

Geometry

COURSE DESCRIPTION:

The Geometry course is a comprehensive look at the study of geometric concepts including the basic elements of geometry, proofs, parallel and perpendicular lines, the coordinate plane, triangles, quadrilaterals, polygons, circles, trigonometry, congruence and similarity, surface area, volume and transformations.

COURSE OBJECTIVES:

After completing the course, students will be able to:

- Identify and apply the properties of rays and angles
- Identify and apply the properties of parallel and perpendicular lines
- Write conditional statements
- Write proofs
- Write and graph linear functions
- Identify and apply the properties of triangles
- Identify and apply the properties of quadrilaterals
- Identify and apply the properties of polygons
- Identify and apply the properties of circles
- Prove figures are congruent
- Prove figures are similar
- Apply transformations to various figures

PREREQUISITES: Algebra I

COURSE LENGTH: Two semesters

REQUIRED TEXT: None

COURSE OUTLINE:

UNIT I: Introduction to Geometry

Section 1 - Basic Elements of Geometry

Section 2 - Measuring Segments

Section 3 - Rays and Angles

Section 4 - Parallel and Perpendicular Lines

UNIT II: Introduction to Proof

Section 1 - Inductive and Deductive Reasoning

Section 2 - Conditional Statements and Truth Tables

Section 3 - Informal and Two-Column Proofs

UNIT III: Parallel Lines and the Coordinate Plane

Section 1 - Parallel Lines and Transversals

Section 2 - The Coordinate Plane

Section 3 - Graphing the Equation of a Line

Geometry (continued)

COURSE OUTLINE (continued):

UNIT IV: Triangles

- Section 1 - Introduction to Triangles
- Section 2 - Congruent Triangles
- Section 3 - Isosceles and Equilateral Triangles
- Section 4 - Right Triangles and the Pythagorean Theorem
- Section 5 - Triangle Inequalities
- Section 6 - Perimeter and Area of Triangles

UNIT V: Quadrilaterals and Polygons

- Section 1 - Squares and Rectangles
- Section 2 - Rhombi and Trapezoids
- Section 3 - Parallelograms
- Section 4 - Polygons

UNIT VI: Similarity

- Section 1 - Ratios and Proportions
- Section 2 - Similar Triangles
- Section 3 - Similar Polygons

UNIT VII: Circles

- Section 1 - Arcs and Special Segments
- Section 2 - Special Angles in Circles
- Section 3 - Equation of a Circle
- Section 4 - Circumference and Area of a Circle

UNIT VIII: Right Triangles and Trigonometry

- Section 1 - Review of Pythagorean Theorem
- Section 2 - Ratios of Right Triangles
- Section 3 - Graphing Trigonometric Functions
- Section 4 - Law of Sines and Law of Cosines

UNIT IX: Surface Area and Volume

- Section 1 - Surface Area and Volume of Prisms and Cylinders
- Section 2 - Surface Area and Volume of Pyramids and Cones
- Section 3 - Surface Area and Volume of Spheres

UNIT X: Transformations

- Section 1 - Translations and Reflections
- Section 2 - Rotations and Dilations