

Geometry builds upon students' command of geometric relationships and formulating mathematical arguments. 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 reasoning, proof, and the creation of sound mathematical arguments; points, lines, and angles; triangles and trigonometry; quadrilaterals and other polygons; circles; congruence, similarity, transformations, and constructions; coordinate geometry; and three-dimensional solids.

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, and 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 Maryland state standards.

Length: Two Semesters

## UNIT 1: FOUNDATIONS OF GEOMETRY

### LESSON 1: THE LOOK AND LANGUAGE OF LOGIC

#### Study: The Look and Language of Logic

Explore examples of geometric reasoning. Learn about converses, inverses, and contrapositives of conditional statements.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: The Look and Language of Logic

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 2: INTRODUCTION TO PROOFS

#### Study: Introduction to Proofs

Learn about postulates and axioms, givens, proof by contradiction (indirect proof), theorems and corollaries, and the axiomatic method.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Quiz: Introduction to Proofs

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 3: BASIC POSTULATES IN GEOMETRY

#### Study: Basic Postulates in Geometry

Learn about the relationship of rays, lines, and angles to direction; the definition of a line; notation for rays and lines; building and defining an angle (including its vertex and sides); conventions for naming angles; and straight and zero angles.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Basic Postulates in Geometry

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 4: PLANES AND THE SPACE OF GEOMETRY

### Study: Planes and the Space of Geometry

Learn about dimensionality, collinear points, two-dimensional objects, the geometric plane, the flat plane, postulate coplanar objects, and three-dimensional objects (solids).

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Planes and the Space of Geometry

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: Logo Design

Use your knowledge of location, direction, and angles to model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 5: INTERSECTING LINES AND PROOFS

### Study: Intersecting Lines and Proofs

Learn about intersections that form vertical angles; the vertical angle theorem; perpendicular lines, rays, and segments; distance and length; and perpendicular bisectors.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Intersecting Lines and Proofs

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 6: PARALLEL LINES AND PROOFS

### Study: Parallel Lines and Proofs

Learn about skew lines, coplanar lines that do not intersect, parallel line notation, transversals and corresponding angles, alternate interior angles, consecutive interior angles, and parallel line theorems.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Parallel Lines and Proofs

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Journal: Consecutive Angle Theorem

Use what you know about lines and angles to critique the reasoning of others and prove a theorem.

Duration: 0 hrs 30 mins Scoring: 20 points

### **Study: Solving the Mirror Problem**

Learn about applying theorems from this unit to the problem of measuring light reflected off a mirror. Learn about the law of reflection.

Duration: 0 hrs 35 mins Scoring: 0 points

## **LESSON 7: FOUNDATIONS OF GEOMETRY WRAP-UP**

### **Checkpoint: Foundations of Geometry Practice Problems**

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Review: Foundations of Geometry**

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

Duration: 0 hrs 30 mins Scoring: 0 points

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

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

Duration: 0 hrs 40 mins Scoring: 40 points

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

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

Duration: 0 hrs 30 mins Scoring: 40 points

## **UNIT 2: CONSTRUCTIONS AND TRANSFORMATIONS**

### **LESSON 1: CONSTRUCTIONS**

#### **Study: Constructions**

Learn about using a straightedge and a compass, common notions of Euclidean geometry, five postulates, constructing an equilateral triangle and a regular hexagon, bisecting an angle, and constructing a perpendicular bisector.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Quiz: Constructions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### **Practice: Modeling: Constructing a Square**

Use your geometry skills to construct a square using only a straightedge and a compass.

Duration: 0 hrs 30 mins Scoring: 20 points

### **LESSON 2: PAPER FOLDING**

#### **Study: Paper Folding**

Learn about constructing geometric solids with folding paper, coinciding objects bisecting an angle, and constructing a parallel line segment.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Quiz: Paper Folding**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 3: IMPOSSIBLE PROBLEMS FROM ANTIQUITY**

#### **Study: Impossible Problems from Antiquity**

Learn about the Delian problem (doubling a cube) and trisecting an angle.

Duration: 0 hrs 35 mins Scoring: 0 points

#### **Quiz: Impossible Problems from Antiquity**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 4: T TRANSFORMATIONS**

#### **Study: Transformations**

Learn about rigid motions, describe the image and preimage, predict the results of transformations, and use a series of transformations to move figures onto themselves.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Quiz: Transformations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Journal: Transformations**

Critique a conjecture about a series of transformations.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 5: TESSELLATIONS**

### **Study: Tessellations**

Learn the definition and explore examples of tessellations. Discover the chessboard as an example of a regular tessellation. Learn about semiregular tessellations.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Quiz: Tessellations**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 6: CONSTRUCTIONS AND TRANSFORMATIONS WRAP-UP**

### **Checkpoint: Constructions and Transformations Practice Problems**

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Review: Constructions and Transformations**

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

Duration: 0 hrs 30 mins Scoring: 0 points

### **Test (CS): Constructions and Transformations**

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

Duration: 0 hrs 40 mins Scoring: 36 points

### **Test (TS): Constructions and Transformations**

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

Duration: 0 hrs 30 mins Scoring: 33 points

## **UNIT 3: TRIANGLES**

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

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

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

Duration: 0 hrs 35 mins Scoring: 0 points

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

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Naming Triangles by Angle Measures**

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### **Quiz: Naming Triangles by Side Lengths**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: The Triangle Inequality Theorem

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 2: THE ANGLES OF A TRIANGLE

### Study: The Angles of a Triangle

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

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Angle Theorems

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Exterior and Remote Interior Angles

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 3: CONGRUENCE

### Study: Congruence

Learn about congruence, transformations of triangles, corresponding triangles, notation for writing congruence statements, and the CPCTC triangle congruence theorem.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Congruent Triangles

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Properties of Congruence

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 4: CONGRUENCE POSTULATES

### Study: Congruence Postulates

Learn about postulates including the SSS, SAS, ASA, and AAS theorems.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkup: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Using Congruence Postulates

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: The AAS Theorem

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 5: PROOFS OF CONGRUENCE

### Study: Proofs of Congruence

Learn about proving that parts of triangles are congruent by using Thales's method for measuring the distance from ship to shore.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Quiz: Proofs of Congruence**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Journal: Proofs of Congruence**

Use what you know about congruence of triangles to prove the Perpendicular Bisector Theorem.

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 6: SIMILAR TRIANGLES**

### **Study: Similar Triangles**

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

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkup: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Similar Triangles**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 7: SIMILARITY THEOREMS AND PROPORTIONAL REASONING**

### **Study: Similarity Theorems and Proportional Reasoning**

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

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkup: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Similarity Theorems**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Practice: Modeling: Similarity Theorems**

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

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 8: TRIANGLE THEOREMS**

### **Study: Triangle Theorems**

Learn and prove the isosceles triangle theorem and its converse. Investigate two corollaries involving angle measures for equilateral triangles. Explore theorems for scalene triangles. Apply what you have learned to solve Thales's problem.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkup: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Isosceles and Equilateral Triangles**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Scalene Triangles**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 9: MEDIANS AND ALTITUDES

### Study: Medians and Altitudes

Identify and explore medians and altitudes. Discover their relationship to centroids, orthocenters, incenters, and circumcenters.

Duration: 0 hrs 35 mins Scoring: 0 points

### Quiz: Medians and Altitudes

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 10: BISECTORS AND MIDSEGMENTS

### Study: Bisectors and Midsegments

Identify and explore angle bisectors, perpendicular bisectors, and midpoint bisectors, and lines parallel to one side of a triangle to discover their relationships to circumcenters, incenters, and side lengths.

Duration: 0 hrs 35 mins Scoring: 0 points

### Quiz: Bisectors and Midsegments

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 11: PERFORMANCE TASK: THE PARALLAX PROBLEM

### Study: The Parallax Problem

Learn to apply the concepts of congruence, similarity, ratio, and proportion to the solution of a real-world parallax problem.

Duration: 0 hrs 35 mins Scoring: 0 points

### Project: Performance Task: The Parallax Problem

Apply the concepts of congruence, similarity, ratio, and proportion to solve a real-world problem.

Duration: 2 hrs Scoring: 120 points

## LESSON 12: TRIANGLES WRAP-UP

### Checkpoint: Triangles Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Review: Triangles

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

Duration: 0 hrs 30 mins Scoring: 0 points

### Test (CS): Triangles

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

Duration: 0 hrs 40 mins Scoring: 50 points

### Test (TS): Triangles

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

Duration: 0 hrs 30 mins Scoring: 50 points

## UNIT 4: QUADRILATERALS AND OTHER POLYGONS

### LESSON 1: ANGLE SUMS OF A POLYGON AND PROOFS

#### Study: Angle Sums of a Polygon and Proofs

Learn about the diagonal of a polygon, the formula for the sum of the measures of a polygon's interior angles and exterior angles, and a theorem for the sum of their measures.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Angle Sums of a Polygon and Proofs

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 2: PARALLELOGRAMS AND PROOFS

### Study: Parallelograms and Proofs

Learn about the definition of a parallelogram, properties and theorems of parallelograms, consecutive angle pairs, and diagonals.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Parallelograms and Proofs

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 3: TESTS FOR PARALLELOGRAMS

### Study: Tests for Parallelograms

Explore parallelogram theorems involving opposite side lengths, opposite and consecutive angle measures, and bisecting diagonals. Then work through a sample proof.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Tests for Parallelograms

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: Finding Parallelograms

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

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 4: RECT ANGLES

### Study: Rectangles

Learn about the definition of a rectangle, congruent diagonal theorems, and right angle theorems. Explore a sample problem about using the congruent diagonal theorem to prove that a window is rectangular.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Rectangles

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 5: RHOMBI AND SQUARES

### Study: Rhombi and Squares

Identify the properties and definitions of a rhombus and a square. Prove that the diagonals of a rhombus are perpendicular. Investigate how diagonals of a rhombus bisect opposite vertices. Apply the properties of rhombi and squares to find missing side lengths, diagonal lengths, and angle measures.

Duration: 0 hrs 35 mins Scoring: 0 points



### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Rhombi and Squares

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 6: TRAPEZOIDS

### Study: Trapezoids

Learn the definition of a trapezoid and identify its parts. Explore how base angles and diagonals of an isosceles trapezoid are congruent. Investigate the medians of a trapezoid. Apply the properties of trapezoids and isosceles trapezoids to find missing side lengths and median lengths.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Trapezoids

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Journal: The Stone Arch

Use what you know about triangles and parallelograms to solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 7: QUADRILATERALS AND OTHER POLYGONS WRAP-UP

### Checkpoint: Quadrilaterals and Other Polygons Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Review: Quadrilaterals and Other Polygons

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

Duration: 0 hrs 30 mins Scoring: 0 points

### Test (CS): Quadrilaterals and Other Polygons

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

Duration: 0 hrs 40 mins Scoring: 50 points

### Test (TS): Quadrilaterals and Other Polygons

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

Duration: 0 hrs 30 mins Scoring: 50 points

## UNIT 5: SEMESTER 1 EXAM

### LESSON 1: SEMESTER 1 EXAM

#### Review: Semester 1 Review

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

Duration: 0 hrs 30 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: 155 points

## UNIT 6: RIGHT TRIANGLES

### LESSON 1: THE PYTHAGOREAN THEOREM

#### Study: The Pythagorean Theorem

Learn how the Pythagorean theorem applies only to right triangles and discover one proof of it. Learn about the converse of the Pythagorean theorem, Pythagorean triples, and applying the theorem to the problem of fitting a baseball bat into a rectangular trunk.

Duration: 0 hrs 35 mins Scoring: 0 points

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

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: The Pythagorean Theorem**

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### **Journal: Proving the Pythagorean Theorem**

Use what you know about congruence of triangles to prove the Pythagorean Theorem.

Duration: 0 hrs 30 mins Scoring: 20 points

### **LESSON 2: CONGRUENT RIGHT TRIANGLES**

#### **Study: Congruent Right Triangles**

Learn about the HL, LL, HA, LA, and perpendicular bisector theorems. Learn about the angle bisector theorem and its converse.

Duration: 0 hrs 35 mins Scoring: 0 points

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

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Proving Right Triangle Congruence**

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### **Quiz: Right Triangle Measurements**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **LESSON 3: SIMILAR RIGHT TRIANGLES**

#### **Study: Similar Right Triangles**

Explore the properties of similar right triangles. Prove that if an altitude is drawn from the right-angle vertex of a right triangle to its hypotenuse, then three similar triangles are formed. Calculate the missing sides of similar right triangles by using proportions and apply concepts learned to a miniature-golf problem.

Duration: 0 hrs 35 mins Scoring: 0 points

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

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### **Quiz: Similar Right Triangles**

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### **Practice: Modeling: The Pool Table Problem**

Use your knowledge of similar right triangles to model a pool table and hit your ball in the pocket.

Duration: 0 hrs 30 mins Scoring: 20 points

### **LESSON 4: SPECIAL RIGHT TRIANGLES**

#### **Study: Special Right Triangles**

Explore 45-45-90 and 30-60-90 triangles as special cases of right triangles and learn how to apply the ratios of their side lengths.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: 45-45-90 Right Triangles

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: 30-60-90 Right Triangles

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 5: TRIGONOMETRIC RATIOS

### Study: Trigonometric Ratios

Learn the definitions of *sine*, *cosine*, and *tangent*. Memorize the shortcut "soh-cah-toa" as a way to relate these ratios. Explore the use of trigonometric ratios in the solution of a real-world problem involving the construction of a cable car.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Trigonometric Ratios

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: Leaning Towers

Use your knowledge of right triangles, trigonometric ratios, and the Pythagorean Theorem to model and solve a real-world problem.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 6: RIGHT TRIANGLES WRAP-UP

### Checkpoint: Right Triangles Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Review: Right Triangles

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

Duration: 0 hrs 30 mins Scoring: 0 points

### Test (CS): Right Triangles

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

Duration: 0 hrs 40 mins Scoring: 50 points

### Test (TS): Right Triangles

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

Duration: 0 hrs 30 mins Scoring: 49 points

## UNIT 7: COORDINATE GEOMETRY

### LESSON 1: MIDPOINT FORMULA

#### Study: Midpoint Formula

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

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Midpoint Formula

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 2: THE DISTANCE FORMULA

### Study: The Distance Formula

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

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: The Distance Formula

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Journal: The Distance Formula

Use what you know about the midpoint and distance formulas to critique the reasoning of others.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 3: SLOPE

### Study: Slope

Learn about measuring slope, rise, and run; the slope formula; negative zero and undefined slope; and measuring the rate of change of a dependent variable.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Computing Slope

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: The Rescue Ship

Use your knowledge of parallel lines and the slope formula to steer a ship through dangerous waters.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 4: EQUATIONS OF LINES

### Study: Equations of Lines

Learn about and explore examples of properties of lines, the  $y$ -intercept, the slope-intercept equation, and the point-slope equation.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Equations of Lines — Part I

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Equations of Lines — Part II

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 5: EQUATIONS OF PARALLEL AND PERPENDICULAR LINES AND PROOFS

### Study: Equations of Parallel and Perpendicular Lines and Proofs

Learn about the definitions and slopes of parallel and perpendicular lines. Learn about negative reciprocals.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Equations of Parallel and Perpendicular Lines and Proofs

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 6: COORDINATE GEOMETRY WITH POLYGONS

### Study: Coordinate Geometry with Polygons

Investigate the properties of polygons using coordinate geometry and congruence transformations on the coordinate plane.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Complete a set of practice problems to hone your calculation skills.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Coordinate Geometry with Polygons

Take a quiz to assess your understanding of the material.

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 7: AREA OF A TRIANGLE WITH COORDINATE GEOMETRY

### Study: Area of a Triangle with Coordinate Geometry

Learn about the area of a polygon, square units, and the triangle area formula and theorem.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Area of a Triangle

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 8: AREA AND PERIMETER OF POLYGONS WITH COORDINATE GEOMETRY

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

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

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Area and Perimeter of Polygons

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 9: COORDINATE GEOMETRY WRAP-UP

**Checkpoint: Practice Problems**

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

**Review: Coordinate Geometry**

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

Duration: 0 hrs 30 mins Scoring: 0 points

**Test (CS): Coordinate Geometry**

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

Duration: 0 hrs 40 mins Scoring: 50 points

**Test (TS): Coordinate Geometry**

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

Duration: 0 hrs 30 mins Scoring: 50 points

**UNIT 8: THREE-DIMENSIONAL SOLIDS****LESSON 1: THREE DIMENSIONS****Study: Three Dimensions**

Learn about measuring three-dimensional figures.

Duration: 0 hrs 35 mins Scoring: 0 points

**Quiz: Three Dimensions**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 2: CYLINDERS AND CONES****Study: Cylinders and Cones**

Learn about the definition, components, and properties of a cylinder; the definition and components of a cone; and the similarities between cones and pyramids.

Duration: 0 hrs 35 mins Scoring: 0 points

**Quiz: Cylinders and Cones**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 3: SURFACE AREA****Study: Surface Area**

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

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Surface Area of Regular Prisms and Pyramids**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**Quiz: Surface Area of Right Cylinders and Cones**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 4: VOLUME****Study: Volume**

Learn about area and volume, the formulas for volume of a cube and a rectangular prism, and Bonaventura Francesco

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

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Volume of Prisms, Cylinders, and Cubes**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Quiz: Volume of Cones, Cylinders, and Pyramids**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### **Journal: Volume**

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

Duration: 0 hrs 30 mins Scoring: 20 points

## **LESSON 5: SPHERES**

### **Study: Spheres**

Learn about the definition of a sphere; the formulas for surface area and volume of a sphere; comparing the surface area and volume of a sphere, cube, cylinder, and cone; and using Cavalieri's principle to derive the formula for volume of a sphere.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Spheres**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 6: SIMILAR SOLIDS**

### **Study: Similar Solids**

Learn about similar prisms, pyramids, cylinders, cones, and spheres; the constant ratio between corresponding parts of similar solids; and the ratio of volumes of similar solids.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### **Quiz: Similar Solids**

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

Duration: 0 hrs 20 mins Scoring: 20 points

## **LESSON 7: PERFORMANCE TASK: THREE-DIMENSIONAL SOLIDS**

### **Study: Geodesic Domes**

Use your knowledge of three-dimensional solids to solve a geodesic dome problem.

Duration: 0 hrs 35 mins Scoring: 0 points

### **Project: Performance Task: The Subway Stop**

Use what you know about three-dimensional solids to solve a real-world problem.

Duration: 2 hrs Scoring: 120 points

## **LESSON 8: THREE-DIMENSIONAL SOLIDS WRAP-UP**

### Checkpoint: Three-Dimensional Solids Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Review: Three-Dimensional Solids

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

Duration: 0 hrs 30 mins Scoring: 0 points

### Test (CS): Three-Dimensional Solids

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

Duration: 0 hrs 40 mins Scoring: 32 points

### Test (TS): Three-Dimensional Solids

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

Duration: 0 hrs 30 mins Scoring: 50 points

## UNIT 9: CIRCLES

### LESSON 1: WHAT IS A CIRCLE?

#### Study: What Is a Circle?

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

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: What Is a Circle?

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 2: CHORDS

#### Study: Chords

Investigate the properties and definitions of chords and diameters. Discover that two chords are congruent if they are the same distance from the center of the circle. Prove that the radius bisects a chord if it is perpendicular to the chord.

Duration: 0 hrs 35 mins Scoring: 0 points

#### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

#### Quiz: Congruent Chords

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### Quiz: Chords and Perpendicular Radii

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

Duration: 0 hrs 20 mins Scoring: 20 points

#### Quiz: Diameter of a Circle

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

Duration: 0 hrs 20 mins Scoring: 20 points

### LESSON 3: ARCS

#### Study: Arcs

Learn the definitions of arc, endpoint, central angle, and intercept. Learn about minor and major arcs and semicircles, arc notation, the measure of minor and major arcs, and the arc congruence and congruent chord theorems.

Duration: 0 hrs 35 mins Scoring: 0 points



**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Arc Types and Measure**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 4: CHORD AND ARC RELATIONSHIPS****Study: Chord and Arc Relationships**

Learn the definitions of arc, endpoint, central angle, and intercept. Learn about minor and major arcs and semicircles, arc notation, the measure of minor and major arcs, and the arc congruence and congruent chord theorems.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Congruent Chords and Circle Angle Measure**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 5: CIRCLES, ANGLES, AND PROOFS****Study: Circles, Angles, and Proofs**

Learn the definition of an inscribed angle. Experiment with inscribed angles and their intercepted arcs. Discover and prove that an inscribed angle is half the measure of its intercepted arc. Discover and prove the intersecting chord theorem.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Inscribed Angles**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**Quiz: Intersecting Chord Theorem**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**LESSON 6: SECANTS, TANGENTS, AND PROOFS****Study: Secants, Tangents, and Proofs**

Learn about the definition of secant and about secant-secant angle, its theorem, and proving the theorem. Learn about tangent line, point of tangency and tangent segments, tangents perpendicular to a circle's radius, a tangent-tangent angle and its theorem, and a tangent-chord angle and its theorem. Explore a sample proof.

Duration: 0 hrs 35 mins Scoring: 0 points

**Checkpoint: Practice Problems**

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

**Quiz: Secant-Secant Angles**

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

Duration: 0 hrs 20 mins Scoring: 20 points

**Quiz: Tangent-Chord Angles**

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Tangent-Tangent Angles and Their Intercepted Arcs

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 7: CIRCUMFERENCE AND ARC LENGTH

### Study: Circumference and Arc Length

Learn about the irrational number pi and the formula for finding the circumference of a circle. Apply circumference to a real-world problem about how to build a bridge that's tall enough for boats to travel beneath it. Learn about the degree measure of an arc and arc length. Derive the formula for arc length.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Circumference of a Circle

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Arc Length

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 8: AREA AND SECTORS

### Study: Area and Sectors

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

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Area of a Circle

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Area of a Sector

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Practice: Modeling: Stained Glass Window

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

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 9: CIRCLES AND TRIANGLES

### Study: Circles and Triangles

Learn about inscribed objects; circumscribed objects; and the definitions of incenter and circumcenter.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Circles and Triangles

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Journal: Similar Circles

A peer uses dilation to prove that two circles are similar. Now you prove it using inscribed triangles.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 10: CIRCLES AND POLYGONS

### Study: Circles and Polygons

Learn about the theorems of a quadrilateral inscribed in a circle and of a parallelogram inscribed in a circle.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Circles and Polygons

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

Duration: 0 hrs 20 mins Scoring: 20 points

## LESSON 11: CIRCLES WITH COORDINATES AND PROOFS

### Study: Circles with Coordinates and Proofs

Use algebra to find an equation whose solution set is a circle. Learn about the standard equation for circles that are not centered at the origin.

Duration: 0 hrs 35 mins Scoring: 0 points

### Checkpoint: Practice Problems

Check your understanding of the lesson.

Duration: 0 hrs 25 mins Scoring: 0 points

### Quiz: Circles Centered at the Origin

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Quiz: Circles Not Centered at the Origin

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

Duration: 0 hrs 20 mins Scoring: 20 points

### Journal: Point on a Circle

Use what you know about equations of circles to prove whether or not a point is on a circle.

Duration: 0 hrs 30 mins Scoring: 20 points

## LESSON 12: CIRCLES WITHOUT COORDINATES WRAP-UP

### Checkpoint: Circles Without Coordinates Practice Problems

Check your understanding of the topics in this unit.

Duration: 0 hrs 25 mins Scoring: 0 points

### Review: Circles Without Coordinates

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

Duration: 0 hrs 30 mins Scoring: 0 points

### Test (CS): Circles Without Coordinates

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

Duration: 0 hrs 40 mins Scoring: 50 points

### Test (TS): Circles Without Coordinates

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

Duration: 0 hrs 30 mins Scoring: 56 points

## UNIT 10: SEMESTER 2 EXAM

### LESSON 1: SEMESTER 2 EXAM

**Review: Semester 2 Review**

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

Duration: 0 hrs 30 mins Scoring: 0 points

**Exam: Semester 2 Exam**

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

Duration: 0 hrs 50 mins Scoring: 165 points