

Geometry Topics

5 credits - Level: II

Grades: 10-12

Prerequisite: Satisfactory completion of Algebra I Topics

The Geometry Topics course is designed for students who are at or near grade level in their mathematical skills. Geometric concepts are related to the real world with concrete applications of theorems being emphasized. Three-dimensional concepts are introduced informally. The units of study include basic geometric figures, angles, perpendicular lines, parallel lines, planes, congruent triangles, quadrilaterals, similar polygons, right triangles, circles, measuring plane and solid figures, and coordinate geometry.

PROFICIENCIES

BASICS OF GEOMETRY

- make predictions and conjectures based on patterns
- sketch points, lines and planes
- measure segments and angles
- use inductive reasoning

SEGMENTS AND ANGLES

- analyze segment bisectors and angle bisectors
- identify complementary angles, supplementary angles, vertical angles and linear pairs
- use properties of equality and congruence
- use if-then statements and deductive reasoning

PARALLEL AND PERPENDICULAR

- determine the relationship between lines
- apply theorems about perpendicular lines
- describe angles formed by transversals and parallel lines
- prove lines are parallel lines
- use properties of perpendicular and parallel lines
- identify and use translations

TRIANGLE RELATIONSHIPS

- classify triangles by their sides and angles
- find angle measures of triangles
- use properties of Isosceles and Equilateral triangles
- use the Pythagorean theorem and distance formula
- use side lengths to classify triangles
- identify medians in a triangle
- use triangle measurements to decide which side is longest and which angle is largest

CONGRUENT TRIANGLES

- identify congruent triangles and congruent parts
- show triangles are congruent
- use angle bisector and perpendicular bisectors
- identify and use reflection and lines of symmetry

QUADRILATERALS

- identify and classify polygons
- find angle measures of quadrilaterals
- use properties of parallelograms and special parallelograms
- use properties of trapezoids

SIMILARITIES

- use ratios and proportions
- identify similar polygons
- show that two triangles are similar
- use the triangle proportional theorem and its converse
- identify and draw dilations

POLYGONS AND AREA

- find the perimeter of a polygon and circumference of a circle
- find the measures of interior and exterior angles of a polygon
- find the area of plain figures

SURFACE AREA AND VOLUME

- identify and name solid figures
- find the lateral area and surface area of 3-dimensional figures
- find the volume of 3-dimensional figures

RIGHT TRIANGLES AND TRIGONOMETRY

- find the side lengths of special right triangles
- use trigonometry to solve a right triangle

CIRCLES

- identify segments and lines related to circles
- use properties of a tangent of a circle
- use properties of arcs of a circle
- use properties of chords of circles
- use inscribed angles of a circle
- write and graph the equations of a circle
- identify rotations and rotational symmetry