**Class Title: 8th Grade Math
Grade Level: 8th**

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| Nine Weeks: 1stUnit: CCSS Unit 1: Real Numbers and Exponents |
| Concepts/Content | Desired Outcomes |
| Distinguish between rational and irrational numbers. (8.NS.1)  Convert a decimal expansion which repeats eventually into a rational number. (8.NS.1) Convert a fraction into a repeating decimal. (8.NS.1) Find rational approximations of irrational numbers. (8.NS.2)  Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line, and estimate the value of expressions.(8.NS.2)  Evaluate square roots of small perfect squares and cube roots of small perfect cubes. (8.EE.2)  Use square root and cube root symbols to solve and represent solutions of equations. (8.EE.2) Apply the properties of integer exponents to generate equivalent numerical expressions. (8.EE.1)  Estimate very large or very small quantities using a single digit times a power of ten. (8.EE.3)  Express how much larger one number expressed as a single digit times a power of ten is than another in the context of the situation. (8.EE.3)  Express numbers in scientific notation. (8.EE.4)  Perform operations with numbers expressed in scientific notation and a mix of scientific notation and decimal notation. (8.EE.4) Choose appropriate units of measurements for a given number in scientific notation. (8.EE.4) Interpret scientific notation that has been generated by technology. (8.EE.4)  | Know that there are numbers that are not rational, and approximate them by rational numbers. Work with radicals and integer exponents.  |

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| Nine Weeks: 1stUnit: CCSS Unit 2: Expressions and Equations |
| Concepts/Content | Desired Outcomes |
| Simplify linear expressions utilizing the distributive property and collecting like terms. (8.EE.7) Create a multi-step linear equation to represent a real-life situation. (8.EE.7) Solve equations with linear expressions on either or both sides including equations with one solution, infinitely many solutions, and no solutions. (8.EE.7) Give examples of and identify equations as having one solution, infinitely many solutions, or no solutions. (8.EE.7)  | **Analyze and solve linear equations.**  |

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| Nine Weeks: 2nd Unit: CCSS Unit 3: Congruence & Similarity |
| Concepts/Content | Desired Outcomes |
| Describe a series of transformations that exhibits congruence between two congruent figures. (8.G.2)  Describe transformations (dilations, translations, rotations, and reflections) with words and with coordinates. Note that dilations can have centers other than (0,0). (8.G.3) Describe a series of transformations that exhibits similarity between two similar figures. (8.G.4)  Find the measures of angles using transversals, the sum of angles in a triangle, the exterior angles of triangles. (8.G.5) Determine if triangles are similar using the angle-angle criterion. (8.G.5)  Justify congruence or similarity of figures using a series of transformations. (8.G.2 and 8.G.4)  |

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|  Understand congruence and similarity using physical models, transparencies, or geometry software.  |

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| Nine Weeks: 2nd Unit: CCSS Unit 4: Functions |
| Concepts/Content | Desired Outcomes |
| Verify that a relationship is a function or not. (8.F.1) Reason from a context, graph, or table after knowing which quantity is the input and which is the output. (8.F.1) Represent and compare functions numerically, graphically, verbally and algebraically. (8.F.2)  Interpret equations in form y = mx + b as a linear function. (8.F.3) Determine whether a function is linear or non-linear. (8.F.3)  Identify and contextualize the rate of change and the initial value from tables, graphs, equations, or verbal descriptions. (8.F.4) Construct a model for a linear function. (8.F.4) Describe the qualities of a function using a graph (e.g., where the function is increasing or decreasing). (8.F.5) Sketch a graph when given a verbal description of a situation. (8.F.5) Compare graphs, tables, and equations of proportional relationships. (8.EE.5) Graph proportional relationships and interpret the unit rate as the slope. (8.EE.5) Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane. (8.EE.6) Derive the equation y = mx for a line through the origin and y = mx + b for a line intercepting the vertical axis at. (8.EE.6)  | **Understand the connections between proportional relationships, lines, and linear equations.** **Define, evaluate, and compare functions.**  |

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| Nine Weeks: 3rd Unit: CCSS Unit 5: Linear Relationships |
| Concepts/Content | Desired Outcomes |
| Estimate solutions by graphing equations. (8.EE.8) Solve systems by graphing, substitution, or elimination (combination). (8.EE.8) Determine if a system has one solution, no solutions, or many solutions. (8.EE.8)  Interpret the solution to a system of equations in context. (8.EE.8)  | **Analyze and solve linear equations and pairs of simulations linear equations.**  |

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| Nine Weeks: 3rd Unit: CCSS Unit 6: Pythagorean Theorem |
| Concepts/Content | Desired Outcomes |
| Explain a proof of the Pythagorean Theorem and its converse. (8.G.6) Use the Pythagorean Theorem to solve for a missing side of a right triangle given the other 2 sides in both 2-D and 3-D problems. (8.G.7)  Apply the Pythagorean Theorem to solve problems in real-world contexts. (8.G.7) Apply the Pythagorean Theorem to find the distance between two points in the coordinate system. (8.G.8)  |

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| Understand and apply the Pythagorean Theorem  |

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| Nine Weeks: 4thUnit: CCSS Unit 7: Volume |
| Concepts/Content | Desired Outcomes |
| Find the volume of rounded objects in real-world contexts. (8.G.9)  Give volume in terms of 𝜋 and using 𝜋≈3.14 or $\frac{22}{7}$. (8.G.9)  Find a missing dimension given the volume of rounded object. (8.G.9)  |

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| Solve real-world and mathematical problems involving volume of cylinders, cones, and spheres**.**  |

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| Nine Weeks: 4thUnit: CCSS Unit 8: Patterns & Bivariate Data |
| Concepts/Content | Desired Outcomes |
| Construct and interpret scatter plots and two-way tables for patterns such as positive or negative association, linearity or curvature, and outliers. (8.SP.1) Generate an approximate line of best fit. (8.SP.2)  Use the equation of a linear model to solve problems in the context of bivariate measurement data. (8.SP.3)  Interpret the slope and 𝑦-intercept of the line of best fit in context. (8.SP.3)  Show that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. (8.SP.4) Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. (8.SP.4) Use relative frequencies calculated for rows or columns to describe possible association between the two variables. (8.SP.4)  | **Investigate patterns of associations in bivariate data.**  |