

Linking Study Report: Predicting Performance on Tennessee Ready (TNReady) based on NWEA MAP Growth Scores

July 2020

NWEA Psychometric Solutions

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Executive Summary

To predict student achievement on Tennessee Ready (TNReady) assessments in Grades 3–8 English Language Arts (ELA) and Mathematics, NWEA® conducted a linking study using Spring 2017 data to derive Rasch Unit (RIT) cut scores on the MAP® Growth™ assessments that correspond to the TNReady achievement levels. With this information, educators can identify students at risk of failing to meet state proficiency standards early in the year and provide tailored educational interventions. The linking study has been updated since the previous version published in May 2018 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020).

Table E.1 presents the TNReady *On Track* achievement level cut scores and the corresponding MAP Growth RIT cut scores that allow teachers to identify students who are on track for proficiency on the state summative test and those who are not. For example, the *On Track* cut score on the TNReady Grade 3 ELA test is 359. A Grade 3 student with a MAP Growth Reading RIT score of 197 in the fall is likely to meet proficiency on the TNReady ELA test in the spring, whereas a Grade 3 student with a MAP Growth Reading RIT score lower than 197 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 TNReady 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 TNReady Proficiency

Assessment		On Track Cut Scores by Grade						
		2	3	4	5	6	7	8
ELA/Reading								
TNReady Spring		–	359	343	333	342	341	346
MAP Growth	Fall	184	197	205	214	217	222	226
	Winter	192	203	210	218	220	224	228
	Spring	196	206	212	219	221	225	229
Mathematics								
TNReady Spring		–	341	330	339	340	339	330
MAP Growth	Fall	179	192	203	216	219	229	235
	Winter	188	199	210	222	224	233	238
	Spring	193	204	214	226	227	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 TNReady Grades 3–8 ELA and Mathematics tests are Tennessee’s state summative assessments aligned to the Tennessee ELA and Mathematics standards adopted in April 2016. Based on their test scores, students are placed into one of four achievement levels: *Below*, *Approaching*, *On Track*, and *Mastered*. These tests are used to provide evidence of student achievement in ELA and Mathematics for various goals such as satisfying the federal accountability requirements. The *On Track* 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 2017 test administration, the equipercentile linking method was used to identify the spring MAP Growth scores that correspond to the spring TNReady achievement level cut scores. Spring cuts for Grade 2 were derived based on the cuts for Grade 3 and the 2020 NWEA growth norms. MAP Growth fall and winter cut scores that predict proficiency on the spring TNReady 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 TNReady assessments in Spring 2017 were included in the study sample. Table E.2 presents the weighted number of Tennessee students from seven districts and 248 schools who were included in the linking study. The linking study sample is voluntary and can only include student scores from partners who share their data. Also, not all students in a state take MAP Growth. The sample may therefore not represent the general student population as well as it should. To ensure that the linking study sample represents the state student population in terms of race, sex, and achievement level, weighting (i.e., a statistical method that matches the distributions of the variables of interest to those of the target population) was applied to the sample. As a result, the RIT cuts derived from the study sample can be generalized to any student from the target population. All analyses in this study for Grades 3–8 were conducted based on the weighted sample.

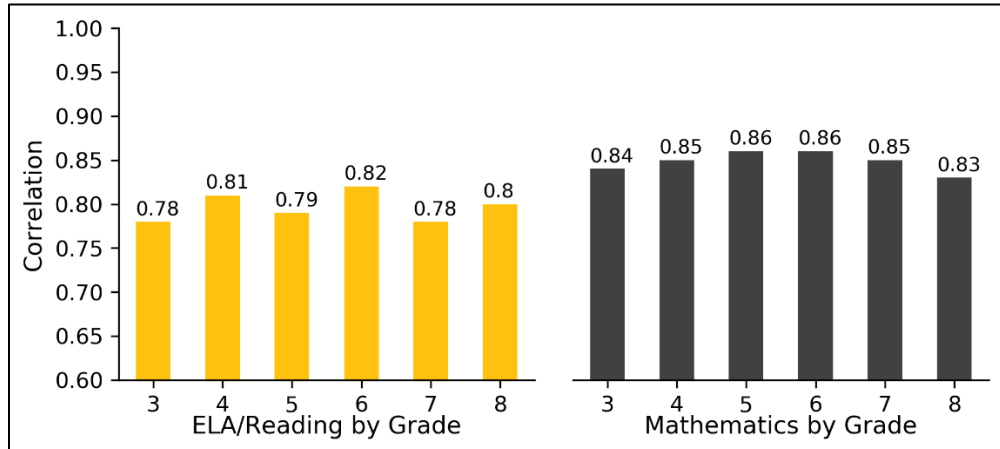
Table E.2. Linking Study Sample

Grade	#Students	
	ELA/Reading	Mathematics
3	14,072	10,400
4	13,936	9,913
5	11,372	7,876
6	9,459	6,298
7	9,364	6,219
8	9,429	5,560

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and TNReady scores range from 0.78 to 0.86 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 TNReady assessments.

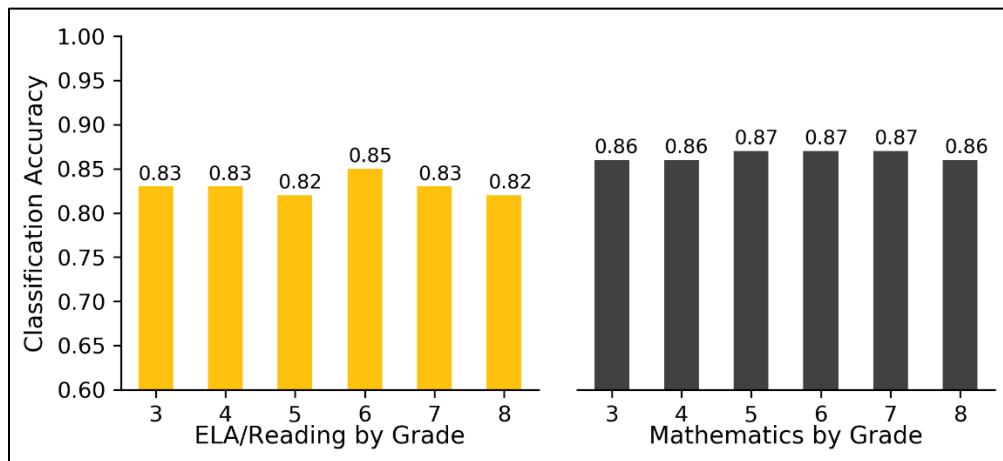
Figure E.1. Correlations between MAP Growth and TNReady



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 TNReady tests. For example, the MAP Growth Reading Grade 3 *On Track* cut score has a 0.83 accuracy rate, meaning it accurately classified student achievement on the state test for 83% of the sample. The results range from 0.82 to 0.87 across both content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the TNReady 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 the Tennessee Ready (TNReady) Grades 3–8 English Language Arts (ELA) and Mathematics assessments with Rasch Unit (RIT) scores from the MAP Growth assessments taken during the Spring 2017 term. The linking study has been updated since the previous version published in May 2018 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 TNReady 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 TNReady achievement levels using the equipercentile linking procedure for the spring results and the 2020 norms for the fall and winter results
4. Classification accuracy statistics to determine the degree to which MAP Growth accurately predicts student proficiency status on the TNReady tests
5. The probability of achieving grade-level proficiency on the TNReady assessment based on MAP Growth RIT scores from fall, winter, and spring using the 2020 norms

1.2. Assessment Overview

The TNReady Grades 3–8 ELA and Mathematics summative assessments are aligned to the Tennessee ELA and Mathematics standards adopted in April 2016. Each assessment has three cut scores (i.e., the minimum score a student must get on a test to be placed in a certain achievement level) that distinguish between the following achievement levels: *Below*, *Approaching*, *On Track*, and *Mastered*. The *On Track* 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 2017 administrations of the MAP Growth and TNReady assessments. NWEA recruited Tennessee 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 Tennessee 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 TNReady assessments in Spring 2017 were included in the study sample.

2.2. Post-Stratification Weighting

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

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

2.3. MAP Growth Cut Scores

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

The MAP Growth spring cut scores for Grades 3–8 could be calculated using the equipercntile linking method because that data are directly connected to the TNReady spring data used in the study. The equipercntile linking procedure matches scores on the two scales that have the same percentile rank (i.e., the proportion of tests at or below each score). For example, let x represent a score on Test X (e.g., TNReady). Its equipercntile equivalent score on Test Y (e.g., MAP Growth), $e_y(x)$, can be obtained through a cumulative-distribution-based linking function defined in Equation 1:

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

where $e_y(x)$ is the equipercentile equivalent of score x on TNReady on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on TNReady, 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 for Grade 2, the growth score from spring of one year to the next was used (i.e., the growth score from spring Grade 2 to spring Grade 3). The calculation of fall and winter cuts for Grade 2 followed the same process as the other grades. For example, the growth score from fall to spring in Grade 2 was used to calculate the fall cuts for Grade 2.

2.4. Classification Accuracy

The degree to which MAP Growth predicts student proficiency status on the TNReady tests can be described using classification accuracy statistics based on the MAP Growth spring RIT cut scores that show the proportion of students correctly classified by their RIT scores as proficient (*On Track* or *Mastered*) or not proficient (*Below* or *Approaching*). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich, Hanson, Harris, & Scoring, 2004). The results are based on the Spring 2017 MAP Growth and TNReady data for the *On Track* cut score.

Since Tennessee students do not begin taking the TNReady assessment until Grade 3, longitudinal data were collected for the 2016–2017 Grade 3 cohort in order to link the TNReady assessment to MAP Growth for Grade 2 to calculate the classification accuracy statistics. To accomplish this, 2016–2017 TNReady Grade 3 results were linked to MAP Growth data from Grade 3 students in 2016–2017 and Grade 2 students in 2015–2016. In this way, the data came from the same cohort of students beginning when they were in Grade 2 and continuing through Grade 3.

Table 2.1. Description of Classification Accuracy Summary Statistics

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

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

2.5. Proficiency Projection

In addition to calculating the MAP Growth fall and winter cut scores, the MAP Growth conditional growth norms data were also used to calculate the probability of reaching proficiency on the TNReady 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 *On Track* proficiency on the TNReady test based on their fall or winter RIT score:

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

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 *On Track* 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 *On Track* proficiency on the TNReady test based on their spring RIT score (RIT_{Spring}):

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

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

3. Results

3.1. Study Sample

Only students who took both the MAP Growth and TNReady assessments in Spring 2017 were included in the study sample. Data used in this study were collected from seven districts and 248 schools in Tennessee. Table 3.1 presents the demographic distributions of race, sex, and achievement level in the original unweighted study sample. Table 3.2 presents the distributions of the student population that took the Spring 2017 TNReady tests (TDOE, 2017). Since the unweighted data are different from the general TNReady 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 TNReady student population distributions. The analyses in this study were therefore conducted based on the weighted sample.

Table 3.1. Linking Study Sample Demographics (Unweighted)

Linking Study Sample (Unweighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
Total N		14,072	13,922	11,372	9,450	9,373	9,438
Race	Asian	2.8	2.5	2.8	2.7	3.2	2.2
	Black	54.5	55.3	60.6	60.1	62.0	55.6
	Hispanic	19.8	18.7	16.3	17.1	15.5	9.6
	Other	3.3	5.2	2.9	2.8	2.2	24.3
	White	19.5	18.2	17.4	17.4	17.0	8.3
Sex	Female	49.6	49.8	49.0	50.2	50.5	50.0
	Male	50.4	50.2	51.0	49.8	49.5	50.0
Achievement Level	<i>Below</i>	37.5	29.5	37.8	30.6	31.8	26.5
	<i>Approaching</i>	38.1	45.3	42.7	47.0	44.4	53.1
	<i>On Track</i>	20.2	22.3	16.6	18.8	21.0	16.9
	<i>Mastered</i>	4.2	2.9	2.8	3.6	2.8	3.5
Mathematics							
Total N		10,400	9,913	7,876	6,298	6,213	5,560
Race	Asian	2.4	1.9	1.9	2.0	1.7	1.3
	Black	60.6	63.2	68.7	69.0	72.0	74.8
	Hispanic	18.7	17.4	14.1	15.1	13.4	12.1
	Other	3.4	4.0	3.1	3.2	2.6	4.6
	White	15.0	13.5	12.1	10.8	10.3	7.2
Sex	Female	49.8	49.6	49.8	50.3	50.9	48.5
	Male	50.2	50.4	50.2	49.7	49.1	51.5
Achievement Level	<i>Below</i>	32.6	39.7	40.4	40.7	43.4	58.9
	<i>Approaching</i>	36.7	33.9	35.0	36.4	42.0	31.2
	<i>On Track</i>	21.9	22.4	19.7	20.2	13.0	9.4
	<i>Mastered</i>	8.8	4.0	5.0	2.7	1.6	0.5

Table 3.2. Spring 2017 TNReady Student Population Demographics

Spring 2017 TNReady Population							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
ELA							
Total N		75,078	76,293	74,578	71,872	71,559	70,724
Race	Asian	2.3	2.3	2.3	2.3	2.3	2.3
	Black	24.4	23.8	23.4	22.8	22.7	23.1
	Hispanic	11.0	11.1	10.6	10.0	9.1	8.9
	Other	0.6	0.6	0.6	0.6	0.7	0.7
	White	61.7	62.3	63.1	64.3	65.2	65.1
Sex	Female	49.7	49.2	49.8	49.8	49.7	49.9
	Male	50.3	50.8	50.2	50.2	50.3	50.1
Achievement Level	<i>Below</i>	26.4	19.3	24.9	18.9	20.5	17.5
	<i>Approaching</i>	39.0	44.3	44.5	47.1	43.7	51.5
	<i>On Track</i>	27.5	31.7	25.7	27.9	30.9	25.3
	<i>Mastered</i>	7.1	4.8	4.9	6.2	4.8	5.6
Mathematics							
Total N		76,304	76,892	75,441	72,136	71,567	62,055
Race	Asian	2.4	2.3	2.4	2.1	2.2	1.7
	Black	24.5	23.9	23.5	23.1	22.9	24.2
	Hispanic	11.2	11.3	10.8	10.2	9.4	9.3
	Other	0.6	0.6	0.7	0.6	0.7	0.7
	White	61.3	61.8	62.7	63.9	64.8	64.1
Sex	Female	49.6	49.2	49.8	49.8	49.7	49.3
	Male	50.4	50.8	50.2	50.2	50.3	50.7
Achievement Level	<i>Below</i>	24.0	25.1	27.2	24.7	24.4	34.5
	<i>Approaching</i>	35.2	33.9	34.9	36.2	44.1	34.5
	<i>On Track</i>	27.2	31.9	27.4	33.3	27.2	25.2
	<i>Mastered</i>	13.6	9.1	10.5	5.8	4.4	5.8

Table 3.3. Linking Study Sample Demographics (Weighted)

Linking Study Sample (Weighted)							
Demographic Subgroup		%Students by Grade					
		3	4	5	6	7	8
ELA/Reading							
Total N		14,072	13,936	11,372	9,459	9,364	9,429
Race	Asian	2.3	2.3	2.3	2.3	2.3	2.3
	Black	24.4	23.8	23.4	22.8	22.7	23.1
	Hispanic	11.0	11.1	10.6	10.0	9.1	8.9
	Other	0.6	0.6	0.6	0.6	0.7	0.7
	White	61.7	62.2	63.1	64.3	65.2	65.0
Sex	Female	49.7	49.2	49.8	49.8	49.7	49.9
	Male	50.3	50.8	50.2	50.2	50.3	50.1
Achievement Level	<i>Below</i>	26.4	19.3	24.9	18.9	20.5	17.5
	<i>Approaching</i>	39.0	44.3	44.5	47.1	43.7	51.6
	<i>On Track</i>	27.5	31.7	25.7	27.9	30.9	25.3
	<i>Mastered</i>	7.1	4.8	4.9	6.2	4.8	5.6
Mathematics							
Total N		10,400	9,913	7,876	6,298	6,219	5,560
Race	Asian	2.4	2.3	2.4	2.1	2.2	1.7
	Black	24.5	23.9	23.5	23.1	22.9	24.2
	Hispanic	11.2	11.3	10.8	10.2	9.4	9.3
	Other	0.6	0.6	0.7	0.6	0.7	0.7
	White	61.3	61.9	62.6	64.0	64.8	64.1
Sex	Female	49.6	49.2	49.8	49.8	49.7	49.3
	Male	50.4	50.8	50.2	50.2	50.3	50.7
Achievement Level	<i>Below</i>	24.0	25.1	27.2	24.7	24.4	34.5
	<i>Approaching</i>	35.2	33.9	34.9	36.2	44.1	34.5
	<i>On Track</i>	27.2	31.9	27.4	33.3	27.2	25.2
	<i>Mastered</i>	13.6	9.1	10.5	5.8	4.4	5.8

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and TNReady test scores from Spring 2017, including the correlation coefficient (r) between them. The correlation coefficients between the scores range from 0.78 to 0.82 for ELA/Reading and 0.83 to 0.86 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 TNReady assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	r	TNReady*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA/Reading										
3	14,072	0.78	339.0	41.3	200	449	197.4	18.2	134	250
4	13,936	0.81	326.8	37.4	200	449	204.3	17.8	137	253
5	11,372	0.79	316.7	35.7	200	450	210.5	17.7	140	254
6	9,459	0.82	328.8	34.3	200	449	213.0	17.9	141	260
7	9,364	0.78	328.5	31.9	200	450	216.9	18.8	142	261
8	9,429	0.80	329.5	36.5	200	449	220.5	18.7	140	266
Mathematics										
3	10,400	0.84	329.6	40.5	200	450	199.6	15.0	133	259
4	9,913	0.85	318.0	41.9	200	450	209.8	16.6	138	263
5	7,876	0.86	320.4	45.3	200	450	219.0	18.6	141	279
6	6,298	0.86	326.2	38.4	200	449	220.6	18.5	142	282
7	6,219	0.85	318.0	39.0	200	444	225.8	19.5	138	269
8	5,560	0.83	305.8	38.7	200	398	228.3	19.4	140	268

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

3.3. MAP Growth Cut Scores

Table 3.5 and Table 3.6 present the TNReady scale score ranges and the corresponding MAP Growth RIT cut scores and percentile ranges by content area and grade. These tables can be used to predict a student’s likely achievement level on the TNReady 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 197 in the fall is likely to reach *On Track* proficiency on the TNReady ELA test. A Grade 3 student who obtained a MAP Growth Reading RIT score of 206 in the spring is also likely to reach *On Track* proficiency on the TNReady. 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 achievement level could be different from the generic projection presented in this document. Partners are therefore encouraged to use the projected achievement level in students’ 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

TNReady ELA								
Grade	Below		Approaching		On Track		Mastered	
3	200–321		322–358		359–390		391–450	
4	200–298		299–342		343–378		379–450	
5	200–295		296–332		333–370		371–450	
6	200–302		303–341		342–376		377–450	
7	200–304		305–340		341–373		374–450	
8	200–297		298–345		346–383		384–450	
MAP Growth Reading*								
Grade	Below		Approaching		On Track		Mastered	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
2	100–158	1–18	159–183	19–77	184–207	78–98	208–350	99–99
3	100–174	1–23	175–196	24–72	197–215	73–95	216–350	96–99
4	100–180	1–17	181–204	18–68	205–223	69–94	224–350	95–99
5	100–193	1–25	194–213	26–71	214–230	72–94	231–350	95–99
6	100–195	1–18	196–216	19–65	217–233	66–92	234–350	93–99
7	100–198	1–17	199–221	18–67	222–239	68–93	240–350	94–99
8	100–199	1–14	200–225	15–67	226–243	68–93	244–350	94–99
Winter								
2	100–168	1–20	169–191	21–75	192–213	76–98	214–350	99–99
3	100–182	1–24	183–202	25–70	203–220	71–94	221–350	95–99
4	100–187	1–18	188–209	19–67	210–227	68–93	228–350	94–99
5	100–199	1–27	200–217	28–70	218–232	71–92	233–350	93–99
6	100–200	1–20	201–219	21–64	220–234	65–90	235–350	91–99
7	100–202	1–18	203–223	19–66	224–240	67–92	241–350	93–99
8	100–203	1–15	204–227	16–66	228–244	67–92	245–350	93–99
Spring								
2	100–173	1–22	174–195	23–74	196–216	75–97	217–350	98–99
3	100–186	1–26	187–205	27–70	206–222	71–93	223–350	94–99
4	100–190	1–19	191–211	20–66	212–228	67–92	229–350	93–99
5	100–201	1–28	202–218	29–68	219–233	69–92	234–350	93–99
6	100–202	1–21	203–220	22–63	221–235	64–89	236–350	90–99
7	100–204	1–20	205–224	21–65	225–241	66–92	242–350	93–99
8	100–205	1–17	206–228	18–66	229–245	67–92	246–350	93–99

*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

TNReady Mathematics*								
Grade	Below		Approaching		On Track		Mastered	
3	200–304		305–340		341–370		371–450	
4	200–294		295–329		330–372		373–450	
5	200–299		300–338		339–373		374–450	
6	200–306		307–339		340–381		382–450	
7	200–294		295–338		339–378		379–450	
8	200–295		296–329		330–366		367–450	
MAP Growth Mathematics*								
Grade	Below		Approaching		On Track		Mastered	
	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall								
2	100–164	1–21	165–178	22–61	179 –190	62–88	191–350	89–99
3	100–178	1–23	179–191	24–59	192 –201	60–83	202–350	84–99
4	100–189	1–24	190–202	25–58	203 –219	59–91	220–350	92–99
5	100–199	1–26	200–215	27–66	216 –231	67–92	232–350	93–99
6	100–203	1–24	204–218	25–59	219 –238	60–92	239–350	93–99
7	100–208	1–25	209–228	26–68	229 –248	69–94	249–350	95–99
8	100–217	1–35	218–234	36–69	235 –253	70–93	254–350	94–99
Winter								
2	100–173	1–21	174–187	22–61	188 –198	62–86	199–350	87–99
3	100–186	1–24	187–198	25–57	199 –208	58–82	209–350	83–99
4	100–196	1–26	197–209	27–59	210 –226	60–91	227–350	92–99
5	100–205	1–28	206–221	29–67	222 –237	68–92	238–350	93–99
6	100–208	1–25	209–223	26–59	224 –243	60–92	244–350	93–99
7	100–211	1–24	212–232	25–68	233 –252	69–94	253–350	95–99
8	100–220	1–35	221–237	36–69	238 –256	70–92	257–350	93–99
Spring								
2	100–179	1–23	180–192	24–60	193 –203	61–85	204–350	86–99
3	100–191	1–25	192–203	26–57	204 –213	58–81	214–350	82–99
4	100–200	1–26	201–213	27–58	214 –230	59–90	231–350	91–99
5	100–209	1–29	210–225	30–66	226 –241	67–91	242–350	92–99
6	100–211	1–26	212–226	27–58	227 –246	59–91	247–350	92–99
7	100–214	1–25	215–235	26–68	236 –255	69–93	256–350	94–99
8	100–222	1–35	223–239	36–68	240 –258	69–91	259–350	92–99

*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 TNReady tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from 0.82 to 0.85 for ELA/Reading and 0.81 to 0.87 for Mathematics. These values suggest that the RIT cut scores are good at classifying students as proficient or not proficient on the TNReady assessment. For Grade 2, the classification accuracy rate refers to how well the MAP Growth cuts can predict students' proficiency status on TNReady 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 TNReady tests, there is a notable limitation to how these results should be used and interpreted. TNReady 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	TNReady		FP	FN				
ELA/Reading										
2	7,171	196	359	0.84	0.10	0.38	0.62	0.90	0.65	0.88
3	14,072	206	359	0.83	0.15	0.22	0.78	0.85	0.74	0.90
4	13,936	212	343	0.83	0.14	0.22	0.78	0.86	0.76	0.91
5	11,372	219	333	0.82	0.16	0.22	0.78	0.84	0.68	0.90
6	9,459	221	342	0.85	0.14	0.18	0.82	0.86	0.76	0.92
7	9,364	225	341	0.83	0.16	0.19	0.81	0.84	0.74	0.90
8	9,429	229	346	0.82	0.18	0.19	0.81	0.82	0.67	0.89
Mathematics										
2	7,051	193	341	0.81	0.09	0.38	0.62	0.91	0.75	0.87
3	10,400	204	341	0.86	0.13	0.15	0.85	0.87	0.81	0.93
4	9,913	214	330	0.86	0.14	0.14	0.86	0.86	0.81	0.94
5	7,876	226	339	0.87	0.12	0.15	0.85	0.88	0.82	0.94
6	6,298	227	340	0.87	0.12	0.13	0.87	0.88	0.82	0.94
7	6,219	236	339	0.87	0.12	0.17	0.83	0.88	0.76	0.94
8	5,560	240	330	0.86	0.10	0.22	0.78	0.90	0.78	0.94

*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 *On Track* performance on the TNReady test based on RIT scores from fall, winter, or spring. For example, a Grade 3 student who obtained a MAP Growth Reading score of 204 in the fall has a 79% chance of reaching *On Track* proficiency or higher on the TNReady test. "Prob." indicates the probability of obtaining proficient status on the TNReady test in the spring.

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

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	Prob.
2	5	196	147	No	<0.01	156	No	<0.01	160	No	<0.01
	10	196	153	No	<0.01	162	No	<0.01	166	No	<0.01
	15	196	157	No	<0.01	166	No	<0.01	170	No	<0.01
	20	196	160	No	<0.01	169	No	<0.01	173	No	<0.01
	25	196	162	No	<0.01	171	No	<0.01	175	No	<0.01
	30	196	164	No	0.01	173	No	<0.01	177	No	<0.01
	35	196	166	No	0.02	175	No	<0.01	180	No	<0.01
	40	196	168	No	0.03	177	No	<0.01	182	No	<0.01
	45	196	170	No	0.04	179	No	0.01	184	No	<0.01
	50	196	172	No	0.07	181	No	0.02	186	No	<0.01
	55	196	174	No	0.12	183	No	0.05	188	No	0.01
	60	196	176	No	0.18	185	No	0.10	189	No	0.01
	65	196	178	No	0.25	187	No	0.17	192	No	0.11
	70	196	180	No	0.30	189	No	0.29	194	No	0.27
	75	196	183	No	0.45	191	No	0.43	196	Yes	0.50
	80	196	185	Yes	0.55	194	Yes	0.65	199	Yes	0.83
	85	196	188	Yes	0.65	197	Yes	0.83	202	Yes	0.97
90	196	192	Yes	0.82	200	Yes	0.93	205	Yes	>0.99	
95	196	197	Yes	0.93	206	Yes	>0.99	211	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	Prob.
3	5	206	159	No	<0.01	167	No	<0.01	170	No	<0.01
	10	206	165	No	<0.01	173	No	<0.01	176	No	<0.01
	15	206	169	No	<0.01	177	No	<0.01	180	No	<0.01
	20	206	173	No	<0.01	180	No	<0.01	183	No	<0.01
	25	206	175	No	0.01	183	No	<0.01	186	No	<0.01
	30	206	178	No	0.02	185	No	<0.01	189	No	<0.01
	35	206	180	No	0.02	188	No	<0.01	191	No	<0.01
	40	206	182	No	0.04	190	No	0.01	193	No	<0.01
	45	206	185	No	0.09	192	No	0.02	195	No	<0.01
	50	206	187	No	0.11	194	No	0.05	197	No	<0.01
	55	206	189	No	0.17	196	No	0.09	199	No	0.01
	60	206	191	No	0.25	198	No	0.17	201	No	0.06
	65	206	193	No	0.34	200	No	0.29	203	No	0.17
	70	206	195	No	0.39	202	No	0.43	206	Yes	0.50
	75	206	198	Yes	0.55	205	Yes	0.65	208	Yes	0.73
	80	206	201	Yes	0.70	207	Yes	0.77	211	Yes	0.94
	85	206	204	Yes	0.79	211	Yes	0.91	214	Yes	0.99
90	206	208	Yes	0.91	215	Yes	0.98	218	Yes	>0.99	
95	206	214	Yes	0.98	220	Yes	>0.99	224	Yes	>0.99	
4	5	212	169	No	<0.01	176	No	<0.01	178	No	<0.01
	10	212	175	No	<0.01	182	No	<0.01	184	No	<0.01
	15	212	179	No	<0.01	186	No	<0.01	188	No	<0.01
	20	212	183	No	<0.01	189	No	<0.01	191	No	<0.01
	25	212	185	No	0.01	192	No	<0.01	194	No	<0.01
	30	212	188	No	0.02	194	No	<0.01	196	No	<0.01
	35	212	190	No	0.04	196	No	0.01	199	No	<0.01
	40	212	192	No	0.06	198	No	0.02	201	No	<0.01
	45	212	195	No	0.11	200	No	0.03	203	No	<0.01
	50	212	197	No	0.17	202	No	0.06	205	No	0.01
	55	212	199	No	0.24	205	No	0.17	207	No	0.06
	60	212	201	No	0.34	207	No	0.28	209	No	0.17
	65	212	203	No	0.39	209	No	0.42	211	No	0.38
	70	212	205	Yes	0.50	211	Yes	0.58	213	Yes	0.62
	75	212	208	Yes	0.66	213	Yes	0.72	216	Yes	0.89
	80	212	211	Yes	0.76	216	Yes	0.87	219	Yes	0.99
	85	212	214	Yes	0.87	219	Yes	0.96	222	Yes	>0.99
90	212	218	Yes	0.94	223	Yes	0.99	226	Yes	>0.99	
95	212	224	Yes	0.99	229	Yes	>0.99	232	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	Prob.
5	5	219	178	No	<0.01	183	No	<0.01	185	No	<0.01
	10	219	183	No	<0.01	189	No	<0.01	191	No	<0.01
	15	219	187	No	<0.01	193	No	<0.01	194	No	<0.01
	20	219	191	No	<0.01	196	No	<0.01	198	No	<0.01
	25	219	193	No	0.01	198	No	<0.01	200	No	<0.01
	30	219	196	No	0.02	201	No	<0.01	203	No	<0.01
	35	219	198	No	0.03	203	No	<0.01	205	No	<0.01
	40	219	200	No	0.05	205	No	0.01	207	No	<0.01
	45	219	202	No	0.08	207	No	0.03	209	No	<0.01
	50	219	204	No	0.13	209	No	0.06	211	No	0.01
	55	219	207	No	0.20	211	No	0.13	213	No	0.03
	60	219	209	No	0.29	213	No	0.22	215	No	0.11
	65	219	211	No	0.39	215	No	0.35	217	No	0.27
	70	219	213	No	0.44	217	No	0.42	219	Yes	0.50
	75	219	216	Yes	0.61	220	Yes	0.65	222	Yes	0.83
	80	219	218	Yes	0.71	222	Yes	0.78	224	Yes	0.94
85	219	221	Yes	0.80	226	Yes	0.94	228	Yes	>0.99	
90	219	225	Yes	0.92	229	Yes	0.98	231	Yes	>0.99	
95	219	231	Yes	0.98	235	Yes	>0.99	237	Yes	>0.99	
6	5	221	183	No	<0.01	188	No	<0.01	189	No	<0.01
	10	221	189	No	<0.01	193	No	<0.01	195	No	<0.01
	15	221	193	No	<0.01	197	No	<0.01	199	No	<0.01
	20	221	196	No	<0.01	200	No	<0.01	202	No	<0.01
	25	221	199	No	0.02	203	No	<0.01	205	No	<0.01
	30	221	202	No	0.03	205	No	<0.01	207	No	<0.01
	35	221	204	No	0.06	208	No	0.02	209	No	<0.01
	40	221	206	No	0.10	210	No	0.04	211	No	<0.01
	45	221	208	No	0.13	212	No	0.09	213	No	0.01
	50	221	210	No	0.19	214	No	0.17	215	No	0.03
	55	221	212	No	0.28	216	No	0.22	217	No	0.11
	60	221	214	No	0.39	218	No	0.35	219	No	0.27
	65	221	217	Yes	0.50	220	Yes	0.50	222	Yes	0.62
	70	221	219	Yes	0.61	222	Yes	0.65	224	Yes	0.83
	75	221	221	Yes	0.72	225	Yes	0.83	226	Yes	0.94
	80	221	224	Yes	0.81	227	Yes	0.91	229	Yes	0.99
85	221	227	Yes	0.90	230	Yes	0.97	232	Yes	>0.99	
90	221	231	Yes	0.97	234	Yes	>0.99	236	Yes	>0.99	
95	221	237	Yes	>0.99	240	Yes	>0.99	242	Yes	>0.99	

ELA/Reading											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	Prob.
7	5	225	187	No	<0.01	190	No	<0.01	191	No	<0.01
	10	225	193	No	<0.01	196	No	<0.01	197	No	<0.01
	15	225	197	No	<0.01	200	No	<0.01	201	No	<0.01
	20	225	200	No	<0.01	203	No	<0.01	205	No	<0.01
	25	225	203	No	0.01	206	No	<0.01	207	No	<0.01
	30	225	206	No	0.02	209	No	<0.01	210	No	<0.01
	35	225	208	No	0.04	211	No	0.01	212	No	<0.01
	40	225	210	No	0.08	213	No	0.02	214	No	<0.01
	45	225	212	No	0.10	215	No	0.04	216	No	<0.01
	50	225	214	No	0.16	217	No	0.09	218	No	0.01
	55	225	216	No	0.24	219	No	0.17	220	No	0.06
	60	225	218	No	0.33	221	No	0.28	223	No	0.27
	65	225	221	No	0.44	223	No	0.42	225	Yes	0.50
	70	225	223	Yes	0.56	226	Yes	0.65	227	Yes	0.73
	75	225	225	Yes	0.67	228	Yes	0.78	229	Yes	0.89
	80	225	228	Yes	0.81	231	Yes	0.91	232	Yes	0.99
85	225	231	Yes	0.88	234	Yes	0.97	235	Yes	>0.99	
90	225	235	Yes	0.96	238	Yes	>0.99	239	Yes	>0.99	
95	225	241	Yes	>0.99	244	Yes	>0.99	245	Yes	>0.99	
8	5	229	190	No	<0.01	193	No	<0.01	194	No	<0.01
	10	229	196	No	<0.01	199	No	<0.01	200	No	<0.01
	15	229	200	No	<0.01	203	No	<0.01	204	No	<0.01
	20	229	204	No	<0.01	206	No	<0.01	207	No	<0.01
	25	229	207	No	0.01	209	No	<0.01	210	No	<0.01
	30	229	209	No	0.02	212	No	<0.01	213	No	<0.01
	35	229	211	No	0.03	214	No	<0.01	215	No	<0.01
	40	229	214	No	0.06	216	No	0.01	217	No	<0.01
	45	229	216	No	0.11	218	No	0.03	220	No	<0.01
	50	229	218	No	0.17	221	No	0.09	222	No	0.01
	55	229	220	No	0.20	223	No	0.17	224	No	0.06
	60	229	222	No	0.29	225	No	0.28	226	No	0.17
	65	229	225	No	0.45	227	No	0.42	228	No	0.38
	70	229	227	Yes	0.55	229	Yes	0.58	231	Yes	0.73
	75	229	230	Yes	0.66	232	Yes	0.78	233	Yes	0.89
	80	229	232	Yes	0.76	235	Yes	0.91	236	Yes	0.99
85	229	236	Yes	0.89	238	Yes	0.97	239	Yes	>0.99	
90	229	240	Yes	0.96	242	Yes	>0.99	243	Yes	>0.99	
95	229	246	Yes	>0.99	248	Yes	>0.99	249	Yes	>0.99	

Table 3.9. Proficiency Projection based on RIT Scores—Mathematics

Mathematics											
Grade	Start %ile	Spring Cut	Fall		Winter			Spring			
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	Prob.
2	5	193	154	No	<0.01	163	No	<0.01	167	No	<0.01
	10	193	158	No	<0.01	167	No	<0.01	172	No	<0.01
	15	193	162	No	0.01	171	No	<0.01	175	No	<0.01
	20	193	164	No	0.01	173	No	<0.01	178	No	<0.01
	25	193	166	No	0.03	175	No	0.01	180	No	<0.01
	30	193	168	No	0.06	177	No	0.02	182	No	<0.01
	35	193	170	No	0.11	179	No	0.05	184	No	<0.01
	40	193	172	No	0.18	181	No	0.07	186	No	0.01
	45	193	173	No	0.22	182	No	0.10	188	No	0.04
	50	193	175	No	0.27	184	No	0.20	189	No	0.08
	55	193	177	No	0.38	186	No	0.34	191	No	0.25
	60	193	178	No	0.44	187	No	0.42	193	Yes	0.50
	65	193	180	Yes	0.56	189	Yes	0.58	195	Yes	0.75
	70	193	182	Yes	0.68	191	Yes	0.74	196	Yes	0.85
	75	193	184	Yes	0.78	193	Yes	0.85	198	Yes	0.96
	80	193	186	Yes	0.82	195	Yes	0.93	201	Yes	>0.99
	85	193	188	Yes	0.89	198	Yes	0.98	203	Yes	>0.99
90	193	192	Yes	0.97	201	Yes	>0.99	207	Yes	>0.99	
95	193	196	Yes	0.99	205	Yes	>0.99	212	Yes	>0.99	
3	5	204	166	No	<0.01	174	No	<0.01	178	No	<0.01
	10	204	171	No	<0.01	179	No	<0.01	183	No	<0.01
	15	204	175	No	<0.01	182	No	<0.01	186	No	<0.01
	20	204	177	No	0.01	185	No	<0.01	189	No	<0.01
	25	204	179	No	0.03	187	No	0.01	192	No	<0.01
	30	204	181	No	0.05	189	No	0.02	194	No	<0.01
	35	204	183	No	0.10	191	No	0.04	196	No	<0.01
	40	204	185	No	0.17	193	No	0.10	198	No	0.02
	45	204	187	No	0.26	195	No	0.20	199	No	0.04
	50	204	188	No	0.31	196	No	0.26	201	No	0.15
	55	204	190	No	0.44	198	No	0.42	203	No	0.37
	60	204	192	Yes	0.50	200	Yes	0.58	205	Yes	0.63
	65	204	194	Yes	0.63	201	Yes	0.67	207	Yes	0.85
	70	204	196	Yes	0.74	203	Yes	0.80	208	Yes	0.92
	75	204	198	Yes	0.83	205	Yes	0.90	211	Yes	0.99
	80	204	200	Yes	0.90	208	Yes	0.97	213	Yes	>0.99
	85	204	202	Yes	0.95	210	Yes	0.99	216	Yes	>0.99
90	204	206	Yes	0.99	214	Yes	>0.99	219	Yes	>0.99	
95	204	211	Yes	>0.99	219	Yes	>0.99	224	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	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	226	184	No	<0.01	189	No	<0.01	191	No	<0.01
	10	226	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	226	193	No	<0.01	198	No	<0.01	201	No	<0.01
	20	226	196	No	<0.01	201	No	<0.01	205	No	<0.01
	25	226	199	No	<0.01	204	No	<0.01	207	No	<0.01
	30	226	201	No	0.01	206	No	<0.01	210	No	<0.01
	35	226	203	No	0.02	209	No	<0.01	212	No	<0.01
	40	226	205	No	0.05	211	No	0.01	215	No	<0.01
	45	226	207	No	0.08	213	No	0.03	217	No	<0.01
	50	226	209	No	0.14	215	No	0.07	219	No	0.01
	55	226	211	No	0.22	217	No	0.15	221	No	0.04
	60	226	213	No	0.32	219	No	0.26	223	No	0.15
	65	226	215	No	0.44	221	No	0.42	225	No	0.37
	70	226	217	Yes	0.56	223	Yes	0.58	228	Yes	0.75
	75	226	219	Yes	0.68	225	Yes	0.74	230	Yes	0.92
	80	226	222	Yes	0.82	228	Yes	0.90	233	Yes	0.99
	85	226	225	Yes	0.92	231	Yes	0.97	236	Yes	>0.99
90	226	229	Yes	0.98	235	Yes	>0.99	240	Yes	>0.99	
95	226	234	Yes	>0.99	241	Yes	>0.99	246	Yes	>0.99	

Mathematics											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	Prob.
6	5	227	188	No	<0.01	192	No	<0.01	194	No	<0.01
	10	227	194	No	<0.01	198	No	<0.01	200	No	<0.01
	15	227	198	No	<0.01	202	No	<0.01	205	No	<0.01
	20	227	201	No	<0.01	205	No	<0.01	208	No	<0.01
	25	227	204	No	0.01	208	No	<0.01	211	No	<0.01
	30	227	206	No	0.02	211	No	<0.01	214	No	<0.01
	35	227	209	No	0.06	213	No	0.01	216	No	<0.01
	40	227	211	No	0.10	215	No	0.03	218	No	<0.01
	45	227	213	No	0.17	217	No	0.07	221	No	0.02
	50	227	215	No	0.27	220	No	0.20	223	No	0.08
	55	227	217	No	0.38	222	No	0.34	225	No	0.25
	60	227	219	Yes	0.50	224	Yes	0.50	227	Yes	0.50
	65	227	221	Yes	0.62	226	Yes	0.66	230	Yes	0.85
	70	227	223	Yes	0.73	228	Yes	0.80	232	Yes	0.96
	75	227	226	Yes	0.86	231	Yes	0.93	235	Yes	>0.99
	80	227	228	Yes	0.92	234	Yes	0.98	238	Yes	>0.99
	85	227	231	Yes	0.97	237	Yes	>0.99	241	Yes	>0.99
90	227	235	Yes	0.99	241	Yes	>0.99	245	Yes	>0.99	
95	227	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											
Grade	Start %ile	Spring Cut	Fall			Winter			Spring		
			Fall RIT	Projected Proficiency		Winter RIT	Projected Proficiency		Spring RIT	Projected Proficiency	
				On Track	Prob.		On Track	Prob.		On Track	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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