Standard	Objective	Alignment to Curriculum
PA.N.1 Read, write, compare, classify, and represent real numbers and use them to solve problems in various contexts.	**PA.N.1.1** Develop and apply the properties of integer exponents, including a0=1 (with a≠0), to generate equivalent numerical and algebraic expressions.	**8.7.1 - 8.7.8**
	PA.N.1.2 Express and compare approximations of very large and very small numbers using scientific notation.	**8.7.9 - 8.7.11, 8.7.13, 8.7.15, 8.7.16**
	PA.N.1.3 Multiply and divide numbers expressed in scientific notation, express the answer in scientific notation.	**8.7.12, 8.7.14, 8.7.16**
	PA.N.1.4 Classify real numbers as rational or irrational. Explain why the rational number system is closed under addition and multiplication and why the irrational system is not. Explain why the sum of a rational number and an irrational number is irrational; and the product of a non-zero rational number and an irrational number is irrational.	**8.8.1 - 8.8.5, 8.8.15**
	PA.N.1.5 Compare real numbers; locate real numbers on a number line. Identify the square root of a perfect square to 400 or, if it is not a perfect square root, locate it as an irrational number between two consecutive positive integers.	**8.8.1, 8.8.2, 8.8.4, 8.8.5**
PA.A.1 Understand the concept of function in real-world and mathematical situations, and distinguish between linear and nonlinear functions.	**PA.A.1.1** Recognize that a function is a relationship between an independent variable and a dependent variable in which the value of the independent variable determines the value of the dependent variable.	**8.4.10, 8.5.1, 8.5.2**
	PA.A.1.2 Use linear functions to represent and explain real-world and mathematical situations.	**8.3.5 - 8.3.7, 8.5.8 - 8.5.10**
	PA.A.1.3 Identify a function as linear if it can be expressed in the form y=mx+b or if its graph is a straight line.	**8.3.8, 8.2.10, 8.5.4**
PA.A.2 Recognize linear functions in real-world and mathematical situations; represent linear functions and other functions with tables, verbal descriptions, symbols, and graphs; solve problems involving linear functions and interpret results in the original context.	**PA.A.2.1** Represent linear functions with tables, verbal descriptions, symbols, and graphs; translate from one representation to another.	**8.5.4 - 8.5.9**
	PA.A.2.2 Identify, describe, and analyze linear relationships between two variables.	**8.3.5, 8.3.6, 8.5.8, 8.5.9**
	PA.A.2.3 Identify graphical properties of linear functions including slope and intercepts. Know that the slope equals the rate of change, and that the y-intercept is zero when the function represents a proportional relationship.	**8.2.10, 8.3.6 - 8.3.10**
	PA.A.2.4 Predict the effect on the graph of a linear function when the slope or y-intercept changes. Use appropriate tools to examine these effects.	**8.3.8**
	PA.A.2.5 Solve problems involving linear functions and interpret results in the original context.	**8.5.8 - 8.5.10**
PA.A.3 Generate equivalent numerical and algebraic expressions and use algebraic properties	**PA.A.3.1** Use substitution to simplify and evaluate algebraic expressions.	
	PA.A.3.2 Justify steps in generating equivalent expressions by identifying the properties used, including the properties of operations (associative, commutative, and distributive laws) and the order of operations, including grouping symbols.	**7.6.18 - 7.6.22**

to evaluate expressions.		
PA.A.4 Represent real-world and mathematical problems using equations and inequalities involving linear expressions. Solve and graph equations and inequalities symbolically and graphically. Interpret solutions in the original context.	**PA.A.4.1** Illustrate, write, and solve mathematical and real-world problems using linear equations with one variable with one solution, infinitely many solutions, or no solutions. Interpret solutions in the original context.	**7.6.7 - 7.6.12** **8.4.1 - 8.4.9**
	PA.A.4.2 Represent, write, solve, and graph problems leading to linear inequalities with one variable in the form px+q>r and px+q<r, where p, q, and r are rational numbers.	**7.6.13 - 7.6.17**
	PA.A.4.3 Represent real-world situations using equations and inequalities involving one variable.	**7.6.7 - 7.6.17**
PA.GM.1 Solve problems involving right triangles using the Pythagorean Theorem.	**PA.GM.1.1** Informally justify the Pythagorean Theorem using measurements, diagrams, or dynamic software and use the Pythagorean Theorem to solve problems in two and three dimensions involving right triangles.	**8.8.6 - 8.8.10**
	PA.GM.1.2 Use the Pythagorean Theorem to find the distance between any two points in a coordinate plane.	**8.8.11**
PA.GM.2 Calculate surface area and volume of three-dimensional figures.	**PA.GM.2.1** Calculate the surface area of a rectangular prism using decomposition or nets. Use appropriate measurements such as cm^2.	**6.1.14 - 6.1.18** **7.7.13 - 7.7.17** **8.7.14**
	PA.GM.2.2 Calculate the surface area of a cylinder, in terms of π and using approximations for π, using decomposition or nets. Use appropriate measurements such as cm^2.	
	PA.GM.2.3 Develop and use the formulas V=lwh and V=Bh to determine the volume of rectangular prisms. Justify why base area (*B*) and height (*h*) are multiplied to find the volume of a rectangular prism. Use appropriate measurements such as cm^3.	**6.1.16** **7.7.11 7.7.12** **8.8.12, 8.8.13**
	PA.GM.2.4 Develop and use the formulas V=πr2h and V=Bh to determine the volume of right cylinders, in terms of π and using approximations for π. Justify why base area (*B*) and height (*h*) are multiplied to find the volume of a right cylinder. Use appropriate measurements such as cm^3.	**8.5.11 - 8.5.14, 8.5.16**
PA.D.1 Display and interpret data in a variety of ways, including using scatterplots and approximate lines of best fit. Use line of best fit and average rate of change to make predictions and	**PA.D.1.1** Describe the impact that inserting or deleting a data point has on the mean and the median of a data set. Know how to create data displays using a spreadsheet and use a calculator to examine this impact	**6.8.10, 6.8.14**
	PA.D.1.2 Explain how outliers affect measures of central tendency.	**6.8.10, 6.8.14**
	PA.D.1.3 Collect, display and interpret data using scatterplots. Use the shape of the scatterplot to informally estimate a line of best fit, make statements about average rate of change, and make predictions about values not in the original data set. Use appropriate titles, labels and units.	**8.6.1 - 8.6.8, 8.6.11**

draw conclusions about data. .		
PA.D.2 Calculate experimental probabilities and reason about probabilities to solve real-world and mathematical problems.	**PA.D.2.1** Calculate experimental probabilities and represent them as percents, fractions and decimals between 0 and 1 inclusive. Use experimental probabilities to make predictions when actual probabilities are unknown.	**7.8.4 - 7.8.6**
	PA.D.2.2 Determine how samples are chosen (random, limited, biased) to draw and support conclusions about generalizing a sample to a population.	**7.8.12 - 7.8.14, 7.8.17**
	PA.D.2.3 Compare and contrast dependent and independent events.	**7.8.7, 7.8.9, 7.8.10**