This document outlines the academic goals, the activities and materials used in the Eighth Grade class in order to achieve high academic success. There is a great deal of overlap in the standards within the activities and within the core areas, thus, standards addressed repeatedly throughout the year.

Time period	Standard	Resources (unit in textbook, learning center, recurring activity, other)	Internet/Media/ other resource
Week ___ to ___	(1) Foundations for functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways. The student is expected to:		
W3 W14	1(A) describe independent and dependent quantities in functional relationships;	1.4 – Patterns and Functions 5.3 – Check Skills You'll Need (263)	
W2 W15	1(B) gather and record data and use data sets to determine functional relationships between quantities;	1.1 5.4 – Writing a Function Rule	X-Marks the Spot Game (hard copy or electronic 'Math Resources folder'.
W2 W3 W15	1(C) describe functional relationships for given problem situations and write equations or inequalities to answer questions arising from the situations;	1.1 – Using Variables 1.4 5.4 – Writing a Function Rule	Activity made by Alia (word doc.) and also hard copy of different word situations and follow on questions.
As above	1(D) represent relationships among quantities using concrete models, tables, graphs, diagrams, verbal descriptions,	1.1 1.4 – Patterns and Functions 1.5 – Scatter Plots 5.3 – Modeling functions using function rules, tables and graphs.	1.4 (see activity available in 1C above which can be found in a plastic wallet in resources folder). 1.5 - Video on scatterplots: http://www.youtube.com/watch?v=CWnfwZRAuaY

	equations, and inequalities; and		
W3	1(E) interpret and make decisions, predictions, and critical judgments from functional relationships.	(1.5 – analyzing data using scatter plots) 5.7 - Finding an equation for a trend line on a scatterplot and using this to make a prediction.	Video on scatterplots: http://www.youtube.com/watch?v=CWnfwZRAuaY
Week ___ to ___	(2) Foundations for functions. The student uses the properties and attributes of functions. The student is expected to:		
W14 W17	2 (A) identify and sketch the general forms of linear (y = x) and quadratic (y = x^2) parent functions;	5.3 – This is the first unit when the different general forms of linear and quadratic functions are introduced. 6.2 – Vocabulary of 'parent' functions first introduced.	
W3 W14	2 (B) identify mathematical domains and ranges and determine reasonable domain and range values for given situations, both continuous and discrete;	1.4 – Example 4 (29) 5.2 – domain and range (258-259) Examples 3 and 4. 5.3 – continuous and discrete data Example 3	See 1C above (soft and hard copy of different scenarios and follow in questions).
W14	2(C) interpret situations in terms of given graphs or creates situations that fit given graphs; and	5.1 – Relating graphs to events	
W3	2(D) collect and organize data, make and interpret scatterplots (including recognizing positive, negative, or no correlation for data approximating	1.5 – analyzing data using scatter plots 5.7 - Finding an equation for a trend line on a scatterplot and using this to make a prediction.	Video on scatterplots: http://www.youtube.com/watch?v=CWnfwZRAuaY

	linear situations), and model, predict, and make decisions and critical judgments in problem situations.		
Week ___ to ___	(3) Foundations for functions. The student understands how algebra can be used to express generalizations and recognizes and uses the power of symbols to represent situations. The student is expected to:		
W2 and ongoing	3(A) use symbols to represent unknowns and variables; and	1.1 Using Variables	
W16 W26	3(B) look for patterns and represent generalizations algebraically.	5.7 – Describing Number Patterns (arithmetic sequences and common difference). 8.6- Geometric Sequence (geometric sequence and common ratio). Chapter 4 - Inequalities	
Week ___ to ___	(4) Foundations for functions. The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations		

	and inequalities in problem situations. The student is expected to:		
W8 – 29	4 (A) find specific function values, simplify polynomial expressions, transform and solve equations, and factor as necessary in problem situations;	3.1 – Solving Two-Step Equations 3.2 – Solving Mult-Step Equations 3.3. – Equations with Variable son Both Sides 3.6 – Equations and Problem Solving (defining one variable in terms of another and consecutive number problems). 9.1 – Adding and Subtracting Polynomials 9.2 – Multiplying and Factoring 9.3 – Multiplying polynomials (9.4 – Multiplying Special Cases) 9.5 - Factoring Trinomials of the Type $x^2 + bx + c$ 9.6 - Factoring Trinomials of the Type $ax^2 + bx + c$	
W6	4(B) use the commutative, associative, and distributive properties to simplify algebraic expressions; and	2.4 – The Distributive Property 2.5 – Properties of Numbers	Number Properties Rap: http://www.youtube.com/watch?v=7HFRH_M1nAc
W14	4(C) connect equation notation with function notation, such as y = x + 1 and f(x) = x + 1.	5.2 – Relations and Functions – function notation (258).	
Week ___ to ___	(5) Linear functions. The student understands that linear functions can be represented in different ways and translates among		

	their various representations. The student is expected to:		
W17	5(A) determine whether or not given situations can be represented by linear functions;	6.3 Applying Linear Functions – interpreting and analyzing linear graphs. (5.5 – Direct Variation, including 'Real-World' Problem Solving, in contrast to 5.6 Indirect Variation)	
W14	5(B) determine the domain and range for linear functions in given situations; and	5.2 – domain and range (258-259) Examples 3 and 4.	
W14 W17-18	5(C) use, translate, and make connections among algebraic, tabular, graphical, or verbal descriptions of linear functions.	5.1 – Relating Graphs to Events (verbal descriptions of linear functions) 5.3 – Example 1 – Three Views of a Function 6.2 – Slope-Intercept Form 6.4 – Standard Form 6.5 – Point-Slope Form Tabular – 5.5 Direct Variation and 5.6 Indirect Variation, including determining which one (287).	
Week ___ to ___	(6) Linear functions. The student understands the meaning of the slope and intercepts of the graphs of linear functions and zeros of linear functions and interprets and describes the effects of changes in parameters of linear functions in real-world and mathematical situations. The student is expected to:		
W17	6(A) develop the	6.1 – Rate of Change and	

	concept of slope as rate of change and determine slopes from graphs, tables, and algebraic representations;	Slope	
W17	6(B) interpret the meaning of slope and intercepts in situations using data, symbolic representations, or graphs;	6.2 – Slope-Intercept Form 6.3 – Applying Linear Functions	
	6(C) investigate, describe, and predict the effects of changes in m and b on the graph of y = mx + b;	6.2 – Slope-Intercept Form 6.3 – Applying Linear Functions	
W18	6(D) graph and write equations of lines given characteristics such as two points, a point and a slope, or a slope and y-intercept;	6.2 – Slope-Intercept Form 6.4 – Standard Form 6.5 – Point-Slope Form	
As above	6(E) determine the intercepts of the graphs of linear functions and zeros of linear functions from graphs, tables, and algebraic representations;	6.2 – Slope-Intercept Form 6.4 – Standard Form 6.5 – Point-Slope Form	
	6(F) interpret and predict the effects of changing slope and y-intercept in applied situations; and	6.3 – Applying Linear Functions	
As above	6(G) relate direct variation to linear functions and solve problems involving proportional	5.5 - Direct Variation 6.2 – Slope-Intercept Form	

	change.		
Week ___ to ___	(7) Linear functions. The student formulates equations and inequalities based on linear functions, uses a variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to:		
W20	7(A) analyze situations involving linear functions and formulate linear equations or inequalities to solve problems;	7.5 – Linear Inequalities	
W19	7(B) investigate methods for solving linear equations and inequalities using concrete models, graphs, and the properties of equality, select a method, and solve the equations and inequalities; and	6.7 – Scatter Plots and Equations of Lines	
W19	7(C) interpret and determine the reasonableness of solutions to linear equations and inequalities.	6.7 – Scatter Plots and Equations of Lines 7.5 – Linear Inequalities	
Week ___ to ___	(8) Linear functions. The student formulates systems of linear equations from problem situations, uses a		

	variety of methods to solve them, and analyzes the solutions in terms of the situation. The student is expected to:		
W21-22	8(A) analyze situations and formulate systems of linear equations in two unknowns to solve problems;	7.4 – Applications of Linear Systems	
W21-22	8(B) solve systems of linear equations using concrete models, graphs, tables, and algebraic methods; and	7.1- Solving Systems by Graphing 7.2 Solving Systems Using Substitution 7.3 – Solving Systems Using Elimination 7.5 – Linear Inequalities 7.6 – Systems of Linear Inequalities (Example 3 – 'Real-World')	
As above	8(C) interpret and determine the reasonableness of solutions to systems of linear equations.	7.4 – Applications of Linear Systems	
Week ___ to ___	(9) Quadratic and other nonlinear functions. The student understands that the graphs of quadratic functions are affected by the parameters of the function and can interpret and describe the effects of changes in the parameters of quadratic functions. The student is expected to:		

W 31	9 (A) determine the domain and range for quadratic functions in given situations;	10.1 – Exploring Quadratic Graphs – Example 5 'Real-World' Example	
W31	9 (B) investigate, describe, and predict the effects of changes in a on the graph of $y = ax^2 + c$;	10.1 – Exploring Quadratic Graphs – Example 2 and 3 comparing width of parabolas	
W31	9 (C) investigate, describe, and predict the effects of changes in c on the graph of $y = ax^2 + c$; and	10.1 – Exploring Quadratic Graphs – Example 4 shows that the value of c translates up or down.	
W31	9 (D) analyze graphs of quadratic functions and draw conclusions.	10.1 and 10.2 – 'Real-World Problem Solving' examples.	
Week ___ to ___	(10) Quadratic and other nonlinear functions. The student understands there is more than one way to solve a quadratic equation and solves them using appropriate methods. The student is expected to:		
W 31-32	10 (A) solve quadratic equations using concrete models, tables, graphs, and algebraic methods; and	10.3 – Solving quadratics by graphing and using square roots. 10.4 – Factoring to Solve Quadratic Equations (algebraic methods). (10.5 – Completing the Square method). (10.6 – Using the Quadratic Formula)	
W31	10 (B) make connections	10.3 – Solving Quadratic Equations	

	among the solutions (roots) of quadratic equations, the zeros of their related functions, and the horizontal intercepts (x-intercepts) of the graph of the function.		
Week ___ to ___	(11) Quadratic and other nonlinear functions. The student understands there are situations modeled by functions that are neither linear nor quadratic and models the situations. The student is expected to:		
W24-26 (Q3 W5-7)	11(A) use patterns to generate the laws of exponents and apply them in problem-solving situations;	8.1 – Zero and Negative Exponents 8.2 – Scientific Notation 8.3 – Multiplication Properties of Exponents 8.4 – More Multiplication Properties of Exponents 8.5 - Division Properties of Exponents	
W 15	11(B) analyze data and represent situations involving inverse variation using concrete models, tables, graphs, or algebraic methods; and	5.6 – Inverse Variation	
W26	11(C) analyze data and represent situations involving exponential growth and decay	8.7 Exponential Functions 8.8 Exponential Growth and Decay	

	using concrete models, tables, graphs, or algebraic methods.	

In support of achieving all of the above the following units form the textbook are also taught –

	Resources (Online)
1.2 (Week 2)	Online video on Order of Operations - http://www.watchknowlearn.org/Video.aspx?VideoID=25745&CategoryID=503
1.3 (Week 2)	Online song on Rational Numbers - http://www.youtube.com/watch?v=m94WTZP14SA
1.5 (Week 3)	Video on scatterplots: http://www.youtube.com/watch?v=CWnfwZRAuaY
2.5 (Week 6)	Number Properties Rap: http://www.youtube.com/watch?v=7HFRH_M1nAc