

South Carolina Tutorials are designed specifically for the South Carolina College and Career Readiness Standards and the South Carolina Academic Standards to prepare students for the South Carolina End-of-Course Examination Program (EOCEP), ACT Aspire, and the South Carolina Palmetto Assessment of State Standards (SCPASS).

Math Tutorials offer targeted instruction, practice and review designed to develop computational fluency, deepen conceptual understanding, and apply mathematical practices. They automatically identify and address learning gaps down to elementary-level content, using adaptive remediation to bring students to grade-level no matter where they start. Students engage with the content in an interactive, feedback-rich environment as they progress through standards-aligned modules. By constantly honing the ability to apply their knowledge in abstract and real world scenarios, students build the depth of knowledge and higher order skills required to demonstrate their mastery when put to the test.

In each module, the Learn It and Try It make complex ideas accessible to students through focused content, modeled logic and process, multi-modal representations, and personalized feedback as students reason through increasingly challenging problems. The Review It offers a high impact summary of key concepts and relates those concepts to students' lives. The Test It assesses students' mastery of the module's concepts, providing granular performance data to students and teachers after each attempt. To help students focus on the content most relevant to them, unit-level pretests and posttests can quickly identify where students are strong and where they're still learning.

Unit 1: Rational and Irrational Numbers

- **RATIONAL AND IRRATIONAL NUMBERS**

- 8.NR.1.1: Convert any form of a rational number to any other form including fractions (mixed numbers), decimals, and percentages.

- **APPROXIMATING IRRATIONAL NUMBERS**

- 8.NR.2.1: Compare real numbers and write statements using is equal to ($=$), is not equal to (\neq), is less than ($<$), is greater than ($>$), is greater than or equal to (\geq), or is less than or equal to (\leq).
- 8.NR.2.2: Classify and order the subsets of real numbers in the number system including natural, whole, integer, rational, and irrational numbers.
- 8.PAFR.3.2: Approximate non-perfect square roots and cube roots to the nearest tenth. Limit to square roots less than or equal to 400 and cube roots less than or equal to 1,000.

- **PROPERTIES OF EXPONENTS**

- 8.PAFR.3.3: Apply laws of exponents to simplify algebraic expressions involving no more than three variables and integer exponents.

- **SOLVING EQUATIONS USING ROOTS**

- 8.PAFR.2.5: Given a table or a graph, identify the slope and the y -intercept of a line and write a linear equation to express that line.
- 8.PAFR.3.1: Analyze patterns of perfect squares and perfect cubes to evaluate square roots and cube roots. Limit to square roots less than or equal to 400 and cube roots less than or equal to 1,000.

Unit 2: Proportional Reasoning and Slope

- **SLOPE**

- 8.PAFR.1.1: Define an equation in slope-intercept form ($y = mx + b$) as being a linear function.
- 8.PAFR.1.2: Identify and describe the constant rate of change and the y -intercept of a linear function.
- 8.PAFR.2.3: Identify the rate of change for a linear function as the slope of the line.
- 8.PAFR.2.4: Explain why the slope, m , is the same between any two distinct points on a linear graph.
- 8.PAFR.2.5: Given a table or a graph, identify the slope and the y -intercept of a line and write a linear equation to express that line.

- **PROPORTIONS AND THEIR MULTIPLE REPRESENTATIONS**

- 8.PAFR.2.3: Identify the rate of change for a linear function as the slope of the line.
- 8.PAFR.2.4: Explain why the slope, m , is the same between any two distinct points on a linear graph.

Unit 3: Solving Equations and Inequalities

- **MULTI-STEP EQUATIONS AND INEQUALITIES**

- 8.PAFR.2.1: Solve multi-step one-variable equations and inequalities with variables on both sides with rational coefficients.

- **SOLVING LINEAR EQUATIONS**

- 8.PAFR.2.1: Solve multi-step one-variable equations and inequalities with variables on both sides with rational coefficients.
- 8.PAFR.2.2: Describe single-variable equations as having one solution, no solution, or an infinite number of solutions.

Unit 4: Functions

- **DOMAIN AND RANGE**

- 8.PAFR.1.4: Describe the key features of given functions, including domain, range, intervals of increasing or decreasing, constant, discrete, continuous, and intercepts.

- **RELATIONS AND FUNCTIONS**

- 8.PAFR.1.3: Determine if a graph, table, mapping, or verbal description is a function (linear or nonlinear) or not a function.

- **GRAPHS OF FUNCTIONS**

- 8.PAFR.1.4: Describe the key features of given functions, including domain, range, intervals of increasing or decreasing, constant, discrete, continuous, and intercepts.
- **COMPARING FUNCTIONS**
- 8.PAFR.1.2: Identify and describe the constant rate of change and the y -intercept of a linear function.
- 8.PAFR.1.5: Use multiple representations including mappings, tables, graphs, verbal description, and equations (only when linear) of two functions to compare the functions and draw conclusions.

Unit 5: Linear Functions

- **MULTIPLE REPRESENTATIONS: TABLES, GRAPHS, AND EQUATIONS**
- 8.PAFR.1.6: Translate among the multiple representations, including mappings, tables, graphs, verbal description, and equations (only when linear) of a function.
- **SLOPE INTERCEPT FORM**
- 8.PAFR.1.1: Define an equation in slope-intercept form ($y = mx + b$) as being a linear function.
- 8.PAFR.1.2: Identify and describe the constant rate of change and the y -intercept of a linear function.
- 8.PAFR.1.3: Determine if a graph, table, mapping, or verbal description is a function (linear or nonlinear) or not a function.
- **WRITING LINEAR FUNCTIONS**
- 8.PAFR.1.6: Translate among the multiple representations, including mappings, tables, graphs, verbal description, and equations (only when linear) of a function.
- 8.PAFR.2.5: Given a table or a graph, identify the slope and the y -intercept of a line and write a linear equation to express that line.

Unit 6: The Pythagorean Theorem and Distance Formula

- **THE PYTHAGOREAN THEOREM**
- 8.MGSR.1.3: Given the Pythagorean Theorem, determine unknown side lengths in right triangles in mathematical and real-world situations.
- 8.MGSR.1.4: Determine if a given set of sides forms a right triangle.
- **THE CONVERSE OF THE PYTHAGOREAN THEOREM**
- 8.MGSR.1.4: Determine if a given set of sides forms a right triangle.
- **DISTANCE ON THE COORDINATE PLANE**
- 8.MGSR.1.2: Find the distance between any two points in the coordinate plane using the Pythagorean Theorem.

Unit 7: Transformations, Congruence, and Similarity

- **BASICS OF TRANSFORMATIONS**
- 8.MGSR.3.5: Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin in a coordinate plane.

- **TRANSFORMATIONS AND CONGRUENCE**

- 8.MGSR.2.2: Determine if two-dimensional figures are congruent or similar.
- 8.MGSR.2.3: Identify the congruent corresponding angles of similar polygons.
- 8.MGSR.2.5: Apply proportional reasoning to find the missing side lengths of two similar figures.
- 8.MGSR.3.2: Identify congruent angles and congruent line segments of a preimage and its image.
- 8.MGSR.3.3: Translate geometric figures vertically and/or horizontally.
- 8.MGSR.3.4: Reflect geometric figures with respect to the x -axis and/or y -axis.
- 8.MGSR.3.5: Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin in a coordinate plane.

- **TRANSFORMATION IN THE COORDINATE PLANE**

- 8.MGSR.3.1: Identify the transformation as a rotation, reflection, and/or translation. Limit rotations to multiples of 90 degrees centered on the origin.
- 8.MGSR.3.3: Translate geometric figures vertically and/or horizontally.
- 8.MGSR.3.4: Reflect geometric figures with respect to the x -axis and/or y -axis.
- 8.MGSR.3.5: Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin in a coordinate plane.
- 8.MGSR.3.7: Describe the effect of a series of transformations, including dilations, translations, rotations, and reflections, on two-dimensional figures using coordinates on the coordinate plane.

- **SIMILARITY AND DILATIONS**

- 8.MGSR.2.5: Apply proportional reasoning to find the missing side lengths of two similar figures.
- 8.MGSR.3.6: Create a dilation using a given scale factor and describe the effect of a dilation.

Unit 8: Angles and Angle Relationships

- **PARALLEL LINES AND ANGLE RELATIONSHIPS**

- 8.MGSR.2.1: Determine missing angle measurements created when parallel lines are cut by a transversal.

- **ANGLE RELATIONSHIPS IN TRIANGLES**

- 8.MGSR.2.2: Determine if two-dimensional figures are congruent or similar.
- 8.MGSR.2.4: Discover and apply the Exterior Angle Theorem of triangles to find a missing angle.

Unit 9: Three-Dimensional Geometry

- **VOLUME OF CYLINDERS AND CONES**

- 8.MGSR.1.1: Given the geometric formulas, find the volume of cones, cylinders, and spheres in mathematical and real-world situations.

- **SPHERES**

- 8.MGSR.1.1: Given the geometric formulas, find the volume of cones, cylinders, and spheres in mathematical and real-world situations.

Unit 10: Data and Statistics

- **VISUALLY COMPARING DATA SETS**

- 8.DPSR.1.2: Draw inferences about data sets from two populations using the shape of the distribution, measures of center, and measures of variability. Limit measures to mean, median, mode, range, mean absolute deviation, and interquartile range.

- **DATA ANALYSIS**

- 8.DPSR.1.4: For two data sets (numerical or graphical), compare and interpret the centers, spreads, and overlap of data to draw inferences about data in mathematical and real-world situations. Limit displays to double line graphs, back-to-back stem-and-leaf plots, and double box plots.

- **SCATTERPLOTS**

- 8.DPSR.1.1: Create and analyze scatter plots to represent numerical data sets in mathematical and real-world situations.

Unit 11: Probability

- **PROBABILITY OF COMPOUND EVENTS**

- 8.DPSR.2.1: Determine the sample space for a compound event.

- **CONDITIONAL PROBABILITY**

- 8.DPSR.2.2: Calculate and interpret the probability of compound independent and dependent events.