

Options EHS Precalculus B 2020	Scope and Sequence
Unit Lesson	Objectives
Right Triangle and Circular Trigonometry	
Right Triangle Trigonometry	
	Use the Pythagorean theorem, and the trigonometric functions and their inverses to solve right triangles.
	Use special right triangle relationships to solve right triangles.
Solving for Side Lengths of Right Triangles	
	Write equations using trigonometric ratios that can be used to solve for unknown side lengths of right triangles.
	Solve for unknown side lengths of right triangles using trigonometric ratios.
	Apply trigonometric ratios to solve real-world problems.
Solving for Angle Measures of Right Triangles	
	Write equations that can be used to solve for unknown angles in right triangles.
	Solve for unknown angles of right triangles using inverse trigonometric functions.
	Apply inverse trigonometric functions to solve real-world problems.
Angles in Standard Position	
	Identify characteristics of angles in standard position.
	Determine angles that are coterminal.
Radian Measure	
	Convert between degree and radian measure.
	Use the definition of radian measure to calculate arc lengths, radii, and angle measures.
The Unit Circle	
	Find the sine, cosine, and tangent values of angle measures using the unit circle.
	Compare sine, cosine, and tangent values for angles having the same reference angle.

Unit Lesson**Objectives**

Reciprocal Trigonometric Functions

Solve right triangle trigonometry problems involving reciprocal trigonometric functions.

Simplify expressions involving the six trigonometric functions using reciprocal relationships.

Evaluate the six trigonometric functions for special angles.

Unit Test

Graphing Trigonometric Functions

Graphing Sine and Cosine

Analyze key features of sine and cosine functions from equations and graphs.

Changes in Period and Phase Shift of Sine and Cosine Functions

Relate transformations of the graphs of the sine and cosine functions to the equation.

Graphing Cosecant and Secant Functions

Analyze key features of secant and cosecant functions from equations and graphs.

Graphing Tangent and Cotangent

Analyze key features of tangent and cotangent functions from equations and graphs.

Trigonometric Inverses and Their Graphs

Graph inverse trigonometric functions

Find principal values of inverse trigonometric functions

Modeling with Periodic Functions

Model and solve real-world problems using periodic functions.

Unit Test

Trigonometry

Evaluating the Six Trigonometric Functions

Unit Lesson

Objectives

Evaluate the six trigonometric functions for angles in degrees or radians based on one or more given trigonometric function values.

Evaluate the six trigonometric functions for angles in degrees or radians given a point on the terminal ray.

Basic Trigonometric Identities

Identify and use reciprocal identities, quotient identities, Pythagorean identities, symmetry identities, and opposite-angle identities

Verifying Trigonometric Identities

Use the basic trigonometric identities to verify other identities

Find numerical values of trigonometric functions

Sum and Difference Identities

Use the sum and difference identities for the sine, cosine, and tangent functions

Double-Angle and Half-Angle Identities

Use the double- and half-angle identities for the sine, cosine, and tangent functions

Solving Trigonometric Equations

Analyze key features of inverse trigonometric functions from equations and graphs.

Evaluate inverse trigonometric functions over a specified domain.

Solve trigonometric equations over a specified domain.

Law of Sines

Apply the law of sines to solve mathematical and real-world problems.

Determine whether a triangle has zero, one, or two solutions using the ambiguous case of the law of sines.

Law of Cosines

Apply the law of cosines to solve mathematical and real-world problems.

Unit Lesson**Objectives**

Law of Sines and Law of Cosines — a Deeper Look

Use right triangle trigonometry to develop and prove the Law of Sines.

Use right triangle trigonometry to develop and prove the Law of Cosines.

Use the Law of Sines to solve problems.

Use the Law of Cosines to solve problems.

Unit Test

Vectors

Geometric Vectors

Find equal, opposite, and parallel vectors

Add and subtract vectors geometrically

Algebraic Vectors

Find ordered pairs that represent vectors

Add, subtract, multiply, and find the magnitude of vectors algebraically.

Vectors and Parametric Equations

Write vector and parametric equations of lines

Graph parametric equations

Polar Coordinates

Convert points and equations from polar to rectangular coordinates and vice versa

Graphs of Polar Equations

Graph polar equations and determine the maximum r-value and the symmetry of a graph

Unit Test

Conics and Analytic Geometry

Unit Lesson**Objectives**

Conic Sections: Parabolas

Use and determine the standard form of the equation of the parabola.

Solve applied problems involving parabolas.

Equations of Ellipses

Identify the center, foci, directrix, and vertices of an ellipse from an equation or graph.

Write the equation of an ellipse from a given graph or information about its center, foci, directrix, or vertices.

Equations of Hyperbolas

Determine the foci, directrices, vertices, and asymptotes of a hyperbola with center at the origin from an equation or graph.

Graph a hyperbola with center at the origin from a given equation.

Write the equation of a hyperbola with center at the origin from a given graph or information about its foci, directrices, or vertices.

Unit Test

Sequences and Series

Arithmetic Sequences

Find the common difference of an arithmetic sequence.

Determine if a sequence is arithmetic.

Apply the formula of an arithmetic sequence.

Find the terms of an arithmetic sequence.

Geometric Sequences

Find the common ratio of a geometric sequence.

Determine if a sequence is geometric.

Apply the formula of a geometric sequence.

Unit Lesson**Objectives**

Find terms of a geometric sequence.

Summation Notation

Convert between series in summation notation and expanded form.

Evaluate a summation by expanding it.

Unit Test

Cumulative Exam

Cumulative Exam Review

Cumulative Exam