ACT Math

Standards for Score Ranges 13-15	Standards for Score Ranges 16-19	Standards for Score Ranges 20-23	Standards for Score Ranges 24-27	Standards for Score Ranges 28-32	Standards for Score Ranges 33-36
Perform one-operation computation with whole numbers and decimals	Recognize one-digit factors of a number	Exhibit knowledge of elementary number concepts such as rounding, the ordering of decimals, pattern identification, primes, and greatest common factor	Order fractions	Apply number properties involving prime factorization	Analyze and draw conclusions based on number concepts
Recognize equivalent fractions and fractions in lowest terms	Identify a digit's place value	Write positive powers of 10 by using exponents	Find and use the least common multiple	Apply number properties involving even/ odd numbers and factors/multiples	Apply properties of rational numbers and the rational number system
Locate positive rational numbers (expressed as whole numbers, fractions, decimals, and mixed numbers) on the number line	Locate rational numbers on the number line	Comprehend the concept of length on the number line, and find the distance between two points	Work with numerical factors	Apply number properties involving positive/negative numbers	Apply properties of real numbers and the real number system, including properties of irrational numbers
Solve problems in one or two steps using whole numbers and using decimals in the context of money	Solve routine one-step arithmetic problems using positive rational numbers, such as single-step percent	Understand absolute value in terms of distance	Exhibit some knowledge of the complex numbers	Apply the facts that p is irrational and that the square root of an integer is rational only if that integer is a perfect square	Apply properties of complex numbers and the complex number system
Exhibit knowledge of basic expressions (e.g., identify an expression for a total as $b + g$)	Solve some routine two-step arithmetic problems	Find the distance in the coordinate plane between two points with the same x-coordinate or y-coordinate	Add and subtract matrices that have integer entries	Apply properties of rational exponents	Multiply matrices
Solve equations in the form $x + a = b$, where a and b are whole numbers or decimals	Relate a graph to a situation described qualitatively in terms of familiar properties such as before and after, increasing and decreasing, higher and lower	Add two matrices that have whole number entries	Solve multistep arithmetic problems that involve planning or converting common derived units of measure (e.g., feet per second to miles per hour)	Multiply two complex numbers	Apply properties of matrices and properties of matrices as a number system
Extend a given pattern by a few terms for patterns that have a constant increase or decrease between terms	Apply a definition of an operation for whole numbers (e.g., $a \bullet b = 3a - b$)	Solve routine two-step or three-step arithmetic problems involving concepts such as rate and proportion, tax added, percentage off, and estimating by using a given average value in place of actual values	Build functions and 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)	Use relations involving addition, subtraction, and scalar multiplication of vectors and of matrices	Solve complex arithmetic problems involving percent of increase or decrease or requiring integration of several concepts (e.g., using several ratios, comparing percentages, or comparing averages)
Estimate the length of a line segment based on other lengths in a geometric figure	Substitute whole numbers for unknown quantities to evaluate expressions	Perform straightforward word-to-symbol translations	Match linear equations with their graphs in the coordinate plane	Solve word problems containing several rates, proportions, or percentages	Build functions and write expressions, equations, and inequalities when the process requires planning and/or strategic manipulation
Calculate the length of a line segment based on the lengths of other line segments that go in the same direction (e.g., overlapping line segments and parallel sides of polygons with	Solve one-step equations to get integer or decimal answers	Relate a graph to a situation described in terms of a starting value and an additional amount per unit (e.g., unit cost, weekly growth)	Recognize that when numerical quantities are reported in real-world contexts, the numbers are often rounded	Build functions and write expressions, equations, and inequalities for common algebra settings (e.g., distance to a point on a curve and profit for variable cost and demand)	Analyze and draw conclusions based on properties of algebra and/or functions
Perform common conversions of money and of length, weight, mass, and time within a measurement system (e.g., dollars to dimes	Combine like terms (e.g., $2x + 5x$)	Evaluate algebraic expressions by substituting integers for unknown quantities	Solve real-world problems by using first- degree equations	Interpret and use information from graphs in the coordinate plane	Analyze and draw conclusions based on information from graphs in the coordinate plane
Calculate the average of a list of positive whole numbers	Extend a given pattern by a few terms for patterns that have a constant factor between terms	Add and subtract simple algebraic expressions	Solve first-degree inequalities when the method does not involve reversing the inequality sign	Given an equation or function, find an equation or function whose graph is a translation by a specified amount up or down	Identify characteristics of graphs based on a set of conditions or on a general equation such as $y = ax^2 + c$
Extract one relevant number from a basic table or chart, and use it in a single computation	Exhibit some knowledge of the angles associated with parallel lines	Solve routine first-degree equations	Match compound inequalities with their graphs on the number line (e.g., $-10.5 < x \leq 20.3$)	Manipulate expressions and equations	Given an equation or function, find an equation or function whose graph is a translation by specified amounts in the horizontal and vertical directions
	Compute the perimeter of polygons when all side lengths are given	Multiply two binomials	Add, subtract, and multiply polynomials	Solve linear inequalities when the method involves reversing the inequality sign	Solve simple absolute value inequalities
	Compute the area of rectangles when whole number dimensions are given	Match simple inequalities with their graphs on the number line (e.g., $x \geq -3/5$)	Identify solutions to simple quadratic equations	Match linear inequalities with their graphs on the number line	Match simple quadratic inequalities with their graphs on the number line
	Locate points in the first quadrant	Exhibit knowledge of slope	Solve quadratic equations in the form $(x + a)(x + b) = 0$, where a and b are numbers or variables	Solve systems of two linear equations	Apply the remainder theorem for polynomials, that $P(a)$ is the remainder when $P(x)$ is divided by $(x - a)$
	Calculate the average of a list of numbers	Evaluate linear and quadratic functions, expressed in function notation, at integer values	Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)	Solve quadratic equations	Compare actual values and the values of a modeling function to judge model fit and compare models
	Calculate the average given the number of data values and the sum of the data values	Use properties of parallel lines to find the measure of an angle	Work with squares and square roots of numbers	Solve absolute value equations	Build functions for relations that are exponential
	Read basic tables and charts	Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)	Work with cubes and cube roots of numbers	Relate a graph to a situation described qualitatively in terms of faster change or slower change	Exhibit knowledge of geometric sequences
	Extract relevant data from a basic table or chart and use the data in a computation	Compute the area and perimeter of triangles and rectangles in simple problems	Work with scientific notation	Build functions for relations that are inversely proportional	Exhibit knowledge of unit circle trigonometry
	Use the relationship between the probability of an event and the probability of its complement	Find the length of the hypotenuse of a right triangle when only very simple computation is involved (e.g., 3-4-5 and 6-8-10 triangles)	Work problems involving positive integer exponents	Find a recursive expression for the general term in a sequence described recursively	Match graphs of basic trigonometric functions with their equations
		Use geometric formulas when all necessary information is given	Determine when an expression is undefined	Evaluate composite functions at integer values	Use trigonometric concepts and basic identities to solve problems
		Locate points in the coordinate plane	Determine the slope of a line from an equation	Use relationships involving area, perimeter, and volume of geometric figures to compute another measure (e.g., surface area for a cube of a given volume and simple geometric probability)	Exhibit knowledge of logarithms
		Translate points up, down, left, and right in the coordinate plane	Evaluate polynomial functions, expressed in function notation, at integer values	Use the Pythagorean theorem	Write an expression for the composite of two simple functions
		*See rest of standards on back of page	*See rest of standards on back of page	*See rest of standards on back of page	*See rest of standards on back of page

ACT Math Benchmark 22

Your ACT Math Score _____

ACT Math

Standards for Score Ranges 20-23	Standards for Score Ranges 24-27	Standards for Score Ranges 28-32	Standards for Score Ranges 33-36
Calculate the missing data value given the average and all data values but one	Find the next term in a sequence described recursively	Apply properties of 30°-60°-90°, 45°- 45°-90°, similar, and congruent triangles	Use relationships among angles, arcs, and distances in a circle
Translate from one representation of data to another (e.g., a bar graph to a circle graph)	Build functions and use quantitative information to identify graphs for relations that are proportional or linear	Apply basic trigonometric ratios to solve right-triangle problems	Compute the area of composite geometric figures when planning and/or visualization is required
Determine the probability of a simple event	Attend to the difference between a function modeling a situation and the reality of the situation	Use the distance formula	Use scale factors to determine the magnitude of a size change
Describe events as combinations of other events (e.g., using *and*, *or*, and *not*)	Understand the concept of a function as having a well-defined output value at each valid input value	Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point	Analyze and draw conclusions based on a set of conditions
Exhibit knowledge of simple counting techniques	Understand the concept of domain and range in terms of valid input and output, and in terms of function graphs	Find the coordinates of a point reflected across a vertical or horizontal line or across $y = x$	Solve multistep geometry problems that involve integrating concepts, planning, and/or visualization
	Interpret statements that use function notation in terms of their context	Find the coordinates of a point rotated 90° about the origin	Distinguish between mean, median, and mode for a list of numbers
	Find the domain of polynomial functions and rational functions	Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)	Analyze and draw conclusions based on information from tables and charts, including two-way frequency tables
	Find the range of polynomial functions	Calculate or use a weighted average	Understand the role of randomization in surveys, experiments, and observational studies
	Find where a rational function's graph has a vertical asymptote	Interpret and use information from tables and charts, including two-way frequency tables	Exhibit knowledge of conditional and joint probability
	Use function notation for simple functions of two variables	Apply counting techniques	Recognize that part of the power of statistical modeling comes from looking at regularity in the differences between actual values and model values
	Use several angle properties to find an unknown angle measure	Compute a probability when the event and/or sample space are not given or obvious	
	Count the number of lines of symmetry of a geometric figure	Recognize the concepts of conditional and joint probability expressed in real- world contexts	
	Use symmetry of isosceles triangles to find unknown side lengths or angle measures	Recognize the concept of independence expressed in real-world contexts	
	Recognize that real-world measurements are typically imprecise and that an appropriate level of precision is related to the measuring device and procedure		
	Compute the perimeter of simple composite geometric figures with unknown side lengths		
	Compute the area of triangles and rectangles when one or more additional simple steps are required		
	Compute the area and circumference of circles after identifying necessary information		
	Given the length of two sides of a right triangle, find the third when the lengths are Pythagorean triples		
	Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths		
	Determine the slope of a line from points or a graph		
	Find the midpoint of a line segment		
	Find the coordinates of a point rotated 180° around a given center point		
	Calculate the average given the frequency counts of all the data values		
	Manipulate data from tables and charts		
	Compute straightforward probabilities for common situations		
	Use Venn diagrams in counting		
	Recognize that when data summaries are reported in the real world, results are often rounded and must be interpreted as having appropriate precision		
	Recognize that when a statistical model is used, model values typically differ from actual values		