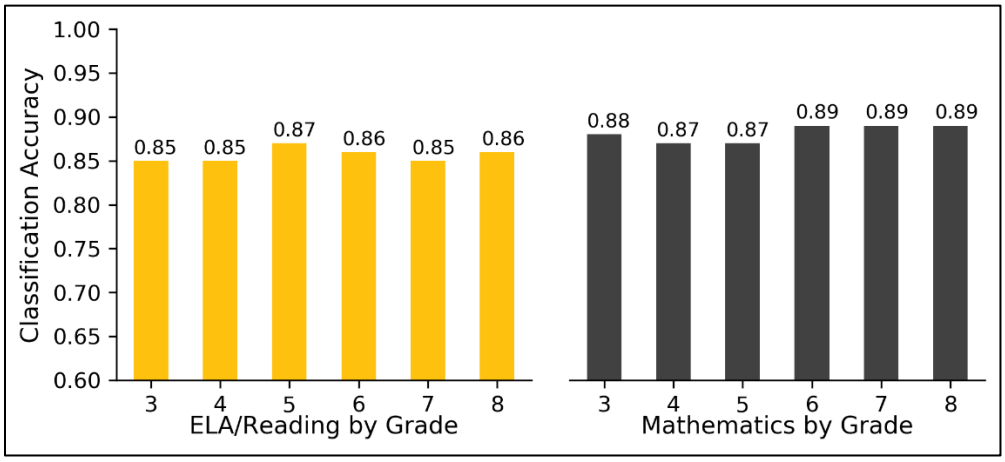
Figure E.1. Correlations between MAP Growth and AzM2



E.5. Accuracy of MAP Growth Classifications

Figure E.2 presents the classification accuracy statistics that show the proportion of students correctly classified by their RIT scores as proficient or not proficient on the AzM2 tests. For example, the MAP Growth Reading Grade 3 *Proficient* cut score has a 0.85 accuracy rate, meaning it accurately classified student achievement on the state test for 85% of the sample. The results range from 0.85 to 0.89 across both content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the AzM2 tests.

Figure E.2. Accuracy of MAP Growth Classifications



1. Introduction

1.1. Purpose of the Study

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

This document presents results from a linking study conducted by NWEA in July 2020 to statistically connect the scores of Arizona's Statewide Achievement Assessment (AzM2) in Grades 3–8 English Language Arts (ELA) and Mathematics with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2019 term. The linking study has been updated since the previous version published in February 2016 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020). In this updated study, MAP Growth cut scores are also included for Grade 2 so educators can track early learners' progress toward proficiency on the AzM2 test by Grade 3. This report presents the following results:

1. Student sample demographics
2. Descriptive statistics of test scores
3. MAP Growth cut scores that correspond to the AzM2 performance levels using the equipercentile linking procedure for the spring results and the 2020 norms for the fall and winter results
4. Classification accuracy statistics to determine the degree to which MAP Growth accurately predicts student proficiency status on the AzM2 tests
5. The probability of achieving grade-level proficiency on the AzM2 assessment based on MAP Growth RIT scores from fall, winter, and spring using the 2020 norms

1.2. Assessment Overview

The AzM2 Grades 3–8 ELA and Mathematics summative assessments are aligned to the Arizona ELA and Mathematics Standards. Each assessment has three cut scores (i.e., the minimum score a student must get on a test to be placed in a certain performance level) that distinguish between the following performance levels: *Minimally Proficient, Partially Proficient, Proficient,* and *Highly Proficient*. The *Proficient* cut score demarks the minimum level of performance considered to be proficient for accountability purposes.

MAP Growth interim assessments from NWEA are computer adaptive and aligned to state-specific content standards. Scores are reported on the RIT vertical scale with a range of 100–350. Each content area has its own scale. To aid the interpretation of scores, NWEA periodically conducts norming studies of student and school performance on MAP Growth. Achievement status norms show how well a student performed on the MAP Growth test compared to students in the norming group by associating the student's performance on the MAP Growth test, expressed as a RIT score, with a percentile ranking. Growth norms provide expected score gains across test administrations (e.g., the relative evaluation of a student's growth from fall to spring). The most recent norms study was conducted in 2020 (Thum & Kuhfeld, 2020).

2. Methods

2.1. Data Collection

This linking study is based on data from the Spring 2019 administrations of the MAP Growth and AzM2 assessments. NWEA recruited Arizona districts to participate in the study by sharing their student and score data for the target term. Districts also gave NWEA permission to access students' associated MAP Growth scores from the NWEA in-house database. Once Arizona state score information was received by NWEA, each student's state testing record was matched to their MAP Growth score by using the student's first and last names, date of birth, student ID, and other available identifying information. Only students who took both the MAP Growth and AzM2 assessments in Spring 2019 were included in the study sample.

2.2. Post-Stratification Weighting

Post-stratification weights were applied to the calculations to ensure that the linking study sample represented the state population in terms of race, sex, and performance level. These variables were selected because they are correlated with the student's academic achievement within this study and are often provided in the data for the state population. The weighted sample matches the target population as closely as possible on the key demographics and test score characteristics. Specifically, a raking procedure was used to calculate the post-stratification weights and improve the representativeness of the sample. Raking uses iterative procedures to obtain weights that match sample marginal distributions to known population margins. The following steps were taken during this process:

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

2.3. MAP Growth Cut Scores

The equipercentile linking method (Kolen & Brennan, 2004) was used to identify the spring MAP Growth RIT scores that correspond to the spring AzM2 performance level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. RIT fall and winter cut scores that predict proficiency on the spring AzM2 test were then projected using the 2020 growth norms. Percentile ranks are also provided that show how a nationally representative sample of students in the same grade scored on MAP Growth for each administration, which is an important interpretation of RIT test scores. This is useful for understanding (1) how student scores compare to peers nationwide and (2) the relative rigor of a state's performance level designations for its summative assessment.

The MAP Growth spring cut scores for Grades 3–8 could be calculated using the equipercentile linking method because that data are directly connected to the AzM2 spring data used in the study. The equipercentile linking procedure matches scores on the two scales that have the same percentile rank (i.e., the proportion of tests at or below each score). For example, let x represent a score on Test X (e.g., AzM2). 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 in Equation 1:

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

where $e_y(x)$ is the equipercentile equivalent of score x on AzM2 on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on AzM2, and G^{-1} is the inverse of the percentile rank function for MAP Growth that indicates the score on MAP Growth corresponding to a given percentile. Polynomial loglinear pre-smoothing was applied to reduce irregularities of the score distributions and equipercentile linking curve.

The MAP Growth conditional growth norms provide students' expected score gains across terms, such as growth from fall or winter to spring within the same grade or from spring of a lower grade to the spring of the adjacent higher grade. This information can be used to calculate the fall and winter cut scores for Grades 3–8 and the fall, winter, and spring cut scores for Grade 2. Equation 2 was used to determine the previous term's or grade's MAP Growth score needed to reach the spring cut score, considering the expected growth associated with the previous RIT score:

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

where:

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

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

2.4. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the AzM2 tests can be described using classification accuracy statistics based on the MAP Growth spring cut scores that show the proportion of students correctly classified by their RIT scores as proficient (*Proficient* or *Highly Proficient*) or not proficient (*Minimally Proficient* or *Partially Proficient*). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich, Hanson, Harris, & Sconing, 2004). The results are based on the Spring 2019 MAP Growth and AzM2 data for the *Proficient* cut score.

Since Arizona students do not begin taking the AzM2 assessment until Grade 3, longitudinal data were collected for the 2018–2019 Grade 3 cohort in order to link the AzM2 assessment to MAP Growth for Grade 2 to calculate the classification accuracy statistics. To accomplish this, 2018–2019 AzM2 Grade 3 results were linked to MAP Growth data from Grade 3 students in 2018–2019 and Grade 2 students in 2017–2018. In this way, the data came from the same cohort of students beginning when they were in Grade 2 and continuing through Grade 3.

Table 2.1. Description of Classification Accuracy Summary Statistics

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

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

2.5. Proficiency Projection

In addition to calculating the MAP Growth fall and winter cut scores, the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the AzM2 test based on a student's RIT scores from fall, winter, and spring. Equation 3 was used to calculate the probability of a student achieving *Proficient* on the AzM2 test based on their fall or winter RIT score:

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

where:

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

Equation 4 was used to estimate the probability of a student achieving *Proficient* on the AzM2 test based on their spring RIT score (RIT_{Spring}):

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

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

3. Results

3.1. Study Sample

Only students who took both the MAP Growth and AzM2 assessments in Spring 2019 were included in the study sample. Data used in this study were collected from 11 districts and 37 schools in Arizona. Table 3.1 presents the demographic distributions of race, sex, and performance level in the original unweighted study sample. Table 3.2 presents the distributions of the student population that took the Spring 2019 AzM2 tests (ADE, 2019). Since the unweighted data are different from the general AzM2 population, post-stratification weights were applied to the linking study sample to improve its representativeness. Table 3.3 presents the demographic distributions of the sample after weighting, which are almost identical to the AzM2 student population distributions. The analyses in this study were therefore conducted based on the weighted sample.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Linking Study Sample (Unweighted)							
		%Students by Grade					
Demographic Subgroup		3	4	5	6	7	8
ELA/Reading							
	Total N	2,726	2,687	2,772	2,736	2,389	2,099
Race*	AI/AN	2.7	3.3	2.2	8.0	9.2	9.1
	Asian	3.3	2.8	3.6	3.4	2.8	3.4
	Black	7.6	7.3	7.2	6.7	5.0	5.9
	Hispanic	21.3	21.6	22.9	21.3	25.7	29.1
	Other	0.2	0.1	0.2	0.2	0.1	0.1
	Two or More Races	8.4	8.7	8.1	7.7	6.9	6.1
	White	56.5	56.3	55.9	52.6	50.2	46.3
Sex	Female	50.8	48.9	50.7	50.9	50.7	51.2
	Male	49.2	51.1	49.3	49.1	49.3	48.8
Performance Level	*Minimally Proficient*	30.0	24.7	18.7	25.7	30.7	31.9
	Partially Proficient	14.7	13.4	18.7	23.0	19.8	22.0
	Proficient	38.4	44.0	36.8	40.8	36.8	31.3
	Highly Proficient	16.8	17.9	25.8	10.5	12.7	14.8
Mathematics							
	Total N	2,725	2,690	2,773	2,892	2,513	1,998
Race*	AI/AN	2.7	3.3	2.2	7.7	8.8	8.1
	Asian	3.3	2.8	3.6	3.4	2.7	3.3
	Black	7.7	7.3	7.2	7.1	5.3	7.1
	Hispanic	21.2	21.7	22.8	23.6	27.6	30.3
	Other	0.2	0.1	0.2	0.2	0.1	0.1
	Two or More Races	8.3	8.6	8.2	7.4	6.7	6.6
	White	56.5	56.2	56.0	50.7	48.9	44.6
Sex	Female	50.7	48.9	50.8	50.7	50.7	51.0
	Male	49.3	51.1	49.2	49.3	49.3	49.0

Linking Study Sample (Unweighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
Performance Level	*Minimally Proficient*	15.6	18.6	17.7	28.2	35.8	37.1
	Partially Proficient	27.1	25.4	23.1	22.7	18.8	20.4
	Proficient	40.4	39.7	39.5	29.0	24.2	22.0
	Highly Proficient	16.8	16.4	19.8	20.1	21.2	20.5

*AI/AN = American Indian/Alaskan Native.

Table 3.2. Spring 2019 AzM2 Student Population Demographics

Spring 2019 AzM2 Population							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
ELA							
	Total N	82,653	86,612	90,098	90,089	88,492	86,517
Race*	AI/AN	4.3	4.4	4.4	4.3	4.5	4.5
	Asian	2.9	3.0	2.9	2.8	2.9	2.9
	Black	5.5	5.6	5.4	5.4	5.5	5.4
	Hispanic	46.2	46.4	47.2	46.4	46.0	45.5
	Other	0.4	0.4	0.4	0.4	0.4	0.4
	Two or More Races	4.0	3.6	3.6	3.7	3.3	3.2
	White	36.6	36.6	36.2	37.0	37.4	38.2
Sex	Female	49.1	48.6	49.1	49.1	49.1	49.4
	Male	50.9	51.4	50.9	50.9	50.9	50.6
Performance Level	*Minimally Proficient*	40.0	34.0	28.0	34.0	39.0	40.0
	Partially Proficient	14.0	15.0	20.0	24.0	19.0	21.0
	Proficient	32.0	37.0	32.0	34.0	31.0	25.0
	Highly Proficient	14.0	14.0	20.0	8.0	10.0	13.0
Mathematics							
	Total N	83,042	86,827	90,178	90,156	88,603	77,402
Race*	AI/AN	4.3	4.4	4.4	4.4	4.5	4.9
	Asian	2.9	3.0	2.9	2.8	2.8	2.2
	Black	5.6	5.6	5.4	5.4	5.5	5.7
	Hispanic	46.3	46.4	47.2	46.4	46.1	46.7
	Other	0.4	0.4	0.4	0.4	0.4	0.4
	Two or More Races	4.0	3.6	3.6	3.7	3.3	3.2
	White	36.6	36.6	36.1	37.0	37.4	37.0
Sex	Female	49.0	48.5	49.1	49.1	49.1	49.3
	Male	51.0	51.5	50.9	50.9	50.9	50.7
Performance Level	*Minimally Proficient*	23.0	27.0	27.0	38.0	44.0	48.0
	Partially Proficient	26.0	25.0	27.0	21.0	18.0	20.0
	Proficient	33.0	33.0	31.0	24.0	20.0	19.0
	Highly Proficient	18.0	15.0	16.0	17.0	18.0	13.0

*AI/AN = American Indian/Alaskan Native.

Table 3.3. Linking Study Sample Demographics (Weighted)

Linking Study Sample (Weighted)							
		%Students by Grade					
Demographic Subgroup		3	4	5	6	7	8
ELA/Reading							
	Total N	2,726	2,687	2,772	2,736	2,365	2,078
Race*	AI/AN	4.3	4.4	4.4	4.3	4.5	4.5
	Asian	2.9	3.0	2.9	2.8	2.9	2.9
	Black	5.5	5.6	5.4	5.4	5.5	5.4
	Hispanic	46.3	46.4	47.2	46.4	46.0	45.5
	Other	0.4	0.4	0.4	0.4	0.4	0.4
	Two or More Races	4.0	3.6	3.6	3.7	3.3	3.2
	White	36.6	36.6	36.1	37.0	37.4	38.2
Sex	Female	49.1	48.6	49.1	49.1	49.1	49.4
	Male	50.9	51.4	50.9	50.9	50.9	50.6
Performance Level	*Minimally Proficient*	40.0	34.0	28.0	34.0	39.4	40.4
	Partially Proficient	14.0	15.0	20.0	24.0	19.2	21.2
	Proficient	32.0	37.0	32.0	34.0	31.3	25.3
	Highly Proficient	14.0	14.0	20.0	8.0	10.1	13.1
Mathematics							
	Total N	2,725	2,690	2,801	2,892	2,513	1,998
Race*	AI/AN	4.3	4.4	4.4	4.4	4.5	4.9
	Asian	2.9	3.0	2.9	2.8	2.8	2.2
	Black	5.6	5.6	5.4	5.4	5.5	5.7
	Hispanic	46.3	46.4	47.2	46.4	46.1	46.7
	Other	0.4	0.4	0.4	0.4	0.4	0.4
	Two or More Races	4.0	3.6	3.6	3.7	3.3	3.2
	White	36.6	36.6	36.1	36.9	37.4	37.0
Sex	Female	49.0	48.5	49.1	49.1	49.1	49.3
	Male	51.0	51.5	50.9	50.9	50.9	50.7
Performance Level	*Minimally Proficient*	23.0	27.0	26.7	38.0	44.0	48.0
	Partially Proficient	26.0	25.0	26.7	21.0	18.0	20.0
	Proficient	33.0	33.0	30.7	24.0	20.0	19.0
	Highly Proficient	18.0	15.0	15.8	17.0	18.0	13.0

*AI/AN = American Indian/Alaskan Native.

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and AzM2 test scores from Spring 2019, including the correlation coefficient (*r*) between them. The correlation coefficients between the scores range from 0.83 to 0.85 for ELA/Reading and 0.86 to 0.91 for Mathematics. These values indicate a strong relationship among the scores, which is important validity evidence for the claim that MAP Growth scores are good predictors of performance on the AzM2 assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	*r*	AzM2*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA/Reading										
3	2,726	0.83	2506.0	29.9	2425	2605	197.5	15.8	148	237
4	2,687	0.85	2523.2	31.9	2432	2610	203.4	16.5	147	252
5	2,772	0.85	2541.7	36.9	2451	2629	209.0	16.3	144	261
6	2,736	0.84	2545.9	32.0	2462	2641	213.3	16.4	159	259
7	2,365	0.85	2552.4	34.0	2447	2648	216.8	16.5	158	260
8	2,078	0.83	2560.3	35.1	2463	2658	220.7	15.8	162	266
Mathematics										
3	2,725	0.87	3526.5	42.4	3395	3605	202.9	14.3	152	246
4	2,690	0.89	3557.1	44.3	3435	3645	211.5	16.9	137	256
5	2,801	0.88	3587.8	42.3	3478	3688	218.7	18.9	142	287
6	2,892	0.91	3617.0	43.3	3512	3722	223.0	19.6	146	286
7	2,513	0.86	3637.7	41.4	3529	3739	227.6	19.3	159	286
8	1,998	0.87	3655.9	39.6	3566	3776	229.8	19.8	161	293

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

3.3. MAP Growth Cut Scores

Table 3.5 and Table 3.6 present the AzM2 scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges by content area and grade. These tables can be used to predict a student's likely performance level on the AzM2 spring assessment when MAP Growth is taken in the fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Reading RIT score of 191 in the fall is likely to reach *Proficient* on the AzM2 ELA test. A Grade 3 student who obtained a MAP Growth Reading RIT score of 201 in the spring is also likely to reach *Proficient* on the AzM2. 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 commonly encountered for each term (Weeks 4, 20, and 32 for fall, winter, and spring, respectively). Since instructional weeks often vary by district, the cut scores in this report may differ slightly from the MAP Growth score reports that reflect instructional weeks set by partners. If the actual instructional weeks deviate from the default ones, a student's projected performance level could be different from the generic projection presented in this document. Partners are therefore encouraged to use the projected performance level in students' profile, classroom, and grade reports in the NWEA reporting system since they reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—ELA/Reading

AzM2 ELA								
Grade	***Minimally Proficient***		***Partially Proficient***		***Proficient***		***Highly Proficient***	
3	2395–2496		2497–2508		**2509**–2540		2541–2605	
4	2400–2509		2510–2522		**2523**–2558		2559–2610	
5	2419–2519		2520–2542		**2543**–2577		2578–2629	
6	2431–2531		2532–2552		**2553**–2596		2597–2641	
7	2438–2542		2543–2560		**2561**–2599		2600–2648	
8	2448–2550		2551–2571		**2572**–2603		2604–2658	
MAP Growth Reading*								
	Minimally Proficient		***Partially Proficient***		***Proficient***		***Highly Proficient***	
Grade	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**
Fall								
2	100–168	1–40	169–176	41–61	**177**–194	62–92	195–350	93–99
3	100–183	1–43	184–190	44–59	**191**–205	60–87	206–350	88–99
4	100–189	1–34	190–197	35–52	**198**–213	53–84	214–350	85–99
5	100–193	1–25	194–203	26–48	**204**–217	49–79	218–350	80–99
6	100–202	1–32	203–213	33–58	**214**–231	59–90	232–350	91–99
7	100–209	1–39	210–218	40–60	**219**–234	61–89	235–350	90–99
8	100–214	1–42	215–223	43–63	**224**–236	64–86	237–350	87–99
Winter								
2	100–178	1–43	179–185	44–62	**186**–201	63–91	202–350	92–99
3	100–191	1–44	192–197	45–59	**198**–211	60–86	212–350	87–99
4	100–195	1–33	196–203	34–53	**204**–217	54–82	218–350	83–99
5	100–199	1–27	200–208	28–49	**209**–221	50–78	222–350	79–99
6	100–206	1–32	207–217	33–59	**218**–233	60–89	234–350	90–99
7	100–213	1–41	214–221	42–61	**222**–235	62–87	236–350	88–99
8	100–217	1–43	218–225	44–62	**226**–237	63–84	238–350	85–99
Spring								
2	100–182	1–42	183–189	43–60	**190**–205	61–90	206–350	91–99
3	100–194	1–44	195–200	45–58	**201**–213	59–84	214–350	85–99
4	100–198	1–35	199–205	36–52	**206**–219	53–81	220–350	82–99
5	100–201	1–28	202–210	29–49	**211**–222	50–76	223–350	77–99
6	100–208	1–34	209–218	35–58	**219**–234	59–88	235–350	89–99
7	100–214	1–41	215–222	42–60	**223**–236	61–86	237–350	87–99
8	100–218	1–43	219–226	44–61	**227**–238	62–84	239–350	85–99

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

Table 3.6. MAP Growth Cut Scores—Mathematics

AzM2 Mathematics								
Grade	***Minimally Proficient***		***Partially Proficient***		***Proficient***		***Highly Proficient***	
3	3395–3494		3495–3530		**3531**–3572		3573–3605	
4	3435–3529		3530–3561		**3562**–3605		3606–3645	
5	3478–3562		3563–3594		**3595**–3634		3635–3688	
6	3512–3601		3602–3628		**3629**–3662		3663–3722	
7	3529–3628		3629–3651		**3652**–3679		3680–3739	
8	3566–3649		3650–3672		**3673**–3704		3705–3776	
MAP Growth Mathematics*								
	Minimally Proficient		***Partially Proficient***		***Proficient***		***Highly Proficient***	
Grade	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**	**RIT**	**Percentile**
Fall								
2	100–166	1–26	167–179	27–64	**180**–193	65–92	194–350	93–99
3	100–180	1–28	181–192	29–62	**193**–204	63–88	205–350	89–99
4	100–191	1–29	192–202	30–58	**203**–216	59–88	217–350	89–99
5	100–198	1–24	199–212	25–59	**213**–227	60–88	228–350	89–99
6	100–209	1–37	210–221	38–66	**222**–233	67–87	234–350	88–99
7	100–218	1–46	219–228	47–68	**229**–238	69–85	239–350	86–99
8	100–224	1–49	225–234	50–69	**235**–247	70–88	248–350	89–99
Winter								
2	100–175	1–26	176–188	27–64	**189**–201	65–91	202–350	92–99
3	100–188	1–29	189–199	30–60	**200**–212	61–88	213–350	89–99
4	100–198	1–31	199–209	32–59	**210**–223	60–88	224–350	89–99
5	100–204	1–26	205–218	27–60	**219**–233	61–88	234–350	89–99
6	100–214	1–38	215–226	39–66	**227**–238	67–87	239–350	88–99
7	100–222	1–47	223–232	48–68	**233**–242	69–84	243–350	85–99
8	100–227	1–49	228–237	50–69	**238**–250	70–87	251–350	88–99
Spring								
2	100–181	1–28	182–193	29–62	**194**–206	63–89	207–350	90–99
3	100–193	1–30	194–204	31–60	**205**–216	61–86	217–350	87–99
4	100–202	1–30	203–213	31–58	**214**–227	59–86	228–350	87–99
5	100–208	1–27	209–222	28–59	**223**–237	60–87	238–350	88–99
6	100–217	1–38	218–229	39–65	**230**–241	66–85	242–350	86–99
7	100–225	1–47	226–235	48–68	**236**–245	69–84	246–350	85–99
8	100–229	1–48	230–239	49–68	**240**–252	69–86	253–350	87–99

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

3.4. Classification Accuracy

Table 3.7 presents the classification accuracy summary statistics, including the overall classification accuracy rate. These results indicate how well MAP Growth spring RIT scores predict proficiency on the AzM2 tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from .80 to 0.87 for ELA and 0.77 to 0.89 for Mathematics. These values suggest that the RIT cut scores are good at classifying students as proficient or not proficient on the AzM2 assessment. For Grade 2, the classification accuracy rate refers to how well the MAP Growth cuts can predict students' proficiency status on AzM2 in Grade 3.

Although the results show that MAP Growth scores can be used to accurately classify students as likely to be proficient on the AzM2 tests, there is a notable limitation to how these results should be used and interpreted. AzM2 and MAP Growth assessments are designed for different purposes and measure slightly different constructs even within the same content area. Therefore, scores on the two tests cannot be assumed to be interchangeable. MAP Growth may not be used as a substitute for the state tests and vice versa.

Table 3.7. Classification Accuracy Results

Grade	N	Cut Score		Class. Accuracy*	Rate*		Sensitivity	Specificity	Precision	AUC*
		MAP Growth	AzM2		FP	FN				
ELA/Reading										
2	595	190	2509	0.80	0.12	0.36	0.64	0.88	0.74	0.87
3	2,726	201	2509	0.85	0.14	0.15	0.85	0.86	0.83	0.93
4	2,687	206	2523	0.85	0.13	0.16	0.84	0.87	0.87	0.93
5	2,772	211	2543	0.87	0.17	0.10	0.90	0.83	0.85	0.94
6	2,736	219	2553	0.86	0.12	0.17	0.83	0.88	0.83	0.93
7	2,365	223	2561	0.85	0.13	0.19	0.81	0.87	0.82	0.93
8	2,078	227	2572	0.86	0.11	0.19	0.81	0.89	0.82	0.93
Mathematics										
2	593	194	3531	0.77	0.12	0.37	0.63	0.88	0.78	0.85
3	2,725	205	3531	0.88	0.12	0.13	0.87	0.88	0.89	0.95
4	2,690	214	3562	0.87	0.13	0.12	0.88	0.87	0.86	0.95
5	2,801	223	3595	0.87	0.10	0.16	0.84	0.90	0.88	0.95
6	2,892	230	3629	0.89	0.08	0.15	0.85	0.92	0.88	0.96
7	2,513	236	3652	0.89	0.09	0.14	0.86	0.91	0.85	0.95
8	1,998	240	3673	0.89	0.09	0.16	0.84	0.91	0.81	0.95

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

3.5. Proficiency Projection

Table 3.8 and Table 3.9 present the estimated probability of achieving *Proficient* performance on the AzM2 test based on RIT scores from fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Reading score of 201 in the fall has an 89% chance of reaching *Proficient* or higher on the AzM2 test. "Prob." indicates the probability of obtaining proficient status on the AzM2 test in the spring.

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

ELA/Reading											
			Fall			Winter			Spring		
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				Proficient	Prob.		*Proficient*	Prob.		*Proficient*	Prob.
2	5	190	147	No	<0.01	156	No	<0.01	160	No	<0.01
	10	190	153	No	<0.01	162	No	<0.01	166	No	<0.01
	15	190	157	No	0.01	166	No	<0.01	170	No	<0.01
	20	190	160	No	0.02	169	No	<0.01	173	No	<0.01
	25	190	162	No	0.03	171	No	<0.01	175	No	<0.01
	30	190	164	No	0.06	173	No	0.01	177	No	<0.01
	35	190	166	No	0.09	175	No	0.03	180	No	<0.01
	40	190	168	No	0.15	177	No	0.07	182	No	0.01
	45	190	170	No	0.18	179	No	0.10	184	No	0.03
	50	190	172	No	0.25	181	No	0.17	186	No	0.11
	55	190	174	No	0.35	183	No	0.29	188	No	0.27
	60	190	176	No	0.45	185	No	0.43	189	No	0.38
	65	190	178	Yes	0.55	187	Yes	0.57	192	Yes	0.73
	70	190	180	Yes	0.60	189	Yes	0.71	194	Yes	0.89
	75	190	183	Yes	0.75	191	Yes	0.83	196	Yes	0.97
	80	190	185	Yes	0.82	194	Yes	0.93	199	Yes	>0.99
	85	190	188	Yes	0.88	197	Yes	0.98	202	Yes	>0.99
	90	190	192	Yes	0.96	200	Yes	>0.99	205	Yes	>0.99
	95	190	197	Yes	0.99	206	Yes	>0.99	211	Yes	>0.99

ELA/Reading												
			Fall			Winter			Spring			
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency		
				Proficient	Prob.		*Proficient*	Prob.		*Proficient*	Prob.	
3	5	201	159	No	<0.01	167	No	<0.01	170	No	<0.01	
	10	201	165	No	<0.01	173	No	<0.01	176	No	<0.01	
	15	201	169	No	0.01	177	No	<0.01	180	No	<0.01	
	20	201	173	No	0.02	180	No	<0.01	183	No	<0.01	
	25	201	175	No	0.03	183	No	<0.01	186	No	<0.01	
	30	201	178	No	0.07	185	No	0.01	189	No	<0.01	
	35	201	180	No	0.09	188	No	0.05	191	No	<0.01	
	40	201	182	No	0.14	190	No	0.07	193	No	0.01	
	45	201	185	No	0.25	192	No	0.13	195	No	0.03	
	50	201	187	No	0.30	194	No	0.23	197	No	0.11	
	55	201	189	No	0.39	196	No	0.35	199	No	0.27	
	60	201	191	Yes	0.50	198	Yes	0.50	201	Yes	0.50	
	65	201	193	Yes	0.61	200	Yes	0.65	203	Yes	0.73	
	70	201	195	Yes	0.66	202	Yes	0.77	206	Yes	0.94	
	75	201	198	Yes	0.79	205	Yes	0.91	208	Yes	0.99	
	80	201	201	Yes	0.89	207	Yes	0.95	211	Yes	>0.99	
	85	201	204	Yes	0.93	211	Yes	0.99	214	Yes	>0.99	
	90	201	208	Yes	0.98	215	Yes	>0.99	218	Yes	>0.99	
	95	201	214	Yes	>0.99	220	Yes	>0.99	224	Yes	>0.99	
4	5	206	169	No	<0.01	176	No	<0.01	178	No	<0.01	
	10	206	175	No	<0.01	182	No	<0.01	184	No	<0.01	
	15	206	179	No	0.01	186	No	<0.01	188	No	<0.01	
	20	206	183	No	0.04	189	No	<0.01	191	No	<0.01	
	25	206	185	No	0.06	192	No	0.02	194	No	<0.01	
	30	206	188	No	0.11	194	No	0.04	196	No	<0.01	
	35	206	190	No	0.17	196	No	0.09	199	No	0.01	
	40	206	192	No	0.24	198	No	0.17	201	No	0.06	
	45	206	195	No	0.34	200	No	0.22	203	No	0.17	
	50	206	197	No	0.44	202	No	0.35	205	No	0.38	
	55	206	199	Yes	0.56	205	Yes	0.58	207	Yes	0.62	
	60	206	201	Yes	0.66	207	Yes	0.72	209	Yes	0.83	
	65	206	203	Yes	0.71	209	Yes	0.83	211	Yes	0.94	
	70	206	205	Yes	0.80	211	Yes	0.91	213	Yes	0.99	
	75	206	208	Yes	0.89	213	Yes	0.96	216	Yes	>0.99	
	80	206	211	Yes	0.94	216	Yes	0.99	219	Yes	>0.99	
	85	206	214	Yes	0.97	219	Yes	>0.99	222	Yes	>0.99	
	90	206	218	Yes	0.99	223	Yes	>0.99	226	Yes	>0.99	
	95	206	224	Yes	>0.99	229	Yes	>0.99	232	Yes	>0.99	

ELA/Reading												
			Fall			Winter			Spring			
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency		
				Proficient	Prob.		*Proficient*	Prob.		*Proficient*	Prob.	
5	5	211	178	No	<0.01	183	No	<0.01	185	No	<0.01	
	10	211	183	No	<0.01	189	No	<0.01	191	No	<0.01	
	15	211	187	No	0.02	193	No	<0.01	194	No	<0.01	
	20	211	191	No	0.05	196	No	0.01	198	No	<0.01	
	25	211	193	No	0.08	198	No	0.02	200	No	<0.01	
	30	211	196	No	0.17	201	No	0.06	203	No	0.01	
	35	211	198	No	0.20	203	No	0.13	205	No	0.03	
	40	211	200	No	0.29	205	No	0.22	207	No	0.11	
	45	211	202	No	0.39	207	No	0.35	209	No	0.27	
	50	211	204	Yes	0.50	209	Yes	0.50	211	Yes	0.50	
	55	211	207	Yes	0.61	211	Yes	0.65	213	Yes	0.73	
	60	211	209	Yes	0.71	213	Yes	0.78	215	Yes	0.89	
	65	211	211	Yes	0.80	215	Yes	0.87	217	Yes	0.97	
	70	211	213	Yes	0.83	217	Yes	0.91	219	Yes	0.99	
	75	211	216	Yes	0.92	220	Yes	0.97	222	Yes	>0.99	
	80	211	218	Yes	0.95	222	Yes	0.99	224	Yes	>0.99	
	85	211	221	Yes	0.97	226	Yes	>0.99	228	Yes	>0.99	
	90	211	225	Yes	0.99	229	Yes	>0.99	231	Yes	>0.99	
	95	211	231	Yes	>0.99	235	Yes	>0.99	237	Yes	>0.99	
6	5	219	183	No	<0.01	188	No	<0.01	189	No	<0.01	
	10	219	189	No	<0.01	193	No	<0.01	195	No	<0.01	
	15	219	193	No	<0.01	197	No	<0.01	199	No	<0.01	
	20	219	196	No	0.01	200	No	<0.01	202	No	<0.01	
	25	219	199	No	0.03	203	No	<0.01	205	No	<0.01	
	30	219	202	No	0.06	205	No	0.01	207	No	<0.01	
	35	219	204	No	0.10	208	No	0.04	209	No	<0.01	
	40	219	206	No	0.16	210	No	0.09	211	No	0.01	
	45	219	208	No	0.19	212	No	0.17	213	No	0.03	
	50	219	210	No	0.28	214	No	0.28	215	No	0.11	
	55	219	212	No	0.39	216	No	0.35	217	No	0.27	
	60	219	214	Yes	0.50	218	Yes	0.50	219	Yes	0.50	
	65	219	217	Yes	0.61	220	Yes	0.65	222	Yes	0.83	
	70	219	219	Yes	0.72	222	Yes	0.78	224	Yes	0.94	
	75	219	221	Yes	0.81	225	Yes	0.91	226	Yes	0.99	
	80	219	224	Yes	0.87	227	Yes	0.96	229	Yes	>0.99	
	85	219	227	Yes	0.94	230	Yes	0.99	232	Yes	>0.99	
	90	219	231	Yes	0.98	234	Yes	>0.99	236	Yes	>0.99	
	95	219	237	Yes	>0.99	240	Yes	>0.99	242	Yes	>0.99	

ELA/Reading												
			Fall			Winter			Spring			
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency		
				Proficient	Prob.		*Proficient*	Prob.		*Proficient*	Prob.	
7	5	223	187	No	<0.01	190	No	<0.01	191	No	<0.01	
	10	223	193	No	<0.01	196	No	<0.01	197	No	<0.01	
	15	223	197	No	<0.01	200	No	<0.01	201	No	<0.01	
	20	223	200	No	0.01	203	No	<0.01	205	No	<0.01	
	25	223	203	No	0.02	206	No	<0.01	207	No	<0.01	
	30	223	206	No	0.04	209	No	0.01	210	No	<0.01	
	35	223	208	No	0.08	211	No	0.03	212	No	<0.01	
	40	223	210	No	0.12	213	No	0.04	214	No	<0.01	
	45	223	212	No	0.16	215	No	0.09	216	No	0.01	
	50	223	214	No	0.24	217	No	0.17	218	No	0.06	
	55	223	216	No	0.33	219	No	0.28	220	No	0.17	
	60	223	218	No	0.44	221	No	0.42	223	Yes	0.50	
	65	223	221	Yes	0.56	223	Yes	0.58	225	Yes	0.73	
	70	223	223	Yes	0.67	226	Yes	0.78	227	Yes	0.89	
	75	223	225	Yes	0.76	228	Yes	0.88	229	Yes	0.97	
	80	223	228	Yes	0.88	231	Yes	0.96	232	Yes	>0.99	
	85	223	231	Yes	0.92	234	Yes	0.99	235	Yes	>0.99	
	90	223	235	Yes	0.98	238	Yes	>0.99	239	Yes	>0.99	
	95	223	241	Yes	>0.99	244	Yes	>0.99	245	Yes	>0.99	
8	5	227	190	No	<0.01	193	No	<0.01	194	No	<0.01	
	10	227	196	No	<0.01	199	No	<0.01	200	No	<0.01	
	15	227	200	No	<0.01	203	No	<0.01	204	No	<0.01	
	20	227	204	No	0.01	206	No	<0.01	207	No	<0.01	
	25	227	207	No	0.02	209	No	<0.01	210	No	<0.01	
	30	227	209	No	0.04	212	No	<0.01	213	No	<0.01	
	35	227	211	No	0.05	214	No	0.01	215	No	<0.01	
	40	227	214	No	0.11	216	No	0.03	217	No	<0.01	
	45	227	216	No	0.17	218	No	0.06	220	No	0.01	
	50	227	218	No	0.24	221	No	0.17	222	No	0.06	
	55	227	220	No	0.29	223	No	0.28	224	No	0.17	
	60	227	222	No	0.39	225	No	0.42	226	No	0.38	
	65	227	225	Yes	0.55	227	Yes	0.58	228	Yes	0.62	
	70	227	227	Yes	0.66	229	Yes	0.72	231	Yes	0.89	
	75	227	230	Yes	0.76	232	Yes	0.87	233	Yes	0.97	
	80	227	232	Yes	0.83	235	Yes	0.96	236	Yes	>0.99	
	85	227	236	Yes	0.94	238	Yes	0.99	239	Yes	>0.99	
	90	227	240	Yes	0.98	242	Yes	>0.99	243	Yes	>0.99	
	95	227	246	Yes	>0.99	248	Yes	>0.99	249	Yes	>0.99	

Table 3.9. Proficiency Projection based on RIT Scores—Mathematics

Mathematics											
			Fall			Winter			Spring		
				Projected Proficiency			Projected Proficiency			Projected Proficiency	
Grade	Start %ile	Spring Cut	Fall RIT	*Proficient*	Prob.	Winter RIT	*Proficient*	Prob.	Spring RIT	*Proficient*	Prob.
2	5	194	154	No	<0.01	163	No	<0.01	167	No	<0.01
	10	194	158	No	<0.01	167	No	<0.01	172	No	<0.01
	15	194	162	No	0.01	171	No	<0.01	175	No	<0.01
	20	194	164	No	0.01	173	No	<0.01	178	No	<0.01
	25	194	166	No	0.02	175	No	<0.01	180	No	<0.01
	30	194	168	No	0.04	177	No	0.01	182	No	<0.01
	35	194	170	No	0.08	179	No	0.03	184	No	<0.01
	40	194	172	No	0.14	181	No	0.05	186	No	<0.01
	45	194	173	No	0.18	182	No	0.07	188	No	0.02
	50	194	175	No	0.22	184	No	0.15	189	No	0.04
	55	194	177	No	0.32	186	No	0.26	191	No	0.15
	60	194	178	No	0.38	187	No	0.34	193	No	0.37
	65	194	180	Yes	0.50	189	Yes	0.50	195	Yes	0.63
	70	194	182	Yes	0.62	191	Yes	0.66	196	Yes	0.75
	75	194	184	Yes	0.73	193	Yes	0.80	198	Yes	0.92
	80	194	186	Yes	0.78	195	Yes	0.90	201	Yes	0.99
	85	194	188	Yes	0.86	198	Yes	0.97	203	Yes	>0.99
	90	194	192	Yes	0.96	201	Yes	0.99	207	Yes	>0.99
	95	194	196	Yes	0.99	205	Yes	>0.99	212	Yes	>0.99
3	5	205	166	No	<0.01	174	No	<0.01	178	No	<0.01
	10	205	171	No	<0.01	179	No	<0.01	183	No	<0.01
	15	205	175	No	<0.01	182	No	<0.01	186	No	<0.01
	20	205	177	No	0.01	185	No	<0.01	189	No	<0.01
	25	205	179	No	0.02	187	No	<0.01	192	No	<0.01
	30	205	181	No	0.04	189	No	0.01	194	No	<0.01
	35	205	183	No	0.07	191	No	0.03	196	No	<0.01
	40	205	185	No	0.13	193	No	0.07	198	No	0.01
	45	205	187	No	0.21	195	No	0.14	199	No	0.02
	50	205	188	No	0.26	196	No	0.20	201	No	0.08
	55	205	190	No	0.37	198	No	0.33	203	No	0.25
	60	205	192	No	0.44	200	Yes	0.50	205	Yes	0.50
	65	205	194	Yes	0.56	201	Yes	0.58	207	Yes	0.75
	70	205	196	Yes	0.69	203	Yes	0.74	208	Yes	0.85
	75	205	198	Yes	0.79	205	Yes	0.86	211	Yes	0.98
	80	205	200	Yes	0.87	208	Yes	0.96	213	Yes	>0.99
	85	205	202	Yes	0.93	210	Yes	0.98	216	Yes	>0.99
	90	205	206	Yes	0.98	214	Yes	>0.99	219	Yes	>0.99
	95	205	211	Yes	>0.99	219	Yes	>0.99	224	Yes	>0.99

Mathematics												
			Fall			Winter			Spring			
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency		
				Proficient	Prob.		*Proficient*	Prob.		*Proficient*	Prob.	
4	5	214	176	No	<0.01	182	No	<0.01	185	No	<0.01	
	10	214	181	No	<0.01	187	No	<0.01	191	No	<0.01	
	15	214	185	No	<0.01	191	No	<0.01	194	No	<0.01	
	20	214	187	No	0.01	194	No	<0.01	197	No	<0.01	
	25	214	190	No	0.02	196	No	<0.01	200	No	<0.01	
	30	214	192	No	0.04	198	No	0.01	202	No	<0.01	
	35	214	194	No	0.07	200	No	0.02	205	No	<0.01	
	40	214	196	No	0.13	202	No	0.04	207	No	0.01	
	45	214	198	No	0.21	204	No	0.10	209	No	0.04	
	50	214	200	No	0.32	206	No	0.20	211	No	0.15	
	55	214	201	No	0.37	208	No	0.33	212	No	0.25	
	60	214	203	Yes	0.50	210	Yes	0.50	214	Yes	0.50	
	65	214	205	Yes	0.63	212	Yes	0.67	217	Yes	0.85	
	70	214	207	Yes	0.74	214	Yes	0.80	219	Yes	0.96	
	75	214	209	Yes	0.83	216	Yes	0.90	221	Yes	0.99	
	80	214	212	Yes	0.93	219	Yes	0.97	224	Yes	>0.99	
	85	214	214	Yes	0.96	221	Yes	0.99	227	Yes	>0.99	
	90	214	218	Yes	0.99	225	Yes	>0.99	230	Yes	>0.99	
	95	214	223	Yes	>0.99	231	Yes	>0.99	236	Yes	>0.99	
5	5	223	184	No	<0.01	189	No	<0.01	191	No	<0.01	
	10	223	190	No	<0.01	194	No	<0.01	197	No	<0.01	
	15	223	193	No	<0.01	198	No	<0.01	201	No	<0.01	
	20	223	196	No	<0.01	201	No	<0.01	205	No	<0.01	
	25	223	199	No	0.01	204	No	<0.01	207	No	<0.01	
	30	223	201	No	0.03	206	No	<0.01	210	No	<0.01	
	35	223	203	No	0.06	209	No	0.02	212	No	<0.01	
	40	223	205	No	0.11	211	No	0.05	215	No	<0.01	
	45	223	207	No	0.18	213	No	0.10	217	No	0.02	
	50	223	209	No	0.27	215	No	0.20	219	No	0.08	
	55	223	211	No	0.38	217	No	0.34	221	No	0.25	
	60	223	213	Yes	0.50	219	Yes	0.50	223	Yes	0.50	
	65	223	215	Yes	0.62	221	Yes	0.66	225	Yes	0.75	
	70	223	217	Yes	0.73	223	Yes	0.80	228	Yes	0.96	
	75	223	219	Yes	0.82	225	Yes	0.90	230	Yes	0.99	
	80	223	222	Yes	0.92	228	Yes	0.97	233	Yes	>0.99	
	85	223	225	Yes	0.97	231	Yes	0.99	236	Yes	>0.99	
	90	223	229	Yes	0.99	235	Yes	>0.99	240	Yes	>0.99	
	95	223	234	Yes	>0.99	241	Yes	>0.99	246	Yes	>0.99	

Mathematics												
			Fall			Winter			Spring			
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency		
				Proficient	Prob.		*Proficient*	Prob.		*Proficient*	Prob.	
6	5	230	188	No	<0.01	192	No	<0.01	194	No	<0.01	
	10	230	194	No	<0.01	198	No	<0.01	200	No	<0.01	
	15	230	198	No	<0.01	202	No	<0.01	205	No	<0.01	
	20	230	201	No	<0.01	205	No	<0.01	208	No	<0.01	
	25	230	204	No	<0.01	208	No	<0.01	211	No	<0.01	
	30	230	206	No	0.01	211	No	<0.01	214	No	<0.01	
	35	230	209	No	0.02	213	No	<0.01	216	No	<0.01	
	40	230	211	No	0.04	215	No	0.01	218	No	<0.01	
	45	230	213	No	0.08	217	No	0.02	221	No	<0.01	
	50	230	215	No	0.14	220	No	0.07	223	No	0.01	
	55	230	217	No	0.22	222	No	0.14	225	No	0.04	
	60	230	219	No	0.32	224	No	0.26	227	No	0.15	
	65	230	221	No	0.44	226	No	0.42	230	Yes	0.50	
	70	230	223	Yes	0.56	228	Yes	0.58	232	Yes	0.75	
	75	230	226	Yes	0.73	231	Yes	0.80	235	Yes	0.96	
	80	230	228	Yes	0.83	234	Yes	0.93	238	Yes	>0.99	
	85	230	231	Yes	0.92	237	Yes	0.98	241	Yes	>0.99	
	90	230	235	Yes	0.98	241	Yes	>0.99	245	Yes	>0.99	
	95	230	241	Yes	>0.99	247	Yes	>0.99	252	Yes	>0.99	
7	5	236	192	No	<0.01	194	No	<0.01	196	No	<0.01	
	10	236	198	No	<0.01	201	No	<0.01	203	No	<0.01	
	15	236	202	No	<0.01	205	No	<0.01	207	No	<0.01	
	20	236	206	No	<0.01	209	No	<0.01	211	No	<0.01	
	25	236	208	No	<0.01	212	No	<0.01	214	No	<0.01	
	30	236	211	No	<0.01	215	No	<0.01	217	No	<0.01	
	35	236	213	No	<0.01	217	No	<0.01	220	No	<0.01	
	40	236	216	No	0.01	219	No	<0.01	222	No	<0.01	
	45	236	218	No	0.04	222	No	0.01	224	No	<0.01	
	50	236	220	No	0.07	224	No	0.03	227	No	<0.01	
	55	236	222	No	0.13	226	No	0.07	229	No	0.01	
	60	236	225	No	0.26	229	No	0.20	231	No	0.04	
	65	236	227	No	0.37	231	No	0.33	234	No	0.25	
	70	236	229	Yes	0.50	233	Yes	0.50	236	Yes	0.50	
	75	236	232	Yes	0.69	236	Yes	0.74	239	Yes	0.85	
	80	236	235	Yes	0.83	239	Yes	0.90	242	Yes	0.98	
	85	236	238	Yes	0.93	243	Yes	0.98	246	Yes	>0.99	
	90	236	243	Yes	0.99	247	Yes	>0.99	251	Yes	>0.99	
	95	236	249	Yes	>0.99	254	Yes	>0.99	257	Yes	>0.99	

Mathematics												
			Fall			Winter			Spring			
Grade	Start %ile	Spring Cut	Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency		
				Proficient	Prob.		*Proficient*	Prob.		*Proficient*	Prob.	
8	5	240	194	No	<0.01	196	No	<0.01	197	No	<0.01	
	10	240	201	No	<0.01	203	No	<0.01	205	No	<0.01	
	15	240	205	No	<0.01	208	No	<0.01	210	No	<0.01	
	20	240	209	No	<0.01	212	No	<0.01	214	No	<0.01	
	25	240	212	No	<0.01	215	No	<0.01	217	No	<0.01	
	30	240	215	No	<0.01	218	No	<0.01	220	No	<0.01	
	35	240	218	No	0.01	221	No	<0.01	223	No	<0.01	
	40	240	220	No	0.02	223	No	<0.01	225	No	<0.01	
	45	240	223	No	0.04	226	No	0.01	228	No	<0.01	
	50	240	225	No	0.07	228	No	0.02	230	No	<0.01	
	55	240	227	No	0.12	231	No	0.07	233	No	0.01	
	60	240	230	No	0.24	233	No	0.15	235	No	0.04	
	65	240	232	No	0.33	236	No	0.34	238	No	0.25	
	70	240	235	Yes	0.50	238	Yes	0.50	241	Yes	0.63	
	75	240	238	Yes	0.67	241	Yes	0.73	244	Yes	0.92	
	80	240	241	Yes	0.81	244	Yes	0.89	247	Yes	0.99	
	85	240	245	Yes	0.93	248	Yes	0.98	251	Yes	>0.99	
	90	240	249	Yes	0.98	253	Yes	>0.99	256	Yes	>0.99	
	95	240	256	Yes	>0.99	260	Yes	>0.99	263	Yes	>0.99	

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