

Geometry provides a curriculum focused on the mastery of critical skills and the understanding of key geometric concepts. Through a "Discovery-Confirmation-Practice"-based exploration of these concepts, students are challenged to work toward a mastery of computational skills, to deepen their understanding of key ideas and solution strategies, and to extend their knowledge in a variety of problem-solving applications.

Course topics include reasoning, proof, and the creation of a sound mathematical argument; points, lines, and angles; triangles; quadrilaterals and other polygons; circles; coordinate geometry; and three-dimensional solids. The course concludes with a look at special topics in geometry, such as constructions, symmetry, tessellations, fractals, and non-Euclidean geometry.

Within each Geometry lesson, students are supplied with a scaffolded note-taking guide, called a Study Sheet, as well as a post-study Checkup activity that provides them the opportunity to hone their computational skills by working through a low-stakes, 10-question problem set before moving on to formal assessment. Unit-level Geometry assessments include a computer-scored test and a scaffolded, teacher-scored test.

To assist students for whom language presents a barrier to learning or who are not reading at grade level, Geometry includes audio resources in both Spanish and English.

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: FOUNDATIONS OF GEOMETRY

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### LESSON 1: ENTERING THE WORLD OF GEOMETRY

#### **Study: Entering the World of Geometry**

Learn about and explore examples of geometric reasoning.

*Duration: 0 hr 50 min*

#### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

#### **Quiz: Entering the World of Geometry**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

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Scoring: 16 points

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## LESSON 2: INDUCTION: THE SEARCH FOR RULES AND PATTERNS

### Study: Induction: The Search for Rules and Patterns

Learn about points, line segments, grouping, similarity, and difference.

*Duration: 0 hr 50 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 30 min*

### Quiz: Induction: The Search for Rules and Patterns

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 20 points*

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## LESSON 3: DEDUCTION: MAKING A CASE

### Study: Deduction: Making a Case

Learn about looking for patterns, making conjectures, cross-referencing to history and science, real-world examples of inductive reasoning, building a triangle, and examples of symmetry.

*Duration: 0 hr 50 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 30 min*

### Quiz: Deduction: Making a Case

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 20 points*

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## LESSON 4: THE LOOK AND LANGUAGE OF LOGIC

### Study: The Look and Language of Logic

Learn about the definition of deductive reasoning, postulates and conditional statements, and using deductive reasoning in proofs. Explore a real-world example of deducing dealing with the combination of a lock.

*Duration: 0 hr 50 min*

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### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 24 points*

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## **LESSON 5: INTRODUCTION TO PROOF**

### **Study: Introduction to Proof**

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

*Duration: 0 hr 50 min*

### **Quiz: Introduction to Proof**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30*

*points*

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## **LESSON 6: PROOF IN GEOMETRY**

### **Study: Proof in Geometry**

Learn about Euclid's *Elements* and real-world applications of geometry like navigation golf.

*Duration: 0 hr 50 min*

### **Quiz: Proof in Geometry**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 8*

*points*

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

### **Practice: Assignment**

Submit your work for a set of 20 practice problems.

*Duration: 1 hr Scoring: 100 points*

### **Review: Review Exercise**

Take part in interactive games to review unit material in preparation for upcoming assessments.

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*Duration: 1 hr*

### **Discuss: Get My Logic?**

Respond to one of three discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

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

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

*Duration: 0 hr 40 min Scoring: 54 points*

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

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

*Duration:*

*0 hr 30 min Scoring: 50 points*

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## **LESSON 8: DIAGNOSTIC**

### **Diagnostic: Foundations of Geometry**

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

*Duration: 0 hr 40 min Scoring: 18 points*

## **UNIT 2: POINTS LINES AND ANGLES**

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### **LESSON 1: POINTS**

#### **Study: Points**

Learn about the concept of a point, why points have no size, and Euclid's definition of a point.

*Duration: 0*

*hr 50 min*

#### **Quiz: Points**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16 points*

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### **LESSON 2: SEGMENTS**

#### **Study: Segments**

Learn the notation for a line segment using its endpoints. Explore line segment length and the distance

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between points on a segment. Investigate midpoints of line segments and the segment addition postulate.

*Duration: 0 hr  
50 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Segments**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 18 points*

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## **LESSON 3: RAYS LINES AND ANGLES**

### **Study: Rays Lines and Angles**

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 hr 50 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Rays Lines and Angles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:  
24 points*

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## **LESSON 4: MORE ABOUT ANGLES**

### **Study: More about Angles**

Learn about measuring angles; units; notation; measuring a segment using a protractor; acute, obtuse, and right angles; equations for adjacent angles; angle bisectors; linear pairs; and complementary and supplementary angles.

*Duration: 0 hr 50 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Identifying Types of Angles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

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Scoring: 22 points

### Quiz: Angle Bisectors and Adjacent Angles

Take a quiz to assess your understanding of the material.

Duration: 0 hr

25 min Scoring: 16 points

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## LESSON 5: CONGRUENT SEGMENTS AND ANGLES

### Study: Congruent Segments and Angles

Learn about the definitions of congruent line segments and angles; notation; the midpoint theorem; and congruence vs. equality.

Duration: 0 hr 50 min

### Checkup: Practice Problems

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

Duration: 0 hr 30 min

### Quiz: Congruent Segments and Angles

Take a quiz to assess your understanding of the material.

Duration: 0 hr 25

min Scoring: 16 points

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## LESSON 6: 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 hr 50 min

### Checkup: Practice Problems

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

Duration: 0 hr 30 min

### Quiz: Planes and the Space of Geometry

Take a quiz to assess your understanding of the material.

Duration: 0 hr 25

min Scoring: 20 points

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## LESSON 7: WHAT IT IS LIKE TO LIVE IN A PLANE

### Study: What It is Like to Live in a Plane

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Take part in a flatland exercise dealing with location and direction in two dimensions.

*Duration: 0 hr 50 min*

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## LESSON 8: INTERSECTING LINES

### Study: Intersecting Lines

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

*Duration: 0 hr 50 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 30 min*

### Quiz: Intersecting Lines

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16*

*points*

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## LESSON 9: PARALLEL LINES

### Study: Parallel Lines

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 hr 50*

*min*

### Checkup: Practice Problems

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

*Duration: 0 hr 30 min*

### Quiz: Parallel Lines

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 18 points*

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## LESSON 10: SOLVING THE MIRROR PROBLEM

### 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 hr 50 min*

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## LESSON 11: WRAP-UP

### Practice: Assignment

Submit your work for a set of 20 practice problems.

*Duration: 1 hr Scoring: 100 points*

### Review: Review Exercise

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 1 hr*

### Discuss: What if You Lived in Flatland?

Respond to one of three discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

### Test (CS): Points Lines and Angles

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

*Duration: 0 hr 40 min Scoring: 75 points*

### Test (TS): Points Lines and Angles

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

*Duration: 0*

*hr 30 min Scoring: 50 points*

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## LESSON 12: DIAGNOSTIC

### Diagnostic: Points Lines and Angles

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

*Duration: 0 hr 40 min Scoring: 25 points*

## UNIT 3: TRIANGLES

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### 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 hr 50 min*

#### Checkup: Practice Problems

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

*Duration: 0 hr 30 min*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr*

*25 min Scoring: 16 points*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25*

*min Scoring: 18 points*

### **Quiz: The Triangle Inequality Theorem**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 22 points*

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## **LESSON 2: THE ANGLES OF A TRIANGLE**

### **Study: The Angles of a Triangle**

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

*Duration: 0 hr 50 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Angle Theorems**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 20*

*points*

### **Quiz: Exterior and Remote Interior Angles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25*

*min Scoring: 16 points*

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## **LESSON 3: CONGRUENCE**

### **Study: Congruence**

Learn about congruence transformations of triangles, corresponding triangles, notation for writing

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congruence statements, and the CPCTC triangle congruence theorem.

*Duration: 0 hr 50 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Congruent Triangles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 18*

*points*

### **Quiz: Properties of Congruence**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 18 points*

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## **LESSON 4: CONGRUENCE POSTULATES**

### **Study: Congruence Postulates**

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

*Duration: 0*

*hr 50 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Using Congruence Postulates**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 20 points*

### **Quiz: The AAS Theorem**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 20*

*points*

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## **LESSON 5: PROOFS OF CONGRUENCE**

### **Study: Proofs of Congruence**

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

*Duration: 0 hr 50 min*

### Quiz: Proofs of Congruence

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*16 points*

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## LESSON 6: SIMILAR TRIANGLES

### Study: Similar Triangles

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

*Duration: 0 hr 50 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 30 min*

### Quiz: Similar Triangles

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 28*

*points*

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## LESSON 7: RATIOS AND PROPORTIONS

### Study: Ratios and Proportions

Learn about ratios, proportions, means, and extremes. Learn about applying the cross product property application to the student-teacher ratio problem and the photo-enlargement problem.

*Duration: 0 hr 50*

*min*

### Checkup: Practice Problems

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

*Duration: 0 hr 30 min*

### Quiz: Ratios and Proportions

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*18 points*

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## LESSON 8: SIMILARITY THEOREMS

### Study: Similarity Theorems

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

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theorem.

*Duration: 0 hr 50 min*

### **Checkpoint: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Similarity Theorems**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 22*

*points*

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## **LESSON 9: 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 is learned to solve Thales's problem.

*Duration: 0 hr 50 min*

### **Checkpoint: Practice Problems**

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

*Duration: 0 hr 30 min*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25*

*min Scoring: 16 points*

### **Quiz: Scalene Triangles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16*

*points*

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## **LESSON 10: MEDIANS ALTITUDES AND BISECTORS**

### **Study: Medians Altitudes and Bisectors**

Identify and explore medians, altitudes, angle bisectors, and perpendicular bisectors of triangles. Discover their relationship to centroids, orthocenters, incenters, and circumcenters.

*Duration: 0 hr 50*

*min*

### **Quiz: Medians Altitudes and Bisectors**

Take a quiz to assess your understanding of the material.

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*Duration: 0 hr 25 min*  
*Scoring: 24 points*

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## LESSON 11: 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 hr 50 min*

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## LESSON 12: WRAP-UP

### **Practice: Assignment**

Submit your work for a set of 20 practice problems.

*Duration: 1 hr Scoring: 100 points*

### **Review: Review Exercises**

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 1 hr*

### **Discuss: The Well-Balanced Triangle**

Respond to one of three discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

### **Test (CS): Triangles**

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

*Duration: 0 hr 40 min*

*Scoring: 75 points*

### **Test (TS): Triangles**

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

*Duration: 0 hr 30 min*

*Scoring: 50 points*

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## LESSON 13: DIAGNOSTIC

### **Diagnostic: Triangles**

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

*Duration: 0 hr*

*40 min Scoring: 25 points*

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## UNIT 4: RIGHT TRIANGLES

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### LESSON 1: AREA OF A TRIANGLE

#### **Study: Area of a Triangle**

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

*Duration: 0 hr 50 min*

#### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

#### **Quiz: Area of a Triangle**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 18 points*

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### LESSON 2: THE PYTHAGOREAN THEOREM

#### **Study: The Pythagorean Theorem**

Learn about 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 hr 50 min*

#### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16 points*

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### LESSON 3: 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 hr 50 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

**Quiz: Proving Right Triangle Congruence**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25*

*min Scoring: 26 points*

**Quiz: Right Triangle Measurements**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 18 points*

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**LESSON 4: SIMILAR RIGHT TRIANGLES****Study: Similar Right Triangles**

Explore the properties of similar right triangles and 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 using proportions, and apply concepts learned to a miniature-golf problem.

*Duration: 0 hr 50*

*min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

**Quiz: Similar Right Triangles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*16 points*

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**LESSON 5: 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 hr 50 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

**Quiz: 45-45-90 Right Triangles**

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Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*16 points*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*12 points*

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## **LESSON 6: TRIGONOMETRIC RATIOS**

### **Study: Trigonometric Ratios**

Learn the definitions of *sine*, *cosine*, and *tangent*. Memorize "soh-cah-toa" as a mnemonic device relating to 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 hr 50 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 30 min*

### **Quiz: Trigonometric Ratios**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16*

*points*

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

### **Practice: Assignment**

Submit your work for a set of 20 practice problems.

*Duration: 1 hr Scoring: 100 points*

### **Review: Review Exercise**

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 1 hr*

### **Discuss: A Closer Look at a Baseball Diamond**

Students respond to one of three discussion questions asking them to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

### **Test (CS): Right Triangles**

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



*Duration: 0 hr 40  
min Scoring: 75 points*

### **Test (TS): Right Triangles**

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

*Duration: 0 hr 30  
min Scoring: 50 points*

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## **LESSON 8: DIAGNOSTIC**

### **Diagnostic: Right Triangles**

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

*Duration: 0 hr 40 min Scoring: 25 points*

## **UNIT 5: GEOMETRY SEMESTER 1 REVIEW AND EXAM**

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### **LESSON 1: PREPARING FOR THE SEMESTER EXAM**

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

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

*Duration: 1 hr*

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

*Duration: 0 hr 50 min Scoring: 220 points*

## **UNIT 6: QUADRILATERALS AND OTHER POLYGONS**

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### **LESSON 1: POLYGONS AND QUADRILATERALS**

#### **Study: Polygons and Quadrilaterals**

Learn about the definitions of a polygon and a quadrilateral and the relationship of one to the other; identifying and naming polygons and quadrilaterals; and convex, concave, regular, congruent, and similar polygons.

*Duration: 0 hr 40 min*

#### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

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### **Quiz: Identifying and Naming Polygons and Quadrilaterals**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

### **Quiz: Sorting and Recognizing Polygons**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24 points*

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## **LESSON 2: ANGLE SUMS OF A POLYGON**

### **Study: Angle Sums of a Polygon**

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 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

### **Quiz: Angle Sums of a Polygon**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

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## **LESSON 3: PARALLELOGRAMS**

### **Study: Parallelograms**

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

*Duration: 0 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

### **Quiz: Parallelograms**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

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## **LESSON 4: 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 hr 40 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

**Quiz: Tests for Parallelograms**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*30 points*

---

**LESSON 5: RECTANGLES****Study: Rectangles**

Learn about the definition of a rectangle, congruent diagonal theorems, and right angle theorems.

Explore a sample problem case study about proving that a window is rectangular using the congruent diagonal theorem.

*Duration: 0 hr 40 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

**Quiz: Rectangles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 28 points*

---

**LESSON 6: 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 hr 40 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

**Quiz: Rhombi and Squares**

Take a quiz to assess your understanding of the material.

---

*Duration: 0 hr 25 min Scoring: 30 points*

---

## LESSON 7: 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 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

### **Quiz: Trapezoids**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

---

## LESSON 8: AREA AND PERIMETER OF QUADRILATERALS

### **Study: Area and Perimeter of Quadrilaterals**

Learn about the formulas for the perimeter of a parallelogram, a rhombus, and a square and for the area of a polygon, rectangle, and square. Complete a sample problem in which you must calculate the area of a square. Learn about the altitude, base, and height of parallelograms and the formulas for the area of a parallelogram and a trapezoid.

*Duration: 0 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

### **Quiz: Area and Perimeter of Quadrilaterals**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

### **Quiz: Area of Rhombi and Trapezoids**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 22 points*

---

## LESSON 9: AREA AND PERIMETER OF POLYGONS

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### **Study: Area and Perimeter of Polygons**

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 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

### **Quiz: Area and Perimeter of Polygons**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 26 points*

---

## **LESSON 10: WRAP-UP**

### **Practice: Assignment**

Submit your work for a set of 20 practice problems.

*Duration: 0 hr 50 min Scoring: 100 points*

### **Review: Review Exercises**

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 0 hr 30 min*

### **Discuss: Parts Bits and Pieces**

Respond to one of four discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

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

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

*Duration: 0 hr 40 min Scoring: 75 points*

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

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

*Duration: 0 hr 30 min Scoring: 50 points*

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## **LESSON 11: DIAGNOSTIC**

### **Diagnostic: Quadrilaterals and Other Polygons**

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

*Duration: 0 hr 40 min Scoring: 25 points*

## UNIT 7: CIRCLES

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### 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 hr 40 min*

#### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

#### **Quiz: What Is a Circle?**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30*

*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 hr 40 min*

#### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

#### **Quiz: Congruent Chords**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 26*

*points*

#### **Quiz: Chords and Perpendicular Radii**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 22 points*

---

### Quiz: Diameter of a Circle

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 18 points*

---

## LESSON 3: ARCS

### Study: Arcs

Learn about 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 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Arc Types and Measure

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

### Quiz: Congruent Chords and Circle Angle Measure

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24 points*

---

## LESSON 4: CIRCLES AND ANGLES

### Study: Circles and Angles

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 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Inscribed Angles

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24 points*

---

### Quiz: Intersecting Chord Theorem

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 22 points*

---

## LESSON 5: SECANTS AND TANGENTS

### Study: Secants and Tangents

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 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Secant-Secant Angles

Quiz on secant-secant angles

*Duration: 0 hr 25 min Scoring: 22 points*

### Quiz: Tangent-Chord Angles

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*24 points*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 14 points*

---

## LESSON 6: 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 involving the raising of a highway over a river to allow for boating traffic underneath. Learn about the degree measure of an arc and arc length. Derive the formula for arc length.

*Duration: 0*

*hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

---



**Quiz: Circumference of a Circle**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 14 points*

**Quiz: Arc Length**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 26 points*

---

**LESSON 7: 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 hr 40 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

**Quiz: Area of a Circle**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 20 points*

**Quiz: Area of a Sector**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 26*

*points*

---

**LESSON 8: CIRCLES AND TRIANGLES****Study: Circles and Triangles**

Learn about inscribed objects, the definition of incenter, circumscribed objects, and the definition of circumcenter.

*Duration: 0 hr 40 min*

**Quiz: Circles and Triangles**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 28*

*points*

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**LESSON 9: CIRCLES AND POLYGONS**

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### **Study: Circles and Polygons**

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

*Duration: 0 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

### **Quiz: Circles and Polygons**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24 points*

---

## **LESSON 10: WRAP-UP**

### **Practice: Assignment**

Submit your work for a set of 20 practice problems.

*Duration: 0 hr 50 min Scoring: 100 points*

### **Review: Review Exercise**

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 0 hr 30 min*

### **Discuss: A Circular Peg within A Square Hole**

Respond to one of three discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

### **Test (CS): Circles**

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

*Duration: 0 hr 40 min*

*Scoring: 75 points*

### **Test (TS): Circles**

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

*Duration: 0 hr 30 min*

*Scoring: 50 points*

---

## **LESSON 11: DIAGNOSTIC**

### **Diagnostic: Circles**

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

Duration: 0 hr  
40 min Scoring: 25 points

## UNIT 8: COORDINATE GEOMETRY

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### LESSON 1: THE CARTESIAN COORDINATE SYSTEM

#### Study: The Cartesian Coordinate System

Learn about René Descartes, latitude and longitude as a grid, the Cartesian coordinate system as perpendicular number lines, axes and the origin, the  $xy$ -plane,  $x$ - and  $y$ -coordinates, and ordered pairs.

Duration: 0 hr 40 min

#### Checkup: Practice Problems

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

Duration: 0 hr 25 min

#### Quiz: The Cartesian Coordinate System

Take a quiz to assess your understanding of the material.

Duration: 0 hr 25

min Scoring: 30 points

---

### LESSON 2: 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 hr 40 min

#### Checkup: Practice Problems

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

Duration: 0 hr 25 min

#### Quiz: Midpoint Formula

Take a quiz to assess your understanding of the material.

Duration: 0 hr 25 min Scoring: 30

points

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### LESSON 3: THE DISTANCE FORMULA

#### Study: The Distance Formula

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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 hr 40 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

**Quiz: The Distance Formula**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*20 points*

---

## LESSON 4: COORDINATES AND DATA

**Study: Coordinates and Data**

Learn about graphs and the Cartesian coordinate system, plotting data points, looking for patterns, finding correlations, dependent and independent variables, the line of best fit, and deviation and range.

*Duration:*

*0 hr 40 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

**Quiz: Coordinates and Data**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16*

*points*

---

## LESSON 5: PATTERNS AND LINES

**Study: Patterns and Lines**

Learn about data points that form a straight line, linear equations, and ordered pairs.

*Duration: 0 hr 40 min*

**Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

**Quiz: Patterns and Lines**

Take a quiz to assess your understanding of the material.

---

*Duration: 0 hr 25 min Scoring: 30 points*

---

## LESSON 6: 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 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

### **Quiz: Computing Slope**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24 points*

### **Quiz: Special Cases of Slope**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

---

## LESSON 7: THE RESCUE SHIP PROBLEM

### **Study: The Rescue Ship Problem**

Explore a case study about using the slope formula and a parallel rule to steer a ship through dangerous waters.

*Duration: 0 hr 40 min*

---

## LESSON 8: PARALLEL AND PERPENDICULAR LINES

### **Study: Parallel and Perpendicular Lines**

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

*Duration: 0 hr 40 min*

### **Checkup: Practice Problems**

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

*Duration: 0 hr 25 min*

---

### Quiz: Parallel and Perpendicular Lines

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 26 points*

---

## LESSON 9: 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 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Equations of Lines

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 28*

*points*

### Quiz: Equations of Lines -- Part 2

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 24 points*

---

## LESSON 10: CIRCLES

### Study: Circles

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

*Duration: 0 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Circles Centered at the Origin

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min*

*Scoring: 20 points*

### Quiz: Circles Not Centered at the Origin

Take a quiz to assess your understanding of the material.

---

*Duration: 0 hr 25  
min Scoring: 22 points*

---

## LESSON 11: WRAP-UP

### **Practice: Assignment**

Submit your work for a set of 20 practice problems.

*Duration: 0 hr 50 min Scoring: 100 points*

### **Review: Review Exercise**

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 0 hr 30 min*

### **Discuss: Graph Paper Puzzles**

Respond to one of three discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

### **Test (CS): Coordinate Geometry**

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

*Duration: 0*

*hr 40 min Scoring: 75 points*

### **Test (TS): Coordinate Geometry**

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

*Duration: 0 hr*

*30 min Scoring: 50 points*

---

## LESSON 12: DIAGNOSTIC

### **Diagnostic: Coordinate Geometry**

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

*Duration: 0 hr 40 min Scoring: 25 points*

## UNIT 9: THREE-DIMENSIONAL SOLIDS

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### LESSON 1: THREE DIMENSIONS

#### **Study: Three Dimensions**

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Learn about measuring three-dimensional figures.

*Duration: 0 hr 40 min*

### **Quiz: Three Dimensions**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24*

*points*

---

## **LESSON 2: WHAT IS A POLYHEDRON?**

### **Study: What is a Polyhedron?**

Learn about the definition and elements of a polyhedron, prisms and their components, triangular and rectangular prisms, cubes, and regular and irregular pyramids.

*Duration: 0 hr 40 min*

### **Quiz: What is a Polyhedron?**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring:*

*30 points*

---

## **LESSON 3: 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 hr 40 min*

### **Quiz: Cylinders and Cones**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 22*

*points*

---

## **LESSON 4: PLATONIC SOLIDS**

### **Study: Platonic Solids**

Learn about polygonal numbers, regularity of Platonic solids, and building your own Platonic solids.

*Duration: 0 hr 40 min*

### **Quiz: Platonic Solids**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

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## LESSON 5: SURFACE AREA

### Study: Surface Area

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

*Duration: 0 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

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

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

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

Take a quiz to assess your understanding of the material.

*Duration:*

*0 hr 25 min Scoring: 22 points*

---

## LESSON 6: VOLUME

### Study: Volume

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

*Duration: 0 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Volume of Prisms Cylinders and Cubes

Take a quiz to assess your understanding of the material.

*Duration: 0 hr*

*25 min Scoring: 28 points*

### Quiz: Volume of Cones Cylinders and Pyramids

Take a quiz to assess your understanding of the material.

*Duration: 0*

*hr 25 min Scoring: 24 points*

## LESSON 7: SPHERES

### Study: Spheres

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

*Duration: 0 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Spheres

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24 points*

---

## LESSON 8: 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 hr 40 min*

### Checkup: Practice Problems

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

*Duration: 0 hr 25 min*

### Quiz: Similar Solids

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

---

## LESSON 9: WRAP-UP

### Practice: Assignment

Submit your work for a set of 20 practice problems.

*Duration: 0 hr 50 min Scoring: 100 points*

### Review: Review Exercises

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 0 hr 30 min*

### Discuss: Polyhedron Tinker Toys

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Respond to one of three discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

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

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

*Duration: 0 hr 40 min Scoring: 75 points*

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

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

*Duration:*

*0 hr 30 min Scoring: 50 points*

---

## **LESSON 10: DIAGNOSTIC**

### **Diagnostic: Three-Dimensional Solids**

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

*Duration: 0 hr 40 min Scoring: 25 points*

## **UNIT 10: TOPICS IN GEOMETRY**

---

### **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 hr 40 min*

#### **Quiz: Constructions**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min 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 hr 40 min*

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### Quiz: Paper Folding

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 18 points*

---

## LESSON 3: SYMMETRY

### Study: Symmetry

Learn about reflectional symmetry and line of symmetry and explore example of an isosceles triangle.

Learn about rotational symmetry, point of symmetry, and the symmetry of a human face.

*Duration: 0 hr 40 min*

### Quiz: Symmetry

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 24 points*

---

## LESSON 4: 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 hr 40 min*

### Quiz: Tessellations

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 18 points*

---

## LESSON 5: FRACTALS

### Study: Fractals

Learn about self-similarity of fractals; the golden rectangle; making a Sierpinski gasket; the Koch curve; a Cantor dust; examples of infinite length in nature; Zeno's paradox; self-similarity in biological organisms; fern fractals; Mandelbrot sets; fractals and recursion; and fractional dimension.

*Duration: 0 hr 40 min*

### Quiz: Fractals

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 26 points*

---

## LESSON 6: LOCUS OF POINTS

**Study: Locus of Points**

Learn about defining objects in terms of points and given distances. Explore examples of a parabola and bisecting angles.

*Duration: 0 hr 40 min*

**Quiz: Locus of Points**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16 points*

---

**LESSON 7: NON-EUCLIDEAN GEOMETRY****Study: Non-Euclidean Geometry**

Learn about the Playfair axiom (parallel postulate); examples of non-Euclidean geometry; Georg Friedrich Bernhard Riemann's negation; great circles; Nikolai Ivanovich Lobachevsky's negation; hyperbolic geometry; Henri Poincaré's disk; Euclidean geometry as a subset of a complete geometric system; and characteristics of spherical and hyperbolic geometry.

*Duration: 0 hr 40 min*

**Quiz: Non-Euclidean Geometry**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 30 points*

---

**LESSON 8: IMPOSSIBLE PROBLEMS FROM ANTIQUITY****Study: Impossible Problems from Antiquity**

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

*Duration: 0 hr 40 min*

**Quiz: Impossible Problems from Antiquity**

Take a quiz to assess your understanding of the material.

*Duration: 0 hr 25 min Scoring: 16 points*

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**LESSON 9: WRAP-UP****Practice: Assignment**

Submit your work for a set of 20 practice problems.

*Duration: 0 hr 50 min Scoring: 100 points*

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**Review: Review Exercise**

Take part in interactive games to review unit material in preparation for upcoming assessments.

*Duration: 0 hr 30 min*

**Discuss: Applying What You've Learned**

Respond to one of three discussion questions asking you to apply methods learned in this unit.

*Duration: 0 hr 20 min Scoring: 30 points*

**Test (CS): Topics in Geometry**

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

*Duration: 0 hr*

*40 min Scoring: 75 points*

**Test (TS): Topics in Geometry**

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

*Duration: 0 hr*

*30 min Scoring: 50 points*

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**LESSON 10: DIAGNOSTIC****Diagnostic: Topics in Geometry**

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

*Duration: 0 hr 40 min Scoring: 25 points*

**UNIT 11: GEOMETRY SEMESTER 2 REVIEW AND EXAM**

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**LESSON 1: PREPARING FOR THE SEMESTER EXAM****Review: Semester Review**

*Duration: 1 hr*

**Exam: Semester Exam**

*Duration: 0 hr 50 min Scoring: 224 points*