



Switched-On
SCHOOLHOUSE

Course Catalog

Geometry

Table of Contents

COURSE OVERVIEW 1
UNIT 1: INTRODUCTION 1
UNIT 2: LOGIC 1
UNIT 3: ANGLES AND PARALLELS 2
UNIT 4: CONGRUENT TRIANGLES AND QUADRILATERALS 2
UNIT 5: SIMILAR POLYGONS 2
UNIT 6: SEMESTER REVIEW AND EXAM 2
UNIT 7: CIRCLES 3
UNIT 8: AREA AND VOLUME 3
UNIT 9: COORDINATE GEOMETRY 3
UNIT 10: TRANSFORMATIONS 3
UNIT 11: REVIEW 4
UNIT 12: SEMESTER REVIEW AND EXAM 4
UNIT 13: FINAL EXAM 4

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

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

UNIT 3: ANGLES AND PARALLELS				
Assignment Titles				
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				
Assignment Titles				
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				
Assignment Titles				
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				
Assignment Titles				
GEOMETRY	1.	Review	3.	Alternate Exam - Form A*
	2.	Exam	4.	Alternate Exam - Form B*

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

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

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

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

UNIT 11: REVIEW	
Assignment Titles	
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	
Assignment Titles	
GEOMETRY	1. Review
	2. Exam
	3. Alternate Exam - Form A*
	4. Alternate Exam - Form B*

UNIT 13: FINAL EXAM	
Assignment Titles	
GEOMETRY	1. Final Exam
	2. Alternate Exam - Form A*
	3. Alternate Exam - Form B*

(*) Indicates alternate assignment