



7<sup>th</sup> Grade Mathematics

South Seneca Middle School

Mr. Scolaro

Brief Outline of Course

**Seventh grade lessons are organized into several chapters that introduce and cover:**

1. **Number Systems** – This lesson teaches number theory in relation to using exponents and scientific notation. Students will learn how to express numbers using exponents and numbers greater than one using scientific notation in order to represent numbers in a variety of formats.
2. **Rational Operations** - Teaches the order of operations applied to decimals, fractions, percents, and estimation. Students will apply the order of operations to simplify expressions, use estimation to solve problems, convert between fractions and decimals, and to convert percent to decimal.
3. **Number Theory** - Teaches the meanings of prime and composite as well as prime factorization, greatest common factor and least common multiple. Students are given guided instruction and will apply these concepts to problem solving situations.
4. **Ratio, Proportion, and Percent** – Students are taught how to identify and use ratios and rates, recognize relationships between ratios/proportions and percents, use tables to solve proportional problems, use ratios to solve problems, use percents to solve discount and mark up problems, use simple interest formulas to solve real world situations, and identify proportional relationships in scale drawings.
5. **Rational Numbers** - Students are taught various rational number concepts. Lessons teach students how to identify pairs of additive and multiplicative inverses, add and subtract with positive and negative numbers, multiply and divide with positive and negative numbers, solve real world problems with different types of numbers, use the number line to explore addition and subtraction of integers, and use the number line to investigate additive inverses as well as the commutative and associative properties of addition.
6. **Expressions and Equations** - Teaches the student about simplification of expressions, properties, and translations of algebraic expressions into word expressions. Students apply skills to use algebraic expressions to generalize a pattern, simplify algebraic expressions by combining like terms, substitution of values for variables in equations, and to solve one and two step linear equations.

7. **Triangles** - Teaches students the classification of angles and triangles. Students will use interior and exterior angle measurement, the Pythagorean relationship, and the Pythagorean Theorem to find unknown angle and side measurements.
8. **Plane Geometry** - Students determine the characteristics and properties of lines and angles and apply these skills to concept of perimeter, circumference, area, and symmetry/reflection. Lessons will teach how to use the protractor and the various attributes of regular and nonregular convex polygons. Students will use angle measurement skills applied to measuring polygons to determine congruency and similarity.
9. **Three-Dimensional Geometry** – Teaches the attributes of three dimensional figures, the volume of prisms and cylinders and how to calculate the surface area of prisms and cylinders. Students will be able to apply these properties to real world problems in the activity “Let me Practice.”
10. **Measurement** – Students learn how to apply the formulas for calculating rate, distance, time, mass, and capacity to estimation and conversion. Guided instruction and practice activities reinforce skills through the chapter.
11. **Graphing** – Teaches identifying ordered pairs and how to plot them, the 4 quadrants of the coordinate plane, recognizing the relationship between a set of points in a table and those points on a graph, recognizing if a set of points represents a function, and exploring inequalities with two variables.
12. **Linear Relationships** - Teaches students how to interpret various types of linear graphs. Students apply graphing skills while graphing linear equations and answering questions about graphs that represent real world situations.
13. **Probability** – Students learn how to interpret experimental results, independent and dependent events, and explore number cubes and spinners. Lessons encourage students to apply probability through various events and computing the odds of these events.
14. **Data and Statistics** – Teaches the representations of data such as the circle, line, bar, histogram, stem-and-leaf, and box and whisker graphs. Students are introduced to statistical terms such as mean, median, and mode and will learn how to apply the measures of central tendency to data and various types of graphs.