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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

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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° - 45° - 90° Right Triangles
Lesson 54: Representing Solids
Lesson 55: Triangle Midsegment Theorem
Lesson 56: 30° - 60° - 90° 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

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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