



RADNOR TOWNSHIP SCHOOL DISTRICT
Course Overview
College Prep Geometry- Grades 9,10,11



General Information

Prerequisite: Advanced Algebra 1 or Algebra 1

Length: Full Year

Format: meets daily for one period

Course Description

Geometry is a college prep level course. The course will cover the basic concepts of geometry at a moderate pace and an appropriate difficulty level. Topics will include the definitions and properties of geometric shapes. The concepts of congruence and similarity will be applied to appropriate figures and problem solving situations. Perimeter, area and volume formulas will be used for various geometric shapes. Pythagorean Theorem and the right triangle trigonometric ratios will be introduced. Throughout the course, algebra skills will be reviewed and reinforced through applications of geometric concepts. The course is designed to help students meet the Pennsylvania State Standards in mathematics.

Course Objectives:

- Name and identify points, lines and planes and their intersections.
- Classify collinear points and coplanar points and lines.
- Use segment addition postulate.
- Find the distance between two points on a number line.
- Name and classify angles.
- Use the angle addition postulate.
- Bisect a segment.
- Find the coordinates of a midpoint of a segment.
- Bisect an angle.
- Identify vertical angles, linear pair, complementary and supplementary angles.
- Recognize and analyze conditional statements and write their converses.
- Recognize and use bi-conditional statements for definitions.
- Identify relationships between lines.
- Identify angles formed by coplanar lines intersected by a transversal
- Use theorem about perpendicular lines.
- Find congruent angles formed when a transversal cuts parallel lines.
- Determine if two lines are parallel.
- Compute slope of a line.
- Write the equation of a line in point slope form.
- Write the equation of parallel and perpendicular lines.
- Classify triangles by their sides and angles.
- Find angle measures in triangles.
- Use properties of isosceles and equilateral triangles.
- Use the Pythagorean Theorem and its converse.
- Use the distance formula.
- Identify the medians and centroid of a triangle.
- Use Triangle Inequality Theorem.
- Rank triangle side or angles using their opposites' measures.
- Identify congruent figures and corresponding parts.
- Prove triangles are congruent using SSS, SAS, ASA, AAS and HL.
- Use CPCTC to find missing measures of angles or sides.
- Use properties of perpendicular bisector of segments and angle bisectors
- Identify, name and describe polygons
- Use the sum of the measures of the interior angles of a quadrilateral

- Use properties of parallelograms
- Show that a quadrilateral is a parallelogram
- Use properties of rhombi, rectangles and squares including properties of diagonals
- Use properties of trapezoids and isosceles trapezoids
- Identify special types of quadrilaterals based on limited information
- Use ratios and proportions
- Identify and use similar polygons
- Use the AA, SSS, and SAS similarity postulates
- Use the triangle proportionality theorem and its converse
- Find the measures of interior and exterior angles of a polygon
- Find the circumference of a circle
- Find the area of a circle and area of a sector
- Find the area of rectangles, parallelograms, squares, triangles, trapezoids and rhombi
- Simplify square roots
- Find the side lengths of $45^\circ - 45^\circ - 90^\circ$ Triangles and $30^\circ - 60^\circ - 90^\circ$ Triangles
- Find sine, cosine, and tangent ratios of an acute angle of a right triangle
- Solve a right triangle
- Identify segments and lines related to circles
- Use properties of tangents and arcs of circles
- Use properties of inscribed angles of circles
- Calculate the arc length

Common Assessments:

Grades will be based on quizzes and tests. In addition, teachers may use homework, group activities, and/or projects for grading purposes. All students will take departmental midyear and final exams. The Radnor High School grading system and scale will be used to determine letter grades.

Major Units of Study:

Basics of Geometry
Segments and Angles
Parallel and Perpendicular Lines
Triangle Relationships
Congruent Triangles
Quadrilaterals
Similarity
Polygons and Area
Right Triangles and Trigonometry
Circles

Materials & Texts

MATERIALS

Scientific calculator

TEXTS

Geometry; McDougal Littell Publishing Company

Summer Assignment