Southmoreland School District
Modern Geometry Curriculum Overview

Geometry:

You will analyze characteristics and properties of two and three dimensional geometric shapes and develop mathematical arguments about geometric relationships. Deductive and inductive reasoning will be used to solve problems.

Module Titles:

Module 1: Tools of Geometry
Module 2: Parallel and Perpendicular lines
Module 3: Congruent Triangles
Module 4: Relationships in Triangles
Module 5: Quadrilaterals
Module 6: Right Triangles and Trigonometry

Module Overviews:

Module 1: Tools of Geometry
Students will develop an awareness of the structure of a mathematical system, connecting definitions, postulates, logical reasoning, and theorems. Use construction to explore attributes of geometric figures and to make conjectures about geometric relationships. Students will use one and two dimensional coordinate systems to represent points, lines, rays, line segments, and figures. Students will be able to find the area and perimeter of polygons and Surface area and Volume of 3-d shapes.

Module 2: Parallel and Perpendicular lines
Students will learn the angle relationships between a transversal and parallel lines and be able to use those relationships to solve for missing angles of a diagram.

Module 3: Congruent Triangles
Students will be able to classify triangles based on their side lengths and their angle measures. Be able to solve for missing angles involving the triangle angle sum theorem. Students will learn how to prove triangles are congruent using various theorems. Students will learn and be able to use the properties of Isosceles and Equilateral triangles to solve problems. Students will learn how to solve problems using special segments in a triangle including perpendicular bisectors, angle bisectors, medians and angle bisectors. Students will also be able to solve problems involving triangle inequalities.

Module 4: Relationships in Triangles

In this module students will be able to solve problems involving interior and exterior angles of polygons using the Interior angle sum theorem of convex polygons. Students will learn all of the properties of parallelograms and the special parallelograms including rectangles, Rhombi, Squares. Students will then learn the properties of Trapezoids and Kites and be able to use the properties to solve for missing pieces within a diagram for each shape.

Module 5: Quadrilaterals

This module explores right triangles. The students start off learning the pythagorean theorem and its converse. Then goes into the special right triangles 45-45-90 and 30-60-90. Students will be able to find missing sides of a special triangle knowing the relationship between the sides of a 45-45-90 and 30-60-90 triangle. Students will learn trigonometry in this lesson and be able to solve for missing sides and angles using sine, cosine, and tangent. Then those concepts will be used in word problems involving angles of elevation and depression.

Module 6: Right Triangles and Trigonometry

Students will learn all of the parts of a circle. They will be able to find the measure of angles and arcs in a circle. Then they will be able to solve problems involving special segments in a circle.