

## MATH-SEVEN

In preparation for high school mathematics courses, this course is a survey course which includes topics from number theory, algebra, geometry, statistics. Functions are used to reinforce arithmetic skills, while introducing basic algebra concepts such as the order of operations, integers and the use of variables. Modeling is used, both with and without technology, to demonstrate algebraic and statistical concepts. Based on the needs of the students in each section, additional topics will be covered such as a review of operations with whole numbers, decimals, and fractions, probability, adding and subtracting matrices, evaluating algebraic expressions and using geometric theorems.

### **OBJECTIVES**

1. To reinforce arithmetic skills and understandings through applications in branches of mathematics such as statistics and geometry
2. To introduce a variety of mathematical notations, including functional and algebraic symbolism
3. To use calculators and computers in problem-solving
4. To increase an awareness of the sensibility of answers

### **SCOPE**

- I. **Connecting Arithmetic and Algebra**
  - A. Comparison of decimal values
  - B. Operation symbols, exponents, grouping symbols, order of operations
  - C. Functions
  - D. Evaluate algebraic expressions
- II. Integers
  - A. Absolute value
  - B. Add, subtract, multiply, divide, exponents
  - C. Matrices (add, subtract, scalar multiplication)
- III. Statistics
  - A. Pictographs, bar graphs, line graphs
  - B. Mean, median, mode, range, mid-range,
  - C. Box-plots, frequency tables, histograms, stem-and-leaf plots
  - D. Probability (experimental and theoretical), odds in favor, tree diagram
- IV. Geometry
  - A. Definitions, notations and symbols for:  
point, line, plane, ray, line segment, congruent, parallel, perpendicular
  - B. Types of angles
  - C. Types of polygons, angle sum in polygons
  - D. Circles
  - E. Polyhedra
  - F. Tessellations
  - G. Unit origami

- H. Measurements
  - 1. Metric conversions
  - 2. Calculations of perimeter and area of polygons
  - 3. Calculations of circumference and area of circles
  - 4. Calculations of surface area of prisms, pyramids and cylinders
  - 5. Calculations of volume of prisms and cylinders
- I. Land navigation and map reading
- V. Computer
  - A. "Excel" spreadsheet
  - B. Paper Pool
- VI. Number Theory
  - A. Divisibility, multiple, factor
  - B. Prime factorization
  - C. Greatest common factor, least common multiple
- VII. Computations with Fractions, Mixed Numerals and Decimals
  - A. Simplifying fractions using prime factorization
  - B. Multiplying fractions using prime factorization
  - C. Multiplying and dividing fractions, decimals and mixed numerals
  - D. Adding and subtracting fractions, decimals and mixed numerals
  - E. Complex fractions
  - F. Conversions: fractions to mixed numerals and vice-versa
  - G. Converting fractions to decimals, patterns in repeating decimals
- VIII. Ratio, Proportion and Percent
  - A. Conversions: ratios, decimals and percents
  - B. Solving proportions algebraically
  - C. Using proportions to solve percent problems
- IX. Stock Market
  - A. Read a stock table
  - B. Develop a stock portfolio
  - C. Speaker on the stock market
  - D. Investment companies, tracking stock prices
- X. Additional Activities
  - A. Scholastic Math Magazine
  - B. St. Jude Math-A-Thon

## **TEXTS**

Middle Grades Mathematics, Course 2, Prentice Hall

Mathematical Connections, Houghton-Mifflin

Mathematics: Applications and Connections Course 2. Glencoe/McGraw Hill