

SPRINGFIELD PUBLIC SCHOOLS
INTEGRATED MATH 1A

Course Description

Integrated Math 1A will emphasize skills necessary for problem-solving and continued growth in mathematics. Students will apply concepts of number and operations, algebraic relationships, geometric and spatial relationships, measurement, and data analysis and probability. This course is a prerequisite to Integrated Math 1B. Prerequisite: Teacher recommendation only.

Course Rationale

The Integrated Math program is an alternate approach to achieve mathematical understanding. The content provides the foundation for future work in mathematics and science. An understanding of integrated mathematics is essential in preparation for careers that utilize or depend upon mathematics. It provides students with tools to represent and solve problems in a variety of ways. Students will better understand the language and abstract symbols of mathematics and how to use that language in real-life applications.

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. Compare and order rational and irrational numbers. (MA5; 3.3)
 - b. Describe the effects of operations on the magnitude of quantities. (MA4; 3.4, 4.1)
 - c. Apply properties of exponents to simplify expressions or solve equations. (MA1; MA4; 1.6, 1.10, 3.4)
 - d. Apply operations to real numbers using various methods. (MA1; MA4; MA5; 1.4, 1.10, 3.3, 3.4)
 - e. Judge the reasonableness of numerical computations and their results. (MA1; 3.8)
 - f. Solve problems involving proportions. (MA1; MA4; 3.3)
 - g. Apply percent in a real-world context. (MA1; 3.8)

2. Apply concepts of **Algebraic Relationships** including:
 - a. Generalize patterns using explicitly or recursively defined functions. (MA4; 1.6, 3.5)
 - b. Compare and contrast various forms of representations of patterns. (MA4; 1.6)
 - c. Use symbolic algebra to represent and solve problems that involve linear and absolute value relationships. (MA4; MA6; 1.6, 3.1)
 - d. Use and solve equivalent forms of equations and inequalities. (MA4; 1.6, 3.4)

3. Apply concepts of **Geometric and Spatial Relationships** including:
 - a. Solve problems involving angle relationships and the Pythagorean Theorem. (MA2; 1.6)
 - b. Apply geometric properties and relationships to solve multi-step problems in two dimensions (including area and perimeter). (MA2; 3.6)
 - c. Draw and use vertex-edge graphs or networks to find optimal solutions. (MA6; 3.4)
 - d. Draw and use visual models to represent and solve problems. (MA2; 3.1)

4. Apply concepts of **Measurement** including:
 - a. Solve problems of angle measure, including those involving triangles or other polygons. (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 effects of computation on precision. (MA2; 1.7, 3.8)
 - d. Use unit analysis to solve problems involving rates. (MA4; 3.1)

5. Apply concepts of **Data Analysis and Probability** including:
 - a. Formulate questions, design studies and collect data about a characteristic. (MA3; 1.2)
 - b. Select, create and use appropriate graphical representation of data. (MA6; 1.8, 3.6)
 - c. Apply statistical concepts to solve problems. (MA3; 1.10, 3.4)
 - d. Use and describe the concepts of probability. (MA6; 1.10, 4.1)