

Algebra II introduces students to advanced functions, with a focus on developing a strong conceptual grasp of the expressions that define those functions. Students learn through discovery and application, developing the skills they need to break down complex challenges and demonstrate their knowledge in new situations.

Course topics include quadratic equations and functions; polynomial functions; rational expressions and functions; radical expressions and functions; exponential and logarithmic functions; trigonometric functions; modeling with functions; probability and inferential statistics; probability distributions; and sampling distributions and confidence intervals.

This course supports all students as they develop computational fluency and deepen conceptual understanding. Students begin each lesson by discovering new concepts through guided instruction, then confirm their understanding in an interactive, feedback-rich environment. Modeling activities equip students with tools for analyzing a variety of real-world scenarios and mathematical ideas. Journaling activities allow students to reason abstractly and quantitatively, construct arguments, critique reasoning, and communicate precisely. Performance tasks prepare students to synthesize their knowledge in novel, real-world scenarios and require that they make sense of multifaceted problems and persevere in solving them.

This course is built to state standards.

Length: Two Semesters

## UNIT 1: EXPRESSIONS, EQUATIONS AND INEQUALITIES

### LESSON 1: ALGEBRAIC EXPRESSIONS

#### Study: Algebraic Expressions

Identify the parts of numerical and algebraic expressions including terms, factors, and coefficients. Interpret complicated expressions by viewing one or more of their parts as a single entity.

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: Algebraic Expressions

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 2: SOLVING LINEAR EQUATIONS

#### Study: Solving Linear Equations

In this lesson, you will solve linear equations in various forms by applying the properties of equality and using inverse operations.

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 Linear Equations

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 3: SOLVING ABSOLUTE VALUE EQUATIONS

#### Study: Solving Absolute Value Equations

In this lesson, you will solve one-variable absolute value equations in various forms by applying the properties of equality and using inverse operations.

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 Absolute Value Equations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 4: SOLVING INEQUALITIES**

### **Study: Solving Inequalities**

In this lesson you will solve one-variable linear and absolute value inequalities in various forms by using inverse operations, writing compound inequalities, and graphing.

Duration: 0 hrs 35 mins

### **Checkpoint: Practice Problems**

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

Duration: 0 hrs 25 mins

### **Quiz: Solving Inequalities**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Practice: Modeling: Solving Inequalities**

Use a number line to represent the possible answers that exist for a given problem.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 5: LITERAL EQUATIONS AND FORMULAS**

### **Study: Literal Equations and Formulas**

In this lesson you will rewrite literal equations and formulas in various forms to solve for a quantity of interest and use them to solve real-world problems.

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: Literal Equations and Formulas**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 6: EXPRESSIONS, EQUATIONS, AND INEQUALITIES WRAP-UP**

### **Review: Expressions, Equations, and Inequalities**

Check your understanding of the unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Test (CS): Expressions, Equations, and Inequalities**

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

Duration: 0 hrs 40 mins Scoring: 50 points

## **UNIT 2: FUNCTIONS AND RELATIONS**

### **LESSON 1: FUNCTIONS**

#### **Study: Functions**

Learn the definition of a function, and understand and identify the domain and range. Explore absolute value and square root functions.

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: Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 2: GRAPHING FUNCTIONS**

### **Study: Graphing Functions**

Become familiar with graphs of the linear, quadratic, reciprocal, square root, cube root, and absolute value parent functions. Explore piecewise functions, including step functions, and their applications.

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: Graphing Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 3: TRANSFORMING FUNCTIONS**

### **Study: Transforming Functions**

Learn about transformations of parent functions, including vertical and horizontal compressions and stretches and vertical and horizontal shifts. Understand how constants in the equation of a function are connected to these transformations.

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: Transforming Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 4: COMBINING FUNCTIONS**

### **Study: Combining Functions**

Add, subtract, multiply, and divide functions. Apply function operations in real-world settings.

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: Combining Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 5: INVERSE FUNCTIONS**

### **Study: Inverse Functions**

Find inverses of functions. Understand the relationship between the domain and range of a function and its inverse. Understand one-to-one functions, and how to use the horizontal line test to see whether a function has an inverse function.

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: Inverse Functions

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 6: FUNCTIONS AND RELATIONS WRAP-UP

### Review: Functions and Relations

Check your understanding of the unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Test (CS): Functions and Relations

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

Duration: 0 hrs 40 mins Scoring: 50 points

## UNIT 3: 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: Binomial Factors of Trinomials

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

Duration: 0 hrs 20 mins Scoring: 20 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 (Basic)

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

Duration: 0 hrs 20 mins Scoring: 20 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 a Difference of Squares**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Factoring Perfect Square Trinomials**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Sum or Difference of Two Cubes**

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: Factoring with the Zero Product Rule**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Converting Quadratics to Standard Form**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Quadratics with Perfect Square Trinomials**

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**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Completing the Square (Advanced)

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

Duration: 0 hrs 20 mins Scoring: 20 points

## 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: Complex Numbers and Discriminants

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

Duration: 0 hrs 20 mins Scoring: 20 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

### Quiz: Working with the Discriminant

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

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Operations on Complex Numbers**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Quadratics With Complex Solutions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 9: QUADRATIC FUNCTIONS WRAP-UP**

### **Review: Quadratic Functions**

Check your understanding of the unit.

Duration: 0 hrs 25 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 40 mins Scoring: 50 points

## **UNIT 4: SYSTEMS OF EQUATIONS AND INEQUALITIES**

### **LESSON 1: LINEAR SYSTEMS OF EQUATIONS**

#### **Study: Linear Systems of Equations**

Find the point of intersection of linear systems using algebra, graphing, and matrices.

Duration: 0 hrs 35 mins

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

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

Duration: 0 hrs 25 mins

#### **Quiz: Linear Systems of Equations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 2: 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

#### **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: 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 3: LINEAR SYSTEMS OF INEQUALITIES**

#### **Study: Linear Systems of Inequalities**

Use graphing to solve two-variable systems of linear inequalities. Use what you know about solving systems of inequalities to solve a real-world problem where there are constraints (limitations) that restrict your options.

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: Linear Systems of Inequalities**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Practice: Modeling: Two-Variable Systems of Inequalities**

Model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 4: SYSTEMS OF EQUATIONS AND INEQUALITIES WRAP-UP**

### **Review: Systems of Equations and Inequalities**

Check your understanding of the unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Test (CS): Systems of Equations and Inequalities**

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

Duration: 0 hrs 40 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

### 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: Remainder and Factor Theorems

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

Duration: 0 hrs 20 mins Scoring: 20 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

### Checkup: Practice Problems

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

Duration: 0 hrs 25 mins

### Quiz: Solving Polynomial Equations

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 6: GRAPHING POLYNOMIAL FUNCTIONS

### Study: Graphing 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

### 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: Graphing 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 IDENTITIES

### Study: Polynomial Identities

Prove polynomial identities and use them to describe numerical relationships.

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: Polynomial Identities

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 8: BINOMIAL THEOREM

### Study: Binomial Theorem

Learn and apply the binomial theorem.

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: Binomial Theorem

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 9: TRANSFORMATIONS OF POLYNOMIAL FUNCTIONS

### Study: Transformations of Polynomial Functions

Transform polynomial functions.

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: Transformations of Polynomial Functions

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 10: POLYNOMIAL FUNCTIONS WRAP-UP

### Review: Polynomial Functions

Check your understanding of the unit.

Duration: 0 hrs 25 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 40 mins Scoring: 50 points

## UNIT 6: SEMESTER 1 EXAM

### LESSON 1: SEMESTER 1 EXAM

#### Review: Semester 1 Exam

Get ready for the semester exam by reviewing important ideas and skills.

Duration: 0 hrs 20 mins Scoring: 0 points

#### Exam: Semester 1 Exam

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

Duration: 0 hrs 50 mins Scoring: 200 points

## UNIT 7: RATIONAL EXPRESSIONS AND FUNCTIONS

### LESSON 1: PROPORTIONS

#### Study: Proportions

Learn the definition of a rational expression and about using proportional reasoning to solve problems. Explore real-world examples of proportional reasoning.

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: Proportions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 2: RATIONAL EXPRESSIONS****Study: Rational Expressions**

Learn about finding the value of a rational expression and about undefined rational 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: Rational Expressions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 3: SIMPLIFYING RATIONAL EXPRESSIONS****Study: Simplifying Rational Expressions**

Practice finding and dividing out common factors in numerators and denominators of rational expressions. Explore the crucial difference between common factors and terms.

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: Simplifying Rational Expressions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 4: MULTIPLYING AND DIVIDING RATIONAL EXPRESSIONS****Study: Multiplying and Dividing Rational Expressions**

Review multiplying and dividing numerical fractions, multiplying rational expressions, dividing rational expressions, and simplifying the results.

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: Multiplying Rational Expressions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**Quiz: Dividing Rational Expressions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 5: ADDING AND SUBTRACTING RATIONAL EXPRESSIONS****Study: Adding and Subtracting Rational Expressions**

Review adding and subtracting numerical fractions, adding and subtracting rational expressions with like denominators, finding least common denominators, finding multiples of rational expressions, and adding and subtracting rational expressions with unlike denominators.

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: Adding and Subtracting Rational Expressions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 6: INVERSE VARIATION**

### **Study: Inverse Variation**

Review direct variation and how increasing input leads to proportionally increasing output. Review inverse variation and how increasing input leads to proportionally decreasing output. Review finding the constant of variation.

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: Inverse Variation**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 7: WRITING RATIONAL FUNCTIONS**

### **Study: Writing Rational Functions**

Learn the definition of a rational function and how to find the domain of a given function. Explore the horizontal and vertical asymptotes of rational functions.

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: Writing Rational Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 8: SOLVING RATIONAL EQUATIONS**

### **Study: Solving Rational Equations**

Learn how to identify domain restrictions, determine the least common denominator, and identify extraneous solutions to rational equations.

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 Rational Equations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 9: VERTICAL ASYMPTOTES**

### **Study: Vertical Asymptotes**

Learn about graphs of rational functions, about finding vertical asymptotes, and about graphing rational functions with more than one vertical asymptote.

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: Finding Vertical Asymptotes

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: More Than One Vertical Asymptote

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 10: GRAPHING RATIONAL FUNCTIONS

### Study: Graphing Rational Functions

Learn about graphing rational functions with variables in the numerator, constructing a sign chart, and picking test numbers. Learn about rational functions with a singular point.

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: Graphing Rational Functions

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 11: RATIONAL EXPRESSIONS AND FUNCTIONS WRAP-UP

### Review: Rational Expressions and Functions

Check your understanding of the unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Test (CS): Rational Expressions and Functions

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

Duration: 0 hrs 40 mins Scoring: 50 points

## UNIT 8: RADICAL EXPRESSIONS AND FUNCTIONS

### LESSON 1: BASICS OF RADICALS

#### Study: Basics of Radicals

Learn the definition of radical expression. Explore simplifying the product and quotient of radicals and simplifying individual radicals.

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: Simplifying Products of Radicals

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### Quiz: Simplifying Quotients of Radicals

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 2: MULTIPLYING AND DIVIDING RADICALS

#### Study: Multiplying and Dividing Radicals

Learn about multiplying and dividing radical expressions that include variables and about using the FOIL (first inner outer last) method to simplify radical 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: Multiplying Radicals**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**Quiz: Dividing Radicals**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 3: ADDING AND SUBTRACTING RADICALS****Study: Adding and Subtracting Radicals**

Learn about adding and subtracting radical expressions by combining like terms and about simplifying terms to get the same radicand.

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: Adding and Subtracting Radicals**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 4: RATIONALIZING DENOMINATORS****Study: Rationalizing Denominators**

Learn about rationalizing a denominator in order to simplify a fraction with a radical expression in the denominator. Learn about multiplying by the conjugate of a denominator.

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: Rationalizing Denominators**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 5: SOLVING RADICAL EQUATIONS****Study: Solving Radical Equations**

Learn how to solve equations with radical expressions by isolating the radical and squaring both sides.

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 Radical Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 6: APPLICATIONS OF RADICAL EQUATIONS****Study: Applications of Radical Equations**

Explore case studies in order to practice methods of solving radical equations in applied settings.

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: Applications of Radical Equations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Practice: Modeling: Pendulums and Bridges**

Create an equation to model pendulums and bridges.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 7: RATIONAL EXPONENTS**

### **Study: Rational Exponents**

Learn about fractional exponents and  $n$ th roots, odd and even indices of radicals, the method of notation for writing an  $n$ th root, the use of fractional exponents, and exponential expressions with decimal powers.

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: Fractional Exponents — Part 1**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Fractional Exponents — Part 2**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 8: REVIEW OF COMPLEX NUMBERS**

### **Study: Review of Complex Numbers**

Learn about square roots of negative numbers; imaginary units; parts of a complex number; adding and subtracting complex numbers by collecting like terms and simplifying; multiplying two complex numbers using the FOIL method; and dividing complex numbers using complex conjugates.

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: Adding and Subtracting Complex Numbers**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Multiplying and Dividing Complex Numbers**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 9: PERFORMANCE TASK: THE SKID DISTANCE PROBLEM**

### **Study: The Skid Distance Problem**

Learn how the length of skid marks left by a vehicle is an application of square root functions. Use the skid distance equation to solve for drag factor of various road surfaces, as well as skid mark lengths and original speed of a variety of vehicles.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Project: Solving the Skid-Distance Problem**

Assume the role of investigator and take on a skid distance problem.

Duration: 2 hrs Scoring: 120 points

## LESSON 10: RADICAL EXPRESSIONS AND FUNCTIONS WRAP-UP

### Review: Radical Expressions and Functions

Check your understanding of the unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Test (CS): Radical Expressions and Functions

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

Duration: 0 hrs 40 mins Scoring: 50 points

## UNIT 9: EXPONENTIAL AND LOGARITHMIC FUNCTIONS

### LESSON 1: GEOMETRIC SEQUENCES

#### Study: Geometric Sequences

Learn about geometric sequences and series.

Duration: 0 hrs 35 mins

#### Checkup: Practice Problems

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

Duration: 0 hrs 25 mins

#### Quiz: Geometric Sequences

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: Evaluating Exponential Functions

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### Quiz: Calculating Exponential Growth

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

#### Checkup: 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: GRAPHS OF EXPONENTIAL FUNCTIONS

#### Study: Graphs of Exponential Functions

Learn about the shape of graphs of exponential functions with various bases and about finding the domain and range of exponential functions.

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 Exponential Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 5: LOGARITHMIC FUNCTIONS**

### **Study: Logarithmic Functions**

Learn about undoing exponential functions, graphing the inverse of an exponential or logarithmic function, and using the common and natural logarithm.

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: Logarithmic Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 6: GRAPHS OF LOGARITHMIC FUNCTIONS**

### **Study: Graphs of Logarithmic Functions**

Learn about the shape of graphs of logarithmic functions with various bases and about the domain and range of logarithmic functions.

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 Logarithmic Functions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 7: PROPERTIES OF EXPONENTS AND LOGARITHMS**

### **Study: Properties of Exponents and Logarithms**

Learn about product, quotient, and power laws of exponents; rewriting the log of a product as the sum of two logs; rewriting the log of a quotient as the difference of two logs; simplifying the log of a power; and using the change-of-base formula to rewrite logarithms.

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: Equivalent Exponential Expressions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Equivalent Logarithmic Expressions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Evaluating Logarithms**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 8: SOLVING EXPONENTIAL EQUATIONS**

**Study: Solving Exponential Equations**

Learn about using ordinary algebra and the properties of logarithms to solve exponential equations. Answer questions inspired by the classic chessboard problem.

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 Exponential Equations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 9: SOLVING LOGARITHMIC EQUATIONS****Study: Solving Logarithmic Equations**

Learn about using ordinary algebra and the definition of a logarithm to solve logarithmic equations. Answer questions about energy in earthquakes.

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 Logarithmic Equations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 10: APPLICATIONS OF LOGARITHMS****Study: Applications of Logarithms**

Solve application problems involving exponential and logarithmic expressions.

Duration: 0 hrs 35 mins

**Checkpoint: Practice Problems**

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

Duration: 0 hrs 25 mins

**Quiz: Applications of Logarithms**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 11: COMPARING AND ANALYZING FUNCTION TYPES****Study: Comparing and Analyzing Function Types**

Apply transformations to a variety of function families.

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: Comparing and Analyzing Function Types**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 12: EXPONENTIAL AND LOGARITHMIC FUNCTIONS WRAP-UP****Review: Exponential and Logarithmic Functions**

Check your understanding of the unit.

Duration: 0 hrs 25 mins

**Test (CS): Exponential and Logarithmic Functions**

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

Duration: 0 hrs 40 mins Scoring: 50 points

## UNIT 10: STATISTICAL ANALYSIS

### LESSON 1: USING DATA TO MAKE INFERENCES

#### Study: Using Data to Make Inferences

This lesson introduces the process for making inferences based on statistics. Students will learn how to use data to estimate population means and proportions, and understand the differences among sample surveys, experiments, and observational studies. Students will also evaluate reports based on data.

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: Using Data to Make Inferences

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 2: USING PROBABILITY TO MAKE DECISIONS

#### Study: Using Probability to Make Decisions

This lesson introduces basic probability concepts. Students will use probability to analyze strategies and to make fair decisions.

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: Using Probability to Make Decisions

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 3: SIMULATION AND MODELING WITH DATA

#### Study: Simulation and Modeling with Data

This lesson shows students how to model (simulate) events using probability. Students will use tools such as random numbers and coin tosses in designing a simulation, and calculate estimated probabilities using the simulation results.

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: Simulation and Modeling with Data

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 4: THE NORMAL DISTRIBUTION

#### Study: The Normal Distribution

Student will use the mean and standard deviation of a data set to fit it to a normal distribution and to estimate population percentages.

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: The Normal Distribution

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Journal: Cell Phone Battery Life**

Evaluate the design and results of an experiment with a peer.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 5: MARGIN OF ERROR AND CONFIDENCE INTERVALS**

### **Study: Margin of Error and Confidence Intervals**

Students will learn how to use sample data to calculate and interpret a margin of error and confidence interval for a population mean or proportion.

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: Margin of Error and Confidence Intervals**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 6: STATISTICAL ANALYSIS WRAP-UP**

### **Review: Statistical Analysis**

Check your understanding of the unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Test (CS): Statistical Analysis**

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

Duration: 0 hrs 40 mins Scoring: 50 points

## **UNIT 11: TRIGONOMETRY**

### **LESSON 1: RIGHT TRIANGLE TRIGONOMETRY**

#### **Study: Right Triangle Trigonometry**

This lesson will show you how to find trigonometric ratios (sine, cosine, and tangent) of angles in a right triangle and to use these to find the side lengths and angles. The lesson includes solving real-world problems using right triangle trigonometry.

Duration: 0 hrs 35 mins

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

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

Duration: 0 hrs 25 mins

#### **Quiz: Right Triangle Trigonometry**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 2: ANGLES AND RADIAN**

#### **Study: Angles and Radians**

This lesson introduces students to radian measures of angles. They will identify various types of angles and convert their measures between degrees and radians. Students will also learn about negative and coterminal angles.

Duration: 0 hrs 35 mins

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

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

Duration: 0 hrs 25 mins

#### **Quiz: Angles and Radians**

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

### LESSON 3: TRIGONOMETRIC RATIOS AND THE UNIT CIRCLE

#### Study: Trigonometric Ratios and the Unit Circle

In this lesson, students find trigonometric ratios for angles of special right triangles in the unit circle. By placing right triangles in quadrant I of the unit circle and identifying their side lengths, students can define these trigonometric ratios as well as the terminal point of the angle. Students also identify terminal points and angles for the other quadrants using the quadrant I angles as reference angles.

Duration: 0 hrs 35 mins

#### Checkup: Practice Problems

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

Duration: 0 hrs 25 mins

#### Quiz: Trigonometric Ratios and the Unit Circle

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 4: TRIGONOMETRIC RATIOS FOR ANY ANGLE

#### Study: Trigonometric Ratios for Any Angle

In this lesson, students will apply what they learned in the previous lessons to find trigonometric ratios for any angle. Students will find the exact value of sine, cosine, or tangent of an angle using a reference angle, and will use the Pythagorean identity to find the values of trigonometric ratios.

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: Trigonometric Ratios for Any Angle

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 5: GRAPHS OF TRIGONOMETRIC FUNCTIONS

#### Study: Graphs of Trigonometric Functions

Students will graph each of the six trigonometric functions and identify the key characteristics of each parent function. The reciprocal functions are introduced in this lesson.

Duration: 0 hrs 35 mins

#### Checkup: Practice Problems

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

Duration: 0 hrs 25 mins

#### Quiz: Graphs of Trigonometric Functions

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 6: TRANSFORMATIONS OF SINUSOIDS

#### Study: Transformations of Sinusoids

This lesson covers transformations of the sine and cosine parent functions. Students will identify the effect of adding constants to the equations and graph the new functions. Students will also write and interpret real-world applications of sinusoids.

Duration: 0 hrs 35 mins

#### Checkup: Practice Problems

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

Duration: 0 hrs 25 mins

### **Quiz: Transformations of Sinusoids**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Practice: Modeling: Riding the Circular Wave**

Model real world data using a periodic function.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 7: TRIGONOMETRY WRAP-UP**

### **Review: Trigonometry**

Check your understanding of the unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Test (CS): Trigonometry**

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

Duration: 0 hrs 40 mins Scoring: 50 points

## **UNIT 12: SEMESTER 2 REVIEW AND EXAM**

### **LESSON 1: SEMESTER 2 REVIEW AND EXAM**

#### **Review: Semester 2 Review**

Get ready for the semester exam by reviewing important ideas and skills.

Duration: 0 hrs 20 mins Scoring: 0 points

#### **Exam: Semester 2 Exam**

Take a computer-scored exam to demonstrate your mastery of concepts and skills covered in Semester 2.

Duration: 0 hrs 50 mins Scoring: 200 points