

## Geometry COURSE DESCRIPTION

This **Geometry** course covers over 100 topics from points & lines to 2D & 3D shapes. Whether you are getting ahead of the curriculum, aiming for better grades, or preparing for the next level with deeper understanding of the concepts, this class will give you a solid foundations needed to succeed in school as the fundamental and important concepts will be taught in great details. Designed for all levels of learners from remedial to the advanced. (Material fee is due on the first day of class).

**Homework:** A page corresponds to each chapter lesson will be assigned. **Tests:** Chapter tests and exams.

### Content

#### Chapter 1 - Points, Lines, Planes, and Angles

- Lesson 1 - Points, Lines, and Planes
- Lesson 2 - Linear Measure and Precision
- Lesson 3 - Distance and Midpoints
- Lesson 4 - Angle Measure
- Lesson 5 - Angle Relationships
- Lesson 6 - Polygons

#### Chapter 2 - Reasoning and Proof

- Lesson 1 - Inductive Reasoning and Conjecture
- Lesson 2 - Logic
- Lesson 3 - Conditional Statements
- Lesson 4 - Deductive Reasoning
- Lesson 5 - Postulates and Paragraph Proofs
- Lesson 6 - Algebraic Proof
- Lesson 7 - Proving Segment Relationships
- Lesson 8 - Proving Angle Relationships

#### Chapter 3 - Parallel and Perpendicular Lines

- Lesson 1 - Parallel Lines and Transversals
- Lesson 2 - Angles and Parallel Lines
- Lesson 3 - Slopes of Lines
- Lesson 4 - Equations of Lines
- Lesson 5 - Proving Lines Parallel
- Lesson 6 - Perpendiculars and Distance

#### Chapter 4 - Congruent Triangles

- Lesson 1 - Classifying Triangles
- Lesson 2 - Angles of Triangles
- Lesson 3 - Congruent Triangles
- Lesson 4 - Proving Congruence—SSS, SAS
- Lesson 5 - Proving Congruence—ASA, AAS
- Lesson 6 - Isosceles Triangles
- Lesson 7 - Triangles and Coordinate Proof

#### Chapter 5 - Relationships in Triangles

- Lesson 1 - Bisectors, Medians, and Altitudes
- Lesson 2 - Inequalities and Triangles
- Lesson 3 - Indirect Proof
- Lesson 4 - The Triangle Inequality
- Lesson 5 - Inequalities Involving Two Triangles

#### Chapter 6 - Proportions and Similarity

- Lesson 1 - Proportions
- Lesson 2 - Similar Polygons
- Lesson 3 - Similar Triangles
- Lesson 4 - Parallel Lines and Proportional Parts
- Lesson 5 - Parts of Similar Triangles
- Lesson 6 - Fractals and Self-Similarity

#### Chapter 7 - Right Triangles and Trigonometry

- Lesson 1 - Geometric Mean
- Lesson 2 - The Pythagorean Theorem and Its Converse
- Lesson 3 - Special Right Triangles
- Lesson 4 - Trigonometry
- Lesson 5 - Angles of Elevation and Depression
- Lesson 6 - The Law of Sines

Lesson 7 - The Law of Cosines

#### Chapter 8 - Quadrilaterals

- Lesson 1 - Angles of Polygons
- Lesson 2 - Parallelograms
- Lesson 3 - Tests for Parallelograms
- Lesson 4 - Rectangles
- Lesson 5 - Rhombi and Squares
- Lesson 6 - Trapezoids
- Lesson 7 - Coordinate Proof and Quadrilaterals

#### Chapter 9 - Transformations

- Lesson 1 - Reflections
- Lesson 2 - Translations
- Lesson 3 - Rotations
- Lesson 4 - Tessellations
- Lesson 5 - Dilations
- Lesson 6 - Vectors
- Lesson 7 - Transformations with Matrices

#### Chapter 10 - Circles

- Lesson 1 - Circles and Circumference
- Lesson 2 - Angles and Arcs
- Lesson 3 - Arcs and Chords
- Lesson 4 - Inscribed Angles
- Lesson 5 - Tangents
- Lesson 6 - Secants, Tangents, and Angle Measures
- Lesson 7 - Special Segments in a Circle
- Lesson 8 - Equations of Circles

#### Chapter 11 - Area and Volume

- Lesson 1 - Areas of Parallelograms
- Lesson 2 - Areas of Triangles, Trapezoids, and Rhombi
- Lesson 3 - Areas of Regular Polygons and Circles
- Lesson 4 - Areas of Irregular Figures
- Lesson 5 - Geometric Probability

#### Chapter 12 - Surface Area

- Lesson 1 - Three-Dimensional Figures
- Lesson 2 - Nets and Surface Area
- Lesson 3 - Surface Areas of Prisms
- Lesson 4 - Surface Areas of Cylinders
- Lesson 5 - Surface Areas of Pyramids
- Lesson 6 - Surface Areas of Cones
- Lesson 7 - Surface Areas of Spheres

#### Chapter 13 - Volume Lesson 1 - Volumes of Prisms and Cylinders

- Lesson 2 - Volumes of Pyramids and Cones
- Lesson 3 - Volumes of Spheres
- Lesson 4 - Congruent and Similar Solids
- Lesson 5 - Coordinates in Space