

Math Grade 8

Standard	Below Basic	Basic	Proficient	Advanced
Standards	Students who perform at this level have not demonstrated mastery in academic performance, thinking abilities, and application of understandings that reflect the knowledge and skills specified by the grade/course level content standards and are not prepared for the next level of study.	Students who perform at this level demonstrate partial mastery in academic performance, thinking abilities, and application of understandings that reflect the knowledge and skills specified by the grade/course level content standards and are minimally prepared for the next level of study.	Students who perform at this level demonstrate mastery in academic performance, thinking abilities, and application of understandings that reflect the knowledge and skills specified by the grade/course level content standards and are well prepared for the next level of study.	Students who perform at this level demonstrate superior mastery in academic performance, thinking abilities, and application of understandings that reflect the knowledge and skills specified by the grade/course level content standards and are significantly prepared for the next level of study.
Mathematical Processes Grade 8	The student is inconsistent in using familiar equations in problem-solving. The student does not relate characteristics in representations to scenarios those characteristics typify.	The student uses a given equation to solve routine problems involving rate, time, and distance. The student is beginning to identify characteristics of qualitative graphs that match specific scenarios. The student calculates unit rates.	The student solves problems involving rate, time, and distance. The student interprets a qualitative graph for familiar contextual situations. The student applies unit rates to determine the better of two purchases.	The student solves non-routine contextual problems involving rate, time, and distance. The student interprets a qualitative graph for various contextual situations. The student compares multiple pricing scenarios to determine best buys.
Number and Operations Grade 8	The student does not recognize differences among subsets of the real numbers. The student has not assigned relative values to integers, rational, and irrational numbers. The student demonstrates inconsistencies in computations. The student does not demonstrate procedural understanding of exponents.	The student identifies some numbers as belonging to the set of rational or irrational numbers. The student compares, orders, and locates rational numbers on a number line. The student uses rational numbers in solving contextual problems. The student has developed understanding for exponents.	The student places numbers correctly in the set of rational or irrational numbers. The student compares, orders, and locates rational and/or irrational numbers on a number line. The student uses both rational and irrational numbers in solving contextual problems. The student solves contextual problems requiring application	The student can generate elements for any subset of the real number system. The student compares values for rational/irrational numbers using multiple strategies (including location on a number line) and can justify reasoning. The student uses both rational and irrational numbers in solving multi-step contextual

			of the laws of exponents. The student finds products and quotients of numbers in scientific notation.	problems. The student applies laws of exponents to solve real-world problems involving multiplication and/or division of very large and very small numbers in scientific notation.
Algebra Grade 8	The student does not recognize equivalent expressions. The student does not use linear equations in any representation. The student has not developed strategies for working with linear functions or linear systems.	The student recognizes simplest form for many algebraic expressions. The student uses a linear function (given slope-intercept form or the graph) to find function values, determines the x- and y- intercepts and slope. The student graphically solves a system of linear equations given in slope-intercept form and recognizes that the solution may be one ordered pair, many ordered pairs, or no ordered pairs. The student distinguishes between linear and nonlinear functions, given the graph.	The student transforms algebraic expressions to simplest form using algebraic properties. The student solves two-variable linear equations and linear inequalities (graphs, equations, tables, verbal rule.) The student analyzes linear functions given various situations (equation, ordered pairs, table, mapping, or graph) to determine and interpret intercepts and slope in context. The student solves a system of linear equations recognizing the geometric model of the system and the solution (two intersecting lines – one point, two lines that are the same line – infinite number of points, or two parallel lines – no points). The student recognizes linear representations that express proportional relationships. The student distinguishes between linear and nonlinear functions in any representation.	The student generates and uses equivalent forms for algebraic expressions and can explain how algebraic properties were applied. The student creates and solves two-variable linear equations and linear inequalities in multiple representations for contextual situations. Using distinguishing features in any representation, the student classifies and uses linear, quadratic, or exponential functions.

<p>Geometry and Measurement Grade 8</p>	<p>The student does not apply the Pythagorean Theorem or the distance formula in routine problems. The student does not recognize and apply relationships exhibited in parallel lines cut by a transversal. The student does not use basic relationships to facilitate conversions.</p>	<p>The student uses the Pythagorean Theorem to find the length of the hypotenuse given the lengths of the two legs of a right triangle. The student recognizes congruent pairs of angles formed by parallel lines cut by a transversal. The student converts within a measurement system (U.S. Customary, metric system) to find equivalent measures.</p>	<p>The student understands and applies the Pythagorean Theorem to find lengths in real-world problems involving right triangles. The student recognizes the application of the Pythagorean Theorem and the formula for distance between points in the coordinate plane. The student applies relationships between pairs of angles formed by parallel lines cut by a transversal to determine angle measures. The students convert between measurement systems (U.S. Customary, metric system) to find equivalent measures. The student identifies intersections of geometric figures in a plane.</p>	<p>The student understands and applies the Pythagorean Theorem to find lengths in real-world problems involving right triangles in polyhedra. The student explains and uses the relationship between the Pythagorean Theorem and the formula for distance between points in the coordinate plane. The student models and visualizes intersection of plane and solid geometric figures.</p>
<p>Data Analysis, Statistics, and Probability Grade 8</p>	<p>The student does not relate outcome of experiments of chance to probability. The student lacks organization skills for data analysis. The student misrepresents data in displays.</p>	<p>The student calculates experimental probability (relative frequency) for a simple event when given data. The student determines theoretical probability of simple events given organized data. The student creates scatterplots, and selects a graph that shows a line correctly fitted to data in a scatterplot.</p>	<p>The student calculates probability for a simple event using simple experiments with equally likely outcomes and relative frequency. The student determines theoretical probability of simple events using a variety of methods (e.g., multiplication, organized lists, tree diagrams, area models). The student creates scatterplots, approximates a line that fits data. The student uses data presented in various graphical displays and recognizes</p>	<p>The student calculates experimental probability for a compound event. The student determines theoretical probability for compound events using a variety of methods. The student relates experimental probability with theoretical probability. The student recognizes situations that describe independent and dependent events. The student creates scatterplots, approximates a line that fits data, and makes predictions</p>

			misrepresentations of data.	using that line. The student analyzes data presented in various graphical displays and evaluates reported statistics for accuracy and appropriateness and accuracy of data representation.
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