Southmoreland School District
MATH 7 - Curriculum Overview

MATH 7 - Overview:

Math 7 continues the exploration of algebraic concepts to prepare students for Algebra 1 as well as further, higher level math courses. Because Math 7 aligns closely with a Pre-Algebra, students will obtain a more thorough comprehension of these grade-level topics and set them up for a deeper understanding of these areas in higher level classes. Throughout the year, students will explore proportional relationships, percents, integer operations, simplifying expressions, solving equations and inequalities, various geometric concepts, probabilities, and statistics. In addition to the Pennsylvania Core Standards presented in seventh grade, students will continue to develop and expand their ability to make sense of word problems and problem solve, connect mathematical concepts to real life, and to apply mathematical knowledge to analyze and model situations/relationships using multiple representations and use appropriate tools to make decisions, solve problems, and to draw conclusions.

Module Titles:

Module 1: Numbers and Operations
Module 2: Algebraic Concepts
Module 3: Geometry
Module 4: Measurement, Data, and Probability

Module Overviews:

Module 1: Numbers and Operations
Students will begin the year by computing unit rates associated with ratios of fractions and to recognize proportional relationships between quantities. When further exploring proportional relationships, students will model and solve real world and mathematical problems using multiple representations such as equations, graphs, and by using tables. After a review of converting between multiple representations of a number (decimal, fractions, percents), students will use proportional relationships to solve multi-step ratio and percent problems. This includes solving real world percent problems, including percent of change, using the simple interest formula, and calculating tax, tip, discounts, and mark-up/downs. Furthermore, students will solve real-world and mathematical problems involving the four operations with rational numbers (decimal and fractional operations), as well as use a number line to solve and

interpret multi-step real-life situations which include operations using positive and negative rational numbers.

Module 2:   Algebraic Concepts
Students will truly expand their algebraic thinking in Module 2: Algebraic Concepts. After a review of translating phrases into mathematical expressions, equations, and inequalities, students will apply properties of operations to generate equivalent expressions. This will include combining like terms and using the distributive property to simplify expressions, as well as factoring out a greatest common factor to write an equivalent expression. After working with equivalent expressions, students will then complete a unit on writing and solving equations (one-step, two-step, and multi-step) in one variable. Students will conclude this module by solving and graphing the solutions of inequalities.

Module 3: Geometry
This module begins with students classifying angles (acute, obtuse, right, straight) and angle pairs (complementary/supplementary). Students will use this knowledge to recognize the properties of angles formed when two parallel lines are cut by a transversal line in order to solve problems. Properties of triangles are explored - classifying types of triangles, solving problems dealing with missing angles, and using the triangle inequality theorem to find missing side lengths. Once complete with triangles, students will describe the two-dimensional figures that result from slicing three-dimensional figures (cross sections). Students will solve problems involving area and circumference of circles and solve problems involving area, volume, and surface area of two- and three- dimensional objects. Finding the area of composite figures and shaded areas will also be investigated. Students will finalize this module by exploring the characteristics of congruent and similar figures, and use this information to solve problems involving scale drawings of geometric figures.

Module 4: Measurement, Data, and Probability
The final module begins with students exploring the likeliness of an event occurring - simple probability. Students will find the probability of a simple event, as well as the probability of the event *not* occuring.   Understanding the difference between theoretical and experimental probabilities will be covered for students to determine the relative frequencies and probabilities of events and use this knowledge to predict the approximate relative frequency given the probability (using proportional relationships). Students will also construct tree diagrams to represent the number of outcomes of compound events, use the fundamental counting principle to find the number of

outcomes, and use this information to find the probabilities of independent compound events. The second half of this module focuses on measurement and data. Students will explore how to collect a sample of data to represent a population, and how biased samples lead to invalid results and predictions. Students will then be able to compare and draw inferences about two populations based on random sampling concepts and to draw informal comparative inferences about two populations using measures of center and measures of variability (mean, median, and mode).