



monarch

2017 - 2018 Curriculum Catalog

Geometry

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Geometry Course Overview

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, 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.
- Make geometric constructions on paper.
- Represent results of motion geometry (translation, rotation, reflection, dilation).

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

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

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

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

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

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

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

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

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

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

Unit 11: Review	
Assignments	
Geometry	1. Geometry as a System
	2. Geometry Proofs
	3. Angle Relationships and Parallels
	4. Quiz 1: Review: Units 1-3
	5. Congruent Triangles and Quadrilaterals
	6. Similar Polygons
	7. Circles
	8. Quiz 2: Review: Units 4,5,7
9. Area and Volume	
10. Coordinate Geometry	
11. Quiz 3: Review: Units 7,8,10	
12. Special Project*	
13. Test	
14. Alternate Test*	
15. Glossary and Credits	

Unit 12: Semester Review and Exam	
Assignments	
Geometry	1. Review
	2. Exam
3. Alternate Exam - Form A*	
4. Alternate Exam - Form B*	

Unit 13: Final Exam	
Assignments	
Geometry	1. Final Exam
	2. Alternate Exam - Form A*
3. Alternate Exam - Form B*	

(*) Indicates alternative assignment