Algebra Readiness Performance-Level Recommendations: A Skills-Based Approach

Curriculum Associates | January 2025

Introduction

Students' success in Algebra I determines their access to advanced learning in mathematics and prepares them for the demands of college and careers in many fields. Placing students in the course at the right moment in their development is key—students with sufficient conceptual knowledge and skills will be appropriately challenged by the material, while underprepared students are likely to struggle less productively without the right sort of support.

The *i-Ready Diagnostic* is just one source of information to factor into decisions about whether students are ready for Algebra 1. Other factors to take into account are students':

- Performance in current math course
- Performance on recent state tests
- Interest in eventually taking advanced math courses and commitment to working hard

The *i-Ready Diagnostic* can provide one source of information to factor into decisions about whether students are ready for Algebra I and what sort of additional support might be helpful for students nearly ready. By considering students' Diagnostic scale scores alongside other evidence of their abilities, including classroom grades and the professional opinions of their teachers and counselors, educators can develop a well-rounded profile of a student's strengths and weaknesses as they prepare to transition to Algebra I.

In the past, the recommendations in this document have relied solely upon a skills-based approach to arrive at a performance-level recommendation for classifying students as "algebra ready." Curriculum Associates (CA) mathematics content experts created a list of algebra skills considered to be critical for algebra-ready students and cross-referenced this list with other available information to make recommendations. However, the recommendations in this document have been updated based on new information from a study that analyzed students' overall mathematics score on the *i-Ready Diagnostic* prior to taking an Algebra 1 course and the results on their state summative Algebra 1 assessments. As such, the recommendations are being slightly altered to allow for a more inclusive population. This new cut score ensures students have scores that are no lower than two Standard Errors of Measurement (SEMs) less than the cut score of 541. Also, please note that our previously recommended cut score for the "most exclusive" population (at least two SEMs higher than 541) is likely too stringent based on this new evidence and so has been removed as a recommendation.

Identifying a Performance-Level Standard

To identify the most essential skills for algebra readiness, CA content experts extensively reviewed a number of sources, including the *i-Ready* middle school construct map, the Student Achievement Partners' progression to algebra, and others. As a result, a scale score of 541 was determined to be an appropriate recommendation for an algebra readiness performance-level standard.[1] This scale score of 541 represents a Mid On Grade Level placement for a Grade 8 student, and it reflects sufficient command of crucial Algebra I prerequisites, including rational number arithmetic, modeling and solving real-world and mathematical problems, and interpreting and analyzing quantitative relationships.

While CA recommends a scale score of 541 as an indicator of algebra readiness, individual districts may find that adjusting this number up or down results in a performance-level standard that is better suited to their local conditions. In making this determination, districts may want to consider:

[1]In 2014, CA held a standard setting for contrasting groups in which panelists were asked to help set the placement cut scores for Grades K–8. The Mid placement was described as students who met the bare-minimum requirements to be considered proficient in Grade 8 and should be ready to take on the next level.

- Their Algebra I scope and sequence and time allotted for remediation of pre-algebra skills—If the Algebra I curriculum incorporates a review of prerequisites, it may be reasonable to include students who are not yet proficient in those skills by applying a lower performance-level standard. However, if little time is available for remediation, it may be advisable to apply a higher, more exclusive performance-level standard.
- The performance of past students in Algebra I and their associated *i-Ready Diagnostic* scores—Over time, districts can accumulate enough of this data to identify the performance-level standard that best predicts success in their Algebra I course.

This document offers guidance for the 2024–2025 school year. If you need guidance for the 2023–2024 school year, it is still available.

To help districts choose a performance-level standard, the following table compares student performance at **four different levels**:

- The recommended performance-level standard, which is equal to a scale score of 541
- A most inclusive score, which is equal to a score that is two minimum SEMs below 541
- A more inclusive performance-level standard, which is equal to a score one minimum SEM below 541
- A more exclusive performance-level standard, which is equal to one minimum SEM above 541

Please note: We are no longer recommending a most exclusive performance-level standard that is equal to two minimum SEMs above 541.

Districts can consider performance at four different levels to choose a performance-level standard that makes sense for their programs.

Spring Diagnostic Performance-Level Standard Scale Scores	Most Inclusive: 529	More Inclusive: 535	Recommended Score: 541	More Exclusive: 547
GRADE 7 Spring Percentile	*79*	82	86	89
Equivalent Winter Scale Score[2]	*520*	524*	530	535
GRADE 8 Spring Percentile	*71*	76	80	84
Equivalent Winter Scale Score	*521*	527	533	540

*When a spring scale score was not available at the specified percentile rank, the next-higher winter equivalent scale score was used.

CurriculumAssociates.com/Reviews/Assessment/Data-Resources

[2]Administrators who wish to use winter *i-Ready Diagnostic* results to identify students for Algebra I should use these equivalent scale scores.

Student Performance Descriptions

Number and Operations	
529 **Most Inclusive**	Compared to students who have a scale score of 541, students at this level are **most likely to need additional practice** computing with positive and negative rational numbers and working with rational numbers in real-world contexts.
535 **More Inclusive**	Compared to students who have a scale score of 541, students at this level are **more likely to need additional practice** computing with positive and negative rational numbers.
541 **Recommended Score**	Students with a scale score of 541 demonstrate **proficiency** in: • Using the four operations to compute with positive rational numbers Students with a scale score of 541 are **progressing** in the following skills: • Solving problems with positive and negative rational numbers in all forms • Identifying, approximating, and comparing irrational numbers Students at this level **may need additional support** with: • Working with integer exponents
547 **More Exclusive**	Compared to students who have a scale score of 541, students at this level are **more likely able to**: • Identify rational numbers • Compare numbers expressed in scientific notation

Student Performance Descriptions

Algebra and Algebraic Thinking

529 **Most Inclusive**	Compared to students who have a scale score of 541, students at this level are **more likely to need additional practice**: • Using and analyzing proportional relationships • Applying the properties of operations to manipulate variable expressions • Formulating and solving simple equations and inequalities in one variable to solve real-world and mathematical problems • Applying foundational concepts of functions
535 **More Inclusive**	Compared to students who have a scale score of 541, students at this level are **more likely to need additional practice**: • Applying the properties of operations to manipulate variable expressions • Formulating and solving simple equations and inequalities in one variable to solve real-world and mathematical problems • Applying foundational concepts of functions
541 **Recommended Score**	Students with a scale score of 541 demonstrate **proficiency** in: • Middle school ratio and proportional reasoning concepts • Applying the properties of operations to manipulate variable expressions • Formulating and solving simple equations in one variable • Identifying and making simple descriptions of functions Students at this level are **progressing** in the following skills: • Formulating and solving simple inequalities in one variable • Analyzing and comparing properties of functions
547 **More Exclusive**	Compared to students who have a scale score of 541, students at this level are **more likely able to**: • Solve real-world and mathematical problems by formulating and solving equations and inequalities in one variable and systems of equations • Define and describe functions

Student Performance Descriptions

Geometry	
529 **Most Inclusive**	Compared to students who have a scale score of 541, students at this level are **most likely to need additional practice**: • Applying formulas to calculate area and volume • Creating representations of polygons in the coordinate plane
535 **More Inclusive**	Compared to students who have a scale score of 541, students at this level are **more likely to need additional practice**: • Applying formulas to calculate area and volume
541 **Recommended Score**	Students with a scale score of 541 demonstrate **proficiency** in: • Using proportional reasoning to solve problems involving similar figures Students at this level are **progressing** in the following skills: • Solving problems involving scale drawings and the area of polygons • Finding unknown measures of angles formed by intersecting lines Students at this level **may need additional support** with: • Solving problems involving the Pythagorean theorem and volume and surface area of three-dimensional figures
547 **More Exclusive**	Compared to students who have a scale score of 541, students at this level are **more likely able to**: • Use the Pythagorean theorem to solve problems involving right triangles

Student Performance Descriptions

Measurement and Data

529 **Most Inclusive**	Compared to students who have a scale score of 541, students at this level are **more likely to need additional practice**: • Using measures of center and variability to analyze and informally compare data distributions • Understanding foundational probability concepts • Distinguishing between statistical and non-statistical questions
535 **More Inclusive**	Compared to students who have a scale score of 541, students at this level are **more likely to need additional practice**: • Using measures of center and variability to analyze and informally compare data distributions • Understanding foundational probability concepts
541 **Recommended Score**	Students with a scale score of 541 demonstrate **proficiency** in: • Displaying data in dot and scatter plots and describing patterns in the data Students with a scale score of 541 are **progressing** in the following skills: • Calculating measures of center and variability Students at this level **may need additional support**: • Understanding probability concepts and developing simple probability models
547 **More Exclusive**	Compared to students who have a scale score of 541, students at this level are **more likely able to**: • Find and interpret measures of center and variability • Develop and evaluate simple probability models

Appendix: Other Algebraic Readiness Performance Standards

1. MetaMetrics® found that the median Quantile® of tasks in Algebra I textbooks analyzed is 1020Q. 1020Q equates to an *i-Ready* scale score of 534.

2. Houghton Mifflin Harcourt® and Scholastic® use 1030Q as one definition of algebra readiness. 1030Q equates to an *i-Ready* scale score of 536.