

Bridge Math is a fourth year math course focused on reinforcing core concepts from Algebra I, Geometry and Algebra II. Bridge Math is intended for students who need to review concepts before continuing their studies. It starts with a review of algebraic concepts before moving on to a variety of key algebraic, geometric, statistical, and probability concepts. Course topics include rational and irrational numbers, systems of linear equations, quadratic functions, exponential functions, triangles, coordinate geometry, solid geometry, conditional probability, independence, data analysis, scatterplots, and linear and non-linear models of data.

Throughout the course, students hone their computational skills and extend their knowledge through problem solving and real-world applications. Within each Bridge Math lesson, students are supplied with scaffolded note-taking study guides and are given ample opportunity to practice computations in low-stakes Checkup activities before moving on to formal assessment. Additionally, students will have the opportunity to formulate and justify conclusions as they extend and apply concepts through printable exercises and "in-your-own-words" interactive activities.

The course is built to state standards, including Tennessee's Bridge Math standards.

Length: Two Semesters

## UNIT 1: FOUNDATIONS OF ALGEBRA

### LESSON 1: RATIONAL AND IRRATIONAL NUMBERS

#### Study: Rational and Irrational Numbers

Learn about different types of real numbers, including rational and irrational numbers. Investigate sums and products of rational and irrational numbers.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Rational and Irrational Numbers

Take a quiz to assess your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 2: SOLVING LINEAR EQUATIONS

#### Study: Solving Linear Equations

Review how to isolate the variable and solve simple equations with addition, subtraction, multiplication and division.

Duration: 0 hrs 45 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Solving Linear Equations

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

### LESSON 3: SOLVING MULTISTEP LINEAR EQUATIONS

#### Study: Solving Multistep Linear Equations

Solve multistep equations, including equations that have no solutions, one solution, or an infinite number of solutions.

Write and solve equations that model real-world situations.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Solving Multistep Linear Equations**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

**Practice: Modeling: Multistep Linear Equations**

Model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

**LESSON 4: SOLVING LINEAR INEQUALITIES****Study: Solving Linear Inequalities**

Solve multistep inequalities, including those that involve collecting like terms.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Solving Linear Inequalities**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

**LESSON 5: LITERAL EQUATIONS****Study: Literal Equations**

Learn how to solve literal equations, including formulas, for a particular variable.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Literal Equations**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

**LESSON 6: MEASUREMENT AND UNITS****Study: Measurement and Units**

Explore the ideas of precision and accuracy in measurement. Solve problems involving a single unit conversion and those requiring multiple conversions.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Measurement and Units**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

**Journal: Measurement and Units**

Construct arguments and critique the reasoning of others as you write about topics in algebra.

Duration: 0 hrs 30 mins Scoring: 20 points

**LESSON 7: PERFORMANCE TASK: PROBLEM SOLVING WITH INEQUALITIES****Study: Problem Solving with Inequalities**

Learn strategies for solving a variety of application problems related to topics in this unit.

Duration: 0 hrs 45 mins Scoring: 0 points

### **Project: Performance Task: A Trade Show Booth**

Use your knowledge, skills, and resources to make sense of and persevere in solving a real-world problem.

Duration: 2 hrs Scoring: 80 points

## **LESSON 8: FOUNDATIONS OF ALGEBRA WRAP-UP**

### **Review: Foundations of Algebra Practice Problems**

Check your understanding of the topics in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

### **Discuss: In Your Own Words**

Join a three- to five-question discussion to practice methods learned in this unit.

Duration: 0 hrs 40 mins Scoring: 20 points

### **Test (CS): Foundations of Algebra**

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

### **Test (TS): Foundations of Algebra**

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## **UNIT 2: FUNCTIONS**

### **LESSON 1: WHAT IS A FUNCTION?**

#### **Study: Relating to Functions**

Learn about functions, their graphs, and some special functions.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkup: Practice Problems**

Complete a set of practice problems on functions.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: What Is a Function?**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 2: GRAPHING FUNCTIONS**

#### **Study: Graphing Functions**

Learn the vertical line and horizontal line tests for evaluating a function. Evaluate a function for given values and explore special functions.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkup: Practice Problems**

Complete a set of practice problems on graphing functions.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Graphing Functions**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 3: SLOPE-INTERCEPT EQUATION OF A LINE**

#### **Study: Slope-Intercept Equation of a Line**

Learn to use the slope and  $y$ -intercept of a line to write its slope-intercept equation. Understand the meaning of the slope and  $y$ -intercept in slope-intercept equations that model real-world situations.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkup: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Slope-Intercept Equation of a Line**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### **Practice: Modeling: Slope-Intercept Equation of a Line**

Model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 4: POINT-SLOPE EQUATION OF A LINE**

### **Study: Point-Slope Equation of a Line**

Write point-slope equations for lines given a point and the slope or two points. Rewrite point-slope equations in slope-intercept form.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkup: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Point-Slope Equation of a Line**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 5: FUNCTIONS WRAP-UP**

### **Review: Practice Problems**

Check your understanding of the unit.

Duration: 0 hrs 30 mins Scoring: 0 points

### **Test (CS): Functions**

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

### **Test (TS): Functions**

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## **UNIT 3: SYSTEMS OF LINEAR EQUATIONS**

### **LESSON 1: TWO-VARIABLE SYSTEMS: GRAPHING**

#### **Study: Two-Variable Systems: Graphing**

Use graphing to solve two-variable systems of linear equations. Explore what it means for a linear system to have no solution, one solution, or an infinite number of solutions.

Duration: 0 hrs 45 mins Scoring: 0 points

#### **Checkup: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Two-Variable Systems: Graphing**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

### **LESSON 2: TWO-VARIABLE SYSTEMS: SUBSTITUTION**

#### **Study: Two-Variable Systems: Substitution**

Use substitution to solve two-variable systems of linear equations.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Two-Variable Systems: Substitution**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

**LESSON 3: TWO-VARIABLE SYSTEMS: ELIMINATION****Study: Two-Variable Systems: Elimination**

Use elimination to solve two-variable systems of linear equations.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Two-Variable Systems: Elimination**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 25 mins Scoring: 20 points

**Journal: Two-Variable Systems: Elimination**

Construct arguments and critique the reasoning of others as you write about topics in algebra.

Duration: 0 hrs 30 mins Scoring: 20 points

**LESSON 4: SYSTEMS OF LINEAR EQUATIONS WRAP-UP****Review: Systems of Linear Equations Practice Problems**

Check your understanding of the topics in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

**Discuss: What's the Solution?**

Join a three- to five-question discussion to practice methods learned in this unit.

Duration: 0 hrs 40 mins Scoring: 20 points

**Test (CS): Systems of Linear Equations**

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

**Test (TS): Systems of Linear Equations**

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

**UNIT 4: QUADRATIC FUNCTIONS****LESSON 1: FACTORING  $x^2 + bx + c$** **Study: Factoring  $x^2 + bx + c$** 

Learn about factoring quadratic trinomials with leading coefficients of 1; rules for finding the constant term and coefficient of the  $x$ -term; using a table to factor trinomials; and diagramming signs while factoring trinomials.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Factoring Trinomials**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 2: FACTORING  $ax^2 + bx + c$**

**Study: Factoring  $ax^2 + bx + c$** 

Learn about factoring trinomials with leading coefficients other than 1; factoring out a leading coefficient of -1; how values of factors relate to values of a trinomial; finding factor pairs of leading coefficients and constant terms; and finding signs in factors of trinomials with leading coefficients other than 1.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Factoring Trinomials (Advanced)**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 3: SPECIAL CASES****Study: Special Cases**

Identify and factor differences of squares and perfect-square trinomials.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Factoring Special Cases**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**Journal: Breakdown Ahead**

Explain your understanding of factoring to help a peer solve a problem.

Duration: 0 hrs 30 mins Scoring: 20 points

**LESSON 4: SOLVING QUADRATIC EQUATIONS****Study: Solving Quadratic Equations**

Learn about solving quadratic equations using factoring and the zero product rule, manipulating a quadratic equation into standard form, and solving quadratic equations with perfect-square trinomials.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Solving Quadratic Equations**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 5: COMPLETING THE SQUARE****Study: Completing the Square**

Learn the "completing the square" method of solving quadratic equations. Practice adding a strategic number to both sides of an equation to make one side a perfect-square trinomial. Then solve the equation by taking the square root of both sides and simplifying. Use algebra tiles to determine the number needed to complete the square.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Completing the Square (Advanced)**

Take a quiz to check your understanding of what you have learned.

## LESSON 6: THE QUADRATIC FORMULA

### Study: The Quadratic Formula

Learn about types of equations that can be solved with the quadratic formula; complex numbers; discriminants; and finding roots (including complex roots) using the quadratic formula.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: The Quadratic Formula

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 7: GRAPHS OF QUADRATIC FUNCTIONS

### Study: Graphs of Quadratic Functions

Relate factors of a quadratic function to the graph of a parabola and its corresponding  $x$ -intercepts. Locate the vertex of a quadratic function graphically and algebraically. Use the discriminant of the quadratic formula to identify the number and types of solutions to a given quadratic equation, as well as to visualize its corresponding graph.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Graphs of Quadratic Functions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: Pumpkin Launch

Model a graph with real world data.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 8: IMAGINARY NUMBERS

### Study: Imaginary Numbers

Learn about imaginary and complex numbers, perform basic arithmetic operations on complex numbers, and solve equations with imaginary and complex numbers.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Imaginary Numbers and Complex Solutions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 9: NONLINEAR SYSTEMS OF EQUATIONS

### Study: Nonlinear Systems of Equations

Learn about solution sets for nonlinear systems of equations, solving nonlinear systems of equations using the substitution method, choosing which variable to isolate, substituting a squared variable, and determining the number of solutions. Explore a human-cannonball case study.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Nonlinear Systems of Equations

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 10: QUADRATIC FUNCTIONS WRAP-UP

### Checkpoint: Practice Problems

Submit your work for a set of 20 practice problems.

Duration: 0 hrs 25 mins Scoring: 0 points

### Review: Quadratic Functions

Get ready for the unit test by reviewing important ideas and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

### Test (CS): Quadratic Functions

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

### Test (TS): Quadratic Functions

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## UNIT 5: POLYNOMIAL FUNCTIONS

### LESSON 1: POLYNOMIAL BASICS

#### Study: Polynomial Basics

Learn that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkpoint: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Polynomial Basics

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

#### Practice: Modeling: Multiplying Polynomials

Use tiles to model the multiplication of binomials and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

### LESSON 2: POLYNOMIAL FUNCTIONS

#### Study: Polynomial Functions

Learn to identify, classify, evaluate, and graph polynomial functions and expressions. Practice writing polynomials in descending order, as well as using the degree of a given polynomial function to predict the general shape of its graph.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkpoint: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Polynomial Functions

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 3: SYNTHETIC DIVISION

#### Study: Synthetic Division



Learn two methods for dividing polynomials — long division and synthetic division. Use synthetic division to expedite the process of finding factors and roots of polynomial expressions.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Synthetic Division**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 4: FACTORING POLYNOMIALS COMPLETELY**

#### **Study: Factoring Polynomials Completely**

Learn about the remainder-factor theorem, rational-roots theorem, complex-conjugate theorem, and conjugate-radical theorem. Learn to use synthetic division to factor higher-order polynomials.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Factoring Polynomials Completely**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 5: SOLVING POLYNOMIAL EQUATIONS**

#### **Study: Solving Polynomial Equations**

Find all solutions to polynomial equations.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkpoint: Practice Problems**

Complete a set of practice problems on solving polynomial equations.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Solving Polynomial Equations**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 6: GRAPHING POLYNOMIAL FUNCTIONS**

#### **Study: Graphs of Polynomial Functions**

Learn to graph polynomial functions, identify zeros and write a polynomial function from its zeros.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Graphs of Polynomial Functions**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

#### **Journal: Designing a Mountain Landscape**

Discuss with a peer the process for using binomials to design a curved mountain landscape.

Duration: 0 hrs 30 mins Scoring: 20 points

### **LESSON 7: POLYNOMIAL FUNCTIONS WRAP-UP**

#### **Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Review: Polynomial Functions**

Get ready for the unit test by reviewing important ideas and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

### **Test (CS): Polynomial Functions**

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 40 points

### **Test (TS): Polynomial Functions**

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## **UNIT 6: SEMESTER EXAM**

### **LESSON 1: SEMESTER EXAM**

#### **Review: Semester Review**

Prepare for the final exam by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

#### **Exam: Semester Exam**

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in Semester 1.

Duration: 0 hrs 50 mins Scoring: 56 points

## **UNIT 7: EXPONENTS AND EXPONENTIAL FUNCTIONS**

### **LESSON 1: EXPONENTS**

#### **Study: Exponents**

Evaluate exponential expressions. Use properties to rewrite exponential expressions, including those with rational exponents, and to rewrite radicals using fractional exponents.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkup: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Exponents**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 2: EXPONENTIAL FUNCTIONS**

#### **Study: Exponential Functions**

Define the standard form of an exponential function and explore a variety of its applications, such as exponential growth and decay (in the forms of doubling time and half-life), as well as compound interest. Compare compound interest to continuously compounded interest using the irrational number  $e$ .

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkup: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Exponential Functions**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 3: EXAMPLES AND APPLICATIONS OF EXPONENTIAL FUNCTIONS**

#### **Study: Examples and Applications of Exponential Functions**

Explore case studies in exponential growth and decay and logarithmic growth.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

## **LESSON 4: EXPONENTIAL AND LINEAR GROWTH**

### **Study: Exponential and Linear Growth**

Learn about the connections between linear and exponential functions and arithmetic and geometric sequences.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Exponential and Linear Growth**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 5: EXPONENTS AND EXPONENTIAL FUNCTIONS WRAP-UP**

### **Review: Practice Problems**

Submit your work for a set of 20 practice problems.

Duration: 0 hrs 30 mins Scoring: 0 points

### **Test (CS): Exponents and Exponential Functions**

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

### **Test (TS): Exponents and Exponential Functions**

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## **UNIT 8: TRIANGLES**

### **LESSON 1: WHAT IS A TRIANGLE?**

#### **Study: What Is a Triangle?**

Learn about the definition and parts of a triangle; opposite and included figures; naming and sorting triangles; equilateral, isosceles, and scalene triangles; and the triangle inequality theorem.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: What Is a Triangle?**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 2: THE ANGLES OF A TRIANGLE**

#### **Study: The Angles of a Triangle**

Explore the angle sum theorem and third angle theorem for triangles. Investigate the relationship between a given triangle's vertex and its exterior and remote interior angles.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: The Angles of a Triangle**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 3: SIMILAR TRIANGLES

#### Study: Similar Triangles

Learn about similarity versus congruence, testing for similarity among triangles, proportionality, the definition of similar triangles, and scale factor.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Similar Triangles

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 4: SIMILARITY THEOREMS AND PROPORTIONAL REASONING

#### Study: Similarity Theorems and Proportional Reasoning

Learn about the ASA similarity postulate, the SSS similarity theorem, and the SAS similarity theorem.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Similarity Theorems

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

#### Practice: Modeling: Similarity Theorems

Use your knowledge of similarity to model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

### LESSON 5: RIGHT TRIANGLES

#### Study: Right Triangles

Review right triangles and get an introduction to trigonometric ratios.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Complete a set of practice problems on trigonometry.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Introduction to Trigonometry

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 6: TRIANGLES WRAP-UP

#### Review: Triangles Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

#### Test (CS): Triangles

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

#### Test (TS): Triangles

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## UNIT 9: 2-D AND 3-D GEOMETRY

### LESSON 1: MIDPOINT FORMULA

#### Study: Midpoint Formula

Learn about the midpoints of horizontal, vertical, and diagonal line segments and about the midpoint formula. Complete a sample problem.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Midpoint Formula

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 2: THE DISTANCE FORMULA

#### Study: The Distance Formula

Derive the distance formula from the Pythagorean theorem. Use this formula to calculate the distance between any two points. Apply the distance formula in a real-world problem that involves locating the shortest route on a nautical map.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: The Distance Formula

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 3: AREA AND PERIMETER OF POLYGONS WITH COORDINATE GEOMETRY

#### Study: Area and Perimeter of Polygons with Coordinate Geometry

Find the perimeter of any polygon. Determine the areas of irregular polygons by breaking them up into quadrilaterals and regular polygons. Use the apothem formula to find the area of a regular polygon. Complete sample problems about the area of irregular polygons.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Area and Perimeter of Polygons

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 4: WHAT IS A CIRCLE?

#### Study: What Is a Circle?

Learn about the definition of a circle and about its center, radius, and circumference.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: What Is a Circle?

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 5: AREA AND SECTORS

### Study: Area and Sectors

Learn about the formula for the area of a circle. Explore a case study comparing the cost per square inch of small and large pizzas. Learn about sectors and the area of a sector.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Area and Sectors

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: Stained Glass Window

Use what you know about finding the area of circles and sectors to model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 6: WHAT IS A POLYHEDRON?

### Study: What Is a Polyhedron?

Learn about the definition and elements of a polyhedron, prisms and their components, triangular and rectangular prisms, cubes, and regular and irregular pyramids.

Duration: 0 hrs 35 mins Scoring: 0 points

### Quiz: What Is a Polyhedron?

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 7: SURFACE AREA

### Study: Surface Area

Learn about perimeter and surface area; base and lateral area; slant height versus altitude; and the formulas for surface area of a right prism, an oblique prism, a regular pyramid, an oblique cylinder, a right cone, and an oblique cone. Explore sample problems dealing with these subjects.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Surface Area

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 8: VOLUME

### Study: Volume

Learn about area and volume, the formulas for volume of a cube and a rectangular prism, and Bonaventura Francesco Cavalieri's principle. Learn about the formulas for volume of a cylinder, a pyramid, and a cone; explore sample problems dealing with these formulas. Learn about cross-sectional area.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Volume

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**Journal: Volume**

Think about and discuss how changing one dimension of a given shape changes its volume and surface area.

Duration: 0 hrs 30 mins Scoring: 20 points

**LESSON 9: 2-D AND 3-D GEOMETRY WRAP-UP****Review: 2-D and 3-D Geometry Practice Problems**

Check your understanding of the topics in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

**Test (CS): 2-D and 3-D Geometry**

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

**Test (TS): 2-D and 3-D Geometry**

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

**UNIT 10: APPLICATIONS OF PROBABILITY****LESSON 1: WHAT IS PROBABILITY?****Study: What Is Probability?**

Learn the definition for probability and explore its different forms.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: What Is Probability?**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**Study: Organizing What Is Possible**

Explore the numbers of possible outcomes from a brown bag containing gum balls of different colors.

Duration: 0 hrs 35 mins Scoring: 0 points

**LESSON 2: COUNTING PRINCIPLES****Study: Counting Principles**

Learn about counting strategies and the multiplication principle. Practice using tree diagrams and Venn diagrams in probability problems.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Counting Principles**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 3: BASIC RULES OF PROBABILITY****Study: Basic Rules of Probability**

Learn four rules of probability, as well as the addition rule for disjoint events and the multiplication rule for independent events.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Basic Rules of Probability, Part I

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 4: CONDITIONAL PROBABILITY

### Study: Conditional Probability

Learn how to identify and solve conditional probability problems using correct notation, formulas, and tables.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Conditional Probability

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: A Student Survey

Use your knowledge of conditional probability to analyze the results of a student survey.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 5: INDEPENDENCE

### Study: Independence

Learn how to show if two events are independent, and solve probability problems for both independent and dependent events using the multiplication rule and tree diagrams.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Independence

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

### Journal: Smoking and Lung Cancer

Use what you know about conditional probability and independence to critique the reasoning of others.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 6: APPLICATIONS OF PROBABILITY WRAP-UP

### Review: Applications of Probability Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

### Test (CS): Applications of Probability

Take a computer-scored test to assess what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

### Test (TS): Applications of Probability

Take a teacher-scored test to assess what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## UNIT 11: DATA AND MATHEMATICAL MODELING

### LESSON 1: REVIEW OF GRAPHICAL ANALYSIS OF DATA

#### Study: Review of Graphical Analysis of Data

Learn about the different ways to express data graphically and the various shapes or properties these representations have.

Duration: 0 hrs 35 mins Scoring: 0 points



**Checkpoint: Practice Problems**

Complete a set of practice problems to check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Graphical Analysis of Data**

Take a quiz to check your understanding of what you have learned.

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 2: TWO-VARIABLE DATA AND SCATTERPLOTS****Study: Two-Variable Data and Scatterplots**

Create scatterplots for bivariate data and recognize positive and negative correlations. Use a calculator to find correlation coefficients, and understand what the result says about the strength of the correlation. Know that correlation does not imply causation.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Two-Variable Data and Scatterplots**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 20 points

**LESSON 3: FITTING LINEAR MODELS TO DATA****Study: Fitting Linear Models to Data**

Find equations for best-fit lines (regression equations) by estimation and by using a calculator. Use regression equations to make predictions. Find residuals and residual plots and understand how they indicate whether or not a linear model is appropriate.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Fitting Linear Models to Data**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 20 points

**Practice: Modeling: Fitting Linear Models to Data**

Model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

**LESSON 4: NONLINEAR MODELS****Study: Nonlinear Models**

Learn how to apply nonlinear regression.

Duration: 0 hrs 45 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Nonlinear Models**

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 25 mins Scoring: 20 points

**Journal: Nonlinear Models**

Construct arguments and critique the reasoning of others as you write about topics in algebra.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 5: DATA AND MATHEMATICAL MODELING WRAP-UP

### Review: Data and Mathematical Modeling Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 30 mins Scoring: 0 points

### Discuss: The Latest Model

Join a three- to five-question discussion to practice methods learned in this unit.

Duration: 0 hrs 40 mins Scoring: 20 points

### Test (CS): Data and Mathematical Modeling

Take a computer-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

### Test (TS): Data and Mathematical Modeling

Take a teacher-scored test to check what you have learned in this unit.

Duration: 0 hrs 50 mins Scoring: 50 points

## UNIT 12: SEMESTER 2 EXAM

### LESSON 1: SEMESTER 2 EXAM

#### Review: Semester 2

Prepare for the final exam by reviewing key concepts and skills.

Duration: 0 hrs 30 mins Scoring: 0 points

#### Exam: Semester 2 Exam

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in this semester.

Duration: 0 hrs 50 mins Scoring: 56 points