

Middle School Course Outline Sixth Grade



Subject: Mathematics

Introduction:

The sixth grade math curriculum is based on the National Standards of the National Council of Teachers of Mathematics (NCTM), and reinforces concepts and computational skills learned in the previous grades. The stimulating curriculum promotes critical thinking and problem solving, and builds respect for the wide variety of successful strategies. Emphasis is placed on cooperative learning, as well as individual exploration, development, and mastery.

Content:

Numeration:

Students will learn to recognize place value in numerals for whole numbers and decimals, expressing numbers in scientific notation, base ten, and finding factors of numbers. Students will order and compare fractions, decimals, and percents.

Operations and Computation:

Students will develop and master algorithms for addition, subtraction, multiplication, and division over whole numbers, integers, and rational numbers. Students will engage fractions, decimals and percents in problem solving activities.

Statistics and Probability:

Students will collect, organize, and analyze data using line plots, bar graphs, line graphs, circle graphs, and step graphs. In addition, they will identify landmarks of data sets which include mean, median, and range. Students will also calculate and experiment with simple and compound probability.

Geometry:

Students will study the construction and properties of two and three dimensional figures including congruence and similarity.

Measurements:

Students will study conventional measurements of distance, area, and volume in both US and Metric measurements. Students will be introduced to the Cartesian Plane.

Patterns, Functions and Algebra:

Students will create number models, working with scientific calculators and explore variables in formulas.

Materials:

Everyday Math Student Journals, Student Reference Book, Study Links, student tool kit, Connected Mathematics Program resources (CMP), John Hopkins Talented Youth Descartes' Cove Math Computer Series, and other math manipulatives are used as needed.

Evaluation:

Unit assessments, teacher observations, daily journal work, student goal and self-assessment (portfolios), and alternative performance assessment are the basis for students' trimester grades.

Middle School Course Outline

Seventh Grade

Subject: Pre-Algebra

Introduction:

The seventh grade math curriculum is based on the National Standards of the National Council of Teachers of Mathematics (NCTM). The stimulating curriculum promotes critical thinking and problem solving, and builds respect for the wide variety of successful strategies. Emphasis is placed on cooperative learning, as well as individual exploration, development, and mastery.

Content:

Numeration:

Students gain understanding of number properties and comparisons between Whole Number sets. Students gain mastery of base ten numbers and utilizing Scientific Notation.

Operations and Computation:

Students master multiplying and dividing fractions, mixed numbers, decimals, and positive and negative numbers. Students gain proficiency in using variables in equations and how inverse operations are utilized to solve.

Statistics and Probability:

Students will study picturing numerical data, pictographs, circle graphs, mean, median, and range. In addition, students will explore permutations, combinations, and the probability of an event, the odds in favor and against, and mutually exclusive events.

Geometry:

Students will become familiar with different geometric figures. Students learn the basics of geometric construction with a compass and straightedge.

Measurements:

Students will explore two-dimensional figures for area calculations. Volume calculations for three-dimensional figures, surface area of three-dimensional solids, mass and density are explored in standard and Metric measurements.

Patterns, Functions and Algebra:

Equations are solved using transformations, with emphasis on equations with decimals and fractions. Illustration with variables on both sides of the equation, as well as inequalities, is explored. Students are introduced to algebraic graphing on the number line and Cartesian plane.

Materials:

Pre-Algebra: An Accelerated Course (Houghton Mifflin), Connected Mathematics Program resources (CMP), John Hopkins Talented Youth Descartes' Cove Math computer series, and other math manipulatives are used as needed.

Evaluation:

Unit Assessments, teacher observations, daily journals work, student goal and self-assessment (portfolios), and alternative performance assessment are the basis for trimester grades.

Middle School Course Outline

Eighth Grade

Subject: Algebra I

Introduction:

The eighth grade math curriculum is based on the National Standards for the National Council of Teachers of Mathematics (NCTM). The stimulating curriculum promotes critical thinking and problem solving, and builds respect for the wide variety of successful strategies. Emphasis is placed on cooperative learning, as well as individual exploration, development, and mastery.

Content:

Numeration:

Students will learn to master the use of number properties to solve and prove algebraic transformations. Students will gain mastery in making comparisons among all types of Rational Numbers and be introduced to Irrational Numbers.

Operations and Computation:

Students will master all operations over Rational Numbers, especially the use of inverse operations to solve linear and quadratic equations and inequalities.

Statistics and Probability:

Students will explore concepts about sample space, events of random experiments and the probabilities of compound events. Representing the statistical data by means of a stem-and-leaf plot and box-and-whiskers plots will be included.

Geometry:

Students explore the use of lines and the Cartesian Plane to graph solutions to linear equations and inequalities. Students are also introduced to the parabolic graph of a quadratic equations and inequalities. Also, trigonometric tables involving sine, cosine, and tangent are explored.

Measurements:

Students will study direct variation from a graph or a table of values. They will identify the domain and range for a linear relation when given a set of ordered pairs.

Patterns, Functions and Algebra:

Functions, equations, and inequalities of the first and second degree are presented. Solution sets of linear equations are represented graphically using the coordinate plane. Linear and quadratic functions are explored. Algebraic fractions and irrational numbers in equations are also introduced.

Materials:

Algebra I: Structure and Method (Houghton Mifflin), John Hopkins Talented Youth Descartes' Cove Math computer series, and other math manipulatives are used as needed.

Evaluation:

Unit assessments, teacher observations, daily journals work, student goal and self-assessment (portfolios), and alternative performance assessment are the basis for their trimester grades.

Middle School Course Outline Eighth Grade

Subject: Advanced Topics in Mathematics (ATM)

Introduction:

The eighth graders who are placed in the Advanced Topics in Mathematics (ATM) have completed a full year of Algebra I. The ATM math curriculum is based on the National Standards for the National Council of Teachers of Mathematics (NCTM) and reinforces concepts and computational skills learned in the previous grades. The stimulating curriculum promotes critical thinking and problem solving, and builds respect for the wide variety of successful strategies. Emphasis is placed on cooperative learning, as well as individual exploration, development, and mastery.

Content:

The ATM course explores special topics in Algebra, Geometry, and Real World mathematics usage through more intensive cooperative learning and individual initiative and exploration. The emphasis is on production assessment, the student creation and cultivation of self interest projects that require depth of mathematical investigation.

Materials:

Discovering Geometry (Key Curriculum Press), John Hopkins Talented Youth Descartes' Cove Math computer series, various web sites, and other math manipulatives are used as needed.

Evaluation:

Unit Assessments, teacher observations, daily journals work, student goal and self-assessment (portfolios), and alternative performance assessment.