

Students will be able to: NUMBER SENSE AND OPERATIONS

- Recognize the order and continuity of the number line including fractions, decimals, percents, rational and common irrational numbers. (*square root of 2*)
- Estimate and calculate square roots of whole and rational numbers.
- Estimate and calculate the sum, difference, product, or quotient of whole numbers, integers, and rational numbers.
- Convert among percent, decimal, and fractional equivalents including repeating decimals to fractions.
- Express numbers using scientific notation including negative exponents and use this form in computation.
- Use inverse relationships including squaring and finding square roots to solve problems.
- Solve percent problems using the proportion or equation method. (*rate of change, discounts/markups, sales tax, simple interest*)
- Use ratios and proportions to solve problems including similar figures, indirect measurement and scale drawings.
- Select and use appropriate operation (+, -, ×, ÷) to solve problems with rational numbers (including negatives).
- Use communicative, associative, and distributive properties to simplify numerical and algebraic expressions.

Students will be able to: PATTERNS, RELATIONS AND ALGEBRA

- Recognize and describe patterns in a number sequence, including describe a pattern algebraically.
- Evaluate algebraic expressions using order of operations including distributive property.
- Translate verbal expressions into algebraic expressions and vice versa.
- Write and solve multi-step, single-variable equations that model story situations, including equations with rational coefficients.
- Solve one-step inequalities using inverse operations and graph the solution on a number line.
- Identify, describe and analyze linear relationships between two variables (*compare positive rate of change to negative rate of change:  $y=3x+1$  to  $y=-3x+1$* )
- Use linear equations to model and analyze proportional relationships ( $y=3x$ ).
- Identify the slope of a line as a measure of its steepness and as a constant rate of change from its table of values, equation, or graph.
- Relate the concept of slope to parallel, perpendicular, horizontal, and vertical lines in a plane.
- Estimate, calculate, and compare the slope and x- and y-intercepts of the graph of a line.
- Express a linear equation in slope-intercept form ( $y=mx+b$ ) and identify the roles of each variable.
- Solve and graph linear equations and inequalities with two variables using a function table.
- Explain how the change in one variable in an equation or formula will change another variable.

*Students will be able to:*

*GEOMETRY*

- Identify angle patterns formed by two parallel lines cut by a transversal, including vertical, alternate interior and exterior angles.
- Identify and draw translations, reflections, and rotations of objects in the coordinate plane.
- Use the Pythagorean Theorem to solve problems involving missing sides of right triangles.
- Use ruler, compass, and protractor to draw and analyze geometric figures.
- Analyze, apply, and explain the relationship between the number of sides and the sums of the interior angles of polygons.

*Students will be able to:*

*MEASUREMENT*

- Solve problems pertaining to perimeter, circumference, area, surface area, and volume using the appropriate formula. (*including triangular prisms, pyramids, and spheres*)
- Use formulas to solve for one variable, given the values of the other variables such as problems involving rate, velocity, and density.
- Use ratio and proportion (*including scale factors*) to solve problems.

*Students will be able to:*

*DATA ANALYSIS, STATISTICS AND PROBABILITY*

- Find and interpret the mean, median, mode and range for a set of data.
- Construct and interpret circle graphs and box and whiskers plots.
- Read, interpret, explain and utilize information expressed in graphs, tables, stem-and-leaf plots, box-and-whisker plots, and Venn Diagrams.
- Apply the fundamental counting principle, tree diagrams, and organized lists to determine the number of outcomes in a situation.
- Calculate theoretical and experimental probabilities for simple compound events.
- Describe characteristics and types of data sampling.