

Geometry

Geometry is a full-year, high school math course for the student who has successfully completed the prerequisite course, Algebra I. The course focuses on the skills and methods of linear, quadratic, coordinate, and plane geometry. In it, students will gain solid experience with geometric calculations and coordinate plane graphing, methods of formal proof, and techniques of construction.

By the end of the course, students will be expected to do the following:

- Understand defined terms, axioms, postulates, and theories.
- Apply rules of formal logic and construct proofs in two-column format.
- Know how to solve for angles given parallels, perpendiculars, and transversals.
- Demonstrate how to solve for sides and angles of triangles, quadrilaterals, and polygons.
- Understand trigonometric ratios and know how to use them to solve for unknown sides and angles in given triangles as well as application word problems.
- Be able to determine arcs, chords, and sectors of circles.
- Calculate perimeter, area, and volume of figures and solids.
- Graph lines and determine slopes, midpoints, and distances.
- Interpret and construct the graphs and equations of quadratic functions.
- Make geometric constructions on paper.
- Represent results of motion geometry (translation, rotation, reflection, dilation).
- Calculate simple probabilities using addition, multiplication, permutations, combinations, and frequency tables.

Unit 1: Introduction		
Assignments		
Geometry	1. Course Overview	12. Review of Algebraic Postulates
	2. Mathematic System: Set Theory Review	13. Geometric Theorems
	3. Mathematic System: Operations with Sets	14. Review of Properties of Algebra
	4. Quiz 1: Set Theory	15. Quiz 4: Postulates and Theorems
	5. Geometry Undefined Terms: Point	16. Performance Task
	6. Geometry Undefined Terms: Line	17. Alternate Performance Task*
	7. Geometry Undefined Terms: Plane	18. Special Project*
	8. Quiz 2: Undefined Terms	19. Test
	9. Defined Terms: Definitions	20. Alternate Test*
	10. Quiz 3: Defined Terms	21. Glossary and Credits
	11. Geometric Postulates	

Unit 2: Logic		
Assignments		
Geometry	1. Logic	13. Proof Formats: The Figure
	2. Conjunctions	14. Proof Formats: The Given Statement
	3. Disjunctions	15. Proof Formats: To Prove Statement
	4. Negation	16. Proof Formats: The Plan of the Proof
	5. Conditional or Implication Statements	17. Indirect Proof Format: The Paragraph Proof
	6. Converse, Inverse, Contrapositive	18. Quiz 3: Proof Formats
	7. Quiz 1: Principles of Logic	19. Performance Task
	8. Inductive Reasoning	20. Alternate Performance Task*
	9. Deductive Reasoning	21. Special Project*
	10. Using Deductive Reasoning	22. Test
	11. Quiz 2: Inductive and Deductive Reasoning	23. Alternate Test*
	12. Proof Formats: Statement of the Theorem	24. Glossary and Credits

Unit 3: Angles and Parallels		
Assignments		
Geometry	1. Angle Definitions	13. Quiz 3: Parallels and Transversals
	2. Angle Measurement	14. Construction: Perpendiculars
	3. Quiz 1: Angles	15. Construction: Tangents to Circles
	4. Geometric Proof	16. Construction: Parallels
	5. Angle Relationship Definitions	17. Classifying Triangles by Sides and Angles
	6. Angle Relationship Theorems (1)	18. Exterior and Remote Interior Angles of a Triangle
	7. Angle Relationship Theorems (2)	19. Proofs Involving Triangles
	8. Quiz 2: Angle Theorems	20. Other Polygons
	9. Construction: Copying Figures	21. Quiz 4: Triangles, Polygons, and Angle Properties
	10. Construction: Bisecting Figures	22. Performance Task
	11. Basic Properties of Parallels	23. Alternate Performance Task*
	12. Transversals and Special Angles	24. Special Project*
	13. More Proofs: Transversals and Special Angles	25. Test
	14. Continued Proofs: Transversals and Special Angles	26. Alternate Test*
	15. More Proofs for Postulates 9 and 10	27. Glossary and Credits

Unit 4: Congruent Triangles and Quadrilaterals		
Assignments		
Geometry	1. Defining Congruent Triangles	18. Inequality Theorem in One Triangle Part 2
	2. Proving Triangles Congruent (1)	19. Inequality Theorem in Two Triangles
	3. Proving Triangles Congruent (2)	20. Quadrilateral Parallelograms Theorems Part 1
	4. Proving Triangles Congruent (3)	21. Quadrilateral Parallelograms Theorems Part 2
	5. Proving Right Triangles Congruent	22. Quiz 3: Inequalities; Quadrilaterals
	6. Quiz 1: Congruent Triangles	23. Triangles that Use Parallelograms in Proofs
	7. Independent Triangles (1)	24. Parallelograms: Rectangles
	8. Independent Triangles (2)	25. Parallelograms: Rhombus
	9. Overlapping Triangles (1)	26. Trapezoids-Definitions and Proofs
	10. Overlapping Triangles (2)	27. Quiz 4: Parallelograms; Trapezoids
	11. Isosceles Triangles (1)	28. Performance Task
	12. Isosceles Triangles (2)	29. Alternate Performance Task*
	13. Construction of Triangles 30-60-90	30. Special Project*
	14. Construction of Triangles 45-45-90	31. Test
	15. Constructing Inscribed Shapes	32. Alternate Test*
	16. Quiz 2: Types of Triangles	33. Glossary and Credits
	17. Inequality Theorem in One Triangle Part 1	

Unit 5: Similar Polygons		
Assignments		
Geometry	1. Algebra and Ratios	13. Using Triangles: Regular Square Pyramid
	2. Algebra Properties and Proportions	14. Trigonometry-Sine Ratio
	3. Properties of Proportions	15. Trigonometry-Cosine Ratio
	4. Quiz 1: Ratios, Properties, and Proportions	16. Trigonometry-Tangent Ratio
	5. Meaning of Similarity	17. Using Similar Triangles in Indirect Measurement
	6. Meaning of Similarity-Theorems	18. Using Trigonometry in Indirect Measure
	7. Meaning of Similarity-Proofs	19. Quiz 3: Triangles and Trigonometry
	8. Theorems-Similar Polygons	20. Project: Model and Scale Drawing
	9. Theorems-Special Segments in Triangles	21. Performance Task
	10. Similar Right Triangles	22. Alternate Performance Task*
	11. The Pythagorean Theorem	23. Special Project*
	12. Theorem about 30-60-90 Right Triangles	24. Test
	13. Theorem about 45-45-90 Right Triangles	25. Alternate Test*
	14. Quiz 2: Similarity; Triangle Theorems	26. Glossary and Credits
	15. Using Triangles: Rectangular Solids	27.

Unit 6: Semester Review and Exam		
Assignments		
Geometry	1. Review	3. Alternate Exam - Form A*
	2. Exam	4. Alternate Exam - Form B*

Unit 7: Circles		
Assignments		
Geometry	1. Characteristics of Circles	12. Special Angles Type 3
	2. Characteristics of Spheres	13. Special Segments
	3. Quiz 1: Circles and Spheres	14. Quiz 3: Special Angles and Segments
	4. Tangents	15. Construction: Circles
	5. Arcs	16. Performance Task
	6. Chords	17. Alternate Performance Task*
	7. Theorems (1)	18. Special Project*
	8. Theorems (2)	19. Test
	9. Quiz 2: Tangents, Arcs, and Chords	20. Alternate Test*
	10. Special Angles Type 1	21. Glossary and Credits
	11. Special Angles Type 2	

Unit 8: Area and Volume		
Assignments		
Geometry	1. Area Concepts of Polygons	17. Solids: Cylinders
	2. Area of Rectangles	18. Solids: Cones
	3. Area of Parallelograms	19. Solids: Spheres
	4. Area of Triangles and Rhombuses	20. Quiz 3: Volume of Solids
	5. Area of Trapezoids	21. Two- and Three-Dimensional Shapes
	6. Area of Regular Polygons	22. Project: Rotating a Two Dimensional Shape
	7. Area Comparisons of Polygons	23. Geometric Probability
	8. Quiz 1: Area of Polygons	24. Construction: Dividing a Segment
	9. Construction: Polygons	25. Construction: 4th Proportion
	10. Circles: Circumference and PI	26. Construction: The Geometric Mean
	11. Circles: Area of Circles	27. Performance Task
	12. Circles: Area of Sectors	28. Alternate Performance Task*
	13. Circles: Area of Segments	29. Special Project*
	14. Quiz 2: Area of Circles	30. Test
	15. Solids: Prisms	31. Alternate Test*
	16. Solids: Pyramids	32. Glossary and Credits

Unit 9: Coordinate Geometry		
Assignments		
Geometry	1. Symmetry	13. Quiz 3: Slope and Lines
	2. Ordered Pairs: Points in a Plane	14. Figures in the Coordinate Plane
	3. Graphs of Algebraic Sentences	15. Proofs with Coordinate Geometry (1)
	4. Quiz 1: Symmetry, Ordered Pairs, and Graphs	16. Proofs with Coordinate Geometry (2)
	5. Distance Formula	17. Quiz 4: Figures and Proofs
	6. Perimeter and Area	18. Performance Task 2
	7. Equation of a Circle	19. Alternate Performance Task 2*
	8. Midpoint Formula	20. Special Project*
	9. Quiz 2: Distance Formula and Applications	21. Test
	10. Slope	22. Alternate Test*
	11. Parallel and Perpendicular Lines	23. Glossary and Credits
	12. Equations of Lines	

Unit 10: Transformations		
Assignments		
Geometry	1. Introduction: Rigid Motion, or Isometry	9. Inverse and Identity Transformation
	2. Isometry: Reflection	10. Quiz 2: Transformations
	3. Isometry: Translation	11. Performance Task
	4. Isometry: Rotation	12. Alternate Performance Task*
	5. Quiz 1: Isometry	13. Special Project*
	6. Transformation Sequences	14. Test
	7. Similarity Transformation: Dilation	15. Alternate Test*
	8. Product Transformation	16. Glossary and Credits

Unit 11: Geometric Application	
Geometry	Assignments
	1. Using SOH CAH TOA in Trigonometry
	2. Finding the Values of Trigonometric Functions
	3. Law of Sines
	4. Quiz 1: Sines
	5. Ambiguity and Area of a Triangle
	6. Law of Cosines: Finding a Side
	7. Law of Cosines: Finding an Angle
	8. Quiz 2: Cosines
	9. Modeling with Geometric Figures
	10. Density
	11. Geometry in Design
	12. Quiz 3: Modeling Geometry
	13. Special Project*
	14. Test
	15. Alternate Test*
16. Glossary and Credits	
Unit 12: Probability	
Geometry	Assignments
	1. Definitions, Sample Spaces, and Probability
	2. Addition of Probabilities
	3. Multiplication of Probabilities
	4. Quiz 1: Using Probability
	5. Definitions
	6. Permutations of N Things: Different
	7. Permutations of N things: Not All Different
	8. Combinations
	9. Quiz 2: Probability
	10. Conditional Probability
	11. Conditional Probability in Real-World Situations
	12. Two-Way Frequency Tables
	13. Using Probability in Decision Making
	14. Quiz 3: Conditional Probability
	15. Special Project*
	16. Test
	17. Alternate Test*
18. Glossary and Credits	
Unit 13: Semester Review and Exam	
Geometry	Assignments
	1. Review
	2. Exam
	3. Alternate Exam - Form A*
4. Alternate Exam - Form B*	
Unit 14: Final Exam	
Geometry	Assignments
	1. Final Exam
	2. Alternate Exam - Form A*
	3. Alternate Exam - Form B*
4. Performance Task 1	
5. Performance Task 2	
Unit 15: End of Course Exam	
Geometry	Assignments
	1. Exam
	2. Alternate Exam - Form A*
3. Alternate Exam - Form B*	