



Geometry

This geometry course introduces students to the basic theorems of Euclidean plane geometry and their applications, and it explores both plane and solid geometric figures. Students learn how to prove theorems by the axiomatic method and to use these theorems in solving a variety of problems. They also learn how to accomplish a variety of geometric constructions.

Prerequisite: Algebra I

Course Length: Full year

Course Materials:

- *Geometry* (Saxon, 2009)
- Textbook includes test packet, answer key, and Solutions Manual

Contents of Geometry textbook:

Lesson 1: Points, Lines, and Planes

Lesson 2: Segments

Lesson 3: Angles

Lesson 4: Postulates and Theorems About Points, Lines, and Planes

Lesson 5: More Theorems about Lines and Planes

Lesson 6: Identifying Pairs of Angles

Lesson 7: Using Inductive Reasoning

Lesson 8: Using Formulas in Geometry

Lesson 9: Finding Length: Distance Formula

Lesson 10: Using Conditional Statements

Lesson 11: Finding Midpoints

Lesson 12: Proving Lines Parallel

Lesson 13: Introduction to Triangles

Lesson 14: Disproving Conjectures with Counterexamples

Lesson 15: Introduction to Polygons

Lesson 16: Finding Slopes and Equations of Lines

Lesson 17: More Conditional Statements

Lesson 18: Triangle Theorems

Lesson 19: Introduction to Quadrilaterals

Lesson 20: Interpreting Truth Tables

Lesson 21: Laws of Detachment and Syllogism

Lesson 22: Finding Areas of Quadrilaterals

Lesson 23: Introduction to Circles

Lesson 24: Algebraic Proofs

Lesson 25: Triangle Congruence: SSS

Lesson 26: Central Angles and Arc Measure



Lesson 27: Two-Column Proofs
Lesson 28: Triangle Congruence: SAS
Lesson 29: Using the Pythagorean Theorem
Lesson 30: Triangle Congruence: ASA and AAS
Lesson 31: Flowchart and Paragraph Proofs
Lesson 32: Altitudes and Medians of Triangles
Lesson 33: Converse of the Pythagorean Theorem
Lesson 34: Properties of Parallelograms
Lesson 35: Finding Arc Lengths and Areas of Sectors
Lesson 36: Right Triangle Congruence Theorems
Lesson 37: Writing Equations of Parallel and Perpendicular Lines
Lesson 38: Perpendicular and Angle Bisectors of Triangles
Lesson 39: Inequalities in a Triangle
Lesson 40: Finding Perimeters and Areas of Composite Figures
Lesson 41: Ratios, Proportions, and Similarity
Lesson 42: Finding Distance from a Point to a Line
Lesson 43: Chords, Secants, and Tangents
Lesson 44: Applying Similarity
Lesson 45: Introduction to Coordinate Proofs
Lesson 46: Triangle Similarity: AA, SSS, SAS
Lesson 47: Circles and Inscribed Angles
Lesson 48: Indirect Proofs
Lesson 49: Introduction to Solids
Lesson 50: Geometric Mean
Lesson 51: Properties of Isosceles and Equilateral Triangles
Lesson 52: Properties of Rectangles, Rhombuses, and Squares
Lesson 53: $45^\circ - 45^\circ - 90^\circ$ Right Triangles
Lesson 54: Representing Solids
Lesson 55: Triangle Midsegment Theorem
Lesson 56: $30^\circ - 60^\circ - 90^\circ$ Right Triangles
Lesson 57: Finding Perimeter and Area with Coordinates
Lesson 58: Tangents and Circles, Part I
Lesson 59: Finding Surface Areas and Volumes of Prisms
Lesson 60: Proportionality Theorems
Lesson 61: Determining if a Quadrilateral is a Parallelogram
Lesson 62: Finding Surface Areas and Volumes of Cylinders
Lesson 63: Introduction to Vectors
Lesson 64: Angles Interior to Circles
Lesson 65: Distinguishing Types of Parallelograms
Lesson 66: Finding Perimeters and Areas of Regular Polygons



Lesson 67: Introduction to Transformations
Lesson 68: Introduction to Trigonometric Ratios
Lesson 69: Properties of Trapezoids and Kites
Lesson 70: Finding Surface Areas and Volumes of Pyramids
Lesson 71: Translations
Lesson 72: Tangents and Circles, Part 2
Lesson 73: Applying Trigonometry: Angles of Elevation and Depression
Lesson 74: Reflections
Lesson 75: Writing the Equation of a Circle
Lesson 76: Symmetry
Lesson 77: Finding Surface Areas and Volumes of Cones
Lesson 78: Rotations
Lesson 79: Angles Exterior to Circles
Lesson 80: Finding Surface Areas and Volumes of Spheres
Lesson 81: Graphing and Solving Linear Systems
Lesson 82: More Applications of Trigonometry
Lesson 83: Vector Addition
Lesson 84: Dilations
Lesson 85: Cross Sections of Solids
Lesson 86: Determining Chord Length
Lesson 87: Area Ratios of Similar Figures
Lesson 88: Graphing and Solving Linear Inequalities
Lesson 89: Vector Decomposition
Lesson 90: Composite Transformations
Lesson 91: Introduction to Trigonometric Identities
Lesson 92: Quadrilaterals on the Coordinate Plane
Lesson 93: Representing Solids: Orthographic Views
Lesson 94: Law of Sines
Lesson 95: Equations of Circles: Translating and Dilating
Lesson 96: Effects of Changing Dimensions on Perimeter and Area
Lesson 97: Concentric Circles
Lesson 98: Law of Cosines
Lesson 99: Volume Ratios of Similar Solids
Lesson 100: Transformation Matrices
Lesson 101: Determining Lengths of Segments Intersecting Circles
Lesson 102: Dilations in the Coordinate Plane
Lesson 103: Frustums of Cones and Pyramids
Lesson 104: Relating Arc Lengths and Chords
Lesson 105: Rotations and Reflections in the Coordinate Plane
Lesson 106: Circumscribed and Inscribed Figures



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Lesson 107: Maximizing Area

Lesson 108: Introduction to Coordinate Space

Lesson 109: Non-Euclidean Geometry

Lesson 110: Scale Drawings and Maps

Lesson 111: Finding Distance and Midpoint in Three Dimensions

Lesson 112: Finding Areas of Circle Segments

Lesson 113: Symmetry of Solids and Polyhedra

Lesson 114: Solving and Graphing Systems of Inequalities

Lesson 115: Finding Surface Areas and Volumes of Composite Solids

Lesson 116: Secant, Cosecant, and Cotangent

Lesson 117: Determining Line of Best Fit

Lesson 118: Finding Areas of Polygons Using Matrices

Lesson 119: Platonic Solids

Lesson 120: Topology



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Geometry Syllabus

Textbook

Geometry, Student Edition (Saxon 2009)

Materials

Geometry textbook

Homeschool Testing Book (includes cumulative tests, answer forms, and answer key)

Solutions Manual (includes full solutions for all practice problem sets)

Schedule of Assignments

As an independent study student, you can complete this course at your own pace. Some students benefit from doing every single problem in the problem sets while others prefer to do all the even numbered problems, and then go back and do the odd numbered problems for skills that need extra practice. By checking your answers after each problem set, you can gauge how well you are grasping the material and adjust your work load accordingly.

There is a proposed schedule of assignments on the back that will help you move through the 19 lessons in the course. If you complete one lesson every two weeks, you will complete the course in 38 weeks. Feel free to adjust this schedule to suit your needs and learning style.

We wish you a challenging and successful year of Geometry!

Geometry Assignment Sheet

Semester 1

Lesson	Textbook lesson/Practice Set	Test
1	1–10	1
2	11–15	2
3	16–20	3
4	21–25	4
5	26–30	5
6	31–35	6
7	36–40	7
8	41–45	8
9	46–50	9

Semester 2

Lesson	Textbook lesson/Practice Set	Test
10	51–55	10
11	56–60	11
12	61–65	12
13	66–70	13
14	71–75	14
15	76–80	15
16	81–85	16
17	86–90	17
18	91–95	18
19	96–100	19