Eighth Grade Algebra I Curriculum Map

Note: The following timeline and sequence is meant to be a guide only and is subject to change.

(Revised 2008-09 school year)

Grade Level Content Expectations	1st Trimester			2nd Trimester			3rd Trimester			Ongoing
	Sept	Oct	Nov	Dec	Jan	Feb	Mar	Apr	May	
L1.1.5 Justify numerical relationships.										X
Resources:Throughout										
L1.1.2 Explain why the multiplicative inverse of a number has the same sign as the number, while the additive inverse of a number has the opposite sign.	X									
Resources:Ch. 1-3										
L1.1.1 Know the different properties that hold in different number systems and recognize that the applicable properties change in the transition from the positive integers to all integers, to the rational numbers, and to the real numbers.	X	X								
Resources:Ch 1 covered throughout										
L1.1.3 Explain how the properties of associativity, commutativity, and distributivity, as well as identity and inverse elements, are used in arithmetic and algebraic calculations.	X	X								
Resources:Ch. 1, skills bank										
A1.1.1 Give a verbal description of an expression that is presented in symbolic form, write an algebraic expression from a verbal description, and evaluate expressions given values of the variables.	X	X	X	X						
Resources:Ch. 1, Ch. 2										
L1.1.4 Describe the reasons for the different effects of multiplication by, or exponentiation of, a positive number by a number less than 0, a number between 0 and 1, and a number greater than 1.	X	X			X	X				
Resources:Ch. 1, Ch.7										
A1.1.2 Know the properties of exponents and roots and apply them in algebraic expressions.	X	X			X	X				
Resources:Ch. 1, Ch. 7										
L2.1.2 Calculate fluently with numerical expressions involving exponents; use the rules of exponents; evaluate numerical expressions involving rational and negative exponents; transition easily between roots and exponents.		X			X		X	X	X	
Resources:Ch. 7-1, Ch. 9, 1-5, 11-2Ch. 7, Ch. 9										
A1.2.1 Write equations and inequalities with one or two variables to represent mathematical or applied situations, and solve.		X	X	X	X	X				
Resources:Ch. 2-1 to 2-7 Ch. 3, Ch. 4, 5-1										
A1.2.8 Solve an equation involving several variables (with numerical or letter coefficients) for a designated variable. Justify steps in the solution.		X	X	X						
Resources:Ch. 2 5-1										
A1.2.4 Solve absolute value equations and inequalities and justify steps in the solution.			X							
Resources:Ch. 2 extension										
L1.2.2 Interpret representations that reflect absolute value relationships.			X	X						
Resources:Ch. 3 extension, abs value Ch. 2 ext.										
A2.4.2 Adapt the general symbolic form of a function to one that fits the specifications of a given situation by using the information to replace arbitrary constants with numbers.			X					X		
Resources:Ch 11 2-9										

A2.1.2 Read, interpret, and use function notation and evaluate a function at a value in its domain.					X											X			
Resources:Ch. 4-3, (cchill)																			
A3.5.1 Write the symbolic form and sketch the graph of simple polynomial functions.					X	X													
Resources:4-4																			
A2.1.4 Recognize that functions may be defined by different expressions over different intervals of their domains; such functions are piecewise defined.					X	X	X												
Resources:Ch.5 4-2, 4-3																			
A2.1.3 Represent functions in symbols, graphs, tables, diagrams, or words and translate among representations.						X													
Resources:Ch. 4 throughout																			
A3.2.1 Write the symbolic form and sketch the graph of an exponential function given appropriate information.						X										X			
Resources:Ch. 11, 4-3, 4-4																			
A2.1.1 Determine whether a relationship (given in contextual, symbolic, tabular, or graphical form) is a function and identify its domain and range.						X	X												
Resources:Ch. 4, Ch. 5 throughout																			
A2.3.2 Describe the tabular pattern associated with functions having a constant rate of change (linear); or variable rates of change.						X	X												
Resources:Ch. 5 throughout																			
A3.1.1 Write the symbolic forms of linear functions (standard, point-slope, and slope-intercept) given appropriate information and convert between forms.						X	X												
Resources:Ch. 4, Ch. 5 throughout																			
S2.1.1 Construct a scatterplot for a bivariate data set with appropriate labels and scales.						X	X												
Resources:Ch 4-5																			
S2.1.2 Given a scatterplot, identify patterns, clusters, and outliers. Recognize no correlation, weak correlation, and strong correlation.						X	X												
Resources:Ch. 4-5																			
S2.1.4 Differentiate between correlation and causation. Know that a strong correlation does not imply a cause-and-effect relationship. Recognize the role of lurking variables in correlation.						X	X												
Resources:4-5																			
S2.2.1 For bivariate data that appear to form a linear pattern, find the least squares regression line by estimating visually and by calculating the equation of the regression line. Interpret the slope of the equation for a regression line.						X	X												
Resources:Ch 4-5																			
S2.2.2 Use the equation of the least squares regression line to make appropriate predictions.						X											X	X	
Resources:Ch 4 GAP Alg 2																			
A1.2.3 Solve linear and quadratic equations and inequalities including systems of up to three linear equations with three unknowns. Justify steps in the solution, and apply the quadratic formula appropriately.							X	X	X				X						
Resources:Ch. 5, Ch. 6, 9-1, 9-2																			
A3.1.2 Graph lines (including those of the form x = h and y = k) given appropriate information.							X	X											
Resources:Ch. 5 thourghout																			

A2.1.6 Identifythezerosofafunction,theintervalsIdentify the zeros of a function, the intervals where the values of a function are positive or negative, and describe the behavior of a function as x approaches positive or negative infinity, given the symbolic and graphical representations.							X	X					X	X					
Resources:Ch. 9, Ch 5																			
A2.1.7 Identify and interpret the key features of a function from its graph or its formula(s).							X	X					X	X			X		
Resources:Ch. 12, Ch. 5, Ch. 9																			
A3.1.3 Relate the coefficients in a linear function to the slope and x- and y- intercepts of its graph.							X	X	X										
Resources:Chr 5, 6-1 to 6-3																			
A3.1.4 Find an equation of the line parallel or perpendicular to given line, through a given point; understand and use the facts that non-vertical parallel lines have equal slopes, and that non-vertical perpendicular lines have slopes that multiply to give -1.								X											
Resources:Ch 5-8																			
A2.2.2 Apply given transformations to parent functions and represent symbolically.								X					X	X					
Resources:Ch. 9, Ch.5-9																			
A3.4.3 Analyze the graphs of power functions, noting reflectional or rotational symmetry.								X									X	X	
Resources:Alg 2 text, 5-8																			
A2.2.1 Combine functions by addition, subtraction, multiplication, and division.									X	X									
Resources:Ch. 6-1 to 6-3																			
A2.3.3 Write the general symbolic forms that characterize each family of functions.										X	X								
Resources:Ch. 7																			
A1.1.3 Factor algebraic expressions using, for example, greatest common factor, grouping, and the special product identities.										X	X	X							
Resources:Ch. 7, Ch. 8																			
A1.2.2 Associate a given equation with a function whose zeros are the solutions of the equation.													X						
Resources:Ch. 9-2																			
A3.3.2 Identify the elements of a parabola (vertex, axis of symmetry, direction of opening) given its symbolic form or its graph, and relate these elements to the coefficient(s) of the symbolic form of the function.													X						
Resources:Ch. 9-1																			
A3.3.4 Relate the number of real solutions of a quadratic equation to the graph of the associated quadratic function.													X						
Resources:Ch. 9-3																			
A3.5.2 Understand the effects of degree, leading coefficient, and number of real zeros on the graphs of polynomial functions of degree greater than 2.													X						
Resources:9-1, 9-2																			
A3.5.3 Determine the maximum possible number of zeroes of a polynomial function and understand the relationship between the x-intercepts of the graph and the factored form of the function.													X						
Resources:9-2																			
A3.3.1 Write the symbolic form and sketch the graph of a quadratic function given appropriate information.													X			X			
Resources:Ch. 9-1, 11-4																			

A3.3.5 Express quadratic functions in vertex form to identify their maxima or minima and in factored form to identify their zeros.													X	X					
Resources:Ch. 9-4																			
A3.3.3 Convert quadratic functions from standard to vertex form by completing the square.														X					
Resources:Ch. 9-8																			
L1.2.4 Organize and summarize a data set in a table, plot, chart, or spreadsheet; find patterns in a display of data; understand and critique data displays in the media.															X				
Resources:Ch. 10, throughout																			
L2.1.1 Explain the meaning and uses of weighted averages.															X				
Resources:10.3																			
A2.4.1 Identify the family of function best suited for modeling a given real-world situation.																X			
Resources:Ch. 11-3																			
A2.4.3 Using the adapted general symbolic form, draw reasonable conclusions about the situation being modeled.																X			
Resources:Ch. 11 throughout - supplement																			
A3.2.4 Understand and use the fact that the base of an exponential function determines whether the function increases or decreases and how base affects the rate of growth or decay.																X			
Resources:Ch. 11-2, 11-3																			
A3.2.5 Relate exponential functions to real phenomena, including half-life and doubling time.																X			
Resources:Ch. 11-2, 11-3																			
A1.2.6 Solve power equations and equations including radical expressions; justify steps in the solution, and explain how extraneous solutions may arise.																X	X		
Resources:Ch. 11, Alg 2																			
A3.4.1 Write the symbolic form and sketch the graph of power functions.																X	X	X	
Resources:Chill * GAP																			
A2.3.1 Identify a function as a member of a family of functions based on its symbolic or graphical representation; recognize that different families of functions have different asymptotic behavior.																	X		
Resources:Ch. 12-2																			
L2.1.4 Know that the imaginary number i is one of two solutions to x2 = -1.																	X	X	
Resources:Alg 2 text lesson: 5-5, Alg 2																			
A2.1.5 Recognize that functions may be defined Recognize that functions may be defined recursively. Compute values of and graph simple recursively defined functions.																	X	X	
Resources:Alg 2 text lesson: 5-5, Alg 2																			
A2.2.3 Determine whether a function (given in tabular or graphical form) has an inverse and recognize simple inverse pairs.																	X	X	
Resources:Alg2 GAP																			
A3.4.2 Express directly and inversely proportional relationships as functions and recognize their characteristics.																	X	X	
Resources:Ch. 12 GAP*																			
S2.1.3 Estimate and interpret Pearson's correlation coefficient for a scatterplot of a bivariate data set. Recognize that correlation measures the strength of linear association.																	X	X	

Resources:GAP				