| **1st Nine Weeks** | **2nd Nine Weeks** | **3rd Nine Weeks** | **4th Nine Weeks** |
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| Number Sense  *(Chapter 4-5 – 4 weeks)*  NS #1: Apply and extend previous understandings of addition and subtraction to add and subtract rational numbers; represent addition and subtraction on a horizontal or vertical number line diagram.  a. Describe situations in which opposite quantities combine to make 0. b. Understand p + q as the number located a distance from p, in the positive or negative. Show that a number and its opposite have a sum of 0 (are additive inverses). Interpret sums of rational numbers by describing real-world contexts. c. Understand subtraction of rational numbers as adding the additive inverse, p – q = p + (-q). Show that the distance between two rational numbers on the number line is the absolute value of their difference, and apply this principle in real-world contexts. d. Apply properties of operations as strategies to add and subtract rational numbers.  NS #2: Apply and extend previous understandings of multiplication and division and of fractions to multiply and divide rational numbers. a. Understand that multiplication is extended from fractions to rational numbers by requiring that operations continue to satisfy the properties of operations, particularly the distributive property, leading to products such as (-1)(-1) = 1 and the rules for multiplying signed numbers. Interpret products of rational numbers by describing real-world contexts.  b. Understand that integers can be divided, provided that the divisor is not zero, and every quotient of integers (with non-zero divisor) is a rational number. If p and q are integers, then interpret quotients of rational numbers by describing real-world contexts. c. Apply properties of operations as strategies to multiply and divide rational numbers.  d. Convert a rational number to a decimal using long division; know that the decimal form of a rational number terminates in 0s or eventually repeats.  NS #3: Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.  Vocabulary: additive inverse, zero pair, terminating decimals, non-terminating decimals, repeating decimals, non-repeating decimals, bar notation.  --------------------------------------------------  Ratios and Proportions  *(Chapter 1, 2, 3 – 5 weeks)*  RP #1: Compute unit rates associated with ratios of fractions, including ratios of lengths, areas, and other quantities measured in like or different units.  RP #2: Recognize and represent proportional relationship between quantities. a. Decide whether two quantities are in a proportional relationship, e.g., by testing for equivalent ratios in a table or graphing on a coordinate plane and observing whether the graph is a straight line through the origin.  c. Represent proportional relationships by equations.  b. Identify the constant of proportionality (unit rate) in tables, graphs, equations, diagrams, and verbal descriptions of proportional relationships. d. Explain what a point (x, y) on the graph of a proportional means in terms of the situation, with special attention to the points (0, 0) and (1, r) where r is the unit rate.  RP #3: Use proportional relationships to solve multistep ratio and percent problems.  Vocabulary: ratio, rate, proportion, equivalent ratios, scaling up, scaling down, unit rate, convert, variable, inverse operations, direct variation, constant of proportionality, percent equation, interest, principal, simple interest, percent increase, percent decrease, depreciation.  **c.** Extend analysis of patterns ot include analyzing, extending, and determining an expression for simple arithmetic and geometric sequences (e.g., compounding increasing area, using tables, graphs, words, and expressions.  NS #3: Solve real-world and mathematical problems involving the four operations with rational numbers. Computations with rational numbers extend the rules for manipulating fractions to complex fractions.  Vocabulary: variable, algebraic expression, distributive property, factor, common factor, greatest common factor (GCF), coefficient, like terms, combining like term, equation, properties of equality, inequality, multiplicative inverse, reciprocal, unit rate of change. | Expressions vs. Equations  *(Chapter 6, 7, 8 – 5 weeks)*  **6.EE.6**: Use variables to represent numbers and write expressions when solving a real-world or mathematical problem; understand that a variable can represent an unknown number, or depending on the purpose at hand, any number in a specified set. (6th grade)  **EE #1**: Apply properties of operations as strategies to add, subtract, factor, and expand linear expressions with rational coefficients.  **EE #2**: Understand that rewriting an expression in different forms in a problem context can shed light on the problem and how the quantities in it are related.  **EE #3:** Solve multi-step real-life and mathematical problems posed with positive and negative rational numbers in any form (whole numbers, fractions, and decimals), using tools strategically.  **EE #4:** Use variables to represent quantities in a real-world or mathematical problem, and construct simple equations and inequalities to solve problems by reasoning about the quantities.  **a.** Solve word problems leading to equations of the form px + q = r and p(x + q) = r, where p, q, and r are specific rational numbers. Solve equations of these forms fluently. Compare an algebraic solution to an arithmetic solution, identifying the sequence of the operations used in each approach.  **b.** Solve word problems leading to inequalities of the form px + q > r or px < r, where p, q, and r are specific rational numbers. Graph the solution set of the inequality and interpret it in the context of the problem.  --------------------------------------------------  Data and Statistics  *(Chapter 14-15 – 4 weeks)*  SP #1: Understand that statistics can be used to gain information about a population by examining a sample of the population.  a. Differentiate between a sample and a population. b. Understand that conclusions and generalizations about a population are valid only if the sample is representative of that population. Develop an informal understanding of bias.  SP #2: Broaden statistical reasoning by using the GAISE model: a. Formulate Questions: Recognize and formulate a statistical question as one that anticipates variability and can be answered with quantitative data.  b. Collect Data: Design and use a plan to collect appropriate data to answer a statistical question. c. Analyze Data: Select appropriate graphical methods and numerical measures to analyze data by displaying variability within a group, comparing individual to individual, and comparing individual to group. d. Interpret Results: Draw logical conclusions and make generalization form the data based on the original question.  SP #3: Describe and analyze distributions. a. Summarize quantitative data sets in relation to their context by using mean absolute deviation (MAD), interpreting mean as a balance point. b. Informally assess the degree of visual overlap of two numerical data distributions with roughly equal variabilities, measuring the difference between the centers by expressing it as a multiple of a measure of variability.  Vocabulary: survey, data, population, census, sample, statistics, random sample, random number generator, random number table, dot plot/ line plot, variability, spread, range, mean absolute deviation, deviation from the mean, sample size, mean, median, mode, range, biased sample, unbiased sample, | Probability  *(Chapter 16-17 – 5 weeks)*  SP #5: Understand that the probability of a chance vent is a number between 0 and 1 that expresses the likelihood of the vent occurring. Larger numbers indicate greater likelihood. A probability near 0 indicates an unlikely event; a probability around 1⁄2 indicates an event that is neither unlikely nor likely; and a probability near 1 indicates a likely event.  SP #6: Approximate the probability of a chance event by collecting data on the chance process that produces it and observing its long-run relative frequency, and predict the approximate relative frequency given the probability.  SP #7: Develop a probability model and use it to find probabilities of events. Compare probabilities from a model to observed frequencies; if the agreement is not good, explain possible sources of the discrepancy. a. Develop a uniform probability model by assigning equal probability to all outcomes, and use the model to determine probabilities of events.  b. Develop a probability model (which may not be uniform) by observing frequencies in data generated from a chance process.  SP #8: Find probabilities of compound events using organized lists, tables, tree diagrams, and simulations. a. Understand that, just as with simple events, the probability of a compound event is the fraction of outcomes in the sample space for which the compound event occurs.  b. Represent sample spaces for compound events using methods such as organized lists, tables, and tree diagrams. For an event described in everyday language, e.g., “rolling double sixes,” identify the outcomes in the sample space which compose the event. c. Design and use a simulation to generate frequencies for compound events.  Vocabulary: outcome, experiment, sample space, event, simple event, probability, equally likely, experimental probability, theoretical probability, simulation, trial, probability model, uniform probability model, non-uniform probability model, tree diagram, complementary events, compound events, sample space.  Geometry- Construction/Angles  *(Chapter 9 – 4 weeks)*  G #2: Draw (freehand, with ruler and protractor, and with technology) geometric figures with given conditions.  a. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.  b. Focus on constructing quadrilaterals with given conditions noticing types and properties of resulting quadrilaterals and whether it is possible to construct different quadrilaterals using the same conditions.  G #5: Use facts about supplementary, complementary, vertical, and adjacent angles in a multi-step problem to write and solve simple equations for an unknown angle in a figure.  Vocabulary: geometry, protractor, compass, straightedge, sketch, draw, construct, geometric construction, point, line, plane, line segments, endpoints, arc, congruent line segments, congruent, intersection, ray, angle, vertex, degrees, acute angle, right angle, obtuse angle, straight angle, congruent angles, bisect, angle bisector, supplementary angles, complementary angles, perpendicular, midpoint, adjacent angles, vertical angles.  -------------------------------------------------- | Geometry- Triangles  *(Chapter 10 – 3 weeks)*  G #2: Draw (freehand, with ruler and protractor, and with technology) geometric figures with given conditions.  a. Focus on constructing triangles from three measures of angles or sides, noticing when the conditions determine a unique triangle, more than one triangle, or no triangle.  b. Focus on constructing quadrilaterals with given conditions noticing types and properties of resulting quadrilaterals and whether it is possible to construct different quadrilaterals using the same conditions.  Vocabulary: Triangle Sum Theorem, remote interior angles, Exterior Angle Theorem, Exterior Angle Theorem  --------------------------------------------------  Geometry-Similar Figures  *(Chapter 11 – 2 weeks)*  G #1: Solve problems involving similar figures with right triangles, other triangles and special quadrilaterals. a. Compute actual lengths and areas from a scale drawing and reproduce a scale drawing at a different scale. b. Represent proportional relationships within and between similar figures.  Vocabulary: scale factor, ratio, scale drawing Geometry- Circles  *(Chapter 12 – 2 weeks)*  G #4: Know the formulas for the area of circumference of a circle and use them to solve problems; give an information derivation of the relationships between the circumference and area of a circle.  a. Explore and understand the relationships among the circumference, diameter, area, and radius of a circle. b. Know and use the formulas for the area and circumference of a circle and use them to solve real-world and mathematical problems.  Vocabulary: radius of a circle, diameter of a circle, pi, center of a circle, inscribed circle.  -----------------------------------------------  Geometry- 3D Shapes  *(Chapter 13 – 2 weeks)*  G #3: Describe the two-dimensional figures that result from slicing three- dimensional figures, as in plane sections of the right rectangular prisms and right rectangular pyramids.  Vocabulary: cross-section, pyramid, base, lateral faces, lateral edges, vertex, height, regular pyramid, slant height, volume, surface area, apex. |