The School District of Palm Beach County
M/J GRADE 8 PRE-ALGEBRA
Unit 1: Real Numbers, Exponents & Scientific Notation
2015 - 2016

Standards		Topic & Suggested Pacing	Student Target	Core
Mathematics Florida Standards				
MAFS.8.EE.1.1 Calculators: NO	Know and apply the properties of integer exponents to generate equivalent numerical expressions. For example, $3^{-3}=1/3^3=1/27$ **2.1**	**August 20 - September 9** Rational and Irrational Numbers Sets of Real Numbers Ordering Real Numbers Integer Exponents Scientific Notation with Positive Powers of 10 Scientific Notation with Negative Powers of 10 Operations with Scientific Notation	• Rewrite rational numbers and decimals, take square roots and cube roots, and approximate irrational numbers • Describe relationships between sets of real numbers • Order a set of real numbers • Develop and use the properties of integer exponents • Use scientific notation to express very large quantities • Use scientific notation to express very small quantities • Add, subtract, multiply and divide using scientific notation EE - Expressions and Equations NS - The Number System	Go Math Lessons **1.1** **1.2** **1.3** **2.1** **2.2** **2.3** **2.4**
MAFS.8.EE.1.2 Calculators: Neutral	Use square root and cube root symbols to represent solutions to equations of the form $x^2 = p$ and $x^3 = p$, where p is a positive rational number. Evaluate square roots of small perfect squares and cube roots of small perfect cubes. Know that √2 is irrational. **1.1**			
MAFS.8.EE.1.3 Calculators: NO	Use numbers expressed in the form of a single digit times an integer power of 10 to estimate very large or very small quantities, and to express how many times as much one is than the other. For example, estimate the population of the United States as 3×10^8 and the population of the world as 7×10^9 , and determine that the world population is more than 20 times larger. **2.2, 2.3**			
MAFS.8.EE.1.4 Calculators: NO	Perform operations with numbers expressed in scientific notation, including problems where both decimal and scientific notation are used. Use scientific notation and choose units of appropriate size for measurements of very large or very small quantities (e.g., use millimeters per year for seafloor spreading). Interpret scientific notation that has been generated by technology. **2.4**			
MAFS.8.NS.1.1 Calculators: NO	Know that numbers that are not rational are called irrational. Understand informally that every number has a decimal expansion; for rational numbers show that the decimal expansion repeats eventually, and convert a decimal expansion which repeats eventually into a rational number. **1.1, 1.2**			
MAFS.8.NS.1.2 Calculators: NO	Use rational approximations of irrational numbers to compare the size of irrational numbers, locate them approximately on a number line diagram, and estimate the value of expressions (e.g., π^2). For example, by truncating the decimal expansion of √2, show that √2 is between 1 and 2, then between 1.4 and 1.5, and explain how to continue on to get better approximations. **1.1, 1.3**			
FSQ Unit 1				

The School District of Palm Beach County
M/J GRADE 8 PRE-ALGEBRA
Unit 2A: Proportional and Non-Proportional Relationships
2015-2016

Standards		Topic & Suggested Pacing	Student Target	Core
Mathematics Florida Standards		**September 10 - October 7** Representing Proportional Relationships Rate of Change and Slope Interpreting the Unit Rate as Slope Representing Linear Non-Proportional Relationships Determining Slope & y-Intercept Graphing Linear Non-Proportional Relationships Using Slope and y-Intercept Proportional & Non-Proportional Situations	• Use tables, graphs and equations to represent proportional situations • Find a rate of change or a slope • Interpret the unit rate as slope • Use tables, graphs and equations to represent linear, non-proportional situations • Determine the slope and the y-intercept of a line • Graph a line using the slope and the y-intercept • Distinguish between proportional and non-proportional situations EE - Expressions and Equations F - Functions	Go Math Lessons **3.1** **3.2** **3.3** **4.1** **4.2** **4.3** **4.4**
MAFS.8.EE.2.5 Calculators: **Yes**	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. **3.3**			
MAFS.8.EE.2.6 Calculators: **Yes**	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; 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. **3.1, 4.2**			
MAFS.8.F.1.2 Calculators: **Yes**	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change. **3.3, 4.4**			
MAFS.8.F.1.3 Calculators: **Yes**	Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line. **4.1, 4.3, 4.4**			
MAFS.8.F.2.4 Calculators: Neutral	Construct a function to model a linear relationship between two quantities. 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. 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. **3.2, 3.3, 4.2, 4.3, 4.4**			
USA Units 1 & 2A				

The School District of Palm Beach County
M/J GRADE 8 PRE-ALGEBRA
Unit 2B: Functions
2015-2016

Standards		Topic & Suggested Pacing	Student Target	Core
Mathematics Florida Standards		**October 13 - November 6**		Go Math Lessons
MAFS.8.EE.2.5 Calculators: **Yes**	Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways. For example, compare a distance-time graph to a distance-time equation to determine which of two moving objects has greater speed. **6.3**	Writing Linear Equations from Situations & Graphs Writing Linear Equations from a Table Linear Relationships and Bivariate Data Identifying and Representing Functions Describing Functions Comparing Functions Analyzing Graphs	• Write an equation to model a linear relationship given a graph or a description • Write an equation to model a linear relationship given a table • Contrast linear and nonlinear sets of bivariate data • Identify and represent functions • Describe functions • Use tables, graphs and equations to compare functions • Describe a relationship given a graph, and sketch a graph given a description EE - Expressions and Equations F - Functions SP - Statisics and Probability	**5.1** **5.2** **5.3** **6.1** **6.2** **6.3** **6.4**
MAFS.8.F.1.1 Calculators: Neutral	Understand that a function is a rule that assigns to each input exactly one output. The graph of a function is the set of ordered pairs consisting of an input and the corresponding output. **6.1, 6.2**			
MAFS.8.F.1.2 Calculators: **Yes**	Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a linear function represented by a table of values and a linear function represented by an algebraic expression, determine which function has the greater rate of change. **6.3**			
MAFS.8.F.1.3 Calculators: **Yes**	Interpret the equation y = mx + b as defining a linear function, whose graph is a straight line; give examples of functions that are not linear. For example, the function $A = s^2$ giving the area of a square as a function of its side length is not linear because its graph contains the points (1,1), (2,4) and (3,9), which are not on a straight line. **6.2**			
MAFS.8.F.2.4 Calculators: Neutral	Construct a function to model a linear relationship between two quantities. 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. 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. **5.1, 5.2, 6.3**			
MAFS.8.F.2.5 Calculators: Neutral	Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch a graph that exhibits the qualitative features of a function that has been described verbally. **6.4**			
MAFS.8.SP.1.2 Calculators: Neutral	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. **5.3**			
MAFS.8.SP.1.3 Calculators: Neutral	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. **5.3**			

The School District of Palm Beach County
M/J GRADE 8 PRE-ALGEBRA
Unit 3: Solving Equations and Systems
2015-2016

Standards		Topic & Suggested Pacing	Student Target	Core
Mathematics Florida Standards				Go Math Lessons
MAFS.8.EE.3.7 Calculators: **Yes**	Solve linear equations in one variable. a. Give examples of linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms, until an equivalent equation of the form x = a, a = a, or a = b results (where a and b are different numbers). b. Solve linear equations with rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms. **7.1, 7.2, 7.3, 7.4**	**November 9 - December 15** Equations with the Variable on Both Sides Equations with Rational Numbers Equations with the Distributive Property Equations with Many Solutions or No Solutions Solving Systems of Linear Equations by Graphing Solving Systems by Substitution Solving Systems by Elimination Solving Systems by Elimination w/ Multiplication Solving Special Systems	• Represent and solve equations with the variable on both sides • Solve equations with rational number coefficients and constants • Use the Distributive Property to solve equations • Give examples of equations with a given number of solutions • Solve a system of equations by graphing • Use substitution to solve a system of linear equations • Solve a system of linear equations by adding or subtracting • Solve a system of linear equations by multiplying • Solve a system with no solutions or infinitely many solutions EE - Expressions and Equations	**7.1** **7.2** **7.3** **7.4** **8.1** **8.2** **8.3** **8.4** **8.5**
MAFS.8.EE.3.8 Calculators: **Yes**	Analyze and solve pairs of simultaneous linear equations. a. Understand that solutions to a system of two linear equations in two variables correspond to points of intersection of their graphs, because points of intersection satisfy both equations simultaneously. b. Solve systems of two linear equations in two variables algebraically, and estimate solutions by graphing the equations. Solve simple cases by inspection. For example, 3x + 2y = 5 and 3x + 2y = 6 have no solution because 3x + 2y cannot simultaneously be 5 and 6. c. Solve real-world and mathematical problems leading to two linear equations in two variables. For example, given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair. **8.1, 8.2, 8.3, 8.4, 8.5**			

FSQ Unit 3 / USA Units 2B & 3

The School District of Palm Beach County
M/J GRADE 8 PRE-ALGEBRA
Unit 4: Transformational Geometry
2015-2016

Standards		Topic & Suggested Pacing	Student Target	Core
Mathematics Florida Standards		**January 5 - February 2** Properties of Translations Properties of Reflections Properties of Rotations Algebraic Representation of Transformations Congruent Figures Properties of Dilations Algebraic Representations of Dilations Similar Figures G - Geometry	• Describe the properties of orientation and congruence of translations • Describe the properties of orientation and congruence of reflections • Describe the properties of orientation and congruence of rotations • Describe the effect of a translation, rotation, or reflection on coordinates using an algebraic representation • Understand the connection between transformations and figures that have the same shape and size • Describe the properties of dilations • Describe the effect of a dilation on coordinates using an algebraic representation • Understand the connection between transformations and similar figures	Go Math Lessons **9.1** **9.2** **9.3** **9.4** **9.5** **10.1** **10.2** **10.3**
MAFS.8.G.1.1 Calculators: Neutral	Verify experimentally the properties of rotations, reflections, and translations: a. Lines are taken to lines, and line segments to line segments of the same length. b. Angles are taken to angles of the same measure. c. Parallel lines are taken to parallel lines. **9.1, 9.2, 9.3**			
MAFS.8.G.1.2 Calculators: Neutral	Understand that a two-dimensional figure is congruent to another if the second can be obtained from the first by a sequence of rotations, reflections, and translations; given two congruent figures, describe a sequence that exhibits the congruence between them. **9.5**			
MAFS.8.G.1.3 Calculators: Neutral	Describe the effect of dilations, translations, rotations, and reflections on two-dimensional figures using coordinates. **9.1, 9.2, 9.3, 9.4, 10.1, 10.2**			
MAFS.8.G.1.4 Calculators: Neutral	Understand that a two-dimensional figure is similar to another if the second can be obtained from the first by a sequence of rotations, reflections, translations, and dilations; given two similar two-dimensional figures, describe a sequence that exhibits the similarity between them. **10.1, 10.3**			

FSQ Unit 4

The School District of Palm Beach County
M/J GRADE 8 PRE-ALGEBRA
Unit 5: Measurement Geometry
2015-2016

Standards		Topic & Suggested Pacing	Student Target	Core
Mathematics Florida Standards				Go Math Lessons
MAFS.8.EE.2.6 Calculators: **Yes**	Use similar triangles to explain why the slope m is the same between any two distinct points on a non-vertical line in the coordinate plane; 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. **11.3 *Not included on district assessment for this unit. Standard will be assessed elsewhere as appropriate.**	**February 3 - March 8** Parallel Lines Cut by a Transversal Angles Theorems for Triangles Angle-Angle Similarity The Pythagorean Theorem Converse of Pythagorean Theorem Distance Between Two Points Volume of Cylinders Volume of Cones Volume of Spheres	• Understand the relationship of angles formed by parallel lines that are cut by a transversal • Understand the relationship of the measures of the the angles of a triangle • Determine when two triangles are similar • Prove the Pythagorean Theorem and use it to solve problems • Test the converse of the Pythagorean Theorem and use it to solve problems • Use the Pythagorean Theorem to find the distance between two points on a coordinate plane • Find the volume of a cylinder • Find the volume of a cone • Find the volume of a sphere EE - Expressions and Equations G - Geometry	**11.1** **11.2** **11.3** **12.1** **12.2** **12.3** **13.1** **13.2** **13.3**
MAFS.8.G.1.5 Calculators: Neutral	Use informal arguments to establish facts about the angle sum and exterior angle of triangles, about the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles. For example, arrange three copies of the same triangle so that the sum of the three angles appears to form a line, and give an argument in terms of transversals why this is so. **11.1, 11.2, 11.3 *Not included on district assessment for this unit. Standard will be assessed elsewhere as appropriate.**			
MAFS.8.G.2.6 Calculators: **Yes**	Explain a proof of the Pythagorean Theorem and its converse. **12.1, 12.2**			
MAFS.8.G.2.7 Calculators: **Yes**	Apply the Pythagorean Theorem to determine unknown side lengths in right triangles in real-world and mathematical problems in two and three dimensions. **12.1**			
MAFS.8.G.2.8 Calculators: **Yes**	Apply the Pythagorean Theorem to find the distance between two points in a coordinate system. **12.3**			
MAFS.8.G.3.9 Calculators: **Yes**	Know the formulas for the volumes of cones, cylinders, and spheres and use them to solve real-world and mathematical problems. **13.1, 13.2, 13.3**			

USA Units 4 & 5

The School District of Palm Beach County
M/J GRADE 8 PRE-ALGEBRA
Unit 6: Statistics
2015-2016

Standards		Topic & Suggested Pacing	Student Target	Core
Mathematics Florida Standards		**March 11 - April 4** Scatter Plots & Association Trend Lines & Predictions Two-Way Frequency Tables Two-Way Relative Frequency Tables	• Construct and interpret scatter plots • Use a trend line to make a prediction from a scatter plot • Construct and interpret two-way frequency tables • Organize and analyze categorical data SP - Statiistics and Probability	Go Math Lessons **14.1** **14.2** **15.1** **15.2**
MAFS.8.SP.1.1 Calculators: Neutral	Construct and interpret scatter plots for bivariate measurement data to investigate patterns of association between two quantities. Describe patterns such as clustering, outliers, positive or negative association, linear association, and nonlinear association. **14.1, 14.2**			
MAFS.8.SP.1.2 Calculators: Neutral	Know that straight lines are widely used to model relationships between two quantitative variables. For scatter plots that suggest a linear association, informally fit a straight line, and informally assess the model fit by judging the closeness of the data points to the line. **14.1, 14.2**			
MAFS.8.SP.1.3 Calculators: Neutral	Use the equation of a linear model to solve problems in the context of bivariate measurement data, interpreting the slope and intercept. For example, in a linear model for a biology experiment, interpret a slope of 1.5 cm/hr as meaning that an additional hour of sunlight each day is associated with an additional 1.5 cm in mature plant height. **14.2**			
MAFS.8.SP.1.4 Calculators: **Yes**	Understand that patterns of association can also be seen in bivariate categorical data by displaying frequencies and relative frequencies in a two-way table. Construct and interpret a two-way table summarizing data on two categorical variables collected from the same subjects. Use relative frequencies calculated for rows or columns to describe possible association between the two variables. For example, collect data from students in your class on whether or not they have a curfew on school nights and whether or not they have assigned chores at home. Is there evidence that those who have a curfew also tend to have chores? **15.1, 15.2**			
FSQ Unit 6				