Tutorials are designed specifically for the Virginia Standards of Learning to prepare 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.

Unit 1: Expressions, Equations, and Inequalities

- **LAWS OF EXPONENTS**
  - EO.A.2.a: Expressions and Operations The student will perform operations on polynomials, including applying the laws of exponents to perform operations on expressions;
  - EO.A.3.a: Expressions and Operations The student will simplify square roots of whole numbers and monomial algebraic expressions;
  - EO.A.3.b: Expressions and Operations The student will simplify cube roots of integers; and
  - EO.A.3.c: Expressions and Operations The student will simplify numerical expressions containing square or cube roots.
- **FORMULATING AND SIMPLIFYING ALGEBRAIC EXPRESSIONS**
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - EO.A.1.b: Expressions and Operations The student will evaluate algebraic expressions for given replacement values of the variables.
- **AXIOMS OF EQUALITY**
  - EI.A.4.a: Equations and Inequalities The student will solve multistep linear equations in one variable algebraically;

Unit 2: One-Variable and Literal Equations

- **MULTI-STEP EQUATIONS AND INEQUALITIES**
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - EI.A.5.c: Equations and Inequalities The student will solve practical problems involving inequalities; and
  - EI.A.4.a: Equations and Inequalities The student will solve multistep linear equations in one variable algebraically;
  - EI.A.4.e: Equations and Inequalities The student will solve practical problems involving equations and systems of equations.
  - EI.A.5.a: Equations and Inequalities The student will solve multistep linear inequalities in one variable algebraically and represent the solution graphically;
- **LITERAL EQUATIONS**
  - EI.A.4.c: Equations and Inequalities The student will solve literal equations for a specified variable;
  - EO.A.3.a: Expressions and Operations The student will simplify square roots of whole numbers and monomial algebraic expressions;

Unit 3: Functions

- **FUNCTIONS AND RELATIONS**
  - F.A.7.a: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including determining whether a relation is a function;
- **MULTIPLE REPRESENTATIONS OF FUNCTIONS**
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - F.A.7.f: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including connections between and among multiple representations of functions using verbal descriptions, tables, equations, and graphs.

Unit 4: Domain and Range

- **DOMAIN AND RANGE**
  - F.A.7.b: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including domain and range;
- **EVALUATING FUNCTIONS**

- EO.A.1.b: Expressions and Operations The student will evaluate algebraic expressions for given replacement values of the variables.
- F.A.7.e: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including values of a function for elements in its domain; and

Unit 5: Graphs of Linear Functions

- **SLOPE**
  - EI.A.6.a: Equations and Inequalities The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line;
- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**
  - F.A.7.f: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including connections between and among multiple representations of functions using verbal descriptions, tables, equations, and graphs.
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - F.A.7.b: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including domain and range;
  - EI.A.6.c: Equations and Inequalities The student will graph linear equations in two variables.
  - F.A.7.c: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including zeros;
  - F.A.7.d: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including intercepts;
- **GRAPHING AND MANIPULATING Y = MX + B**
  - EI.A.6.a: Equations and Inequalities The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line;
  - EI.A.6.b: Equations and Inequalities The student will write the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line; and
  - EI.A.6.c: Equations and Inequalities The student will graph linear equations in two variables.
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - F.A.7.d: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including intercepts;
  - S.A.9: Statistics The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical

models of linear and quadratic functions.

Unit 6: Linear Equations

- **SLOPE-INTERCEPT FORM OF A LINEAR EQUATION**
  - EI.A.4.e: Equations and Inequalities The student will solve practical problems involving equations and systems of equations.
  - EI.A.6.a: Equations and Inequalities The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line;
  - EI.A.6.b: Equations and Inequalities The student will write the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line; and
  - F.A.7.d: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including intercepts;
  - S.A.9: Statistics The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.
- **POINT-SLOPE FORM OF A LINEAR EQUATION**
  - EI.A.6.a: Equations and Inequalities The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line;
  - EI.A.6.b: Equations and Inequalities The student will write the equation of a line when given the graph of the line, two points on the line, or the slope and a point on the line; and
  - EI.A.6.c: Equations and Inequalities The student will graph linear equations in two variables.
  - F.A.7.d: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including intercepts;
  - EI.A.4.e: Equations and Inequalities The student will solve practical problems involving equations and systems of equations.

Unit 7: Linear Systems

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**
  - EI.A.4.d: Equations and Inequalities The student will solve systems of two linear equations in two variables algebraically and graphically; and
  - EI.A.4.e: Equations and Inequalities The student will solve practical problems involving equations and systems of equations.
  - EI.A.5.d: Equations and Inequalities The student will represent the solution to a system of inequalities graphically.
  - EI.A.6.c: Equations and Inequalities The student will graph linear equations in two variables.
- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**

- EI.A.4.d: Equations and Inequalities The student will solve systems of two linear equations in two variables algebraically and graphically; and
- EI.A.4.e: Equations and Inequalities The student will solve practical problems involving equations and systems of equations.

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**
  - EI.A.4.d: Equations and Inequalities The student will solve systems of two linear equations in two variables algebraically and graphically; and
  - EI.A.4.e: Equations and Inequalities The student will solve practical problems involving equations and systems of equations.

Unit 8: Inequalities

- **GRAPHS OF LINEAR INEQUALITIES**
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - EI.A.5.a: Equations and Inequalities The student will solve multistep linear inequalities in one variable algebraically and represent the solution graphically;
  - EI.A.5.b: Equations and Inequalities The student will represent the solution of linear inequalities in two variables graphically;
- **SOLVING SYSTEMS OF LINEAR INEQUALITIES**
  - EI.A.5.b: Equations and Inequalities The student will represent the solution of linear inequalities in two variables graphically;
  - EI.A.5.d: Equations and Inequalities The student will represent the solution to a system of inequalities graphically.
  - EI.A.5.a: Equations and Inequalities The student will solve multistep linear inequalities in one variable algebraically and represent the solution graphically;
  - EI.A.5.c: Equations and Inequalities The student will solve practical problems involving inequalities; and

Unit 9: Adding and Subtracting Polynomials

- **POLYNOMIAL BASICS**
  - EO.A.1.b: Expressions and Operations The student will evaluate algebraic expressions for given replacement values of the variables.
  - EO.A.2.b: Expressions and Operations The student will perform operations on polynomials, including adding, subtracting, multiplying, and dividing polynomials; and
- **ADDITION AND SUBTRACTION OF POLYNOMIALS**
  - EO.A.2.b: Expressions and Operations The student will perform operations on polynomials, including adding, subtracting, multiplying, and dividing polynomials; and

Unit 10: Multiplying and Dividing Polynomials

- **MULTIPLICATION OF POLYNOMIALS**
  - EO.A.2.b: Expressions and Operations The student will perform operations on polynomials, including adding, subtracting, multiplying, and dividing polynomials; and
- **DIVISION OF POLYNOMIALS**
  - EO.A.2.b: Expressions and Operations The student will perform operations on polynomials, including adding, subtracting, multiplying, and dividing polynomials; and

Unit 11: Factoring

- **FACTORING QUADRATIC TRINOMIALS**
  - EO.A.2.c: Expressions and Operations The student will perform operations on polynomials, including factoring completely first- and second-degree binomials and trinomials in one variable.
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
- **FACTORING SPECIAL CASES**
  - EO.A.2.c: Expressions and Operations The student will perform operations on polynomials, including factoring completely first- and second-degree binomials and trinomials in one variable.

Unit 12: Solving Quadratic Equations

- **SOLVING QUADRATIC FUNCTIONS BY FACTORING**
  - EI.A.4.b: Equations and Inequalities The student will solve quadratic equations in one variable algebraically;
  - F.A.7.c: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including zeros;
  - EO.A.2.c: Expressions and Operations The student will perform operations on polynomials, including factoring completely first- and second-degree binomials and trinomials in one variable.
- **QUADRATIC FORMULA**
  - F.A.7.f: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including connections between and among multiple representations of functions using verbal descriptions, tables, equations, and graphs.
  - EI.A.4.b: Equations and Inequalities The student will solve quadratic equations in one variable algebraically;
  - EO.A.3.a: Expressions and Operations The student will simplify square roots of whole numbers and monomial algebraic expressions;

- F.A.7.c: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including zeros;

Unit 13: Quadratic Functions

- **QUADRATIC FUNCTIONS**
  - F.A.7.c: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including zeros;
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - EI.A.4.b: Equations and Inequalities The student will solve quadratic equations in one variable algebraically;
  - S.A.9: Statistics The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.
- **ANALYZING GRAPHS OF QUADRATIC FUNCTIONS**
  - F.A.7.f: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including connections between and among multiple representations of functions using verbal descriptions, tables, equations, and graphs.
  - F.A.7.b: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including domain and range;
  - F.A.7.d: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including intercepts;
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - S.A.9: Statistics The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.
  - F.A.7.c: Functions The student will investigate and analyze linear and quadratic function families and their characteristics both algebraically and graphically, including zeros;

Unit 14: Direct and Inverse Variation

- **DIRECT VARIATION**
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and
  - S.A.8: Statistics The student, given a data set or practical situation, will analyze a relation to determine whether a direct or inverse variation exists, and represent a direct variation algebraically and graphically and an inverse variation algebraically.

- EI.A.6.a: Equations and Inequalities The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line;

- **INVERSE VARIATION**
  - S.A.8: Statistics The student, given a data set or practical situation, will analyze a relation to determine whether a direct or inverse variation exists, and represent a direct variation algebraically and graphically and an inverse variation algebraically.
- **MODELING SITUATIONS WITH DIRECT AND INVERSE VARIATION**
  - S.A.8: Statistics The student, given a data set or practical situation, will analyze a relation to determine whether a direct or inverse variation exists, and represent a direct variation algebraically and graphically and an inverse variation algebraically.
  - EO.A.1.a: Expressions and Operations The student will represent verbal quantitative situations algebraically; and

Unit 15: Statistics

- **DATA ANALYSIS**
  - S.A.9: Statistics The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.
- **SCATTERPLOTS**
  - EI.A.6.a: Equations and Inequalities The student will determine the slope of a line when given an equation of the line, the graph of the line, or two points on the line;
  - S.A.9: Statistics The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.
- **SCATTERPLOTS AND MODELING**
  - S.A.9: Statistics The student will collect and analyze data, determine the equation of the curve of best fit in order to make predictions, and solve practical problems, using mathematical models of linear and quadratic functions.