

## ACT Math Prep Pacing Guide

1 <sup>st</sup> / 3 <sup>rd</sup> Quarter	TN Standards	Lesson Focus	Additional Notes
Week 1	<a href="https://www.act.org/content/dam/act/unsecured/documents/CCRS-MathStandards.pdf">https://www.act.org/content/dam/act/unsecured/documents/CCRS-MathStandards.pdf</a>	<p><b>N 201.</b> Perform one-operation computation with whole numbers and decimals</p> <p><b>N 202.</b> Recognize equivalent fractions and fractions in lowest terms</p> <p><b>N 203.</b> Locate positive rational numbers (expressed as whole numbers, fractions, decimals, and mixed numbers) on the number line</p> <p><b>N 301.</b> Recognize one-digit factors of a number</p> <p><b>N 302.</b> Identify a digit's place value</p> <p><b>N 303.</b> Locate rational numbers on the number line</p> <p><b>N 401.</b> Exhibit knowledge of elementary number concepts such as rounding, the ordering of decimals, pattern identification, primes, and greatest common factor</p> <p><b>N 402.</b> Write positive powers of 10 by using exponents</p> <p><b>N 403.</b> Comprehend the concept of length on the number line, and find the distance between two points</p> <p><b>N 404.</b> Understand absolute value in terms of distance</p> <p><b>N 405.</b> Find the distance in the coordinate plane between two points with the same x-coordinate or y-coordinate</p> <p><b>N 406.</b> Add two matrices that have whole number entries</p>	Students will also take math and science practice tests #1
Week 2		<p><b>N 501.</b> Order fractions</p> <p><b>N 502.</b> Find and use the least common multiple</p> <p><b>N 503.</b> Work with numerical factors</p> <p><b>N 504.</b> Exhibit some knowledge of the complex</p>	

			<p>numbers</p> <p><b>N 505.</b> Add and subtract matrices that have integer entries</p> <p><b>N 601.</b> Apply number properties involving prime factorization</p> <p><b>N 602.</b> Apply number properties involving even/odd numbers and factors/multiples</p> <p><b>N 603.</b> Apply number properties involving positive/negative numbers</p> <p><b>N 604.</b> Apply the facts that <math>\pi</math> is irrational and that the square root of an integer is rational only if that integer is a perfect square</p> <p><b>N 605.</b> Apply properties of rational exponents</p> <p><b>N 606.</b> Multiply two complex numbers</p> <p><b>N 607.</b> Use relations involving addition, subtraction, and scalar multiplication of vectors and of matrices</p> <p><b>N 701.</b> Analyze and draw conclusions based on number concepts</p> <p><b>N 702.</b> Apply properties of rational numbers and the rational number system</p> <p><b>N 703.</b> Apply properties of real numbers and the real number system, including properties of irrational numbers</p> <p><b>N 704.</b> Apply properties of complex numbers and the complex number system</p> <p><b>N 705.</b> Multiply matrices</p> <p><b>N 706.</b> Apply properties of matrices and properties of matrices as a number system</p>	
	<p>Week 3</p>		<p><b>AF 201.</b> Solve problems in one or two steps using whole numbers and using decimals in the context of money</p> <p><b>A 201.</b> Exhibit knowledge of basic expressions (e.g., identify an expression for a total as <math>b + g</math>)</p> <p><b>A 202.</b> Solve equations in the form <math>x + a = b</math>, where <math>a</math> and <math>b</math> are whole numbers or decimals</p> <p><b>AF 301.</b> Solve routine one-step arithmetic problems using positive rational numbers,</p>	<p>Students will also take math and science practice tests #2</p>

			<p>such as single-step percent</p> <p><b>AF 302.</b> Solve some routine two-step arithmetic problems</p> <p><b>AF 303.</b> Relate a graph to a situation described qualitatively in terms of familiar properties such as before and after, increasing and decreasing, higher and lower</p> <p><b>AF 304.</b> Apply a definition of an operation for whole numbers (e.g., <math>a \square b = 3a - b</math>)</p> <p><b>A 301.</b> Substitute whole numbers for unknown quantities to evaluate expressions</p> <p><b>A 302.</b> Solve one-step equations to get integer or decimal answers</p> <p><b>A 303.</b> Combine like terms (e.g., <math>2x + 5x</math>)</p>	
	<p>Week 4</p>		<p><b>AF 401.</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</p> <p><b>AF 402.</b> Perform straightforward word-to-symbol translations</p> <p><b>AF 403.</b> 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)</p> <p><b>A 401.</b> Evaluate algebraic expressions by substituting integers for unknown quantities</p> <p><b>A 402.</b> Add and subtract simple algebraic expressions</p> <p><b>A 403.</b> Solve routine first-degree equations</p> <p><b>A 404.</b> Multiply two binomials</p> <p><b>A 405.</b> Match simple inequalities with their graphs on the number line (e.g., <math>x \geq -35</math>)</p> <p><b>A 406.</b> Exhibit knowledge of slope</p> <p><b>AF 501.</b> Solve multistep arithmetic problems that involve planning or converting common derived units of measure (e.g., feet per second to miles per hour)</p>	

**AF 502.** 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)

**AF 503.** Match linear equations with their graphs in the coordinate plane

**A 501.** Recognize that when numerical quantities are reported in real-world contexts, the numbers are often rounded

**A 502.** Solve real-world problems by using first-degree equations

**A 503.** Solve first-degree inequalities when the method does not involve reversing the inequality sign

**A 504.** Match compound inequalities with their graphs on the number line (e.g.,  $-10.5 < x \leq 20.3$ )

**A 505.** Add, subtract, and multiply polynomials

**A 506.** Identify solutions to simple quadratic equations

**A 507.** Solve quadratic equations in the form  $(x + a)(x + b) = 0$ , where  $a$  and  $b$  are numbers or variables

**A 508.** Factor simple quadratics (e.g., the difference of squares and perfect square trinomials)

**A 509.** Work with squares and square roots of numbers

**A 510.** Work with cubes and cube roots of numbers

**A 511.** Work with scientific notation

**A 512.** Work problems involving positive integer exponents

**A 513.** Determine when an expression is undefined

**A 514.** Determine the slope of a line from an equation

	Week 5		<p><b>AF 601.</b> Solve word problems containing several rates, proportions, or percentages</p> <p><b>AF 602.</b> 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)</p> <p><b>AF 603.</b> Interpret and use information from graphs in the coordinate plane</p> <p><b>AF 604.</b> Given an equation or function, find an equation or function whose graph is a translation by a specified amount up or down</p> <p><b>A 601.</b> Manipulate expressions and equations</p> <p><b>A 602.</b> Solve linear inequalities when the method involves reversing the inequality sign</p> <p><b>A 603.</b> Match linear inequalities with their graphs on the number line</p> <p><b>A 604.</b> Solve systems of two linear equations</p> <p><b>A 605.</b> Solve quadratic equations</p> <p><b>A 606.</b> Solve absolute value equations</p> <p><b>AF 701.</b> 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)</p> <p><b>AF 702.</b> Build functions and write expressions, equations, and inequalities when the process requires planning and/or strategic manipulation</p> <p><b>AF 703.</b> Analyze and draw conclusions based on properties of algebra and/or functions</p> <p><b>AF 704.</b> Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>AF 705.</b> Identify characteristics of graphs based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p><b>AF 706.</b> Given an equation or function, find an equation or function whose graph is a translation by specified amounts in the</p>	<p>Students will also take math and science practice tests #3</p>
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			<p>horizontal and vertical directions</p> <p><b>A 701.</b> Solve simple absolute value inequalities</p> <p><b>A 702.</b> Match simple quadratic inequalities with their graphs on the number line</p> <p><b>A 703.</b> Apply the remainder theorem for polynomials, that <math>P(a)</math> is the remainder when <math>P(x)</math> is divided by <math>(x - a)</math></p>	
Week 6			<p><b>AF 201.</b> Solve problems in one or two steps using whole numbers and using decimals in the context of money</p> <p><b>F 201.</b> Extend a given pattern by a few terms for patterns that have a constant increase or decrease between terms</p> <p><b>AF 301.</b> Solve routine one-step arithmetic problems using positive rational numbers, such as single-step percent</p> <p><b>AF 302.</b> Solve some routine two-step arithmetic problems</p> <p><b>AF 303.</b> Relate a graph to a situation described qualitatively in terms of familiar properties such as before and after, increasing and decreasing, higher and lower</p> <p><b>AF 304.</b> Apply a definition of an operation for whole numbers (e.g., <math>a \square b = 3a - b</math>)</p> <p><b>F 301.</b> Extend a given pattern by a few terms for patterns that have a constant factor between terms</p> <p><b>AF 401.</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</p> <p><b>AF 402.</b> Perform straightforward word-to-symbol translations</p> <p><b>AF 403.</b> 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)</p>	

			<p><b>F 401.</b> Evaluate linear and quadratic functions, expressed in function notation, at integer values</p>	
<p>Week 7</p>			<p><b>AF 501.</b> Solve multistep arithmetic problems that involve planning or converting common derived units of measure (e.g., feet per second to miles per hour)</p> <p><b>AF 502.</b> 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)</p> <p><b>AF 503.</b> Match linear equations with their graphs in the coordinate plane</p> <p><b>F 501.</b> Evaluate polynomial functions, expressed in function notation, at integer values</p> <p><b>F 502.</b> Find the next term in a sequence described recursively</p> <p><b>F 503.</b> Build functions and use quantitative information to identify graphs for relations that are proportional or linear</p> <p><b>F 504.</b> Attend to the difference between a function modeling a situation and the reality of the situation</p> <p><b>F 505.</b> Understand the concept of a function as having a well-defined output value at each valid input value</p> <p><b>F 506.</b> Understand the concept of domain and range in terms of valid input and output, and in terms of function graphs</p> <p><b>F 507.</b> Interpret statements that use function notation in terms of their context</p> <p><b>F 508.</b> Find the domain of polynomial functions and rational functions</p> <p><b>F 509.</b> Find the range of polynomial functions</p> <p><b>F 510.</b> Find where a rational function's graph has a vertical asymptote</p>	<p>Students will also take math and science practice tests #4</p>

			<p><b>F 511.</b> Use function notation for simple functions of two variables</p> <p><b>AF 601.</b> Solve word problems containing several rates, proportions, or percentages</p> <p><b>AF 602.</b> 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)</p> <p><b>AF 603.</b> Interpret and use information from graphs in the coordinate plane</p> <p><b>AF 604.</b> Given an equation or function, find an equation or function whose graph is a translation by a specified amount up or down</p> <p><b>F 601.</b> Relate a graph to a situation described qualitatively in terms of faster change or slower change</p> <p><b>F 602.</b> Build functions for relations that are inversely proportional</p> <p><b>F 603.</b> Find a recursive expression for the general term in a sequence described recursively</p> <p><b>F 604.</b> Evaluate composite functions at integer values</p>	
	<p>Week 8</p>		<p><b>AF 701.</b> 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)</p> <p><b>AF 702.</b> Build functions and write expressions, equations, and inequalities when the process requires planning and/or strategic manipulation</p> <p><b>AF 703.</b> Analyze and draw conclusions based on properties of algebra and/or functions</p> <p><b>AF 704.</b> Analyze and draw conclusions based on information from graphs in the coordinate plane</p> <p><b>AF 705.</b> Identify characteristics of graphs</p>	



			<p>based on a set of conditions or on a general equation such as <math>y = ax^2 + c</math></p> <p><b>AF 706.</b> Given an equation or function, find an equation or function whose graph is a translation by specified amounts in the horizontal and vertical directions</p> <p><b>F 701.</b> Compare actual values and the values of a modeling function to judge model fit and compare models</p> <p><b>F 702.</b> Build functions for relations that are exponential</p> <p><b>F 703.</b> Exhibit knowledge of geometric sequences</p> <p><b>F 704.</b> Exhibit knowledge of unit circle trigonometry</p> <p><b>F 705.</b> Match graphs of basic trigonometric functions with their equations</p> <p><b>F 706.</b> Use trigonometric concepts and basic identities to solve problems</p> <p><b>F 707.</b> Exhibit knowledge of logarithms</p> <p><b>F 708.</b> Write an expression for the composite of two simple functions</p>	
	<p>Week 9</p>		<p><b>G 201.</b> Estimate the length of a line segment based on other lengths in a geometric figure</p> <p><b>G 202.</b> 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 only right angles)</p> <p><b>G 203.</b> Perform common conversions of money and of length, weight, mass, and time within a measurement system (e.g., dollars to dimes, inches to feet, and hours to minutes)</p> <p><b>G 301.</b> Exhibit some knowledge of the angles associated with parallel lines</p> <p><b>G 302.</b> Compute the perimeter of polygons when all side lengths are given</p> <p><b>G 303.</b> Compute the area of rectangles when</p>	<p>Students will also take math and science practice tests #5</p>

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			whole number dimensions are given <b>G 304.</b> Locate points in the first quadrant	
<b>End of Quarter</b>				
<b>Fall Break</b>				
<b>2<sup>nd</sup> / 4<sup>th</sup> Quarter</b>	<b>TN Standards</b>	<b>Lesson Focus</b>	<b>Additional Notes</b>	
Week 1		<p><b>G 401.</b> Use properties of parallel lines to find the measure of an angle</p> <p><b>G 402.</b> Exhibit knowledge of basic angle properties and special sums of angle measures (e.g., 90°, 180°, and 360°)</p> <p><b>G 403.</b> Compute the area and perimeter of triangles and rectangles in simple problems</p> <p><b>G 404.</b> 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)</p> <p><b>G 405.</b> Use geometric formulas when all necessary information is given</p> <p><b>G 406.</b> Locate points in the coordinate plane</p> <p><b>G 407.</b> Translate points up, down, left, and right in the coordinate plane</p>		
Week 2		<p><b>G 501.</b> Use several angle properties to find an unknown angle measure</p> <p><b>G 502.</b> Count the number of lines of symmetry of a geometric figure</p> <p><b>G 503.</b> Use symmetry of isosceles triangles to find unknown side lengths or angle measures</p> <p><b>G 504.</b> Recognize that real-world measurements are typically imprecise and that an appropriate level of precision is related to the measuring device and procedure</p> <p><b>G 505.</b> Compute the perimeter of simple composite geometric figures with unknown side lengths</p> <p><b>G 506.</b> Compute the area of triangles and</p>	Students will also take math and science practice tests #6	

			<p>rectangles when one or more additional simple steps are required</p> <p><b>G 507.</b> Compute the area and circumference of circles after identifying necessary information</p> <p><b>G 508.</b> Given the length of two sides of a right triangle, find the third when the lengths are Pythagorean triples</p> <p><b>G 509.</b> Express the sine, cosine, and tangent of an angle in a right triangle as a ratio of given side lengths</p> <p><b>G 510.</b> Determine the slope of a line from points or a graph</p> <p><b>G 511.</b> Find the midpoint of a line segment</p> <p><b>G 512.</b> Find the coordinates of a point rotated <math>180^\circ</math> around a given center point</p>	
	<p>Week 3</p>		<p><b>G 601.</b> 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)</p> <p><b>G 602.</b> Use the Pythagorean theorem</p> <p><b>G 603.</b> Apply properties of <math>30^\circ</math>-<math>60^\circ</math>-<math>90^\circ</math>, <math>45^\circ</math>-<math>45^\circ</math>-<math>90^\circ</math>, similar, and congruent triangles</p> <p><b>G 604.</b> Apply basic trigonometric ratios to solve right-triangle problems</p> <p><b>G 605.</b> Use the distance formula</p> <p><b>G 606.</b> Use properties of parallel and perpendicular lines to determine an equation of a line or coordinates of a point</p> <p><b>G 607.</b> Find the coordinates of a point reflected across a vertical or horizontal line or across <math>y = x</math></p> <p><b>G 608.</b> Find the coordinates of a point rotated <math>90^\circ</math> about the origin</p> <p><b>G 609.</b> Recognize special characteristics of parabolas and circles (e.g., the vertex of a parabola and the center or radius of a circle)</p>	

Week 4		<p><b>G 701.</b> Use relationships among angles, arcs, and distances in a circle</p> <p><b>G 702.</b> Compute the area of composite geometric figures when planning and/or visualization is required</p> <p><b>G 703.</b> Use scale factors to determine the magnitude of a size change</p> <p><b>G 704.</b> Analyze and draw conclusions based on a set of conditions</p> <p><b>G 705.</b> Solve multistep geometry problems that involve integrating concepts, planning, and/or visualization</p>	Students will also take math and science practice tests #7
Week 5		<p><b>S 201.</b> Calculate the average of a list of positive whole numbers</p> <p><b>S 202.</b> Extract one relevant number from a basic table or chart, and use it in a single computation</p> <p><b>S 301.</b> Calculate the average of a list of numbers</p> <p><b>S 302.</b> Calculate the average given the number of data values and the sum of the data values</p> <p><b>S 303.</b> Read basic tables and charts</p> <p><b>S 304.</b> Extract relevant data from a basic table or chart and use the data in a computation</p> <p><b>S 305.</b> Use the relationship between the probability of an event and the probability of its complement</p>	
Week 6		<p><b>S 401.</b> Calculate the missing data value given the average and all data values but one</p> <p><b>S 402.</b> Translate from one representation of data to another (e.g., a bar graph to a circle graph)</p> <p><b>S 403.</b> Determine the probability of a simple event</p> <p><b>S 404.</b> Describe events as combinations of other events (e.g., using <i>and</i>, <i>or</i>, and <i>not</i>)</p>	Students will also take math and science practice tests #8

		<p><b>S 405.</b> Exhibit knowledge of simple counting techniques</p>	
Week 7		<p><b>S 501.</b> Calculate the average given the frequency counts of all the data values  <b>S 502.</b> Manipulate data from tables and charts  <b>S 503.</b> Compute straightforward probabilities for common situations  <b>S 504.</b> Use Venn diagrams in counting  <b>S 505.</b> Recognize that when data summaries are reported in the real world, results are often rounded and must be interpreted as having appropriate precision  <b>S 506.</b> Recognize that when a statistical model is used, model values typically differ from actual values</p>	
Week 8		<p><b>S 601.</b> Calculate or use a weighted average  <b>S 602.</b> Interpret and use information from tables and charts, including two-way frequency tables  <b>S 603.</b> Apply counting techniques  <b>S 604.</b> Compute a probability when the event and/or sample space are not given or obvious  <b>S 605.</b> Recognize the concepts of conditional and joint probability expressed in real-world contexts  <b>S 606.</b> Recognize the concept of independence expressed in real-world contexts</p>	Students will also take math and science practice tests #9
Week 9		<p><b>S 701.</b> Distinguish between mean, median, and mode for a list of numbers  <b>S 702.</b> Analyze and draw conclusions based on information from tables and charts, including two-way frequency tables  <b>S 703.</b> Understand the role of randomization in surveys, experiments, and observational studies</p>	

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			<p><b>S 704.</b> Exhibit knowledge of conditional and joint probability</p> <p><b>S 705.</b> Recognize that part of the power of statistical modeling comes from looking at regularity in the differences between actual values and model values</p>	
	<b>End of Quarter</b>			
	<b>End of Semester</b>			