Precalculus is a comprehensive course that weaves together previous study of algebra, geometry, and functions into a preparatory course for calculus. The course focuses on the mastery of critical skills and exposure to new skills necessary for success in subsequent math courses. The first semester includes linear, quadratic, exponential, logarithmic, radical, polynomial, and rational functions; systems of equations; and conic sections. The second semester covers trigonometric ratios and functions; inverse trigonometric functions; applications of trigonometry, including vectors and laws of cosine and sine; polar functions and notation; and arithmetic of complex numbers.

Within each Precalculus lesson, students are supplied with a post-study Checkup activity that provides them the opportunity to hone their computational skills in a low-stakes problem set before moving on to formal assessment. Additionally, connections are made throughout the Precalculus course to calculus, art, history, and a variety of other fields related to mathematics.

The content is based on the National Council of Teachers of Mathematics (NCTM) standards and is aligned with state standards.

Length: Two semesters

UNIT 1: FUNCTIONS

LESSON 1: WHAT IS A FUNCTION?

Study: Relating to Functions

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

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on functions.

Duration: 0 hrs 50 mins

Quiz: What Is a Function?

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: GRAPHING FUNCTIONS

Study: Testing and Special 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 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on graphing functions.

Duration: 0 hrs 50 mins

Quiz: Graphing Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: LINEAR FUNCTIONS

Study: Walking the Line

Learn about slope and the three main forms of linear functions.

Duration: 0 hrs 50 mins

Explore: Connection to Art: Linear Perspective

Learn how linear perspective is used in art and navigation.

Duration: 0 hrs 30 mins

Explore: Connection to Calculus: Difference Quotient

Learn how the difference quotient is used in calculus.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on linear functions.

Duration: 0 hrs 50 mins

Quiz: Linear Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: ARITHMETIC SEQUENCES AND SERIES

Study: It All Adds Up

Learn about arithmetic sequences and series.

Duration: 0 hrs 50 mins

Explore: Connection to History: Famous Arithmetic Sequences

Learn how arithmetic sequences have been used throughout history.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on arithmetic sequences and series.

Duration: 0 hrs 50 mins

Quiz: Arithmetic Sequences and Series

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 5: LINEAR EQUATIONS AND INEQUALITIES

Study: On Equal Footing

Learn how to solve linear equations and inequalities.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on linear equations and inequalities.

Duration: 0 hrs 50 mins

Quiz: Linear Equations and Inequalities

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 6: LINEAR SYSTEMS

Study: Finding the Point of Intersection

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

Duration: 0 hrs 50 mins

Explore: Connection to Business: Linear Programming

Learn how businesses solve problems using linear programming.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on linear systems.

Duration: 0 hrs 50 mins

Quiz: Linear Systems

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 7: ARITHMETIC OF FUNCTIONS

Study: Mixing and Matching

Learn how to add, subtract, multiply, divide, and compose functions.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on the arithmetic of functions.

Duration: 0 hrs 50 mins

Quiz: Arithmetic of Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 8: FUNCTIONS WRAP-UP

Review: Functions

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Functions

Complete a set of practice problems.

Duration: 0 hrs 50 mins Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Functions

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Functions

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 9: DIAGNOSTIC

Diagnostic: Functions

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 2: QUADRATIC FUNCTIONS

LESSON 1: FORMS OF QUADRATIC FUNCTIONS

Study: Express Yourself

Express quadratic functions in a variety of forms.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on forms of quadratic functions.

Duration: 0 hrs 50 mins

Quiz: Forms of Quadratic Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: GRAPHING QUADRATIC FUNCTIONS

Study: Putting the Pieces Together

Use key components such as vertex, axis of symmetry, and x- and y-intercepts to sketch the graphs of quadratic functions and solve quadratic inequalities.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on graphing quadratic functions.

Duration: 0 hrs 50 mins

Quiz: Graphing Quadratic Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: TRANSFORMATIONS

Study: Getting a Move On

Learn how to reflect about the x- and y-axes. Learn about horizontal and vertical shifts and horizontal and vertical stretches.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on transformations.

Duration: 0 hrs 50 mins

Quiz: Transformations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: SOLVING QUADRATIC EQUATIONS

Study: Answers to Your Questions

Use factoring and the quadratic formula to solve an equation. Also relate solutions to zeros and work with complex numbers.

Duration: 0 hrs 50 mins

Explore: Connection to Calculus: Optimization

Learn how calculus uses optimization to solve problems.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on solving quadratic equations.

Duration: 0 hrs 50 mins

Quiz: Solving Quadratic Equations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 5: APPLICATIONS OF QUADRATIC FUNCTIONS

Study: Solving Problems Using Quadratic Functions

Set up and solve application problems involving quadratic functions.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on applications of quadratic functions.

Duration: 0 hrs 50 mins

Quiz: Applications of Quadratic Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 6: QUADRATIC FUNCTIONS WRAP-UP

Review: Quadratic Functions

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Quadratic Functions

Complete a set of practice problems.

Duration: 0 hrs 50 mins Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Quadratic Functions

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Quadratic Functions

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 7: DIAGNOSTIC

Diagnostic: Quadratic Functions

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 3: POLYNOMIAL AND RATIONAL FUNCTIONS

LESSON 1: POLYNOMIAL EXPRESSIONS

Study: What Is a Polynomial?

Learn what makes a polynomial and how to test for one.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on polynomial expressions.

Duration: 0 hrs 50 mins

Quiz: Polynomial Expressions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: DIVIDING POLYNOMIALS

Study: Synthetic Doesn't Mean Fake

Learn the technique for dividing polynomials and testing for factors.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on dividing polynomials.

Duration: 0 hrs 50 mins

Quiz: Dividing Polynomials

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: SOLVING POLYNOMIAL EQUATIONS

Study: These Roots Grow Deep

Find all solutions to polynomial equations.

Duration: 0 hrs 50 mins

Explore: Connection to Calculus: Fundamental Theorem of Algebra

Learn how the fundamental theorems are used in algebra and calculus.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on solving polynomial equations.

Duration: 0 hrs 50 mins

Quiz: Solving Polynomial Equations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: GRAPHING POLYNOMIAL FUNCTIONS

Study: What Goes Up Sometimes Comes Down

Explore the behavior of polynomial functions and find key points of the graph of the function.

Duration: 0 hrs 50 mins

Explore: Connection to Calculus: First and Second Derivatives

Learn how first and second derivatives relate to polynomial functions in calculus.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on graphing polynomial functions.

Duration: 0 hrs 50 mins

Quiz: Graphing Polynomial Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 5: RATIONAL FUNCTIONS

Study: Top and Bottom

Identify rational functions, find domain and range, look at asymptotes, and sketch complete graphs.

Duration: 0 hrs 50 mins

Explore: Connection to Calculus: Horizontal Asymptotes as Limits

Learn how to use optimization to solve problems.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on rational functions.

Duration: 0 hrs 50 mins

Quiz: Rational Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 6: POLYNOMIAL AND RATIONAL FUNCTIONS WRAP-UP

Review: Polynomial and Rational Functions

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Polynomial and Rational Functions

Complete a set of practice problems.

Duration: 0 hrs 50 mins Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Polynomial and Rational Functions

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Polynomial and Rational Functions

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 7: DIAGNOSTIC

Diagnostic: Polynomial and Rational Functions

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 4: EXPONENTIAL AND LOGARITHMIC FUNCTIONS

LESSON 1: EXPONENTS AND RADICALS

Study: Rational Exponents and Radical Expressions

Learn the rules of exponents and how to express radicals.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on exponents and radicals.

Duration: 0 hrs 50 mins

Quiz: Exponents and Radicals

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: EXPONENTIAL FUNCTIONS

Study: Exponential Functions and Their Graphs

Explore the basic exponential graphs.

Duration: 0 hrs 50 mins

Explore: Connection to Science: Nuclear Decay

Learn how nuclear decay is modeled by exponential functions.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on exponential functions.

Duration: 0 hrs 50 mins

Quiz: Exponential Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: GEOMETRIC SEQUENCES

Study: Leaps and Bounds

Learn about geometric sequences and series.

Duration: 0 hrs 50 mins

Explore: Connection to History: Zeno's Paradox

Learn how Zeno's paradox relates to geometric sequences.

Duration: 0 hrs 30 mins

Explore: Connection to Calculus: Infinity

Learn about the concept of infinity.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on geometric sequences.

Duration: 0 hrs 50 mins

Quiz: Geometric Sequences

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: INTRODUCTION TO LOGARITHMS

Study: Logarithms

Learn how logarithms are used to express exponents.

Duration: 0 hrs 50 mins

Explore: Connection to Science: Earthquakes and the Richter Scale

Learn how scientists use a logarithmic scale to describe earthquakes.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on logarithms.

Duration: 0 hrs 50 mins

Quiz: Introduction to Logarithms

Take a quiz to assess your understanding of the material.

LESSON 5: GRAPHS OF LOGARITHMIC FUNCTIONS

Study: Undoing What You Have Done

Learn the graphs of key logarithmic functions.

Duration: 0 hrs 50 mins

Explore: Connection to Calculus: Inverse Functions

Learn how calculus uses inverse functions.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on graphs of logarithmic functions.

Duration: 0 hrs 50 mins

Quiz: Graphs of Logarithmic Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 6: APPLICATIONS OF LOGARITHMS

Study: Logs Are Natural

Solve application problems involving exponential and logarithmic expressions.

Duration: 0 hrs 50 mins

Explore: Connection to Banking: Loans and Savings

Learn how banks calculate interest on savings and loans.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on applications of logarithms.

Duration: 0 hrs 50 mins

Quiz: Applications of Logarithms

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 7: EXPONENTIAL AND LOGARITHMIC FUNCTIONS WRAP-UP

Review: Exponential and Logarithmic Functions

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Exponential and Logarithmic Functions

Complete a set of practice problems.

Duration: 0 hrs 50 mins Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Exponential and Logarithmic Functions

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Exponential and Logarithmic Functions

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 8: DIAGNOSTIC

Diagnostic: Exponential and Logarithmic Functions

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 5: CONIC SECTIONS

LESSON 1: INTRODUCTION TO CONIC SECTIONS

Study: How Do You Cut a Cone?

Explore the various ways a cone can be cut to produce conic sections such as a circle.

Duration: 0 hrs 50 mins

Explore: Connection to Science: GPS

Learn how GPS works.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on conic sections.

Duration: 0 hrs 50 mins

Quiz: Introduction to Conic Sections

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: ELLIPSES

Study: Stretching Circles

Learn how ellipses are defined and formed.

Duration: 0 hrs 50 mins

Explore: Connection to History: Whispering about Kepler

Learn how ellipses have been used throughout history.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on ellipses.

Duration: 0 hrs 50 mins

Quiz: Ellipses

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: HYPERBOLAS

Study: Turning Inside Out

Learn how hyperbolas are defined and formed.

Duration: 0 hrs 50 mins

Explore: Connection to Science: Celestial Mechanics

Learn how objects in space follow hyperbolic orbits.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on hyperbolas.

Duration: 0 hrs 50 mins

Quiz: Hyperbolas

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

LESSON 4: PARABOLAS

Study: A Familiar Friend

Learn how parabolas are defined and formed.

Duration: 0 hrs 50 mins

Explore: Connection to Art: Parabolic Art

Learn how parabolas are used in art.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on parabolas.

Duration: 0 hrs 50 mins

Quiz: Parabolas

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

LESSON 5: SYSTEMS OF CONIC SECTIONS

Study: Finding the Intersections

Find the solutions to systems of conic sections.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on systems of conic sections.

Duration: 0 hrs 50 mins

Quiz: Systems of Conic Sections

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

LESSON 6: CONIC SECTIONS WRAP-UP

Review: Conic Sections

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Conic Sections

Complete a set of practice problems.

Duration: 0 hrs 50 mins   Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins   Scoring: 20 points

Test (CS): Conic Sections

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Conic Sections

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 7: DIAGNOSTIC

Diagnostic: Conic Sections

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 6: PRECALCULUS SEMESTER 1 REVIEW AND EXAM

LESSON 1: PREPARING FOR THE SEMESTER EXAM

Review: Precalculus Semester 1

Prepare for the semester exam by reviewing key concepts covered in Precalculus Semester 1.

Duration: 1 hr 30 mins

Exam: Semester Exam (Computer-Scored)

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

Duration: 1 hr Scoring: 150 points

Final Exam: Semester Exam (Teacher-Scored)

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

Duration: 1 hr Scoring: 100 points

UNIT 7: INTRODUCTION TO TRIGONOMETRY

LESSON 1: RIGHT TRIANGLES

Study: All the Right Moves

Review right triangles and get an introduction to trigonometric ratios.

Duration: 1 hr

Explore: Connection to Science: Sextant

Learn how a sextant works.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on trigonometry.

Duration: 0 hrs 50 mins

Quiz: Introduction to Trigonometry

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: ANGLES AND RADIANS

Study: A Slice of Pi

Learn about angles expressed in degrees and radians.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on angles and radians.

Duration: 0 hrs 50 mins

Quiz: Angles and Radians

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: TRIGONOMETRIC RATIOS AND THE UNIT CIRCLE

Study: Terminal Conditions

Learn the six trigonometric ratios and how the unit circle defines them.

Duration: 1 hr

Study: Pythagorean Theorem

Review the Pythagorean theorem.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on trigonometric functions and the unit circle.

Duration: 0 hrs 50 mins

Quiz: Trigonometric Functions and the Unit Circle

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: INTRODUCTION TO TRIGONOMETRY WRAP-UP

Review: Introduction to Trigonometry

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Introduction to Trigonometry

Complete a set of practice problems.

Duration: 1 hr Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Introduction to Trigonometry

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Introduction to Trigonometry

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 5: DIAGNOSTIC

Diagnostic: Introduction to Trigonometry

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 8: TRIGONOMETRIC FUNCTIONS

LESSON 1: GRAPHS OF SINE AND COSINE

Study: What Is a Sinusoid Anyway?

Learn to build the graphs of sine and cosine.

Duration: 1 hr

Explore: Connection to Science: Tides

Learn how the tides model periodic behavior.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on graphs of sine and cosine.

Duration: 0 hrs 50 mins

Quiz: Graphs of Sine and Cosine

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: GRAPHS OF OTHER FUNCTIONS

Study: Graphing More Trigonometric Functions

Learn the graphs of the other four trigonometric functions.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on graphs of other functions.

Duration: 0 hrs 50 mins

Quiz: Graphs of Other Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: SIMPLE TRANSFORMATIONS OF SINUSOIDS

Study: Stretches, Shifts, and Flips, Oh My!

Learn how to transform trigonometric graphs with reflections, shifts, and stretches.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on transformations of periodic graphs.

Duration: 0 hrs 50 mins

Quiz: Simple Transformations of Sinusoids

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: GENERAL TRANSFORMATIONS OF PERIODIC GRAPHS

Study: Putting It All Together

Learn how to transform trigonometric graphs with reflections, shifts, and stretches.

Duration: 0 hrs 50 mins

Explore: Connection to Calculus: Daylight Hours

Learn how the hours of daylight can be modeled by a sine function.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on transformations of trigonometric functions.

Duration: 0 hrs 50 mins

Quiz: General Transformations of Periodic Graphs

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 5: TRIGONOMETRIC FUNCTIONS WRAP-UP

Review: Trigonometric Functions

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Trigonometric Functions

Complete a set of practice problems.

Duration: 1 hr Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Trigonometric Functions

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Trigonometric Functions

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 6: DIAGNOSTIC

Diagnostic: Trigonometric Functions

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 9: WORKING WITH TRIGONOMETRIC FUNCTIONS

LESSON 1: INVERSE TRIGONOMETRIC FUNCTIONS

Study: Arc! Who Goes There?

Learn how to solve for angles using the inverse trigonometric ratios.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on inverse trigonometric functions.

Duration: 0 hrs 50 mins

Quiz: Inverse Trigonometric Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: SOLVING TRIGONOMETRIC EQUATIONS

Study: 2 Pi or Not 2 Pi?

Learn to find all solutions to a trigonometric equation.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on solving trigonometric equations.

Duration: 0 hrs 50 mins

Quiz: Solving Trigonometric Equations

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: MODELING SIMPLE HARMONIC MOTION

Study: You Are Getting Sleepy

Explore simple harmonic motion settings.

Duration: 0 hrs 50 mins

Explore: Connection to Physics: Simple Harmonic Motion

Learn how physics uses simple harmonic motion.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned

Complete a set of practice problems on simple harmonic motion.

Duration: 0 hrs 50 mins

Quiz: Modeling Simple Harmonic Motion

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: WORKING WITH TRIGONOMETRIC FUNCTIONS WRAP-UP

Review: Working with Trigonometric Functions

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Working with Trigonometric Functions

Complete a set of practice problems.

Duration: 1 hr Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Working with Trigonometric Functions

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Working with Trigonometric Functions

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 5: DIAGNOSTIC

Diagnostic: Working with Trigonometric Functions

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 10: TRIGONOMETRIC IDENTITIES

LESSON 1: IDENTITIES AND PROOF

Study: Overcoming an Identity Crisis
Learn how to prove identities.

Duration: 1 hr

Explore: Connection to Law: Beyond a Reasonable Doubt
Learn how the legal system uses proof.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned
Complete a set of practice problems on identities and proof.

Duration: 0 hrs 50 mins

Quiz: Identities and Proof
Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: TRIGONOMETRIC IDENTITIES

Study: Just the Facts, Ma'am
Learn the key trigonometric identities.

Duration: 1 hr

Checkup: Lessons Learned
Complete a set of practice problems on trigonometric identities.

Duration: 0 hrs 50 mins

Quiz: Trigonometric Identities
Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: APPLICATIONS OF IDENTITIES

Study: Use 'Em or Lose 'Em
Use the key trigonometric identities to solve trigonometric equations.

Duration: 0 hrs 50 mins

Checkup: Lessons Learned
Complete a set of practice problems on identities.

Duration: 0 hrs 50 mins

Quiz: Applications of Identities
Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: TRIGONOMETRIC IDENTITIES WRAP-UP

Review: Trigonometric Identities
Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills
Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Trigonometric Identities
Complete a set of practice problems.

Duration: 0 hrs 50 mins Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Trigonometric Identities

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Trigonometric Identities

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 5: DIAGNOSTIC

Diagnostic: Trigonometric Identities

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 11: APPLICATIONS OF TRIGONOMETRY

LESSON 1: LAW OF COSINES

Study: It's the Law

Use the law of cosines to solve triangles.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems using the law of cosines.

Duration: 0 hrs 50 mins

Quiz: Law of Cosines

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 2: LAW OF SINES

Study: The Long Arm of the Law

Use the law of sines to solve triangles and to explore the ambiguous case.

Duration: 1 hr

Explore: Connection to Geometry: Congruent Triangle Rules

Review rules of congruent triangles.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems using the law of sines.

Duration: 0 hrs 50 mins

Quiz: Law of Sines

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 3: VECTORS

Study: Getting Around

Use vectors to describe motion.

Duration: 1 hr

Explore: Connection to Physics: Navigation

Learn how to use physics in navigation.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on vectors.

Duration: 0 hrs 50 mins

Quiz: Vectors

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins Scoring: 20 points

LESSON 4: APPLICATIONS OF TRIGONOMETRY WRAP-UP

Review: Applications of Trigonometry

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Applications of Trigonometry

Complete a set of practice problems.

Duration: 0 hrs 50 mins Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Applications of Trigonometry

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Applications of Trigonometry

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 5: DIAGNOSTIC

Diagnostic: Applications of Trigonometry

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 12: COMPLEX NUMBERS

LESSON 1: POLAR COORDINATES

Study: The Polar Express

Learn to use polar coordinates to express locations of points.

Duration: 1 hr

Explore: Connection to Geography: Mapmaking

Learn how mapmakers use polar coordinates.

Duration: 0 hrs 30 mins

Checkup: Lessons Learned

Complete a set of practice problems on polar coordinates.

Duration: 0 hrs 50 mins

Quiz: Polar Coordinates

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

LESSON 2: GRAPHS OF POLAR FUNCTIONS

Study: From Lemniscates to Limaçons

Produce a variety of new graphs using polar functions.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on graphs of polar functions.

Duration: 0 hrs 50 mins

Quiz: Graphs of Polar Functions

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

LESSON 3: POLAR FORM OF COMPLEX NUMBERS

Study: A Good Complex to Have

Express complex numbers in polar form.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on the polar form of complex numbers.

Duration: 0 hrs 50 mins

Quiz: Polar Form of Complex Numbers

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

LESSON 4: ARITHMETIC OF COMPLEX NUMBERS

Study: This Math Isn't Complex

Add, subtract, multiply, and divide complex numbers.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on the arithmetic of complex numbers.

Duration: 0 hrs 50 mins

Quiz: Arithmetic of Complex Numbers

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

LESSON 5: POWERS AND ROOTS OF COMPLEX NUMBERS

Study: Feel the Power

Express powers and roots of complex numbers.

Duration: 1 hr

Checkup: Lessons Learned

Complete a set of practice problems on powers and roots of complex numbers.

Duration: 0 hrs 50 mins

Quiz: Powers and Roots of Complex Numbers

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 40 mins   Scoring: 20 points

Precalculus

LESSON 6: COMPLEX NUMBERS WRAP-UP

Review: Complex Numbers

Prepare for the unit test by reviewing key concepts and skills.

Duration: 0 hrs 50 mins

Review: Calculator Skills

Review key calculator skills.

Duration: 0 hrs 25 mins

Practice: Complex Numbers

Complete a set of practice problems.

Duration: 0 hrs 50 mins Scoring: 50 points

Discuss: What Questions Do You Have?

Discuss ideas about this unit that are still unclear. Help to answer your classmates' questions.

Duration: 0 hrs 30 mins Scoring: 20 points

Test (CS): Complex Numbers

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

Duration: 0 hrs 50 mins Scoring: 60 points

Test (TS): Complex Numbers

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

Duration: 0 hrs 50 mins Scoring: 100 points

LESSON 7: DIAGNOSTIC

Diagnostic: Complex Numbers

Take a diagnostic unit test that will generate a study plan based on your responses.

Duration: 0 hrs 40 mins Scoring: 20 points

UNIT 13: PRECALCULUS SEMESTER 2 REVIEW AND EXAM

LESSON 1: PREPARING FOR THE SEMESTER EXAM

Review: Semester Review

Prepare for the semester exam by reviewing key concepts covered in Precalculus Semester 2.

Duration: 2 hrs

Exam: Semester Exam (Computer-Scored)

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

Duration: 1 hr Scoring: 150 points

Final Exam: Semester Exam (Teacher-Scored)

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

Duration: 1 hr Scoring: 100 points