



Develop a Deep and Flexible Conceptual Understanding	Develop Accurate and Appropriate Procedural Fluency	Develop Strategies for Problem Solving	Develop Mathematical Reasoning	Develop a Productive Mathematical Disposition	Develop the Ability to Make Conjectures, Model, and Generalize	Develop the Ability to Communicate
Numbers & Operations (N)						
A1.N.1 Extend the understanding of exponents to include square roots and cube roots.		A1.N.1.1 Write square roots and cube roots of constants and monomial algebraic expressions in simplest radical form.				
		A1.N.1.2 Add, subtract, multiply, divide, and simplify square roots of constants, rationalizing the denominator when necessary.				
Algebraic Reasoning & Algebra (A)						
A1.A.1 Represent and solve mathematical and real-world problems using linear equations, absolute value equations, and systems of equations; interpret solutions in the original context.		A1.A.1.1 Use knowledge of solving equations with rational values to represent, use and apply mathematical models (e.g., angle measures, geometric formulas, dimensional analysis, Pythagorean theorem, science, statistics) and interpret the solutions in the original context.				
		A1.A.1.2 Solve absolute value equations and interpret the solutions in the original context.				
		A1.A.1.3 Analyze, use and apply mathematical models to solve problems involving systems of linear equations with a maximum of two variables by graphing, substitution, and elimination. Graphing calculators or other appropriate technology may be utilized. Interpret the solutions in the original context.				
A1.A.2 Represent and solve real-world and mathematical problems using linear inequalities and compound inequalities; interpret solutions in the original context.		A1.A.2.1 Represent relationships using mathematical models with linear inequalities; solve the resulting inequalities, graph on a coordinate plane, and interpret the solutions.				
		A1.A.2.2 Represent relationships using mathematical models with compound and absolute value inequalities and solve the resulting inequalities by graphing and interpreting the solutions on a number line.				
A1.A.3 Create and evaluate equivalent algebraic expressions and equations using algebraic properties.		A1.A.3.1 Solve equations involving several variables for one variable in terms of the others.				
		A1.A.3.2 Simplify polynomial expressions by adding, subtracting, or multiplying.				
		A1.A.3.3 Factor common monomial factors from polynomial expressions and factor quadratic expressions with a leading coefficient of 1.				
		A1.A.3.4 Evaluate linear, absolute value, rational, and radical expressions. Include applying a nonstandard operation such as $x \odot y = 2x + y$				
A1.A.4 Analyze real-world and mathematical problems involving linear equations.		A1.A.4.1 Analyze, use and apply mathematical models and other data sets (e.g., graphs, equations, two points, a set of data points) to calculate and interpret slope and the x- and y-intercepts of a line.				
		A1.A.4.2 Analyze and interpret mathematical models involving lines that are parallel, perpendicular, horizontal, and vertical.				
		A1.A.4.3 Write the equation of the line given its slope and y-intercept, slope and one point, two points, x- and y-intercepts, or a set of data points.				
		A1.A.4.4 Express linear equations in slope-intercept, point-slope, and standard forms. Convert between these forms.				
		A1.A.4.5 Analyze and interpret associations between graphical representations and written scenarios.				



Functions (F)	
A1.F.1 Understand functions as descriptions of covariation (how related quantities vary together) in real-world and mathematical problems.	A1.F.1.1 Distinguish between relations and functions.
	A1.F.1.2 Identify the dependent variable, independent variable, domain and range given a function, equation, or graph. Identify restrictions on the domain and range in mathematical models.
	A1.F.1.3 Write linear functions, using function notation, to represent mathematical models.
	A1.F.1.4 Read and interpret the linear piecewise function, given a graph modeling a situation.
	A1.F.1.5 Interpret graphs as being discrete or continuous.
A1.F.2 Recognize and understand that families of functions are defined by their characteristics.	A1.F.2.1 Distinguish between linear and nonlinear (including exponential) functions. Understand that linear functions grow by equal intervals (arithmetic) and that exponential functions grow by equal factors over equal intervals (geometric).
	A1.F.2.2 Recognize the parent functions $f(x) = x$ and $f(x) = x $. Predict the effects of vertical and horizontal transformations $f(x + c)$ and $f(x) + c$, algebraically and graphically.
A1.F.3 Represent functions in multiple ways and use the representation to interpret real-world and mathematical problems.	A1.F.3.1 Identify and generate equivalent representations of linear functions, graphs, tables, and real-world situations.
	A1.F.3.2 Use function notation; evaluate a function, including nonlinear, at a given point in its domain algebraically and graphically. Interpret the results in terms of the original context.
	A1.F.3.3 Add, subtract, and multiply functions using function notation.
Data & Probability (D)	
A1.D.1 Display, describe, and compare data. For linear relationships, make predictions, and assess the reliability of those predictions.	A1.D.1.1 Display, describe, and compare data sets using summary statistics (central tendency and spread (range)). Utilize technology (e.g., spreadsheets, calculators) to display data and calculate summary statistics.
	A1.D.1.2 Collect data and analyze scatter plots for patterns, linearity, and outliers.
	A1.D.1.3 Make predictions based upon the linear regression, and use the correlation coefficient to assess the reliability of those predictions using graphing technology.
A1.D.2 Calculate probabilities, and apply probability concepts.	A1.D.2.1 Apply simple counting procedures (factorials, permutations, combinations, and tree diagrams) to determine sample size, sample space, and calculate probabilities.
	A1.D.2.2 Given a Venn diagram, determine the probability of the union of events, the intersection of events, and the complement of an event. Understand the relationships between these concepts and the words "AND," "OR," and "NOT."
	A1.D.2.3 Use simulations and experiments to calculate experimental probabilities.
	A1.D.2.4 Apply probability concepts to real-world situations to make informed decisions.