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JC Schools 8th Grade Yearly Math Standards

Units	Priority Standards	Supporting Standards
Unit 1 **Real Numbers and Exponents** **28 Days**	**8.EEI.A.1** Know and apply the properties of integer exponents to generate equivalent expressions.	**8.NS.A.1.a-d** Explore the real number system. a. Know the differences between rational and irrational numbers. b. Understand that all rational numbers have a decimal expansion that terminates or repeats. c. Convert decimals which repeat into fractions and fractions into repeating decimals. d. Generate equivalent representations of rational numbers. **8.NS.A.2** Estimate the value and compare the size of irrational numbers and approximate their locations on a number line. **8.EEI.A.4.a,b** Use scientific notation to solve problems. a. Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. b. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities. **8.EEI.A.3**

		Express very large and very small quantities in scientific notation and approximate how many times larger one is than the other.
Unit 2 **Equations** **28 Days**	**8.EEI.C.7.a,b** Solve linear equations and inequalities in one variable. a. Create and identify linear equations with one solution, infinitely many solutions or no solutions. b. Solve linear equations and inequalities with rational number coefficients, including equations and inequalities whose solutions require expanding expressions using the distributive property and combining like terms.	**8.EEI.A.2.a-c** Investigate concepts of square and cube roots. a. Solve equations of the form x2 = p and x3 = p, where p is a positive rational number. b. Evaluate square roots of perfect squares less than or equal to 625 and cube roots of perfect cubes less than or equal to 1000. c. Recognize that square roots of non-perfect squares are irrational.
Unit 3 **Functions** **28 Days**	**8.F.A.1.b** Explore the concept of functions. (The use of function notation is not required.) b. Determine if a relation is a function. **8.F.A.2** Compare characteristics of two functions each represented in a different way. **8.EEI.B.6.a,b** Apply concepts of slope and y-intercept to graphs, equations and proportional relationships. a. Explain why the slope (m) is the same between any two distinct points on a non-vertical line in the Cartesian coordinate plane. b. Derive the equation y = mx for a line through the origin and the equation y = mx + b for a line intercepting the vertical axis at b. **8.F.B.4.a** Use functions to model linear relationships between quantities.	**8.F.A.1.a,c** Explore the concept of functions. (The use of function notation is not required.) a. Understand that a function assigns to each input exactly one output. c. Graph a function. **8.F.A.3.a-c** Investigate the differences between linear and nonlinear functions. a. Interpret the equation y = *m*x + *b* as defining a linear function, whose parameters are the slope (*m*) and the y-intercept (*b*). b. Recognize that the graph of a linear function has a constant rate of change c. Give examples of nonlinear functions. **8.F.B.4.b-c** Use functions to model linear relationships between quantities. b. Determine the parameters of a linear function

	a. Explain the parameters of a linear function based on the context of a problem. **Interpret the rate of change and initial value of a linear function in terms of the situation it models, and in terms of its graph or a table of values* **8.F.B.5** Describe the functional relationship between two quantities from a graph or a verbal description.	**Determine the rate of change and initial value of the function from a description of a relationship or from two (x, y) values, including reading these from a table or from a graph) of a linear function.* c. Determine the x-intercept of a linear function **8.EEI.B.5.a,b** Graph proportional relationships. a. Interpret the unit rate as the slope of the graph. b. Compare two different proportional relationships.
Unit 4 **Systems of Equations** **22 Days**	**8.EEI.C.7.a,b** Solve linear equations and inequalities in one variable. a. Create and identify linear equations with one solution, infinitely many solutions or no solutions. b. Solve linear equations and inequalities with rational number coefficients, including equations and inequalities whose solutions require expanding expressions using the distributive property and combining like terms. **8.EEI.C.8.a-d** Analyze and solve systems of linear equations. a. Graph systems of linear equations and recognize the intersection as the solution to the system. b. Explain why solution(s) to a system of two linear equations in two variables correspond to point(s) of intersection of the graphs. c. Explain why systems of linear equations can have one solution, no solution or infinitely many solutions. d. Solve systems of two linear equations. **Algebraically only*	
Unit 5 **Pythagorean Theorem, Volume and Surface Area**	**8.GM.B.6** Use models to demonstrate a proof of the Pythagorean Theorem and its converse. **8.GM.C.9.a,b** Solve problems involving surface area and volume.	**8.GM.B.7** Use the Pythagorean Theorem to determine unknown side lengths in right triangles in problems in two- and three-dimensional contexts. **8.GM.B.8**

20 Days	a. Understand the concept of surface area and find the surface area of pyramids. b. Understand the concepts of volume and find the volume of pyramids, cones and spheres.	Use the Pythagorean Theorem to find the distance between points in a Cartesian coordinate system.
Unit 6 **Geometry Transformations** **20 Days**	**8.GM.A.3** Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates.	**8.GM.A.1.a,b** Verify experimentally the congruence properties of rigid transformations. a. Verify that angle measure, betweenness, collinearity and distance are preserved under rigid transformations. b. Investigate if orientation is preserved under rigid transformations. **8.GM.A.2.a** Understand that two-dimensional figures are congruent if a series of rigid transformations can be performed to map the pre-image to the image. a. Describe a possible sequence of rigid transformations between two congruent figures. **8.GM.A.4.a** Understand that two-dimensional figures are similar if a series of transformations (rotations, reflections, translations and dilations) can be performed to map the pre-image to the image. a. Describe a possible sequence of transformations between two similar figures. **8.GM.A.5.a-d** Explore angle relationships and establish informal arguments. a. Derive the sum of the interior angles of a triangle. b. Explore the relationship between the interior and exterior angles of a triangle. c. Construct and explore the angles created when parallel lines are cut by a transversal. d. Use properties of similar figures to solve problems

Unit 7 **Statistics and Probability** **15 Days**	**8.DSP.A.3** Interpret the parameters of a linear model of bivariate measurement data to solve problems. **8.DSP.A.4.a** Understand the patterns of association in bivariate categorical data displayed in a two-way table. a. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects.	**8.DSP.A.1** Construct and interpret scatter plots of bivariate measurement data to investigate patterns of association between two quantities. **8.DSP.A.2** Generate and use a trend line for bivariate data, and informally assess the fit of the line. **8.DSP.A.4.b** Understand the patterns of association in bivariate categorical data displayed in a two-way table. b. Use relative frequencies calculated for rows or columns to describe possible association between the two variables.