9TH GRADE MATH (ALGEBRA) SCOPE AND SEQUENCE

EARLY FIRST QUARTER

Number, Number Sense and Operations
A. Use scientific notation to express large numbers and numbers less than one.
B. Identify subsets of the real number system.
C. Apply properties of operations and the real number system, and justify when they hold for a set of numbers.
D. Connect physical, verbal and symbolic representations of integers, rational numbers and irrational numbers.
E. Compare, order and determine equivalent forms of real numbers.
F. Explain the effects of operations on the magnitude of quantities.

Measurement
C. Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.

Geometry and Spatial Sense
C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.
D. Use coordinate geometry to represent and examine the properties of geometric figures.
I. Use right triangle trigonometric relationships to determine lengths and angle measures.

Patterns, Functions and Algebra
C. Translate information from one representation (words, table, graph or equation) to another representation of a relation or function.
F. Solve and graph linear equations and inequalities.

Data Analysis and Probability
A. Create, interpret and use graphical displays and statistical measures to describe data.
K. Make predictions based on theoretical probabilities and experimental results.

Mathematical Processes
A through H

LATE FIRST QUARTER

Number, Number Sense and Operations
G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.
H. Find the square root of perfect squares, and approximate the square root of non-perfect squares.
I. Estimate, compute and solve problems involving scientific notation, square roots and numbers with integer exponents.

Measurement
F. Write and solve real-world, multi-step problems involving money, elapsed time and temperature, and verify reasonableness of solutions.

Geometry and Spatial Sense
C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.
D. Use coordinate geometry to represent and examine the properties of geometric figures.
I. Use right triangle trigonometric relationships to determine lengths and angle measures.

Patterns, Functions and Algebra
C. Translate information from one representation to another representation of a relation or function.
F. Solve and graph linear equations and inequalities.

Data Analysis and Probability
A. Create, interpret and use graphical displays and statistical measures to describe data.
K. Make predictions based on theoretical probabilities and experimental results.

Mathematical Processes
A through H

EARLY SECOND QUARTER

Number, Number Sense and Operations
G. Estimate, compute and solve problems involving real numbers, including ratio, proportion and percent, and explain solutions.

Measurement
C. Apply indirect measurement techniques, tools and formulas, as appropriate, to find perimeter, circumference and area of circles, triangles, quadrilaterals and composite shapes, and to find volume of prisms, cylinders, and pyramids.

Geometry and Spatial Sense
C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.

Patterns, Functions and Algebra
A. Generalize and explain patterns and sequences in order to find the next term and the *n*th term.
B. Identify and classify functions as linear or nonlinear, and contrast their properties using tables, graphs or equations.

Data Analysis and Probability
A. Create, interpret and use graphical displays and statistical measures to describe data.
K. Make predictions based on theoretical probabilities and experimental results.

Mathematical Processes
A. Formulate a problem or mathematical model in response to a specific need or situation, determine information required to solve the problem; choose method for obtaining this information, and set limits for acceptable solution.
B. Apply mathematical knowledge and skills routinely in other content areas and practical situations.
C. Recognize and use connections between equivalent representations and related procedures for a mathematical concept.
D. Apply reasoning processes and skills to construct logical verifications or counter-examples to test conjectures and to justify and defend algorithms and solutions.
E. Use a variety of mathematical representations flexibly and appropriately to organize, record and communicate mathematical ideas.
F. Use precise mathematical language and notations to represent problem situations and mathematical ideas.
G. Write clearly and coherently about mathematical thinking and ideas.
H. Locate and interpret mathematical information accurately, and communicate ideas, processes and solutions in a complete and easily understood manner.

LATE SECOND QUARTER

Number, Number Sense and Operations
A. Use scientific notation to express large numbers and numbers less than one.

Measurement
B. Use formulas to find surface area and volume for specified three-dimensional objects accurate to a specified level of precision.
D. Use proportional reasoning and apply indirect measurement techniques, including right triangle trigonometry and properties of similar triangles, to solve problems involving measurements and rates.

Geometry and Spatial Sense
C. Recognize and apply angle relationships in situations involving intersecting lines, perpendicular lines and parallel lines.
D. Use coordinate geometry to represent and examine the properties of geometric figures.
I. Use right triangle trigonometric relationships to determine lengths and angle measures.

Patterns, Functions and Algebra
D. Use algebraic representations, such as tables, graphs, expressions, functions and inequalities, to model and solve problem situations.
E. Analyze and compare functions and their graphs using attributes, such as rates of change, intercepts and zeros.
H. Solve systems of linear equations involving two variables graphically and symbolically.

Data Analysis and Probability
A. Create, interpret and use graphical displays and statistical measures to describe data.

Mathematical Processes
A through H

July 2008