Keystone Tutorials are designed specifically to prepare students for the Keystone Exams.

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. REAL NUMBERS

- **GREATEST COMMON FACTOR AND LEAST COMMON MULTIPLE**
  - **A1.1.1.2.1** *Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.*
- **APPROXIMATING IRRATIONAL NUMBERS**
  - **A1.1.1.1.1** *Compare and/or order any real numbers.*
- **MONITORING PRECISION AND ACCURACY**
  - **A1.1.1.4.1** *Use estimation to solve problems.*

2. EXPONENTS AND ROOTS

- **LAWS OF EXPONENTS**
  - **A1.1.1.3.1** *Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems.*
  - **A1.1.1.5.3** *Simplify/reduce a rational algebraic expression.*
  - **A1.1.2.1.2** *Use and/or identify an algebraic property to justify any step in an equation-solving process.*
  - **A1.1.1.1.2** *Simplify square roots (e.g., square root of 24 = 2 square root of 6).*
- **SIMPLIFYING SQUARE ROOTS**
  - **A1.1.1.1.2** *Simplify square roots (e.g., square root of 24 = 2 square root of 6).*
  - **A1.1.1.3.1** *Simplify/evaluate expressions involving properties/laws of exponents, roots, and/or absolute values to solve problems.*

3. EXPRESSIONS AND EQUATIONS

- **ONE-STEP EQUATIONS AND INEQUALITIES**
  - **A1.1.3.1.3** *Interpret solutions to problems in the context of the problem situation.*

- **A1.1.2.1.2** *Use and/or identify an algebraic property to justify any step in an equation-solving process.*
- **A1.1.3.1.2** *Identify or graph the solution set to a linear inequality on a number line.*

- **MULTI-STEP EQUATIONS AND INEQUALITIES**
  - **A1.1.2.1.2** *Use and/or identify an algebraic property to justify any step in an equation-solving process.*
  - **A1.1.3.1.3** *Interpret solutions to problems in the context of the problem situation.*
  - **A1.1.3.1.2** *Identify or graph the solution set to a linear inequality on a number line.*

- **AXIOMS OF EQUALITY**
  - **A1.1.2.1.2** *Use and/or identify an algebraic property to justify any step in an equation-solving process.*

4. FUNCTIONS

- **FUNCTIONS AND RELATIONS**
  - **A1.2.1.1.3** *Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).*
  - **A1.2.1.1.2** *Determine whether a relation is a function, given a set of points or a graph.*
  - **A1.2.1.2.1** *Create, interpret, and/or use the equation, graph, or table of a linear function.*

- **DOMAIN AND RANGE**
  - **A1.2.1.1.3** *Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).*

5. GRAPHS OF LINEAR FUNCTIONS

- **SLOPE**
  - **A1.2.2.1.1** *Identify, describe, and/or use constant rates of change.*
  - **A1.2.2.1.4** *Determine the slope and/or y-intercept represented by a linear equation or graph.*
  - **A1.1.2.1.3** *Interpret solutions to problems in the context of the problem situation.*
  - **A1.2.2.1.3.c** *the slope and a point on the line.*
  - **A1.2.2.1.2** *Apply the concept of linear rate of change (slope) to solve problems.*

- **GRAPHING AND ANALYZING LINEAR FUNCTIONS**
  - **A1.2.1.2.1** *Create, interpret, and/or use the equation, graph, or table of a linear function.*
  - **A1.2.1.2.2** *Translate from one representation of a linear function to another (i.e., graph, table, and equation).*
  - **A1.2.1.1.3** *Identify the domain or range of a relation (may be presented as ordered pairs, a graph, or a table).*
  - **A1.1.2.1.1** *Write, solve, and/or apply a linear equation (including problem situations).*
  - **A1.1.2.1.3** *Interpret solutions to problems in the context of the problem situation.*
  - **A1.2.2.1.4** *Determine the slope and/or y-intercept represented by a linear equation or graph.*

- **GRAPHING AND MANIPULATING Y = MX + B**
  - **A1.2.1.2.1** *Create, interpret, and/or use the equation, graph, or table of a linear function.*
  - **A1.2.2.1.3.a** *the graph of the line,*
  - **A1.2.2.1.4** *Determine the slope and/or y-intercept represented by a linear equation or graph.*
  - **A1.2.2.1.2** *Apply the concept of linear rate of change (slope) to solve problems.*
  - **A1.1.2.1.1** *Write, solve, and/or apply a linear equation (including problem situations).*
  - **A1.1.2.1.3** *Interpret solutions to problems in the context of the problem situation.*
  - **A1.2.1.2.2** *Translate from one representation of a linear function to another (i.e., graph, table, and equation).*

6. LINEAR EQUATIONS

- **SLOPE-INTERCEPT FORM OF A LINEAR EQUATION**
  - **A1.2.2.1.2** *Apply the concept of linear rate of change (slope) to solve problems.*
  - **A1.2.2.1.3.c** *the slope and a point on the line.*
  - **A1.2.2.1.4** *Determine the slope and/or y-intercept represented by a linear equation or graph.*
  - **A1.2.1.2.1** *Create, interpret, and/or use the equation, graph, or table of a linear function.*
  - **A1.2.2.1.3.a** *the graph of the line,*
  - **A1.1.2.1.1** *Write, solve, and/or apply a linear equation (including problem situations).*
  - **A1.2.1.2.2** *Translate from one representation of a linear function to another (i.e., graph, table, and equation).*
  - **A1.2.2.1.1** *Identify, describe, and/or use constant rates of change.*
  - **A1.1.2.1.3** *Interpret solutions to problems in the context of the problem situation.*

- **POINT-SLOPE FORM OF A LINEAR EQUATION**
  - **A1.2.1.2.1** *Create, interpret, and/or use the equation, graph, or table of a linear function.*
  - **A1.2.1.2.2** *Translate from one representation of a linear function to another (i.e., graph, table, and equation).*
  - **A1.2.2.1.3.a** *the graph of the line,*
  - **A1.2.2.1.3.c** *the slope and a point on the line.*
  - **A1.2.2.1.4** *Determine the slope and/or y-intercept represented by a linear equation or graph.*
  - **A1.1.2.1.3** *Interpret solutions to problems in the context of the problem situation.*
  - **A1.1.2.2.2** *Interpret solutions to problems in the context of the problem situation.*
  - **A1.1.2.1.1** *Write, solve, and/or apply a linear equation (including problem situations).*
  - **A1.2.2.1.3.b** *two points on the line, or*

7. GRAPHS OF LINEAR SYSTEMS

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: GRAPHING**
  - **A1.1.1.4.1** *Use estimation to solve problems.*
  - **A1.1.2.2.1** *Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination.*
  - **A1.1.2.2.2** *Interpret solutions to problems in the context of the problem situation.*

- **SOLVING SYSTEMS OF LINEAR INEQUALITIES**
  - **A1.1.3.2.1** *Write and/or solve a system of linear inequalities using graphing.*
  - **A1.1.3.2.2** *Interpret solutions to problems in the context of the problem situation.*

8. LINEAR SYSTEMS OF EQUATIONS

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: ELIMINATION**
  - **A1.1.2.2.1** *Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination.*
  - **A1.1.2.2.2** *Interpret solutions to problems in the context of the problem situation.*

- **SOLVING SYSTEMS OF LINEAR EQUATIONS: SUBSTITUTION**
  - **A1.1.2.2.1** *Write and/or solve a system of linear equations (including problem situations) using graphing, substitution, and/or elimination.*
  - **A1.1.2.2.2** *Interpret solutions to problems in the context of the problem situation.*

9. POLYNOMIAL EXPRESSIONS

- **ADDITION AND SUBTRACTION OF POLYNOMIALS**
  - **A1.1.1.5.1** *Add, subtract, and/or multiply polynomial expressions (express answers in simplest form).*

- **MULTIPLICATION OF POLYNOMIALS**
  - **A1.1.1.5.1** *Add, subtract, and/or multiply polynomial expressions (express answers in simplest form).*

10. SEQUENCES

- **SEQUENCES**
  - **A1.2.1.1.1** *Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.*

- **ARITHMETIC AND GEOMETRIC SEQUENCES**
  - **A1.2.1.1.1** *Analyze a set of data for the existence of a pattern and represent the pattern algebraically and/or graphically.*
  - **A1.2.2.1.1** *Identify, describe, and/or use constant rates of change.*

11. FACTORING

- **FACTORING POLYNOMIALS WITH GCF**
  - **A1.1.1.2.1** *Find the Greatest Common Factor (GCF) and/or the Least Common Multiple (LCM) for sets of monomials.*
  - **A1.1.1.5.2** *Factor algebraic expressions, including difference of squares and trinomials.*

- **FACTORING QUADRATIC TRINOMIALS**
  - **A1.1.1.5.2** *Factor algebraic expressions, including difference of squares and trinomials.*

- **FACTORING SPECIAL CASES**
  - **A1.1.1.5.2** *Factor algebraic expressions, including difference of squares and trinomials.*

12. DATA ANALYSIS

- **DOT PLOTS AND HISTOGRAMS**
  - **A1.2.3.2.1** *Estimate or calculate to make predictions based on a circle, line, bar graph, measures of central tendency, or other representations.*

- **DATA ANALYSIS**
  - **A1.2.3.2.2** *Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations).*
  - **A1.2.3.1.1** *Calculate and/or interpret the range, quartiles, and interquartile range of data.*

13. SCATTERPLOTS

- **SCATTERPLOTS**
  - **A1.2.3.2.2** *Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations).*
  - **A1.2.3.2.3** *Make predictions using the equations or graphs of best-fit lines of scatter plots.*
  - **A1.2.2.1.2** *Apply the concept of linear rate of change (slope) to solve problems.*
  - **A1.2.2.2.1** *Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.*

- **SCATTERPLOTS AND MODELING**
  - **A1.2.2.2.1** *Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.*
  - **A1.2.3.2.2** *Analyze data, make predictions, and/or answer questions based on displayed data (box-and-whisker plots, stem-and-leaf plots, scatter plots, measures of central tendency, or other representations).*
  - **A1.2.3.2.3** *Make predictions using the equations or graphs of best-fit lines of scatter plots.*

14. PROBABILITY

- **PROBABILITY OF COMPOUND EVENTS**
  - **A1.2.3.3.1** *Find probabilities for compound events (e.g., find probability of red and blue, find probability of red or blue) and represent as a fraction, decimal, or percent.*