

College Readiness Standards — Mathematics

	Basic Operations & Applications	Probability, Statistics, & Data Analysis	Numbers: Concepts & Properties	Expressions, Equations, & Inequalities
13–15	<p>Perform one-operation computation with whole numbers and decimals</p> <p>Solve problems in one or two steps using whole numbers</p> <p>Perform common conversions (e.g., inches to feet or hours to minutes)</p>	<p>Calculate the average of a list of positive whole numbers</p> <p>Perform a single computation using information from a table or chart</p>	<p>Recognize equivalent fractions and fractions in lowest terms</p>	<p>Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$)</p> <p>Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals</p>
16–19	<p>Solve routine one-step arithmetic problems (using whole numbers, fractions, and decimals) such as single-step percent</p> <p>Solve some routine two-step arithmetic problems</p>	<p>Calculate the average of a list of numbers</p> <p>Calculate the average, given the number of data values and the sum of the data values</p> <p>Read tables and graphs</p> <p>Perform computations on data from tables and graphs</p> <p>Use the relationship between the probability of an event and the probability of its complement</p>	<p>Recognize one-digit factors of a number</p> <p>Identify a digit's place value</p>	<p>Substitute whole numbers for unknown quantities to evaluate expressions</p> <p>Solve one-step equations having integer or decimal answers</p> <p>Combine like terms (e.g., $2x + 5x$)</p>
20–23	<p>Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and computing with a given average</p>	<p>Calculate the missing data value, given the average and all data values but one</p> <p>Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p>Determine the probability of a simple event</p> <p>Exhibit knowledge of simple counting techniques*</p>	<p>Exhibit knowledge of elementary number concepts including rounding, the ordering of decimals, pattern identification, absolute value, primes, and greatest common factor</p>	<p>Evaluate algebraic expressions by substituting integers for unknown quantities</p> <p>Add and subtract simple algebraic expressions</p> <p>Solve routine first-degree equations</p> <p>Perform straightforward word-to-symbol translations</p> <p>Multiply two binomials*</p>
24–27	<p>Solve multistep arithmetic problems that involve planning or converting units of measure (e.g., feet per second to miles per hour)</p>	<p>Calculate the average, given the frequency counts of all the data values</p> <p>Manipulate data from tables and graphs</p> <p>Compute straightforward probabilities for common situations</p> <p>Use Venn diagrams in counting*</p>	<p>Find and use the least common multiple</p> <p>Order fractions</p> <p>Work with numerical factors</p> <p>Work with scientific notation</p> <p>Work with squares and square roots of numbers</p> <p>Work problems involving positive integer exponents*</p> <p>Work with cubes and cube roots of numbers*</p> <p>Determine when an expression is undefined*</p> <p>Exhibit some knowledge of the complex numbers †</p>	<p>Solve real-world problems using first-degree equations</p> <p>Write expressions, equations, or inequalities with a single variable for common pre-algebra settings (e.g., rate and distance problems and problems that can be solved by using proportions)</p> <p>Identify solutions to simple quadratic equations</p> <p>Add, subtract, and multiply polynomials*</p> <p>Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)*</p> <p>Solve first-degree inequalities that do not require reversing the inequality sign*</p>
28–32 *	<p>Solve word problems containing several rates, proportions, or percentages</p>	<p>Calculate or use a weighted average</p> <p>Interpret and use information from figures, tables, and graphs</p> <p>Apply counting techniques</p> <p>Compute a probability when the event and/or sample space are not given or obvious</p>	<p>Apply number properties involving prime factorization</p> <p>Apply number properties involving even/odd numbers and factors/multiples</p> <p>Apply number properties involving positive/negative numbers</p> <p>Apply rules of exponents</p> <p>Multiply two complex numbers †</p>	<p>Manipulate expressions and equations</p> <p>Write expressions, equations, and inequalities for common algebra settings</p> <p>Solve linear inequalities that require reversing the inequality sign</p> <p>Solve absolute value equations</p> <p>Solve quadratic equations</p> <p>Find solutions to systems of linear equations</p>
33–36 †	<p>Solve complex arithmetic problems involving percent of increase or decrease and problems requiring integration of several concepts from pre-algebra and/or pre-geometry (e.g., comparing percentages or averages, using several ratios, and finding ratios in geometry settings)</p>	<p>Distinguish between mean, median, and mode for a list of numbers</p> <p>Analyze and draw conclusions based on information from figures, tables, and graphs</p> <p>Exhibit knowledge of conditional and joint probability</p>	<p>Draw conclusions based on number concepts, algebraic properties, and/or relationships between expressions and numbers</p> <p>Exhibit knowledge of logarithms and geometric sequences</p> <p>Apply properties of complex numbers</p>	<p>Write expressions that require planning and/or manipulating to accurately model a situation</p> <p>Write equations and inequalities that require planning, manipulating, and/or solving</p> <p>Solve simple absolute value inequalities</p>

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College Readiness Standards — Mathematics (continued)

	Graphical Representations	Properties of Plane Figures	Measurement	Functions†
13–15	Identify the location of a point with a positive coordinate on the number line		Estimate or calculate the length of a line segment based on other lengths given on a geometric figure	
16–19	Locate points on the number line and in the first quadrant	Exhibit some knowledge of the angles associated with parallel lines	<p>Compute the perimeter of polygons when all side lengths are given</p> <p>Compute the area of rectangles when whole number dimensions are given</p>	
20–23	<p>Locate points in the coordinate plane</p> <p>Comprehend the concept of length on the number line*</p> <p>Exhibit knowledge of slope*</p>	<p>Find the measure of an angle using properties of parallel lines</p> <p>Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)</p>	<p>Compute the area and perimeter of triangles and rectangles in simple problems</p> <p>Use geometric formulas when all necessary information is given</p>	Evaluate quadratic functions, expressed in function notation, at integer values
24–27	<p>Identify the graph of a linear inequality on the number line*</p> <p>Determine the slope of a line from points or equations*</p> <p>Match linear graphs with their equations*</p> <p>Find the midpoint of a line segment*</p>	<p>Use several angle properties to find an unknown angle measure</p> <p>Recognize Pythagorean triples*</p> <p>Use properties of isosceles triangles*</p>	<p>Compute the area of triangles and rectangles when one or more additional simple steps are required</p> <p>Compute the area and circumference of circles after identifying necessary information</p> <p>Compute the perimeter of simple composite geometric figures with unknown side lengths*</p>	<p>Evaluate polynomial functions, expressed in function notation, at integer values</p> <p>Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p>
28–32 *	<p>Interpret and use information from graphs in the coordinate plane</p> <p>Match number line graphs with solution sets of linear inequalities</p> <p>Use the distance formula</p> <p>Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point</p> <p>Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)†</p>	<p>Apply properties of 30°-60°-90°, 45°-45°-90°, similar, and congruent triangles</p> <p>Use the Pythagorean theorem</p>	Use relationships involving area, perimeter, and volume of geometric figures to compute another measure	<p>Evaluate composite functions at integer values</p> <p>Apply basic trigonometric ratios to solve right-triangle problems</p>
33–36 †	<p>Match number line graphs with solution sets of simple quadratic inequalities</p> <p>Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$</p> <p>Solve problems integrating multiple algebraic and/or geometric concepts</p> <p>Analyze and draw conclusions based on information from graphs in the coordinate plane</p>	<p>Draw conclusions based on a set of conditions</p> <p>Solve multistep geometry problems that involve integrating concepts, planning, visualization, and/or making connections with other content areas</p> <p>Use relationships among angles, arcs, and distances in a circle</p>	<p>Use scale factors to determine the magnitude of a size change</p> <p>Compute the area of composite geometric figures when planning or visualization is required</p>	<p>Write an expression for the composite of two simple functions</p> <p>Use trigonometric concepts and basic identities to solve problems</p> <p>Exhibit knowledge of unit circle trigonometry</p> <p>Match graphs of basic trigonometric functions with their equations</p>

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