WDHS Curriculum Map: created by Christina Berth, Jaclyn Falcone, Julia Holloway
Course: RC Algebra I July 2013

Time Interval/ Content	*Standards/ Strands*	*Essential Questions*	*Skills*	*Assessment*
Unit 1: Solving Equations and Inequalities in Two Variables *Holt Sections:* 2.1-2.5, 3.1-3.6 *22 days*	• A-CED-1. Create equations and inequalities in one variable and use them to solve problems. • A-CED-4. Represent constraints by equations or inequalities,…and interpret solutions as viable or non-viable options in a modeling context. • A-REI-1. Explain each step in solving a simple equation as following from the equality of numbers asserted at the previous step, starting from the assumption that the original equation has a solution. Construct a viable argument to justify a solution method. • A-REI-3. Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters.	• What is an inequality? • What is an equation? • What do the algebraic and graphical solutions to an equation or inequality represent?	*Students will understand that…* • An inequality is a representation of two quantities which may not be equivalent. • The solution to an inequality represents a range of possible solutions that may or may not be relevant to a given situation. *Students will know…* • The definitions of inequality, compound inequality, intersection, union, and solution of an inequality. • How to solve inequalities using a variety of strategies. *Students will be able to…* • Develop inequalities in order to represent real-world situations. • Determine the appropriateness of the model, method, and solution in regards to the situation. • Apply the solutions to these inequalities in context.	• Classwork • Practice • Homework • Quizzes • Test • Project

Unit 2: Ratio, Proportion, and Percents *Holt Sections*: 2.6-2.10 22days	• 6-RP-1. Understand the concept of a ratio and use ratio language to describe a ratio relationship between two quantities. • 6-RP-2. Understand the concept of a unit rate *a*/*b* associated with a ratio *a:b* with $b \neq 0$, and use rate language in the context of a ratio relationship. • 6-RP-3. Use ratio and rate reasoning to solve real-world and mathematical problems, e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations. • 7-RP-1. Compute unit rates associated with ratios of fractions, including ratios of lengths, areas and other quantities measured in like or different units. • 7-RP-2. Recognize and represent proportional relationships between quantities. • 7-RP-3. Use proportional relationships to solve multistep ratio and percent problems.	• What is proportional reasoning? • How are percents applied to real-world scenarios?	*Students will understand that…* • When comparing two quantities, one should use a ratio. • There are many applications of proportions and percentages that are used on an everyday basis. *Students will know…* • The definitions of indirect measurement, percent, percent change, proportion, ratio, and unit rate. • The formulas for simple interest and percent change. *Students will be able to…* • Solve a proportion and problems involving percents. • Use scale models to represent distances and objects. • Find and discuss percents of change.	• Classwork • Practice • Homework • Quizzes • Test • Project – *Extreme Couponing*

Unit 3: Functions *Holt Sections:* 4.1-4.6 22 days	• A-CED-2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. • F-IF-1 Understand that a function from one set to another set assigns each element of the domain to exactly one element of the range. If *f* is a function and *x* is an element of its domain, then *f(x)* denotes the output of *f* corresponding to the input *x*. The graph of *f* is the graph of the equation *y = f(x)*. • F-IF-2 Use function notation, evaluate functions for inputs in their domains, and interpret statements that use function notation in terms of a context. • F-IF-3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. • F-IF-5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. • F-IF-6. Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph. • F-IF-7a. Graph functions expressed symbolically and show	• What is a function? • How are the different representations of a function related?	*Students will understand that…* • A function is a type of relation that pairs each domain value with exactly one range value. • The equation, table, and graph of a function all provide the same information, but it is more evident in one representation than another. *Students will know…* • The definitions of continuous graph, discrete graph, relation, domain, range, function, independent, dependent, function notation, correlation, and sequence. • How to identify, write, and graph functions. • How to recognize and continue arithmetic sequences. *Students will be able to…* • Discuss functions in terms of their domain and range. • Write a function using function notation. • Apply functions and arithmetic sequences in a real-life context.	• Classwork • Practice • Homework • Quizzes • Test • Project – *What's the Trend?*

	key features of the graph, by hand in simple cases and using technology for more complicated cases. (Graph linear ~~and quadratic~~ functions and show intercepts, ~~maxima, and minima~~.) • F-BF-1a. Write a function that describes a relationship between two quantities (Determine an explicit expression, a recursive process, or steps for calculation from a context.) • F-BF-2. Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms. • S-ID-1. Represent data with plots on the real number line (dot plots, histograms, and box plots). • S-ID-5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. • S-ID-6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. • S-ID-8. Compute (using technology) and interpret the correlation coefficient of a linear			

	fit. • S-ID-9. Distinguish between correlation and causation.			
Unit 4: Linear Functions *Holt Sections:* 5.1 – 5.Ext UbD Unit 4 22 days	• N-Q-1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret units consistently in formulas; choose and interpret the scale and the origin in graphs and data displays. • N-Q-2. Define appropriate quantities for the purpose of descriptive modeling. • A-SSE-1a. Interpret parts of an expression, such as terms, factors, and coefficients. • A-SSE-1b. Interpret complicated expressions by viewing one or more of their parts as a single entity. • A-SSE-2. Use the structure of an expression to identify ways to rewrite it. • A-CED-2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. • A-CED-3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context.	• What is represented by the x- and y-intercepts of a linear equation? • How can the slopes of lines be interpreted in a given situation?	*Students will understand that…* • The x- and y- intercepts can represent a "starting point" for each of the respective variables. • Linear functions change at a constant rate, and the direction of the slope represents the relationship between variables. *Students will know…* • The definitions of linear equation, linear function, parallel lines, perpendicular lines, rate of change, slope, x-intercept, y-intercept, transformation, parent function, axis of symmetry, vertex. • The slope formula, point-slope form of a linear function, slope-intercept form of a linear function. *Students will be able to…* • Graph a line in different forms. • Transform a linear function. • Compare lines using slopes and y-intercepts. • Find the slope and intercepts of a line. • Apply linear functions in a real-	• Classwork • Practice • Homework • Quizzes • Test • Project – *Tell Me A Story!*

	• A-REI-10. Understand that the graph of an equation in two variables is the set of all its solutions plotted in the coordinate plane, often forming a curve (which could be a line). • F-IF-4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. • F-LE-1a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. • F-LE-1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. • F-LE-2. Construct linear and exponential functions, including arithmetic and geometric sequences, given a graph, a description of a relationship, or two input-output pairs (include reading these from a table). • F-LE-5. Interpret the parameters in a linear or exponential function in terms of a context**.** • S-ID-7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model		world context.	

	in the context of the data.			
Unit 5: Systems of Equations and Inequalities *Holt Sections:* 6.1-6.6 22 days	• A-CED-3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or nonviable options in a modeling context. • A-REI-5. Prove that, given a system of two equations in two variables, replacing one equation by the sum of that equation and a multiple of the other produces a system with the same solutions. • A-REI-6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. • A-REI-11. Explain why the *x*-coordinates of the points where the graphs of the equations $y = f(x)$ and $y = g(x)$ intersect are the solutions of the equation $f(x) = g(x)$; find the solutions approximately, e.g., using technology to graph the functions, make tables of values, or find successive approximations.	• How do you choose the best method for solving a system of linear equations? • What does the solution to a system of equations represent?	*Students will understand that…* • Although any solution method for solving systems of equations will work, there is an optimal method based on the representation of the equations. • The solution to a system of equations is represented by its intersection (if there is an intersection). *Students will know…* • The definitions of system of linear equations, solutions of a system of linear equations. • The definition of a linear inequality and solutions of linear inequalities. *Students will be able to…* • Solve systems of linear equations using the methods of substitution, elimination, and graphing. • Apply systems of linear equations in a real-world context.	• Classwork • Practice • Homework • Quizzes • Test • Project – *Which Way Is Best?*

Unit 6: Exponents and Polynomials *Holt Sections:* 7.1-7.8 *22 days*	• A-SSE-1a. Interpret parts of an expression, such as terms, factors, and coefficients. • A-SSE- 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. • 8.EE- 1. Know and apply the properties of integer exponents to generate equivalent numerical expressions. • A-APR-1. Understand that polynomials form a system analogous to the integers, namely, they are closed under the operations of addition, subtraction, and multiplication; add, subtract, and multiply polynomials.	• When is an exponential expression completely simplified? • How are the operations on integers and operations on polynomials related?	*Students will understand that…* • The properties of exponents can be used to simplify exponential expressions. • The operations on integers and polynomials are related in method, geometric representation, and logical definition. *Students will know…* • The definitions of monomial, binomial, trinomial, polynomial, leading coefficient, cubic, and quadratic. • To classify polynomials as a difference of two squares or as a perfect square trinomial. *Students will be able to…* • Use the respective properties to simplify expressions involving exponents and polynomials.. • Recognize when simplification of expressions is useful and when it is detrimental.	• Classwork • Practice • Homework • Quizzes • Test • Project
Unit 7: Factoring *Holt Sections:* 8.1-8.6 22 days	• A-SSE-1a. Interpret parts of an expression, such as terms, factors, and coefficients. • A-SSE-2. Use the structure of an expression to identify ways to rewrite it.	• What is factoring?	*Students will understand that…* • Factoring can be related to geometric representation of the product. • A polynomial is considered to be factored if it is broken down to the product of its simplest	• Classwork • Practice • Homework • Quizzes • Test • Project

	• A-REI-4b. Solve quadratic equations in one variable by inspection (e.g., for $x^2 = 49$), and factoring, as appropriate to the initial form of the equation. • F-FI-8. Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. • 6-NS-4. Find the greatest common factor of two whole numbers less than or equal to 100. *(We will also work with the greatest common factor of expressions using variables.)*		components. *Students will know…* • The definitions of factor, greatest common factor, prime factorization. • When to use each of the method of factorization. • Whether or not a polynomial is completely factored. *Students will be able to…* • Find the greatest common factor of two monomials. • Write the prime factorization of an integer. • Factor polynomials with integer coefficients.	
Unit 8: Quadratic Functions and Equations *Holt Sections:* 9.1-9.9 22 days	• A-SSE-1a. Interpret parts of an expression, such as terms, factors, and coefficients. • A-SSE-2. Use the structure of an expression to identify ways to rewrite it. • A-REI- 4a. Solve quadratic equations in one variable. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x – p)^2 = q$ that has the same solutions. Derive the quadratic formula from this form. • A-REI-4b. Solve quadratic equations by inspection (e.g., for	• What are the solutions to a quadratic equation? • What does the graph of a quadratic equation look like and how can it be changed?	*Students will understand that…* • There can exist 0, 1, or 2 solutions to a quadratic equation. • The graph of a quadratic equation is a parabola, and it can be transformed in much the same way as a linear equation. *Students will know…* • The definitions of axis of symmetry, parabola, discriminant, maximum, minimum, vertex, and zero of a function. • The quadratic formula and	• Classwork • Practice • Homework • Quizzes • Test • Project

	$x^2 = 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions. • F-IF-4. For a function that models a relationship between two quantities, interpret key features of graphs and tables in terms of the quantities, and sketch graphs showing key features given a verbal description of the relationship. • F-IF- 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases.		formula for the discriminant (and how to use it.) *Students will be able to…* • Identify a quadratic function from a graph, equation, or a set of points. • Graph a quadratic equation. • Solve a quadratic equation by graphing, factoring, using square roots, and using the quadratic formula. • How to transform the graph of a quadratic function.	