

SPRINGFIELD PUBLIC SCHOOLS

GEOMETRY

Course Description

Geometry will emphasize skills necessary for problem-solving and continued growth in mathematics. Students will apply concepts from the study of two-and three-dimensional figures. Emphasis is placed on using deductive reasoning in the analysis of topics such as: parallel lines, triangle congruence, similarity, area, and volume. Content will include both coordinate and transformational geometry. Prerequisite: C or better in Algebra I.

Course Rationale

The skills gained from this class will enable the student to succeed in Algebra II and other upper level classes. The student will also gain logic and problem-solving skills needed for success on the Missouri Assessment Program, ACT, SAT, standardized achievement tests, and in daily life.

Major Instructional Goals

The intent of the Springfield R-12 Secondary Mathematics Program is to explore, investigate, and understand the importance of mathematics through real-world experiences. In mathematics, students will acquire the knowledge and skills to problem solve, communicate, reason, create models, and make connections. Students will:

1. Apply concepts of **Number and Operations** including:
 - a. Judge the reasonableness of numerical computations and their results. (MA1; 3.8)
 - b. Solve problems involving proportions. (MA1; MA4; 3.3)
2. Apply concepts of **Algebraic Relationships** including:
 - a. Compare and contrast various forms of representations of patterns. (MA4; 1.6)
 - b. Identify quantitative relationships and determine the type(s) of functions that might model the situation to solve the problem. (MA4; 1.6, 3.6)
3. Apply concepts of **Geometric and Spatial Relationships** including:
 - a. Apply the basic concepts of geometry including terms, postulates, theorems and symbolic representations. (MA2; 3.4)
 - b. Solve problems involving angle relationships. (MA2; 1.6)
 - c. Use inductive and deductive reasoning. (MA2; 3.5)
 - d. Classify polygons and solve problems involving their various relationships. (MA2; 1.6, 1.10, 3.7)
 - e. Effectively apply an understanding of congruent triangles utilizing proofs and/or verbally justifying reasoning. (MA2; 3.5, 4.1)
 - f. Apply properties of right triangles to a variety of situations. (MA2; 1.10, 3.6)
 - g. Apply circle relationships to real-world situations. (MA2; 1.10)
 - h. Apply geometric properties and relationships to solve multi-step problems in twodimensions, including area and perimeter. (MA2; 3.6)

- i. Solve problems involving surface area and volume. (MA2; 3.6)
 - j. Make conjectures and solve problems involving two-dimensional objects represented with Cartesian coordinates. (MA2; 3.2, 3.6, 4.1)
 - k. Use and apply constructions to represent translations, reflections, rotations, and dilations of objects. (MA2; 1.10)
 - l. Identify types of symmetries of two- and three-dimensional figures. (MA2; 1.6, 1.10)
 - m. Draw and use visual models to represent and solve problems in two and three dimensions, using a variety of tools. (MA2; 1.4)
 - n. Draw and use vertex-edge graphs or networks to find optimal solutions. (MA6; 3.4)
4. Apply concepts of **Measurement** including:
- a. Solve problems of angle measure, including those of triangles or other polygons, and parallel lines cut by a transversal. (MA2; 3.1, 3.4)
 - b. Determine the perimeter, area, surface area and volume of two- and three-dimensional geometric figures. (MA2; 1.10, 3.4)
 - c. Analyze the effects of computation on precision. (MA2; 1.7, 3.8)
5. Apply concepts of **Data Analysis and Probability** including:
- a. Select, create and use appropriate graphical representation of data. (MA6; 1.8, 3.6)
 - b. Given a scatterplot, determine an equation for a line of best fit. (MA3; 1.6)
 - c. Explore and analyze the principles of geometric probability. (MA3; 1.10, 3.4)