

Achievement Level Descriptors
Grade 8 Mathematics

Achievement Levels and Achievement Level Descriptors

With the implementation of the Missouri Learning Standards (MLS) educators have developed four achievement levels to describe student mastery and command of the knowledge and skills outlined in the MLS content expectations. Most students have at least some knowledge of the content described in the content expectations; however, achievement levels succinctly describe how much mastery a student has. Achievement levels give meaning and context to scale scores by describing the knowledge and skills students must demonstrate to achieve each level.

The four achievement levels on MLS are Below Basic, Basic, Proficient and Advanced. The general meaning of each of the four levels is provided below:

Below Basic students do not yet demonstrate proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in the MLS. The students ***need substantial academic support*** to be prepared for the next grade level or course and to be on track for college and career readiness.

Basic students demonstrate partial proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in the MLS. The students ***need additional academic support*** to ensure success in the next grade level or course and to be on track for college and career readiness.

Proficient students demonstrate proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in the MLS. The students ***are prepared*** for the next grade level or course and are on track for college and career readiness.

Advanced students demonstrate advanced proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in the MLS. The students ***are well prepared*** for the next grade level or course and are well prepared for college and career readiness.

More detailed and content-specific concepts and skills are provided for each grade, content area, and course in the **Achievement Level Descriptors** (ALDs). ALDs are narrative descriptions of the knowledge and skills expected at each of the four achievement levels and were developed for each grade level, content area, and course. The ALDs are based on the state-adopted content expectations.

ALDs show a progression of knowledge and skills for which students must demonstrate competency across the achievement levels. It is important to understand that a student should demonstrate mastery of the knowledge and skills within his/her achievement level *as well as all content and skills in any achievement levels that precede his/her own, if any*. For example, a Proficient Learner should also possess the knowledge and skills of a Below Basic and Basic student.

ALD	Domain	Below Basic	Basic	Proficient	Advanced
Policy		Below Basic do not yet demonstrate proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in content expectations. These students need substantial academic support to be prepared for the next grade level or course and to be on track for <i>college and career readiness</i> .	Basic demonstrate partial proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in content expectations. These students need additional academic support to ensure success in the next grade level or course and to be on track for <i>college and career readiness</i> .	Proficient demonstrate proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in content expectations. These students are prepared for the next grade level or course and are on track for <i>college and career readiness</i> .	Advanced demonstrate advanced proficiency in the knowledge and skills necessary at this grade level/course of learning, as specified in content expectations. These students are well prepared for the next grade level or course and are well prepared for <i>college and career readiness</i> .
		A student who achieves at the Below Basic level demonstrates minimal command of the grade-level expectations.	A student who achieves at the Basic level demonstrates partial command of the grade-level expectations.	A student who achieves at the Proficient level demonstrates proficiency of the grade-level expectations.	A student who achieves at the Advanced level demonstrates advanced proficiency of the grade-level expectations.
Range	The Number System	Calculates approximations of irrational numbers.	Recognizes examples of irrational numbers.	Represents irrational numbers as a category distinct from rational numbers, and locates rational and irrational numbers on a number line.	Recognizes that irrational numbers are not expressible as a quotient of any two integers, and converts a repeating decimal into a fraction.
	Expressions and Equations	Calculates the value of a base with an integer exponent, and represents whole number multiples of ten in scientific notation.	Recognizes and uses integer exponents, expresses quantities in scientific notation, calculates square and cubed roots, graphs proportional relationships, and solves given linear equations.	Understands and solves problems that involve scientific notation, proportional relationships, the slope of a graph, triangle similarity, square and cubed roots and linear equations; and solves systems of linear equations.	Solves complex problems involving scientific notation, determines the most efficient methods to solve equations and systems of equations, and interprets and analyzes solutions to problems in a context.

ALD	Domain	Below Basic	Basic	Proficient	Advanced
Range	Functions	Determines from graphs if relations are functions.	Identifies linear and non-linear functions from graphs.	Determines if relations are functions; and defines, creates, evaluates, graphs, compares, and uses functions to model relationships between quantities, in multiple representations.	Communicates key differences between functions represented in multiple ways.
	Geometry	Recognizes congruent and similar figures and possible transformations between the figures, and plots points in the Cartesian coordinate plane.	Recognizes and identifies congruence and similarity using physical models, transparencies, or geometry software; applies the Pythagorean theorem in two dimensions; recognizes and applies rigid transformations; and calculates the volume of figures given the formulas.	Understands congruence and similarity, solves problems involving congruent and similar figures, solves problems involving the angles in a triangle, applies the Pythagorean theorem, describes and creates sequences of rigid and non-rigid transformations, and determines the volume of figures to solve problems.	Understands and analyzes problems involving parallel lines and triangles, interprets the Pythagorean theorem in three dimensions, and solves real-world volume problems.
	Statistics and Probability	Recognizes association in given bivariate data.	Describes association in bivariate data, and estimates a linear model for data.	Constructs a two-way table summarizing bivariate data, describes and creates linear functions to model data, and investigates patterns of association in bivariate data.	Describes and analyzes patterns of association in bivariate categorical data, interprets data in a two-way table, and interprets the quality of data models in a context.