Linking Study Report: Predicting Performance on the Illinois Assessment of Readiness (IAR) based on NWEA MAP Growth Scores

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NWEA Psychometric Solutions

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Executive Summary

To predict student achievement on the Illinois Assessment of Readiness (IAR) in Grades 3–8 English Language Arts/Literacy (ELA/L) and Mathematics, 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 IAR 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 November 2016 to incorporate the new 2020 NWEA MAP Growth norms (Thum & Kuhfeld, 2020).

Table E.1 presents the IAR *Level 4* 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 *Level 4* cut score on the IAR Grade 3 ELA/L test is 750. A Grade 3 student with a MAP Growth Reading RIT score of 196 in the fall is likely to meet proficiency on the IAR ELA/L test in the spring, whereas a Grade 3 student with a MAP Growth Reading RIT score lower than 196 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 IAR 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 IAR Proficiency

Assessment		*Level 4* Cut Scores by Grade						
		2	3	4	5	6	7	8
ELA-L/Reading								
IAR Spring		–	750	750	750	750	750	750
MAP Growth	Fall	183	196	207	214	221	224	228
	Winter	191	202	212	218	224	226	230
	Spring	195	205	214	219	225	227	231
Mathematics								
IAR Spring		–	750	750	750	750	750	750
MAP Growth	Fall	184	197	211	222	229	234	241
	Winter	193	204	218	228	234	238	244
	Spring	198	209	222	232	237	241	246

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 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 the specific instructional weeks set by partners.

E.1. Assessment Overview

The IAR Grades 3–8 ELA/L and Mathematics tests are Illinois' state summative assessments aligned to the Common Core State Standards (CCSS). Based on their test scores, students are placed into one of five performance levels: *Level 1: Did not yet meet expectations*, *Level 2: Partially met expectations*, *Level 3: Approached expectations*, *Level 4: Met expectations*, and *Level 5: Exceeded expectations*. These tests are used to provide evidence of student achievement in ELA and mathematics for various test score uses such as determining whether students are on track for college and career readiness. The *Level 4* 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 IAR 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 IAR test were then projected using the 2020 NWEA conditional growth norms that provide expected score gains across test administrations.

E.3. Student Sample

Only students who took both the MAP Growth and IAR assessments in Spring 2019 were included in the study sample. Table E.2 presents the weighted number of Illinois students from 34 districts and 670 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

Grade	#Students	
	ELA-L/Reading	Mathematics
3	34,780	34,226
4	35,465	34,722
5	36,243	35,764
6	36,569	36,373
7	34,537	34,208
8	33,549	33,242

E.4. Test Score Relationships

Correlations between MAP Growth RIT scores and IAR scores range from 0.73 to 0.86 across 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 IAR assessments.

Figure E.1. Correlations between MAP Growth and IAR Test Scores
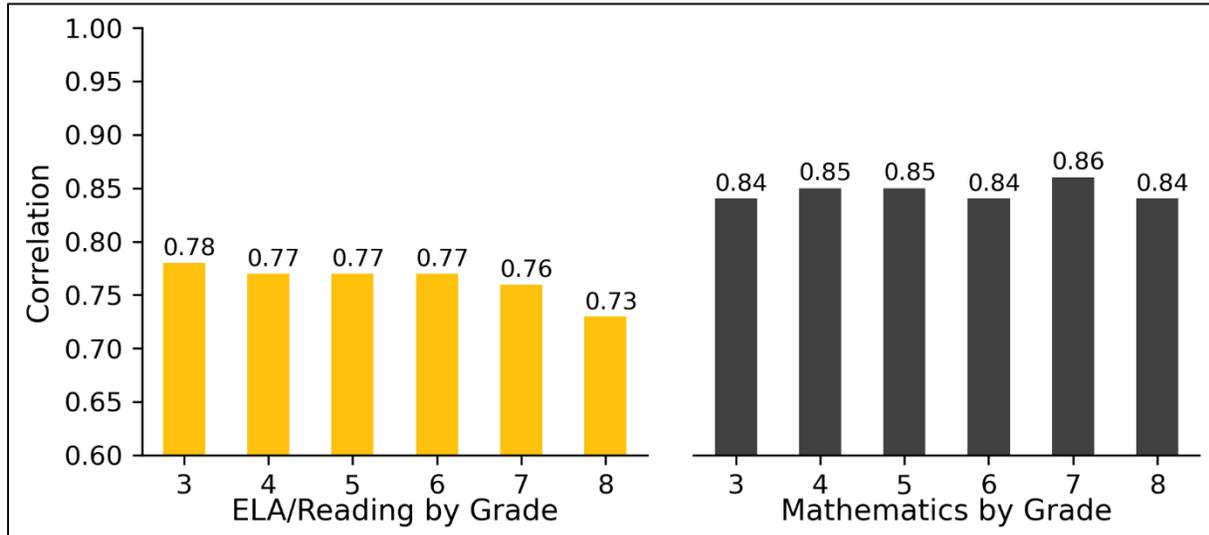
E.5. Accuracy of MAP Growth Classifications

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 IAR tests. For example, the MAP Growth Reading Grade 3 *Level 4* cut score has a 0.81 accuracy rate, meaning it accurately classified student achievement on the state test for 81% of the sample. The results range from 0.79 to 0.89 across content areas, indicating that RIT scores have a high accuracy rate of identifying student proficiency on the IAR tests.

Figure E.2. Accuracy of MAP Growth Classifications
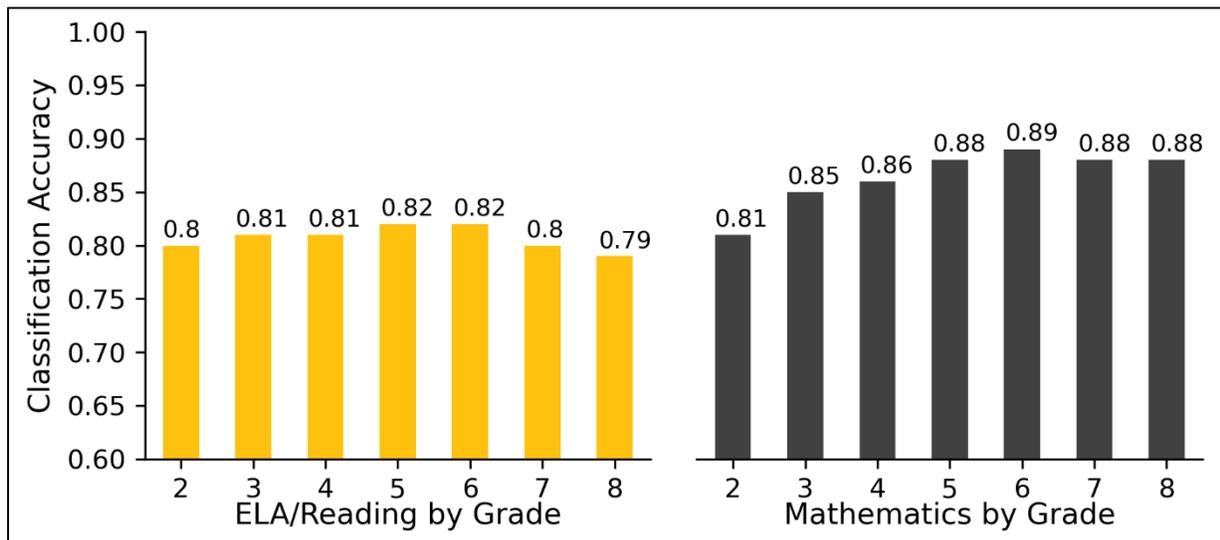
1. Introduction

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 January 2021 to statistically connect the scores of the Illinois Assessment of Readiness (IAR) Grades 3–8 English Language Arts/Literacy (ELA/L) and Mathematics assessments 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 November 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 IAR 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 IAR 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 IAR tests
5. The probability of achieving grade-level proficiency on the IAR assessment based on MAP Growth RIT scores from fall, winter, and spring using the 2020 norms

1.2. Assessment Overview

The IAR Grades 3–8 ELA/L and Mathematics summative assessments are aligned to the Common Core State Standards (CCSS). Each assessment has four 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: *Level 1: Did not yet meet expectations*, *Level 2: Partially met expectations*, *Level 3: Approached expectations*, *Level 4: Met expectations*, and *Level 5: Exceeded expectations*. The *Level 4* 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 IAR assessments. NWEA recruited Illinois 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 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 IAR 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 IAR 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 IAR 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 compared 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 IAR 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., IAR). 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:

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

where $e_y(x)$ is the equipercentile equivalent of score x on IAR on the scale of MAP Growth, $P(x)$ is the percentile rank of a given score on IAR, 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:

$$RIT_{PredSpring} = RIT_{previous} + g \tag{2}$$

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 IAR 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 (*Level 4* or *Level 5*) or not proficient (*Level 1*, *Level 2*, or *Level 3*). Table 2.1 describes the classification accuracy statistics provided in this report (Pommerich et al., 2004). The results are based on the Spring 2019 MAP Growth and IAR data for the *Level 4* cut score.

Since Illinois students do not begin taking the IAR assessment until Grade 3, longitudinal data were collected for the Grade 3 cohort to link the IAR assessment to MAP Growth for Grade 2 to calculate the classification accuracy statistics. To accomplish this, 2018–2019 IAR 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 IAR 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 *Level 4* performance on the IAR test based on their fall or winter RIT score:

$$Pr(Achieving\ Level\ 4\ in\ spring|\ starting\ RIT) = \Phi \left(\frac{RIT_{previous} + g - RIT_{SpringCut}}{SD} \right) \quad (3)$$

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 *Level 4* 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 *Level 4* performance on the IAR test based on their spring RIT score (RIT_{Spring}):

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

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 IAR assessments in Spring 2019 were included in the study sample. Data used in this study were collected from 34 districts and 670 schools in Illinois. 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 IAR tests. Since the unweighted data are different from the general IAR 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 IAR 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-L/Reading							
	Total N	34,780	35,430	36,207	36,569	34,537	33,549
Race	American Indian/Alaskan Native	0.6	0.7	0.9	0.9	1.1	1.1
	Asian	5.9	5.8	5.5	5.4	5.6	5.8
	Black	28.3	25.7	25.9	26.2	25.0	24.8
	Hispanic	39.3	41.6	42.6	43.2	43.1	43.6
	Multi-race	2.0	2.0	1.7	1.6	1.7	1.5
	Native Hawaiian/Pacific Islander	0.1	0.2	0.2	0.3	0.4	0.4
	White	23.8	24.0	23.3	22.3	23.3	22.9
Sex	Female	49.3	49.8	49.4	49.3	49.5	49.2
	Male	50.7	50.2	50.6	50.7	50.5	50.8
Performance Level	*Level 1: Did Not Meet*	25.7	23.6	18.3	18.1	21.5	23.0
	Level 2: Partially Met	17.3	23.2	25.4	24.5	21.6	21.3
	Level 3: Approached	19.9	24.9	26.7	30.0	25.1	24.7
	Level 4: Met	32.0	23.2	27.1	24.1	23.8	25.9
	Level 5: Exceeded	5.2	5.1	2.5	3.2	8.1	5.2
Mathematics							
	Total N	34,226	34,722	35,764	36,373	34,208	33,242
Race	American Indian/Alaskan Native	0.5	0.5	0.7	0.9	1.0	1.1
	Asian	6.1	5.9	5.4	5.5	5.6	5.8
	Black	28.5	26.1	26.1	26.3	25.1	24.9
	Hispanic	38.7	41.2	42.6	42.9	42.9	43.3
	Multi-race	2.0	2.0	1.7	1.7	1.7	1.5
	Native Hawaiian/Pacific Islander	0.2	0.2	0.2	0.3	0.4	0.4
	White	23.9	24.0	23.4	22.5	23.3	23.0
Sex	Female	49.4	49.7	49.4	49.3	49.5	49.2
	Male	50.6	50.3	50.6	50.7	50.5	50.8

Linking Study Sample (Unweighted)							
		%Students by Grade					
Demographic Subgroup		**3**	**4**	**5**	**6**	**7**	**8**
Performance Level	*Level 1: Did Not Meet*	16.2	20.4	16.7	20.5	13.7	30.8
	Level 2: Partially Met	22.8	23.6	33.2	33.3	31.8	23.5
	Level 3: Approached	24.3	27.3	25.7	24.9	29.6	18.4
	Level 4: Met	29.7	26.1	20.6	18.3	20.8	23.5
	Level 5: Exceeded	7.1	2.5	3.8	3.0	4.0	3.8

Table 3.2. Spring 2019 IAR Student Population Demographics

Spring 2019 IAR Population							
		%Students by Grade					
Demographic Subgroup		**3**	**4**	**5**	**6**	**7**	**8**
ELA/L							
	Total N	137,092	140,534	144,713	146,878	143,739	142,244
Race	American Indian/Alaskan Native	0.2	0.2	0.3	0.2	0.2	0.2
	Asian	5.3	5.2	5.1	4.9	5.0	5.2
	Black	17.5	16.8	16.8	16.9	16.4	15.9
	Hispanic	26.1	27.0	27.3	27.6	27.3	27.1
	Multi-race	4.0	3.9	3.8	3.7	3.5	3.3
	Native Hawaiian/Pacific Islander	0.1	0.1	0.1	0.1	0.1	0.1
	White	46.8	46.7	46.6	46.6	47.5	48.1
Sex	Female	48.7	49.1	49.2	49.1	49.1	48.6
	Male	51.3	50.9	50.8	50.9	50.9	51.4
Performance Level	*Level 1: Did Not Meet*	22.4	17.2	13.3	13.2	15.3	16.7
	Level 2: Partially Met	18.5	19.9	21.4	20.6	17.9	18.1
	Level 3: Approached	22.7	26.1	27.4	31.0	25.3	25.4
	Level 4: Met	32.8	29.4	34.5	30.5	29.9	32.5
	Level 5: Exceeded	3.6	7.5	3.5	4.7	11.6	7.3
Mathematics							
	Total N	136,938	140,253	144,476	146,399	143,162	141,399
Race	American Indian/Alaskan Native	0.2	0.2	0.3	0.2	0.2	0.2
	Asian	5.3	5.2	5.1	4.9	5.0	5.2
	Black	17.5	16.8	16.7	16.8	16.3	15.8
	Hispanic	26.1	27.0	27.3	27.6	27.3	27.2
	Multi-race	4.0	3.9	3.8	3.7	3.5	3.3
	Native Hawaiian/Pacific Islander	0.1	0.1	0.1	0.1	0.1	0.1
	White	46.8	46.7	46.6	46.7	47.6	48.2
Sex	Female	48.7	49.1	49.2	49.1	49.1	48.6
	Male	51.3	50.9	50.8	50.9	50.9	51.4
Performance Level	*Level 1: Did Not Meet*	14.5	16.5	13.4	16.3	10.8	25.3
	Level 2: Partially Met	20.2	21.2	29.9	30.5	27.5	22.0
	Level 3: Approached	24.7	28.7	26.8	27.8	31.6	20.0
	Level 4: Met	33.0	30.6	25.0	22.1	25.4	28.3
	Level 5: Exceeded	7.6	3.0	4.9	3.3	4.7	4.4

Table 3.3. Linking Study Sample Demographics (Weighted)

Linking Study Sample (Weighted)							
		%Students by Grade					
Demographic Subgroup		**3**	**4**	**5**	**6**	**7**	**8**
ELA-L/Reading							
	Total N	34,780	35,465	36,243	36,569	34,537	33,549
Race	American Indian/Alaskan Native	0.2	0.2	0.3	0.2	0.2	0.2
	Asian	5.3	5.2	5.1	4.9	5.0	5.2
	Black	17.5	16.8	16.8	16.9	16.4	15.9
	Hispanic	26.1	27.0	27.3	27.6	27.3	27.1
	Multi-race	4.0	3.9	3.8	3.7	3.5	3.3
	Native Hawaiian/Pacific Islander	0.1	0.1	0.1	0.1	0.1	0.1
	White	46.8	46.7	46.6	46.6	47.5	48.1
Sex	Female	48.7	49.1	49.2	49.1	49.1	48.6
	Male	51.3	50.9	50.8	50.9	50.9	51.4
Performance Level	*Level 1: Did Not Meet*	22.4	17.2	13.3	13.2	15.3	16.7
	Level 2: Partially Met	18.5	19.9	21.4	20.6	17.9	18.1
	Level 3: Approached	22.7	26.1	27.4	31.0	25.3	25.4
	Level 4: Met	32.8	29.4	34.5	30.5	29.9	32.5
	Level 5: Exceeded	3.6	7.5	3.5	4.7	11.6	7.3
Mathematics							
	Total N	34,226	34,722	35,764	36,373	34,208	33,242
Race	American Indian/Alaskan Native	0.2	0.2	0.3	0.2	0.2	0.2
	Asian	5.3	5.2	5.1	4.9	5.0	5.2
	Black	17.5	16.8	16.7	16.8	16.3	15.8
	Hispanic	26.1	27.0	27.3	27.6	27.3	27.2
	Multi-race	4.0	3.9	3.8	3.7	3.5	3.3
	Native Hawaiian/Pacific Islander	0.1	0.1	0.1	0.1	0.1	0.1
	White	46.8	46.7	46.6	46.7	47.6	48.2
Sex	Female	48.7	49.1	49.2	49.1	49.1	48.6
	Male	51.3	50.9	50.8	50.9	50.9	51.4
Performance Level	*Level 1: Did Not Meet*	14.5	16.5	13.4	16.3	10.8	25.3
	Level 2: Partially Met	20.2	21.2	29.9	30.5	27.5	22.0
	Level 3: Approached	24.7	28.7	26.8	27.8	31.6	20.0
	Level 4: Met	33.0	30.6	25.0	22.1	25.4	28.3
	Level 5: Exceeded	7.6	3.0	4.9	3.3	4.7	4.4

3.2. Descriptive Statistics

Table 3.4 presents descriptive statistics of the MAP Growth and IAR test scores from Spring 2019, including the correlation coefficient (r) between them. The correlation coefficients between the scores range from 0.73 to 0.78 for ELA-L/reading and 0.84 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 IAR assessments.

Table 3.4. Descriptive Statistics of Test Scores

Grade	N	r	IAR*				MAP Growth*			
			Mean	SD	Min.	Max.	Mean	SD	Min.	Max.
ELA-L/Reading										
3	34,780	0.78	734.5	42.8	650	850	198.3	16.5	139	257
4	35,465	0.77	736.4	36.8	650	850	207.6	16.0	138	263
5	36,243	0.77	738.0	34.4	650	850	213.3	15.5	143	273
6	36,569	0.77	737.0	32.0	650	850	218.3	15.0	149	268
7	34,537	0.76	739.7	38.7	650	850	222.6	15.4	154	281
8	33,549	0.73	738.2	38.7	650	850	226.1	15.0	154	290
Mathematics										
3	34,226	0.84	739.5	36.3	650	850	204.3	14.5	131	278
4	34,722	0.85	734.6	34.2	650	850	214.6	16.0	132	287
5	35,764	0.85	733.4	32.1	650	850	222.3	18.0	136	304
6	36,373	0.84	728.8	32.0	650	850	225.5	17.0	161	316
7	34,208	0.86	735.2	30.0	650	850	231.7	18.8	157	323
8	33,242	0.84	730.9	40.5	650	850	237.1	19.8	157	322

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

3.3. MAP Growth Cut Scores

Table 3.5 and Table 3.6 present the IAR 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 IAR 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 196 in the fall is likely to achieve *Level 4* performance on the IAR ELA/L test. A Grade 3 student who obtained a MAP Growth Reading RIT score of 205 in the spring is also likely to achieve *Level 4* performance on the IAR assessment. The spring cut score is higher than the fall cut score because growth is expected between fall and spring as students receive more instruction during the school year.

Within this report, the cut scores for fall and winter are derived from the spring cuts and the typical growth scores from fall-to-spring or winter-to-spring. The typical growth scores are based on the default instructional weeks most encountered for each term (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' score reports since they reflect the specific instructional weeks set by partners.

Table 3.5. MAP Growth Cut Scores—ELA-L/Reading

Grade	Level 1: Did Not Meet	Level 2: Partially Met	Level 3: Approached	Level 4: Met	Level 5: Exceeded
			IAR ELA/L*		
3	650–699	700–724	725–749	**750**–809	810–850
4	650–699	700–724	725–749	**750**–789	790–850
5	650–699	700–724	725–749	**750**–798	799–850
6	650–699	700–724	725–749	**750**–789	790–850
7	650–699	700–724	725–749	**750**–784	785–850
8	650–699	700–724	725–749	**750**–793	794–850

	MAP Growth Reading*									
	Level 1: Did Not Meet		Level 2: Partially Met		Level 3: Approached		Level 4: Met		Level 5: Exceeded	
Grade	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall										
2	100–159	1–20	160–170	21–45	171–182	46–75	**183**–208	76–98	209–350	99–99
3	100–175	1–25	176–184	26–45	185–195	46–70	**196**–216	71–96	217–350	97–99
4	100–183	1–22	184–196	23–50	197–206	51–72	**207**–222	73–93	223–350	94–99
5	100–188	1–16	189–201	17–43	202–213	44–71	**214**–233	72–95	234–350	96–99
6	100–194	1–17	195–208	18–46	209–220	47–73	**221**–238	74–95	239–350	96–99
7	100–203	1–26	204–213	27–49	214–223	50–71	**224**–239	72–93	240–350	94–99
8	100–207	1–27	208–218	28–51	219–227	52–71	**228**–243	72–93	244–350	94–99
Winter										
2	100–169	1–22	170–179	23–46	180–190	47–73	**191**–214	74–98	215–350	99–99
3	100–183	1–26	184–192	27–47	193–201	48–68	**202**–221	69–95	222–350	96–99
4	100–190	1–23	191–202	24–50	203–211	51–71	**212**–226	72–92	227–350	93–99
5	100–194	1–18	195–206	19–44	207–217	45–70	**218**–235	71–94	236–350	95–99
6	100–199	1–18	200–211	19–44	212–223	45–73	**224**–239	74–94	240–350	95–99
7	100–206	1–26	207–216	27–49	217–225	50–70	**226**–240	71–92	241–350	93–99
8	100–210	1–27	211–221	28–53	222–229	54–71	**230**–244	72–92	245–350	93–99
Spring										
2	100–174	1–24	175–183	25–45	184–194	46–72	**195**–217	73–97	218–350	98–99
3	100–187	1–28	188–195	29–46	196–204	47–68	**205**–223	69–94	224–350	95–99
4	100–193	1–24	194–204	25–49	205–213	50–70	**214**–227	71–91	228–350	92–99
5	100–197	1–20	198–208	21–44	209–218	45–68	**219**–236	69–94	237–350	95–99
6	100–201	1–19	202–213	20–46	214–224	47–72	**225**–240	73–94	241–350	95–99
7	100–208	1–27	209–217	28–48	218–226	49–69	**227**–241	70–92	242–350	93–99
8	100–212	1–29	213–222	30–52	223–230	53–70	**231**–245	71–92	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

IAR Mathematics*				
Grade	*Level 1: Did Not Meet*	*Level 2: Partially Met*	*Level 3: Approached*	*Level 4: Met*	*Level 5: Exceeded*
3	650–699	700–724	725–749	**750**–789	790–850
4	650–699	700–724	725–749	**750**–795	796–850
5	650–699	700–724	725–749	**750**–789	790–850
6	650–699	700–724	725–749	**750**–787	788–850
7	650–699	700–724	725–749	**750**–785	786–850
8	650–699	700–724	725–749	**750**–800	801–850

MAP Growth Mathematics*									
	Level 1: Did Not Meet		*Level 2: Partially Met*		*Level 3: Approached*		*Level 4: Met*		*Level 5: Exceeded*	
Grade	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile	RIT	Percentile
Fall										
2	100–159	1–11	160–171	12–40	172–183	41–74	**184**–201	75–97	202–350	98–99
3	100–175	1–17	176–185	18–42	186–196	43–73	**197**–212	74–96	213–350	97–99
4	100–187	1–20	188–198	21–47	199–210	48–78	**211**–231	79–98	232–350	99–99
5	100–193	1–15	194–207	16–46	208–221	47–79	**222**–241	80–97	242–350	98–99
6	100–202	1–22	203–215	23–52	216–228	53–80	**229**–247	81–97	248–350	98–99
7	100–205	1–20	206–218	21–46	219–233	47–78	**234**–255	79–97	256–350	98–99
8	100–217	1–35	218–229	36–60	230–240	61–79	**241**–264	80–97	265–350	98–99
Winter										
2	100–169	1–13	170–181	14–43	182–192	44–74	**193**–208	75–96	209–350	97–99
3	100–183	1–17	184–193	18–43	194–203	44–71	**204**–219	72–95	220–350	96–99
4	100–193	1–20	194–205	21–49	206–217	50–78	**218**–238	79–98	239–350	99–99
5	100–198	1–15	199–213	16–47	214–227	48–79	**228**–247	80–97	248–350	98–99
6	100–207	1–23	208–220	24–52	221–233	53–80	**234**–252	81–97	253–350	98–99
7	100–208	1–19	209–222	20–47	223–237	48–77	**238**–259	78–97	260–350	98–99
8	100–220	1–35	221–232	36–59	233–243	60–78	**244**–267	79–97	268–350	98–99
Spring										
2	100–175	1–15	176–186	16–42	187–197	43–73	**198**–213	74–96	214–350	97–99
3	100–188	1–19	189–198	20–43	199–208	44–70	**209**–223	71–94	224–350	95–99
4	100–198	1–22	199–209	23–48	210–221	49–76	**222**–242	77–97	243–350	98–99
5	100–202	1–16	203–217	17–47	218–231	48–78	**232**–251	79–97	252–350	98–99
6	100–210	1–24	211–223	25–52	224–236	53–78	**237**–255	79–96	256–350	97–99
7	100–211	1–20	212–225	21–47	226–240	48–77	**241**–262	78–96	263–350	97–99
8	100–222	1–35	223–234	36–58	235–245	59–77	**246**–269	78–97	270–350	98–99

*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 IAR tests, providing insight into the predictive validity of MAP Growth. The overall classification accuracy rate ranges from 0.79 to 0.82 for ELA-L/reading and 0.81 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 IAR assessment. For Grade 2, the classification accuracy rate refers to how well the MAP Growth cuts can predict students' proficiency status on IAR 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 IAR tests, there is a notable limitation to how these results should be used and interpreted. The IAR 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	IAR		FP	FN				
ELA-L/Reading										
2	30,819	195	750	0.80	0.13	0.31	0.69	0.87	0.77	0.88
3	34,780	205	750	0.81	0.17	0.23	0.77	0.83	0.72	0.89
4	35,465	214	750	0.81	0.17	0.23	0.77	0.83	0.73	0.89
5	36,243	219	750	0.82	0.16	0.22	0.78	0.84	0.75	0.90
6	36,569	225	750	0.82	0.14	0.26	0.74	0.86	0.74	0.89
7	34,537	227	750	0.80	0.18	0.23	0.77	0.82	0.76	0.88
8	33,549	231	750	0.79	0.17	0.26	0.74	0.83	0.74	0.87
Mathematics										
2	30,060	198	750	0.81	0.10	0.33	0.67	0.90	0.81	0.89
3	34,226	209	750	0.85	0.12	0.18	0.82	0.88	0.82	0.93
4	34,722	222	750	0.86	0.09	0.24	0.76	0.91	0.81	0.93
5	35,764	232	750	0.88	0.08	0.21	0.79	0.92	0.81	0.95
6	36,373	237	750	0.89	0.07	0.20	0.80	0.93	0.79	0.95
7	34,208	241	750	0.88	0.10	0.16	0.84	0.90	0.79	0.95
8	33,242	246	750	0.88	0.09	0.18	0.82	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 *Level 4* performance on the IAR test based on RIT scores from fall, winter, or spring. "Prob." indicates the probability of obtaining proficient status on the IAR test in the spring. For example, a Grade 3 student who obtained a MAP Growth Reading score of 204 in the fall has an 83% chance of reaching the *Level 4* level or higher on the IAR ELA/L test.

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

Grade	Start %ile	Spring Cut	Fall RIT	Level 4	Prob.	Winter RIT	Level 4	Prob.	Spring RIT	Level 4	Prob.
				Fall			**Winter**			**Spring**	
				Projected Proficiency			*Projected Proficiency*			*Projected Proficiency*	
2	5	195	147	No	<0.01	156	No	<0.01	160	No	<0.01
	10	195	153	No	<0.01	162	No	<0.01	166	No	<0.01
	15	195	157	No	<0.01	166	No	<0.01	170	No	<0.01
	20	195	160	No	<0.01	169	No	<0.01	173	No	<0.01
	25	195	162	No	0.01	171	No	<0.01	175	No	<0.01
	30	195	164	No	0.01	173	No	<0.01	177	No	<0.01
	35	195	166	No	0.02	175	No	<0.01	180	No	<0.01
	40	195	168	No	0.04	177	No	0.01	182	No	<0.01
	45	195	170	No	0.06	179	No	0.01	184	No	<0.01
	50	195	172	No	0.09	181	No	0.03	186	No	<0.01
	55	195	174	No	0.15	183	No	0.07	188	No	0.01
	60	195	176	No	0.21	185	No	0.13	189	No	0.03
	65	195	178	No	0.30	187	No	0.23	192	No	0.17
	70	195	180	No	0.35	189	No	0.35	194	No	0.38
	75	195	183	Yes	0.50	191	Yes	0.50	196	Yes	0.62
	80	195	185	Yes	0.60	194	Yes	0.71	199	Yes	0.89
	85	195	188	Yes	0.70	197	Yes	0.87	202	Yes	0.99
	90	195	192	Yes	0.85	200	Yes	0.95	205	Yes	>0.99
	95	195	197	Yes	0.94	206	Yes	>0.99	211	Yes	>0.99
3	5	205	159	No	<0.01	167	No	<0.01	170	No	<0.01
	10	205	165	No	<0.01	173	No	<0.01	176	No	<0.01
	15	205	169	No	<0.01	177	No	<0.01	180	No	<0.01
	20	205	173	No	<0.01	180	No	<0.01	183	No	<0.01
	25	205	175	No	0.01	183	No	<0.01	186	No	<0.01
	30	205	178	No	0.02	185	No	<0.01	189	No	<0.01
	35	205	180	No	0.03	188	No	0.01	191	No	<0.01
	40	205	182	No	0.05	190	No	0.01	193	No	<0.01
	45	205	185	No	0.11	192	No	0.03	195	No	<0.01
	50	205	187	No	0.14	194	No	0.07	197	No	0.01
	55	205	189	No	0.21	196	No	0.13	199	No	0.03
	60	205	191	No	0.30	198	No	0.23	201	No	0.11
	65	205	193	No	0.39	200	No	0.35	203	No	0.27
	70	205	195	No	0.45	202	Yes	0.50	206	Yes	0.62
	75	205	198	Yes	0.61	205	Yes	0.71	208	Yes	0.83
	80	205	201	Yes	0.75	207	Yes	0.83	211	Yes	0.97
	85	205	204	Yes	0.83	211	Yes	0.93	214	Yes	>0.99
	90	205	208	Yes	0.93	215	Yes	0.99	218	Yes	>0.99
	95	205	214	Yes	0.98	220	Yes	>0.99	224	Yes	>0.99

			Fall			Winter			Spring		
				Projected Proficiency			**Projected Proficiency**			**Projected Proficiency**	
	Start	**Spring**	**Fall**			**Winter**			**Spring**		
Grade	**%ile**	**Cut**	**RIT**	*Level 4*	**Prob.**	**RIT**	*Level 4*	**Prob.**	**RIT**	*Level 4*	**Prob.**
	5	214	169	No	<0.01	176	No	<0.01	178	No	<0.01
	10	214	175	No	<0.01	182	No	<0.01	184	No	<0.01
	15	214	179	No	<0.01	186	No	<0.01	188	No	<0.01
	20	214	183	No	<0.01	189	No	<0.01	191	No	<0.01
	25	214	185	No	<0.01	192	No	<0.01	194	No	<0.01
	30	214	188	No	0.01	194	No	<0.01	196	No	<0.01
	35	214	190	No	0.02	196	No	<0.01	199	No	<0.01
	40	214	192	No	0.04	198	No	0.01	201	No	<0.01
	45	214	195	No	0.06	200	No	0.01	203	No	<0.01
4	50	214	197	No	0.11	202	No	0.03	205	No	<0.01
	55	214	199	No	0.17	205	No	0.09	207	No	0.01
	60	214	201	No	0.24	207	No	0.17	209	No	0.06
	65	214	203	No	0.29	209	No	0.28	211	No	0.17
	70	214	205	No	0.39	211	No	0.42	213	No	0.38
	75	214	208	Yes	0.56	213	Yes	0.58	216	Yes	0.73
	80	214	211	Yes	0.66	216	Yes	0.78	219	Yes	0.94
	85	214	214	Yes	0.80	219	Yes	0.91	222	Yes	0.99
	90	214	218	Yes	0.89	223	Yes	0.97	226	Yes	>0.99
	95	214	224	Yes	0.98	229	Yes	>0.99	232	Yes	>0.99
	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
5	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

(Table header: **ELA-L/Reading**)

			ELA-L/Reading								
			Fall			**Winter**			**Spring**		
	Start %ile	**Spring Cut**	**Fall RIT**	**Projected Proficiency**		**Winter RIT**	**Projected Proficiency**		**Spring RIT**	**Projected Proficiency**	
Grade				*Level 4*	**Prob.**		*Level 4*	**Prob.**		*Level 4*	**Prob.**
	5	225	183	No	<0.01	188	No	<0.01	189	No	<0.01
	10	225	189	No	<0.01	193	No	<0.01	195	No	<0.01
	15	225	193	No	<0.01	197	No	<0.01	199	No	<0.01
	20	225	196	No	<0.01	200	No	<0.01	202	No	<0.01
	25	225	199	No	<0.01	203	No	<0.01	205	No	<0.01
	30	225	202	No	0.01	205	No	<0.01	207	No	<0.01
	35	225	204	No	0.02	208	No	<0.01	209	No	<0.01
	40	225	206	No	0.03	210	No	0.01	211	No	<0.01
	45	225	208	No	0.04	212	No	0.02	213	No	<0.01
6	50	225	210	No	0.08	214	No	0.04	215	No	<0.01
	55	225	212	No	0.13	216	No	0.06	217	No	0.01
	60	225	214	No	0.19	218	No	0.12	219	No	0.03
	65	225	217	No	0.28	220	No	0.22	222	No	0.17
	70	225	219	No	0.39	222	No	0.35	224	No	0.38
	75	225	221	Yes	0.50	225	Yes	0.58	226	Yes	0.62
	80	225	224	Yes	0.61	227	Yes	0.72	229	Yes	0.89
	85	225	227	Yes	0.76	230	Yes	0.88	232	Yes	0.99
	90	225	231	Yes	0.90	234	Yes	0.97	236	Yes	>0.99
	95	225	237	Yes	0.98	240	Yes	>0.99	242	Yes	>0.99
	5	227	187	No	<0.01	190	No	<0.01	191	No	<0.01
	10	227	193	No	<0.01	196	No	<0.01	197	No	<0.01
	15	227	197	No	<0.01	200	No	<0.01	201	No	<0.01
	20	227	200	No	<0.01	203	No	<0.01	205	No	<0.01
	25	227	203	No	<0.01	206	No	<0.01	207	No	<0.01
	30	227	206	No	0.01	209	No	<0.01	210	No	<0.01
	35	227	208	No	0.02	211	No	<0.01	212	No	<0.01
	40	227	210	No	0.04	213	No	0.01	214	No	<0.01
	45	227	212	No	0.06	215	No	0.02	216	No	<0.01
7	50	227	214	No	0.10	217	No	0.04	218	No	<0.01
	55	227	216	No	0.16	219	No	0.09	220	No	0.01
	60	227	218	No	0.24	221	No	0.17	223	No	0.11
	65	227	221	No	0.33	223	No	0.28	225	No	0.27
	70	227	223	No	0.44	226	Yes	0.50	227	Yes	0.50
	75	227	225	Yes	0.56	228	Yes	0.65	229	Yes	0.73
	80	227	228	Yes	0.72	231	Yes	0.83	232	Yes	0.94
	85	227	231	Yes	0.81	234	Yes	0.94	235	Yes	0.99
	90	227	235	Yes	0.92	238	Yes	0.99	239	Yes	>0.99
	95	227	241	Yes	0.99	244	Yes	>0.99	245	Yes	>0.99

			Fall			Winter			Spring		
				Projected Proficiency			**Projected Proficiency**			**Projected Proficiency**	
Grade	**Start %ile**	**Spring Cut**	**Fall RIT**	*Level 4*	**Prob.**	**Winter RIT**	*Level 4*	**Prob.**	**Spring RIT**	*Level 4*	**Prob.**
	5	231	190	No	<0.01	193	No	<0.01	194	No	<0.01
	10	231	196	No	<0.01	199	No	<0.01	200	No	<0.01
	15	231	200	No	<0.01	203	No	<0.01	204	No	<0.01
	20	231	204	No	<0.01	206	No	<0.01	207	No	<0.01
	25	231	207	No	<0.01	209	No	<0.01	210	No	<0.01
	30	231	209	No	0.01	212	No	<0.01	213	No	<0.01
	35	231	211	No	0.01	214	No	<0.01	215	No	<0.01
	40	231	214	No	0.04	216	No	<0.01	217	No	<0.01
	45	231	216	No	0.06	218	No	0.01	220	No	<0.01
8	50	231	218	No	0.11	221	No	0.04	222	No	<0.01
	55	231	220	No	0.13	223	No	0.09	224	No	0.01
	60	231	222	No	0.20	225	No	0.17	226	No	0.06
	65	231	225	No	0.34	227	No	0.28	228	No	0.17
	70	231	227	No	0.45	229	No	0.42	231	Yes	0.50
	75	231	230	Yes	0.55	232	Yes	0.65	233	Yes	0.73
	80	231	232	Yes	0.66	235	Yes	0.83	236	Yes	0.94
	85	231	236	Yes	0.83	238	Yes	0.94	239	Yes	0.99
	90	231	240	Yes	0.94	242	Yes	0.99	243	Yes	>0.99
	95	231	246	Yes	0.99	248	Yes	>0.99	249	Yes	>0.99

ELA-L/Reading

Table 3.9. Proficiency Projection based on RIT Scores—Mathematics

			Fall			Winter			Spring		
				Projected Proficiency			**Projected Proficiency**			**Projected Proficiency**	
Grade	**Start %ile**	**Spring Cut**	**Fall RIT**	*Level 4*	**Prob.**	**Winter RIT**	*Level 4*	**Prob.**	**Spring RIT**	*Level 4*	**Prob.**
2	5	198	154	No	<0.01	163	No	<0.01	167	No	<0.01
	10	198	158	No	<0.01	167	No	<0.01	172	No	<0.01
	15	198	162	No	<0.01	171	No	<0.01	175	No	<0.01
	20	198	164	No	<0.01	173	No	<0.01	178	No	<0.01
	25	198	166	No	<0.01	175	No	<0.01	180	No	<0.01
	30	198	168	No	0.01	177	No	<0.01	182	No	<0.01
	35	198	170	No	0.02	179	No	<0.01	184	No	<0.01
	40	198	172	No	0.04	181	No	0.01	186	No	<0.01
	45	198	173	No	0.06	182	No	0.01	188	No	<0.01
	50	198	175	No	0.08	184	No	0.03	189	No	<0.01
	55	198	177	No	0.14	186	No	0.07	191	No	0.01
	60	198	178	No	0.18	187	No	0.10	193	No	0.04
	65	198	180	No	0.27	189	No	0.20	195	No	0.15
	70	198	182	No	0.38	191	No	0.34	196	No	0.25
	75	198	184	Yes	0.50	193	Yes	0.50	198	Yes	0.50
	80	198	186	Yes	0.56	195	Yes	0.66	201	Yes	0.85
	85	198	188	Yes	0.68	198	Yes	0.85	203	Yes	0.96
	90	198	192	Yes	0.86	201	Yes	0.95	207	Yes	>0.99
	95	198	196	Yes	0.94	205	Yes	0.99	212	Yes	>0.99
3	5	209	166	No	<0.01	174	No	<0.01	178	No	<0.01
	10	209	171	No	<0.01	179	No	<0.01	183	No	<0.01
	15	209	175	No	<0.01	182	No	<0.01	186	No	<0.01
	20	209	177	No	<0.01	185	No	<0.01	189	No	<0.01
	25	209	179	No	<0.01	187	No	<0.01	192	No	<0.01
	30	209	181	No	0.01	189	No	<0.01	194	No	<0.01
	35	209	183	No	0.02	191	No	<0.01	196	No	<0.01
	40	209	185	No	0.04	193	No	0.01	198	No	<0.01
	45	209	187	No	0.07	195	No	0.03	199	No	<0.01
	50	209	188	No	0.10	196	No	0.04	201	No	<0.01
	55	209	190	No	0.17	198	No	0.10	203	No	0.02
	60	209	192	No	0.21	200	No	0.20	205	No	0.08
	65	209	194	No	0.31	201	No	0.26	207	No	0.25
	70	209	196	No	0.44	203	No	0.42	208	No	0.37
	75	209	198	Yes	0.56	205	Yes	0.58	211	Yes	0.75
	80	209	200	Yes	0.69	208	Yes	0.80	213	Yes	0.92
	85	209	202	Yes	0.79	210	Yes	0.90	216	Yes	0.99
	90	209	206	Yes	0.93	214	Yes	0.97	219	Yes	>0.99
	95	209	211	Yes	0.98	219	Yes	>0.99	224	Yes	>0.99

			Fall			Winter			Spring		
				Projected Proficiency			Projected Proficiency			Projected Proficiency	
Grade	Start %ile	Spring Cut	Fall RIT	*Level 4*	Prob.	Winter RIT	*Level 4*	Prob.	Spring RIT	*Level 4*	Prob.
4	5	222	176	No	<0.01	182	No	<0.01	185	No	<0.01
	10	222	181	No	<0.01	187	No	<0.01	191	No	<0.01
	15	222	185	No	<0.01	191	No	<0.01	194	No	<0.01
	20	222	187	No	<0.01	194	No	<0.01	197	No	<0.01
	25	222	190	No	<0.01	196	No	<0.01	200	No	<0.01
	30	222	192	No	<0.01	198	No	<0.01	202	No	<0.01
	35	222	194	No	<0.01	200	No	<0.01	205	No	<0.01
	40	222	196	No	0.01	202	No	<0.01	207	No	<0.01
	45	222	198	No	0.02	204	No	<0.01	209	No	<0.01
	50	222	200	No	0.04	206	No	0.01	211	No	<0.01
	55	222	201	No	0.05	208	No	0.02	212	No	<0.01
	60	222	203	No	0.10	210	No	0.04	214	No	<0.01
	65	222	205	No	0.17	212	No	0.10	217	No	0.04
	70	222	207	No	0.26	214	No	0.20	219	No	0.15
	75	222	209	No	0.37	216	No	0.33	221	No	0.37
	80	222	212	Yes	0.56	219	Yes	0.58	224	Yes	0.75
	85	222	214	Yes	0.68	221	Yes	0.74	227	Yes	0.96
	90	222	218	Yes	0.87	225	Yes	0.93	230	Yes	>0.99
	95	222	223	Yes	0.97	231	Yes	>0.99	236	Yes	>0.99
5	5	232	184	No	<0.01	189	No	<0.01	191	No	<0.01
	10	232	190	No	<0.01	194	No	<0.01	197	No	<0.01
	15	232	193	No	<0.01	198	No	<0.01	201	No	<0.01
	20	232	196	No	<0.01	201	No	<0.01	205	No	<0.01
	25	232	199	No	<0.01	204	No	<0.01	207	No	<0.01
	30	232	201	No	<0.01	206	No	<0.01	210	No	<0.01
	35	232	203	No	<0.01	209	No	<0.01	212	No	<0.01
	40	232	205	No	<0.01	211	No	<0.01	215	No	<0.01
	45	232	207	No	0.01	213	No	<0.01	217	No	<0.01
	50	232	209	No	0.02	215	No	<0.01	219	No	<0.01
	55	232	211	No	0.05	217	No	0.01	221	No	<0.01
	60	232	213	No	0.08	219	No	0.03	223	No	<0.01
	65	232	215	No	0.14	221	No	0.07	225	No	0.01
	70	232	217	No	0.22	223	No	0.15	228	No	0.08
	75	232	219	No	0.32	225	No	0.26	230	No	0.25
	80	232	222	Yes	0.50	228	Yes	0.50	233	Yes	0.63
	85	232	225	Yes	0.68	231	Yes	0.74	236	Yes	0.92
	90	232	229	Yes	0.86	235	Yes	0.93	240	Yes	>0.99
	95	232	234	Yes	0.97	241	Yes	>0.99	246	Yes	>0.99

			Fall			Winter			Spring		
				Projected Proficiency			Projected Proficiency			Projected Proficiency	
Grade	Start %ile	Spring Cut	Fall RIT	*Level 4*	Prob.	Winter RIT	*Level 4*	Prob.	Spring RIT	*Level 4*	Prob.

Mathematics

Grade	Start %ile	Spring Cut	Fall RIT	*Level 4*	Prob.	Winter RIT	*Level 4*	Prob.	Spring RIT	*Level 4*	Prob.
	5	237	188	No	<0.01	192	No	<0.01	194	No	<0.01
	10	237	194	No	<0.01	198	No	<0.01	200	No	<0.01
	15	237	198	No	<0.01	202	No	<0.01	205	No	<0.01
	20	237	201	No	<0.01	205	No	<0.01	208	No	<0.01
	25	237	204	No	<0.01	208	No	<0.01	211	No	<0.01
	30	237	206	No	<0.01	211	No	<0.01	214	No	<0.01
	35	237	209	No	<0.01	213	No	<0.01	216	No	<0.01
	40	237	211	No	<0.01	215	No	<0.01	218	No	<0.01
	45	237	213	No	0.01	217	No	<0.01	221	No	<0.01
6	50	237	215	No	0.01	220	No	<0.01	223	No	<0.01
	55	237	217	No	0.03	222	No	0.01	225	No	<0.01
	60	237	219	No	0.06	224	No	0.02	227	No	<0.01
	65	237	221	No	0.10	226	No	0.04	230	No	0.01
	70	237	223	No	0.17	228	No	0.10	232	No	0.04
	75	237	226	No	0.32	231	No	0.26	235	No	0.25
	80	237	228	No	0.44	234	Yes	0.50	238	Yes	0.63
	85	237	231	Yes	0.62	237	Yes	0.74	241	Yes	0.92
	90	237	235	Yes	0.83	241	Yes	0.93	245	Yes	>0.99
	95	237	241	Yes	0.97	247	Yes	>0.99	252	Yes	>0.99
	5	241	192	No	<0.01	194	No	<0.01	196	No	<0.01
	10	241	198	No	<0.01	201	No	<0.01	203	No	<0.01
	15	241	202	No	<0.01	205	No	<0.01	207	No	<0.01
	20	241	206	No	<0.01	209	No	<0.01	211	No	<0.01
	25	241	208	No	<0.01	212	No	<0.01	214	No	<0.01
	30	241	211	No	<0.01	215	No	<0.01	217	No	<0.01
	35	241	213	No	<0.01	217	No	<0.01	220	No	<0.01
	40	241	216	No	<0.01	219	No	<0.01	222	No	<0.01
	45	241	218	No	<0.01	222	No	<0.01	224	No	<0.01
7	50	241	220	No	0.01	224	No	<0.01	227	No	<0.01
	55	241	222	No	0.03	226	No	<0.01	229	No	<0.01
	60	241	225	No	0.07	229	No	0.03	231	No	<0.01
	65	241	227	No	0.13	231	No	0.07	234	No	0.01
	70	241	229	No	0.21	233	No	0.14	236	No	0.04
	75	241	232	No	0.37	236	No	0.33	239	No	0.25
	80	241	235	Yes	0.56	239	Yes	0.58	242	Yes	0.63
	85	241	238	Yes	0.74	243	Yes	0.86	246	Yes	0.96
	90	241	243	Yes	0.93	247	Yes	0.97	251	Yes	>0.99
	95	241	249	Yes	0.99	254	Yes	>0.99	257	Yes	>0.99

Mathematics												
			Fall			Winter			Spring			
				Projected Proficiency			Projected Proficiency			Projected Proficiency		
Grade	Start %ile	Spring Cut	Fall RIT	*Level 4*	Prob.	Winter RIT	*Level 4*	Prob.	Spring RIT	*Level 4*	Prob.		
	5	246	194	No	<0.01	196	No	<0.01	197	No	<0.01		
	10	246	201	No	<0.01	203	No	<0.01	205	No	<0.01		
	15	246	205	No	<0.01	208	No	<0.01	210	No	<0.01		
	20	246	209	No	<0.01	212	No	<0.01	214	No	<0.01		
	25	246	212	No	<0.01	215	No	<0.01	217	No	<0.01		
	30	246	215	No	<0.01	218	No	<0.01	220	No	<0.01		
	35	246	218	No	<0.01	221	No	<0.01	223	No	<0.01		
	40	246	220	No	<0.01	223	No	<0.01	225	No	<0.01		
	45	246	223	No	<0.01	226	No	<0.01	228	No	<0.01		
8	50	246	225	No	0.01	228	No	<0.01	230	No	<0.01		
	55	246	227	No	0.02	231	No	<0.01	233	No	<0.01		
	60	246	230	No	0.06	233	No	0.01	235	No	<0.01		
	65	246	232	No	0.10	236	No	0.05	238	No	<0.01		
	70	246	235	No	0.19	238	No	0.11	241	No	0.04		
	75	246	238	No	0.33	241	No	0.27	244	No	0.25		
	80	246	241	Yes	0.50	244	Yes	0.50	247	Yes	0.63		
	85	246	245	Yes	0.72	248	Yes	0.80	251	Yes	0.96		
	90	246	249	Yes	0.88	253	Yes	0.97	256	Yes	>0.99		
	95	246	256	Yes	0.98	260	Yes	>0.99	263	Yes	>0.99		

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