Virginia Tutorials are developed specifically for the Virginia Standards of Learning to help prepare your students for the Standards of Learning Tests.

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. NUMBER SENSE

- **SOLVING PERCENT PROBLEMS**
  - **CE.8.4** *The student will solve practical problems involving consumer applications.*

- **APPROXIMATING IRRATIONAL NUMBERS**
  - **NS.8.1** *The student will compare and order real numbers.*
  - **NS.8.3.a** *estimate and determine the two consecutive integers between which a square root lies; and*
  - **NS.8.2** *The student will describe the relationships between the subsets of the real number system.*

2. ALGEBRAIC EXPRESSIONS

- **EVALUATING EXPRESSIONS**
  - **PFA.8.14.a** *evaluate an algebraic expression for given replacement values of the variables; and*

- **SIMPLIFYING AND REWRITING ALGEBRAIC EXPRESSIONS**
  - **PFA.8.14.b** *simplify algebraic expressions in one variable.*

3. EQUATIONS AND INEQUALITIES

- **AXIOMS OF EQUALITY**
  - **PFA.8.17** *The student will solve multistep linear equations in one variable with the variable on one or both sides of the equation, including practical problems that require the solution of a multistep linear equation in one variable.*

- **SOLVING LINEAR INEQUALITIES**
  - **PFA.8.18** *The student will solve multistep linear inequalities in one variable with the variable on one or both sides of the inequality symbol, including practical problems, and graph the solution on a number line.*

- **MULTI-STEP EQUATIONS AND INEQUALITIES**

- **PFA.8.17** *The student will solve multistep linear equations in one variable with the variable on one or both sides of the equation, including practical problems that require the solution of a multistep linear equation in one variable.*
- **PFA.8.18** *The student will solve multistep linear inequalities in one variable with the variable on one or both sides of the inequality symbol, including practical problems, and graph the solution on a number line.*

4. LINEAR EQUATIONS

- **SLOPE**
  - **PFA.8.16.a** *recognize and describe the graph of a linear function with a slope that is positive, negative, or zero;*
  - **PFA.8.16.b** *identify the slope and y-intercept of a linear function, given a table of values, a graph, or an equation in y = mx + b form;*

- **SLOPE-INTERCEPT FORM**
  - **PFA.8.16.a** *recognize and describe the graph of a linear function with a slope that is positive, negative, or zero;*
  - **PFA.8.16.b** *identify the slope and y-intercept of a linear function, given a table of values, a graph, or an equation in y = mx + b form;*
  - **PFA.8.16.d** *graph a linear function given the equation in y = mx + b form; and*
  - **PFA.8.16.e** *make connections between and among representations of a linear function using verbal descriptions, tables, equations, and graphs.*

5. FUNCTIONS

- **FUNCTIONS AND RELATIONS**
  - **PFA.8.15.a** *determine whether a given relation is a function; and*

- **INDEPENDENT AND DEPENDENT VARIABLES**
  - **PFA.8.16.c** *determine the independent and dependent variable, given a practical situation modeled by a linear function;*

- **WRITING LINEAR FUNCTIONS**
  - **PFA.8.16.a** *recognize and describe the graph of a linear function with a slope that is positive, negative, or zero;*
  - **PFA.8.16.b** *identify the slope and y-intercept of a linear function, given a table of values, a graph, or an equation in y = mx + b form;*
  - **PFA.8.16.d** *graph a linear function given the equation in y = mx + b form; and*
  - **PFA.8.16.e** *make connections between and among representations of a linear function using verbal descriptions, tables, equations, and graphs.*

6. THE PYTHAGOREAN THEOREM AND DISTANCE FORMULA

- **THE PYTHAGOREAN THEOREM**
  - **MG.8.9.a** *verify the Pythagorean Theorem; and*
  - **MG.8.9.b** *apply the Pythagorean Theorem.*

- **THE CONVERSE OF THE PYTHAGOREAN THEOREM**
  - **MG.8.9.a** *verify the Pythagorean Theorem; and*
  - **MG.8.9.b** *apply the Pythagorean Theorem.*

7. TWO-DIMENSIONAL GEOMETRY

- **ANGLE RELATIONSHIPS**
  - **MG.8.5** *The student will use the relationships among pairs of angles that are vertical angles, adjacent angles, supplementary angles, and complementary angles to determine the measure of unknown angles.*

- **BASICS OF TRANSFORMATIONS**
  - **MG.8.7.a** *given a polygon, apply transformations, to include translations, reflections, and dilations, in the coordinate plane; and*
  - **MG.8.7.b** *identify practical applications of transformations.*

- **TRANSFORMATIONS ON THE COORDINATE PLANE**
  - **MG.8.7.a** *given a polygon, apply transformations, to include translations, reflections, and dilations, in the coordinate plane; and*

8. AREA AND VOLUME

- **AREA**
  - **MG.8.10** *The student will solve area and perimeter problems, including practical problems, involving composite plane figures.*

- **AREA, VOLUME, AND SURFACE AREA**
  - **MG.8.6.a** *solve problems, including practical problems, involving volume and surface area of cones and square-based pyramids; and*

- **VOLUME OF CYLINDERS AND CONES**
  - **MG.8.6.a** *solve problems, including practical problems, involving volume and surface area of cones and square-based pyramids; and*

9. DATA AND STATISTICS

- **BOX PLOTS**
  - **PS.8.12.a** *represent numerical data in boxplots;*
  - **PS.8.12.b** *make observations and inferences about data represented in boxplots; and*

- **SCATTERPLOTS**
  - **PS.8.13.a** *represent data in scatterplots;*
  - **PS.8.13.b** *make observations about data represented in scatterplots; and*

- **LINEAR MODELS IN DATA**
  - **PS.8.13.a** *represent data in scatterplots;*
  - **PS.8.13.b** *make observations about data represented in scatterplots; and*
  - **PS.8.13.c** *use a drawing to estimate the line of best fit for data represented in a scatterplot.*
  - **PFA.8.16.a** *recognize and describe the graph of a linear function with a slope that is positive, negative, or zero;*
  - **PFA.8.16.b** *identify the slope and y-intercept of a linear function, given a table of values, a graph, or an equation in y = mx + b form;*
  - **PFA.8.16.d** *graph a linear function given the equation in y = mx + b form; and*