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.

1. THE NUMBER SYSTEM

- **RATIONAL AND IRRATIONAL NUMBERS**
  - **8.NS.1.a** *Recognize the differences between rational and irrational numbers.*
  - **8.NS.1.b** *Understand that all real numbers have a decimal expansion.*
  - **8.NS.1.c** *Model the hierarchy of the real number system, including natural, whole, integer, rational, and irrational numbers.*
  - **8.NS.3** *Extend prior knowledge to translate among multiple representations of rational numbers (fractions, decimal numbers, percentages). Include the conversion of repeating decimal numbers to fractions.*

- **APPROXIMATING IRRATIONAL NUMBERS**
  - **8.NS.1.b** *Understand that all real numbers have a decimal expansion.*
  - **8.NS.2** *Estimate and compare the value of irrational numbers by plotting them on a number line.*
  - **8.EEI.2.d** *Recognize that square roots of non-perfect squares are irrational.*
  - **8.NS.1.a** *Recognize the differences between rational and irrational numbers.*
  - **8.NS.1.c** *Model the hierarchy of the real number system, including natural, whole, integer, rational, and irrational numbers.*

2. EXPONENTS

- **PROPERTIES OF EXPONENTS**
  - **8.EEI.1** *Understand and apply the laws of exponents (i.e. product rule, quotient rule, power to a power, product to a power, quotient to a power, zero power property, negative exponents) to simplify numerical expressions that include integer exponents.*

- **POWERS OF 10**
  - **8.EEI.3.a** *Express very large and very small quantities in scientific notation in the form a x 10 to the b power = p where 1 ≤ a < 10 and b is an integer.*
  - **8.EEI.3.b** *Translate between decimal notation and scientific notation.*
  - **8.EEI.3.c** *Estimate and compare the relative size of two quantities in scientific notation.*
  - **8.EEI.4.a** *Multiply and divide numbers expressed in both decimal and scientific notation.*
  - **8.EEI.4.b** *Select appropriate units of measure when representing answers in scientific notation.*

- **8.EEI.4.c** *Translate how different technological devices display numbers in scientific notation.*

- **SCIENTIFIC NOTATION**
  - **8.EEI.3.a** *Express very large and very small quantities in scientific notation in the form a x 10 to the b power = p where 1 ≤ a < 10 and b is an integer.*
  - **8.EEI.3.b** *Translate between decimal notation and scientific notation.*
  - **8.EEI.4.c** *Translate how different technological devices display numbers in scientific notation.*
  - **8.EEI.4.a** *Multiply and divide numbers expressed in both decimal and scientific notation.*
  - **8.EEI.4.b** *Select appropriate units of measure when representing answers in scientific notation.*

3. PROPORTIONAL REASONING AND SLOPE

- **SLOPE**
  - **8.F.4.a** *Understand that the slope is the constant rate of change and the y- intercept is the point where x = 0.*
  - **8.F.4.b** *Determine the slope and the y-intercept of a linear function given multiple representations, including two points, tables, graphs, equations, and verbal descriptions.*
  - **8.F.4.d** *Interpret the meaning of the slope and the y - intercept of a linear function in the context of the situation.*
  - **8.EEI.5.b** *Interpret unit rate as the slope of the graph.*
  - **8.EEI.6.a** *Explain why the slope, m, is the same between any two distinct points on a non-vertical line using similar triangles.*
  - **8.F.3.a** *Define an equation in slope-intercept form (y = mx + b) as being a linear function.*
  - **8.F.4.c** *Construct a function in slope-intercept form that models a linear relationship between two quantities.*
  - **8.EEI.6.b** *Derive the slope-intercept form (y = mx + b) for a non-vertical line.*
  - **8.EEI.7.c** *Generate linear equations with the three types of solutions.*
  - **8.EEI.6.c** *Relate equations for proportional relationships (y = kx) with the slope-intercept form (y = mx + b) where b = 0.*

- **MULTIPLE REPRESENTATIONS OF PROPORTIONS**
  - **8.EEI.5.a** *Graph proportional relationships.*
  - **8.EEI.5.b** *Interpret unit rate as the slope of the graph.*
  - **8.F.1.c** *Translate among the multiple representations of a function, including mappings, tables, graphs, equations, and verbal descriptions.*
  - **8.F.4.b** *Determine the slope and the y-intercept of a linear function given multiple representations, including two points, tables, graphs, equations, and verbal descriptions.*
  - **8.F.4.d** *Interpret the meaning of the slope and the y - intercept of a linear function in the context of the situation.*
  - **8.F.5.b** *Sketch the graph of a function from a verbal description.*
  - **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*
  - **8.EEI.5.c** *Compare two different proportional relationships given multiple representations, including tables, graphs, equations, diagrams, and verbal descriptions.*

4. FUNCTIONS

- **RELATIONS AND FUNCTIONS**
  - **8.F.1.a** *Understand that a function assigns to each input exactly one output.*
  - **8.F.1.b** *Relate inputs (x- values or domain) and outputs (y- values or range) to independent and dependent variables.*
  - **8.F.1.d** *Determine if a relation is a function using multiple representations, including mappings, tables, graphs, equations, and verbal descriptions.*
  - **8.F.1.c** *Translate among the multiple representations of a function, including mappings, tables, graphs, equations, and verbal descriptions.*
  - **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*
  - **8.F.1.e** *Graph a function from a table of values. Understand that the graph and table both represent a set of ordered pairs of that function.*
  - **8.F.5.a** *Analyze and describe attributes of graphs of functions (e.g., constant, increasing/decreasing, linear/nonlinear, maximum/minimum, discrete/continuous).*

- **COMPARING FUNCTIONS**
  - **8.F.1.c** *Translate among the multiple representations of a function, including mappings, tables, graphs, equations, and verbal descriptions.*
  - **8.F.2** *Compare multiple representations of two functions, including mappings, tables, graphs, equations, and verbal descriptions, in order to draw conclusions.*
  - **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*
  - **8.F.4.a** *Understand that the slope is the constant rate of change and the y- intercept is the point where x = 0.*
  - **8.EEI.5.b** *Interpret unit rate as the slope of the graph.*
  - **8.EEI.6.a** *Explain why the slope, m, is the same between any two distinct points on a non-vertical line using similar triangles.*

- **GRAPHS OF FUNCTIONS**
  - **8.F.3.c** *Provide examples of nonlinear functions.*
  - **8.F.5.a** *Analyze and describe attributes of graphs of functions (e.g., constant, increasing/decreasing, linear/nonlinear, maximum/minimum, discrete/continuous).*
  - **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*
  - **8.F.3.b** *Recognize that the graph of a linear function has a constant rate of change.*
  - **8.F.4.b** *Determine the slope and the y-intercept of a linear function given multiple representations, including two points, tables, graphs, equations, and verbal descriptions.*
  - **8.F.5.b** *Sketch the graph of a function from a verbal description.*
  - **8.F.1.c** *Translate among the multiple representations of a function, including mappings, tables, graphs, equations, and verbal descriptions.*
  - **8.F.1.e** *Graph a function from a table of values. Understand that the graph and table both represent a set of ordered pairs of that function.*

5. LINEAR FUNCTIONS

- **SLOPE-INTERCEPT FORM**
  - **8.F.1.c** *Translate among the multiple representations of a function, including mappings, tables, graphs, equations, and verbal descriptions.*
  - **8.F.3.a** *Define an equation in slope-intercept form (y = mx + b) as being a linear function.*
  - **8.F.4.a** *Understand that the slope is the constant rate of change and the y- intercept is the point where x = 0.*
  - **8.F.4.b** *Determine the slope and the y-intercept of a linear function given multiple representations, including two points, tables, graphs, equations, and verbal descriptions.*
  - **8.F.4.c** *Construct a function in slope-intercept form that models a linear relationship between two quantities.*
  - **8.F.4.d** *Interpret the meaning of the slope and the y - intercept of a linear function in the context of the situation.*
  - **8.EEI.6.a** *Explain why the slope, m, is the same between any two distinct points on a non-vertical line using similar triangles.*
  - **8.EEI.6.b** *Derive the slope-intercept form (y = mx + b) for a non-vertical line.*
  - **8.F.3.b** *Recognize that the graph of a linear function has a constant rate of change.*
  - **8.F.3.c** *Provide examples of nonlinear functions.*
  - **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*

- **WRITING LINEAR FUNCTIONS**
  - **8.F.1.c** *Translate among the multiple representations of a function, including mappings, tables, graphs, equations, and verbal descriptions.*
  - **8.F.4.a** *Understand that the slope is the constant rate of change and the y- intercept is the point where x = 0.*
  - **8.F.4.b** *Determine the slope and the y-intercept of a linear function given multiple representations, including two points, tables, graphs, equations, and verbal descriptions.*
  - **8.F.4.d** *Interpret the meaning of the slope and the y - intercept of a linear function in the context of the situation.*
  - **8.EEI.5.b** *Interpret unit rate as the slope of the graph.*
  - **8.EEI.6.a** *Explain why the slope, m, is the same between any two distinct points on a non-vertical line using similar triangles.*
  - **8.F.1.e** *Graph a function from a table of values. Understand that the graph and table both represent a set of ordered pairs of that function.*
  - **8.F.4.c** *Construct a function in slope-intercept form that models a linear relationship between two quantities.*

- **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*

6. SOLVING EQUATIONS

SOLVING LINEAR EQUATIONS

- **8.EEI.7.b** *Recognize the three types of solutions to linear equations: one solution (x = a), infinitely many solutions (a = a), or no solutions (a = b).*
- **8.EEI.7.d** *Justify why linear equations have a specific type of solution.*
- **8.EEI.7.a** *Solve linear equations and inequalities with rational number coefficients that include the use of the distributive property, combining like terms, and variables on both sides.*
- **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*
- **8.EEI.7.c** *Generate linear equations with the three types of solutions.*
- **8.EEI.8.c** *Solve systems of linear equations algebraically, including methods of substitution and elimination, or through inspection.*

SOLVING SYSTEMS OF LINEAR EQUATIONS

- **8.EEI.8.a** *Graph systems of linear equations and estimate their point of intersection.*
- **8.EEI.8.b** *Understand and verify that a solution to a system of linear equations is represented on a graph as the point of intersection of the two lines.*
- **8.EEI.8.c** *Solve systems of linear equations algebraically, including methods of substitution and elimination, or through inspection.*
- **8.EEI.8.d** *Understand that systems of linear equations can have one solution, no solution, or infinitely many solutions.*
- **8.F.5.c** *Write a verbal description from the graph of a function with and without scales.*
- **8.EEI.7.c** *Generate linear equations with the three types of solutions.*

SOLVING EQUATIONS USING ROOTS

- **8.EEI.2.b** *Evaluate square roots of perfect squares.*
- **8.EEI.2.c** *Evaluate cube roots of perfect cubes.*
- **8.EEI.2.a** *Find the exact and approximate solutions to equations of the form $x^2 = p$ and $x^3 = p$ where p is a positive rational number.*

7. THE PYTHAGOREAN THEOREM AND DISTANCE FORMULA

THE PYTHAGOREAN THEOREM

- **8.GM.6** *Use models to demonstrate a proof of the Pythagorean Theorem and its converse.*
- **8.GM.7** *Apply the Pythagorean Theorem to model and solve real-world and mathematical problems in two and three dimensions involving right triangles.*

THE CONVERSE OF THE PYTHAGOREAN THEOREM

- **8.GM.6** *Use models to demonstrate a proof of the Pythagorean Theorem and its converse.*
- **8.GM.7** *Apply the Pythagorean Theorem to model and solve real-world and mathematical problems in two and three dimensions involving right triangles.*

DISTANCE ON THE COORDINATE PLANE

- **8.GM.8** *Find the distance between any two points in the coordinate plane using the Pythagorean Theorem.*

8. THREE-DIMENSIONAL GEOMETRY

VOLUME OF CYLINDERS AND CONES

- **8.GM.9** *Solve real-world and mathematical problems involving volumes of cones, cylinders, and spheres and the surface area of cylinders.*

- **SPHERES**
  - **8.GM.9** *Solve real-world and mathematical problems involving volumes of cones, cylinders, and spheres and the surface area of cylinders.*

9. TRANSFORMATIONS, CONGRUENCE, AND SIMILARITY

- **BASICS OF TRANSFORMATIONS**
  - **8.GM.2.c** *Translate geometric figures vertically and/or horizontally.*
  - **8.GM.1.b** *Verify that corresponding angles are congruent.*
  - **8.GM.4.b** *Recognize that two-dimensional figures are only similar if a series of transformations can be performed to map the pre-image to the image.*
  - **8.GM.4.c** *Given two similar figures, describe the series of transformations that justifies this similarity.*
  - **8.GM.4.d** *Use proportional reasoning to find the missing side lengths of two similar figures.*
  - **8.GM.1.c** *Verify that corresponding line segments are congruent.*
  - **8.GM.1.a** *Verify that lines are mapped to lines, including parallel lines.*
  - **8.GM.2.a** *Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin.*
  - **8.GM.2.b** *Reflect geometric figures with respect to the x - axis and/or y - axis.*
  - **8.GM.3.a** *Use coordinate geometry to describe the effect of transformations on two-dimensional figures.*

- **TRANSFORMATIONS AND CONGRUENCE**
  - **8.GM.2.a** *Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin.*
  - **8.GM.2.b** *Reflect geometric figures with respect to the x - axis and/or y - axis.*
  - **8.GM.2.c** *Translate geometric figures vertically and/or horizontally.*
  - **8.GM.3.a** *Use coordinate geometry to describe the effect of transformations on two-dimensional figures.*
  - **8.GM.1.b** *Verify that corresponding angles are congruent.*
  - **8.GM.2.d** *Recognize that two-dimensional figures are only congruent if a series of rigid transformations can be performed to map the pre-image to the image.*
  - **8.GM.2.e** *Given two congruent figures, describe the series of rigid transformations that justifies this congruence.*

- **TRANSFORMATIONS ON THE COORDINATE PLANE**
  - **8.GM.2.b** *Reflect geometric figures with respect to the x - axis and/or y - axis.*
  - **8.GM.3.a** *Use coordinate geometry to describe the effect of transformations on two-dimensional figures.*
  - **8.GM.2.a** *Rotate geometric figures 90, 180, and 270 degrees, both clockwise and counterclockwise, about the origin.*
  - **8.GM.2.c** *Translate geometric figures vertically and/or horizontally.*
  - **8.GM.4.b** *Recognize that two-dimensional figures are only similar if a series of transformations can be performed to map the pre-image to the image.*
  - **8.GM.4.c** *Given two similar figures, describe the series of transformations that justifies this similarity.*
  - **8.GM.3.b** *Relate scale drawings to dilations of geometric figures.*
  - **8.GM.4.a** *Dilate geometric figures using scale factors that are positive rational numbers.*

- **SIMILARITY AND DILATIONS**
  - **8.GM.4.d** *Use proportional reasoning to find the missing side lengths of two similar figures.*
  - **8.GM.5.d** *Recognize that two similar figures have congruent corresponding angles.*
  - **8.GM.4.a** *Dilate geometric figures using scale factors that are positive rational numbers.*
  - **8.GM.4.b** *Recognize that two-dimensional figures are only similar if a series of transformations can be performed to map the pre-image to the image.*
  - **8.GM.4.c** *Given two similar figures, describe the series of transformations that justifies this similarity.*
  - **8.GM.7** *Apply the Pythagorean Theorem to model and solve real-world and mathematical problems in two and three dimensions involving right triangles.*

10. ANGLES AND ANGLE RELATIONSHIPS

- **PARALLEL LINES AND ANGLE RELATIONSHIPS**
  - **8.GM.5.c** *Identify congruent and supplementary pairs of angles when two parallel lines are cut by a transversal.*

- **ANGLE RELATIONSHIPS IN TRIANGLES**
  - **8.GM.5.a** *Discover that the sum of the three angles in a triangle is 180 degrees.*
  - **8.GM.5.b** *Discover and use the relationship between interior and exterior angles of a triangle.*

11. DATA AND STATISTICS

- **SCATTERPLOTS**
  - **8.DSP.1.b** *Graph the bivariate data on a scatter plot.*
  - **8.DSP.1.c** *Describe patterns observed on a scatter plot, including clustering, outliers, and association (positive, negative, no correlation, linear, nonlinear).*

- **LINEAR MODELS IN DATA**
  - **8.DSP.1.b** *Graph the bivariate data on a scatter plot.*
  - **8.DSP.1.c** *Describe patterns observed on a scatter plot, including clustering, outliers, and association (positive, negative, no correlation, linear, nonlinear).*
  - **8.DSP.2** *Draw an approximate line of best fit on a scatter plot that appears to have a linear association and informally assess the fit of the line to the data points.*
  - **8.DSP.3.a** *Find an approximate equation for the line of best fit using two appropriate data points.*
  - **8.F.3.a** *Define an equation in slope-intercept form ($y = mx + b$) as being a linear function.*
  - **8.F.4.a** *Understand that the slope is the constant rate of change and the y- intercept is the point where $x = 0$.*
  - **8.F.4.b** *Determine the slope and the y-intercept of a linear function given multiple representations, including two points, tables, graphs, equations, and verbal descriptions.*
  - **8.F.4.c** *Construct a function in slope-intercept form that models a linear relationship between two quantities.*
  - **8.F.4.d** *Interpret the meaning of the slope and the y - intercept of a linear function in the context of the situation.*
  - **8.EEI.5.b** *Interpret unit rate as the slope of the graph.*
  - **8.EEI.6.a** *Explain why the slope, m, is the same between any two distinct points on a non-vertical line using similar triangles.*
  - **8.DSP.3.b** *Interpret the slope and intercept.*
  - **8.DSP.3.c** *Solve problems using the equation.*

- **FREQUENCY TABLES**
  - **8.DSP.4.b** *Interpret data in two-way tables using relative frequencies.*
  - **8.DSP.4.c** *Explore patterns of possible association between the two categorical variables.*
  - **8.DSP.4.a** *Organize bivariate categorical data in a two-way table.*