

Options EHS Applied Math B		Scope and Sequence
Unit	Lesson	Objectives
<b>Trigonometry</b>		
Trigonometric Ratios		<p>Given an acute angle of a right triangle, label the hypotenuse, opposite, and adjacent sides.</p> <p>Given an acute angle of a right triangle, write ratios for sine, cosine, and tangent.</p> <p>Relate trigonometric ratios of similar triangles and the acute angles of a right triangle.</p>
The Unit Circle		<p>Determine the coordinates of points on a unit circle using sine and cosine functions</p> <p>Sketch a graph of <math>y = \sin x</math> and <math>y = \cos x</math></p> <p>Identify the properties of the graphs of sine and cosine functions</p>
Angles and Trigonometric Functions		<p>Convert between radian and degree measure.</p> <p>Evaluate trigonometric functions.</p> <p>Use the unit circle to explain key features of the sine and cosine functions.</p> <p>Use trigonometric functions to solve problems.</p>
Right Triangle Trigonometry		<p>Use the Pythagorean theorem, and the trigonometric functions and their inverses to solve right triangles.</p> <p>Use special right triangle relationships to solve right triangles.</p>
Graphing Sine and Cosine		<p>Analyze key features of sine and cosine functions from equations and graphs.</p>
General Form of Sine and Cosine		<p>Graph a vertical or horizontal shift of the sine or cosine function.</p> <p>Describe the result of a vertical or horizontal shift on the sine or cosine function.</p>

**Unit Lesson****Objectives**

Interpret key features of a sine or cosine function that models a real-world context.

Create an appropriate periodic function to model a real-world context.

## 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.

## Test

**Probability and Statistics**

## Introduction to Probability

Interpret probability as the long-run relative frequency of an event.

Describe the law of large numbers.

Describe how a simulation is used to imitate a random process.

Conduct a simulation using a graphing calculator.

## Probability Rules

Identify a probability model to describe a random process.

Apply the basic probability rules, which indicate that the probability of an event is a number between 0 and 1 and that the sum of the probabilities of all outcomes in the sample space is 1.

Apply the complement rule and the addition rule for mutually exclusive events.

## Experimental Probability

Find the experimental probability of an event, expressing it as a ratio.

Use experimental probability to make predictions.

## Probability of Independent Events

## Unit Lesson

## Objectives

Determine if compound events are independent or dependent.

Calculate probabilities using tree diagrams or the multiplication rule of independent events

## Probability of Compound Events

Find probabilities of independent compound events using organized lists, tables, or tree diagrams.

Find probabilities of dependent compound events using organized lists, tables, or tree diagrams.

## Probability and Two-Way Tables

Construct a two-way table.

Use a two-way table to determine if two events are independent.

Compute conditional probabilities from data displayed in a two-way table.

## Geometric Probability

Identify the probability of landing in a given region of a geometric figure as impossible, unlikely, likely, or certain.

Calculate geometric probabilities.

## Conditional Probability

Use calculations to determine if two events are independent.

Calculate conditional probabilities using formulas and Venn diagrams.

Calculate probabilities of compound events.

Compound Events and the  
Fundamental Counting Principle

Use the fundamental counting principle to determine the number of possible outcomes.

Use the fundamental counting principle to determine the probability of compound events.

Properties of Probability  
Distributions

Identify properties of a probability distribution.

**Unit Lesson****Objectives**

Create probability distributions from a data set.

Solve problems using probability distributions.

Probability with Combinations and Permutations

Identify expressions that represent probabilities of compound events.

Use combinations to compute probabilities of compound events.

Use permutations to compute probabilities of compound events.

Simulations

Describe the simulation of a binomial probability distribution.

Describe the simulation of a geometric probability distribution.

Test

**Geometry**

Defining Geometric Terms

Identify undefined terms of point, line, distance along a line, and distance around a circular arc.

Use undefined terms to precisely define angle, circle, perpendicular line, and line segment.

Symmetries in Shapes

Identify reflectional symmetry in geometric figures and the number of lines of symmetry.

Identify rotational symmetry and its order in geometric figures.

Angles of Geometric Figures

Classify angles.

Use relationships between angles in geometric figures to solve for unknown measures.

Develop and use formulas for the sums of the interior angles of polygons by decomposing them into triangles.

Recognizing Patterns

## Unit Lesson

## Objectives

Analyze a sequence of numbers to determine the pattern, and identify whether it is arithmetic or geometric.

Use a recursive rule to calculate a term of a sequence.

Write a recursive rule for a sequence.

## Scale Drawings

Use geometry formulas to solve problems

Use scale drawings in the problem-solving process

## Slopes of Parallel and Perpendicular Lines

Complete the steps to prove the slope criteria for parallel and perpendicular lines using coordinate geometry.

Determine if two lines are parallel or perpendicular.

Use slope criteria to find additional points on a line parallel or perpendicular to a given line.

Prove the slope criteria for perpendicular lines.

## Graphing Proportional Relationships

Graph a proportional relationship from tables and verbal descriptions.

Identify the meanings of points on the graph of a proportional relationship and determine the characteristics of the graph of a proportional relationship.

## Finding a Constant of Proportionality

Find the constant of proportionality from verbal descriptions, tables, graphs, and diagrams.

## Equations of Proportional Relationships

Identify the constant of proportionality from an equation.

Write an equation to represent a proportional relationship.

**Unit Lesson****Objectives**

Translate between tables, graphs, and equations to represent proportional relationships.

Direct Variation

Recognize equivalent forms of the direct variation statement

Determine the constant of proportionality in a direct variation problem

Solve direct variation problems

Test

**Cumulative Exam**

Cumulative Exam Review

Cumulative Exam