**Leaning Outcomes**

**Seventh Grade Double-Block Math**

**Number, Number Sense, and Operations**

* Students will demonstrate an understanding of place value using powers of 10 and write large numbers in scientific notation.
* Students will explain the meaning of exponents that are negative or 0.
* Students will describe difference between rational and irrational numbers.
* Students will use the order of operations and properties to simplify numerical expressions involving integers, fractions, and decimals.
* Students will explain the meaning and effect of adding, subtracting, multiplying, and dividing integers.
* Students will simplify numerical expressions involving integers and use of integers to solve real-life problems
* Students will solve problems using the appropriate form of a rational number (fraction, decimal or percent).
* Students will develop and analyze algorithms for computing with percents and integers, and demonstrate fluency in their use.
* Students will represent and solve problem situations that can be modeled by and solved using concepts of absolute value, exponents and square roots.

**Measurement**

* Students will select appropriate units for measuring derived measurements.
* Students will convert units of area and volume within the same measurement system using proportional reasoning and a reference table when appropriate.
* Students will estimate a measurement to a greater degree of precision that the tool provides.
* Students will solve problems involving proportional relationships and scale factors.
* Students will analyze problem situations involving measurement concepts, select appropriate strategies, and use an organized approach to solve narrative and increasingly complex problems.
* Students will use strategies to develop formulas for finding areas of composite shapes using the areas of triangles, parallelograms, circles and sectors.
* Students will understand the difference between surface area and volume and demonstrate that two objects may have the same surface area, but different volumes or may have the same volume, but different surface areas.
* Students will describe what happens to the surface area and volume of a three-dimensional object when the measurements of the object are changed.

**Geometry and Spatial Sense**

* Students will use proportional reasoning to describe and express relationships between parts and attributes of similar and congruent figures.
* Students will determine sufficient properties that define a specific two-dimensional figure or three-dimensional object.
* Students will determine when one set of figures is a subset of another.
* Students will use and demonstrate understanding of the properties of triangles.
* Students will use Pythagorean Theorem to solve problems involving right triangles.
* Students will use triangle angle sum relationships to solve problems.
* Students will determine necessary conditions for congruence of triangles.
* Students will apply properties of congruent or similar triangles to solve problems involving missing lengths and angle measures.
* Students will determine and use scale factors for similar figures to solve problems using proportional reasoning.
* Students will perform translations, reflections, rotations, and dilations of two-dimensional figures using a variety of methods.

**Patterns, Functions, and Algebra**

* Students will represent and analyze patterns, rules, and functions with words, tables, graphs, and simple variable expressions.
* Students will generalize patterns by describing in words how to find the next term.
* Students will recognize and explain when numerical patterns are linear or nonlinear.
* Students will represent linear equations and inequalities by plotting points in the coordinate plane.
* Students will justify that two forms of an algebraic expression are equivalent, and recognize when an expression is simplified.
* Students will use formulas in problem-solving situations.
* Students will recognize a variety of uses for variables.
* Students will analyze linear and simple nonlinear relationships to explain how a change in one variable results in the change of another.

**Data Analysis and Probability**

* Students will read, create and interpret box-and-whisker plots, stem-and-leaf plots, and other types of graphs.
* Students will analyze a set of data by using and comparing combinations of measures of center and measures of spread and describe how the inclusion of outliers affects those measures.
* Students will construct opposing arguments based on analysis of the same data, using different graphical representations
* Students will compare data from two or more samples to determine how sample selection can influence results.
* Students will identify misuses of statistical data in articles, advertisements, and other media.
* Students will compute probabilities of compound events
* Students will make predictions on theoretical probabilities, design and conduct an experiment to test the predictions, compare actual results to predicted results, and explain differences.