GEOMETRY

The properties of points, lines, planes and their relationships in polygons and circles are studied along with area and perimeter of two-dimensional figures and surface area and volume of three-dimensional shapes. The process of doing formal proofs is introduced and practiced. Properties of triangles and their segments are studied. Similar figures and their properties are studied. Right triangles are solved using the Pythagorean Theorem and the trigonometric functions. Circles and their properties are studied.

OBJECTIVES

1. To understand the characteristics of figures in geometry;

2. To make conjectures about these figures and prove theorems related to them;

3. To be able to evaluate and use formal proof techniques;

4. To be exposed to reasons we study mathematics, including philosophical, aesthetic, and utilitarian justifications;

5. To learn to work successfully alone and in cooperative groups;

6. To learn how to find the answers to one's questions in a logical framework.

SCOPE

I. REASONING
- A. Inductive reasoning and patterns
- B. Deductive reasoning and proof

II. BASIC FIGURES
- A. Points
- B. Lines, segments, and rays
- C. Concepts of parallel and perpendicular
- D. Parallel lines and proof
- E. Angles

III. TRIANGLES
- A. Classification
- B. Congruent triangles
- C. Similar Triangles
- D. Bisectors, altitudes, medians, and midsegments
- E. Right triangles: Pythagorean theorem, Trigonometry

IV. POLYGONS
- A. Terminology
- B. Interior and exterior angles
- C. Quadrilaterals
- D. Similar Polygons

V. CIRCLES
- A. Arcs and angles
- B. Chords, tangents, and secants

VI. PERIMETER AND AREA
- A. Polygons and other planar figures
- B. Planar Regions
- C. Circles and sectors
- D. Geometric Probability

VII. SURFACE AREA AND VOLUME
- A. Prisms, pyramids, cones and cylinders
- B. Spheres

TEXTS

Geometry: Larson, Boswell, Stiff
McDougell Littell, publisher