WDHS Curriculum Map
Course: Algebra 1 June 2015

Time Interval/ Content	*Standards/ Strands*	*Essential Questions*	*Skills*	*Assessment*
Unit 1 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving linear equations and inequalities.				
***Unit 1:* Solving Equations and Inequalities in Two Variables** *Big Ideas Math Chapters 1 and 2* *Holt Chapters 2 and 3* *14 days review, if needed (all levels Alg 1)*	• A-CED-A.1. Create equations and inequalities in one variable and use them to solve problems. • A-CED-3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or non-viable options in modeling context. • A-CED-A.4. Represent constraints by equations or inequalities,…and interpret solutions as viable or non-viable options in a modeling context. • A-REI-A.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-B.3. Solve linear equations and inequalities in one variable, including equations with	• How can you solve a multi-step inequality? • How can you solve an absolute value equation? • How can you solve and absolute value inequality? • How can you solve an equation that has variables on both sides? • How can you use a formula for one measurement to write a formula for a different measurement? • How can you use addition or subtraction to solve an inequality? • How can you use an inequality to	*Students will understand that…* • Multi-step linear equations and inequalities can be used to solve real-life problems. • Solutions to linear equations or inequalities result in one solution, no solution, or infinite solutions. *Students will know…* • Core Vocabulary: conjecture, equation, linear equation in one variable, solution, inverse operations, equivalent equations, expression, absolute value equation, extraneous solutions, literal equations, inequality, solution set, equivalent inequalities, compound inequality, absolute value inequality. *Students will be able to…* • Solve linear equations using addition and subtraction. • Solve linear equations using multiplication and division. • Use linear equations to solve real-life problems.	• Classwork • Homework • Quizzes • Tests • Performance Assessment, if needed

	coefficients represented by letters. • N-Q-A.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. • N-Q-3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	describe a real-life statement? • How can you use division to solve an inequality? • How can you use inequalities to describe intervals on the real number line? • How can you use multi step equations to solve real life problems? • How can you use simple equations to solve real life problems?	• Solve multi-step linear equations using inverse operations. • Use multi-step linear equations to solve real-life problems. • Use unit analysis to model real-life problems. • Solve linear equations that have variables on both sides. • Identify special solutions of linear equations. • Solve absolute value equations. • Solve equations involving two absolute values. • Identify special solutions of absolute value equations. • Rewrite literal equations. • Rewrite and use formulas for area. • Rewrite and use other common formulas. • Write linear inequalities. • Sketch the graphs of linear inequalities. • Write linear inequalities from graphs. • Solve inequalities using addition and subtraction. • Use inequalities to solve real-life problems. • Solve inequalities by multiplying or dividing. • Solve multi-step inequalities. • Use multi-step inequalities to solve real-life problems.	

			• Write and graph compound inequalities. • Solve compound inequalities. • Use compound inequalities to solve real-life problems. • Solve absolute value inequalities. • Use absolute inequalities to solve real-life problems.	
Unit 2 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving graphing linear functions.				
Unit 2: **Graphing Linear Functions** *Big Ideas Math Chapter 3* *Holt Chapters 4 and 5* *14 days (Alg 1)* *21 days (ICR Alg 1)*	• 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-5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes.	• What is a function? • How can you determine whether a function is linear or non-linear? • How can you use function notation to represent a function? • How can you describe the graph of the equation Ax + By = C? • How can you describe the graph of the equation y = mx + b? • How does the graph of the linear function	*Students will understand that…* • Linear functions can be represented as graphs, tables, and equations. • Real-life problems can be solved using function notation, linear equations, slopes, and y-intercepts. • Linear and Absolute Value Functions can be transformed using translations, reflections, stretches, and compressions. *Students will know…* • Core Vocabulary: relation, function, domain, range, independent variable, dependent variable, linear function, non-linear function, solution of a linear equation in two variables, discrete domain, continuous domain, function notation, standard form, x-intercept, y-intercept, slope, rise, run, slope-intercept form,	• Classwork • Practice • Homework • Quizzes • Test • Performance Task – "The Cost of a T-Shirt" (Big Ideas Chapter 3 Performance Task – Assessment Book page 43)

	• F-IF-7a. Graph functions expressed symbolically and show 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~~.) • 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-IF-7b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. • F-IF-9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • F-LE-1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	f(x) = x compare to the graphs of g(x) = f(x) + c and h(x) = f(cx)? • How do the values of a, h, and k affect the graph of the absolute value function g(x) = a$\|x - h\| + k$?	constant function, family of functions, parent function, transformation, translation, reflection, horizontal compression, horizontal stretch, vertical stretch, vertical compression, absolute value function. *Students will be able to…* • Determine whether relations are functions. • Find the domain and range of a function. • Identify the independent and dependent variables of functions. • Identify linear functions using graphs, tables, and equations. • Graph linear functions using discrete and continuous data. • Write real-life problems to fit data. • Use function notation to evaluate and interpret functions. • Use function notation to solve and graph functions. • Solve real-life problems using function notation. • Graph equations of horizontal and vertical lines. • Graph linear equations in standard form using intercepts. • Use linear equations in standard form to solve real-life problems. • Find the slope of a line.	

	• F-LE-5. Interpret the parameters in a linear or exponential function in terms of a context. • F-BF-3. Identify the effect on the graph of replace f(x) by f(x) + k, k f(x), f(kx), and f(x+k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. • TECH.8.1.12.E.1 Demonstrate an understanding of the problem solving capacity of computer in our world. • TECH.8.2.12.A.3 Collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue.		• Use the slope-intercept form of a linear equation. • Use slopes and y-intercepts to solve real-life problems. • Translate and reflect graphs of linear functions. • Stretch and compress graphs of linear functions. • Combine transformations of graphs of linear functions. • Translate graphs of absolute value functions. • Stretch, compress, and reflect graphs of absolute value functions. • Combine transformations of graphs of absolute value functions.	
Unit 3 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving writing linear functions.				
Unit 3: **Writing Linear Functions** *Big Ideas Math Chapter 4* *Holt Chapters 4 and 5* *14 days (Alg 1)* *21 days (ICR Alg 1)*	• 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-LE-1b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another.	• Given the graph of a linear function, how can you write an equation of the line? • How can you write an equation of a line when you are given the slope	*Students will understand that…* • Linear equations can be written in slope-intercept form, point-slope form, and standard form. • Scatterplots can be used to interpret data and determine the model using a line of best fit and distinguish between correlation and causation. • Arithmetic sequences are an extension of linear functions. *Students will know…*	• Classwork • Practice • Homework • Quizzes • Test • Performance Task – "Any Beginning" (Big Ideas Chapter 4 Performance Task – Assessment Book page 59)

	• F-LE-5. Interpret the parameters in a linear or exponential function in terms of a context. • 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. • N-Q-3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. • S-ID-7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. • 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-BF-1a. Determine an explicit expression, a recursive process, or steps of 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.	and a point on the line? • How can you recognize lines that are parallel or perpendicular? • How can you use a scatterplot and a line of fit to make conclusions about data? • How can you analytically find a line of best fit for a scatterplot? • How can you use an arithmetic sequence to describe a pattern? • How can you describe a function that is represented by more than one equation?	• Core Vocabulary: linear model, point-slope form, parallel lines, perpendicular lines, scatterplot, correlation, line of fit, residual, linear regression, line of best fit correlation coefficient, causation, sequence, term, arithmetic sequence, common difference, piecewise function, step function. *Students will be able to…* • Write equations in slope-intercept form. • Use linear equations to solve real-life problems. • Write an equation of a line given its slope and a point on the line. • Write an equation of a line given two points on the line. • Identify and write equations of parallel lines. • Identify and write equations of perpendicular lines. • Use parallel and perpendicular lines in real-life problems. • Interpret scatterplots. • Identify correlations between data sets. • Use lines of fit to model data. • Use residuals to determine how well lines of fit model data. • Use technology to find lines of best fit. • Distinguish between correlation and causation.	

	• 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-IF-3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. • F-IF-7b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. • S-ID-6a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. • S-ID-6b. Informally assess the fit of a function by plotting and analyzing residuals. • S-ID-6c. Fit a linear function for a scatterplot that suggests a linear association. • S-ID-8. Compute (using technology) and interpret the correlation coefficient of a linear fit. • S-ID-9. Distinguish between correlation and causation. • TECH.8.1.12.A.3 Collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue.		• Write the terms of arithmetic sequences. • Write arithmetic sequences as functions. • Evaluate piecewise functions. • Graph and write piecewise functions. • Graph and write step functions. • Write absolute functions.	

	• TECH.8.1.12.E.1 Demonstrate an understanding of the problem solving capacity of computer in our world.			
Unit 4 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving solving systems of equations and inequalities.				
Unit 4: **Solving systems of Linear Equations and Inequalities** *Big Ideas Math Chapter 5* *Holt Sections:* 6.1-6.6 *21 days (Alg 1)* *28 days (ICR Alg 1)*	• 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 can you solve a system of linear equations? • How can you use substitution to solve a system of linear equations? • How can you use elimination to solve a system of linear equations? • Can a system of linear equations have no solution or infinitely many solutions? • How can you graph a linear inequality in two variables? • How can you graph a system of linear inequalities?	*Students will understand that…* • Systems of linear equations can be solved using graphing, substitution, and elimination. • Systems of linear equations and inequalities can be used to model and solve real-life problems. *Students will know…* • Core Vocabulary: system of linear equations, solution to a system of linear equations, linear inequalities in two variables, solution of a linear inequality in two variables. graph of a linear inequality, half-planes, system of linear inequalities, solution of a system of linear inequalities, graph of a system of linear inequalities. *Students will be able to…* • Check solutions of systems of linear equations. • Solve systems of linear equations by graphing. • Solve systems of linear equations by substitution.	• Classwork • Practice • Homework • Quizzes • Test • Performance Task – "*Which Way Is Best?"*

	• A-REI-12. Graph the solutions to a linear inequality in two variables as a half plane (excluding the boundary in the case of a strict inequality), and graph the solution set to a system of linear inequalities in two variables as the intersection of the corresponding half-planes. • TECH.8.1.12.A.3 Collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue. • TECH.8.1.12.E.1 Demonstrate an understanding of the problem solving capacity of computer in our world.		• Solve systems of linear equations by elimination. • Use systems of linear equations to solve real-life problems. • Determine the number of solutions of linear systems. • Check solutions of linear inequalities. • Graph linear inequalities in two variables. • Use linear inequalities to solve real-life problems. • Check solutions of systems of linear inequalities. • Graph systems of linear inequalities. • Write systems of linear inequalities. • Use systems of linear inequalities to solve real-life problems.	
Unit 5 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving polynomial expressions and factoring.				
Unit 5: **Polynomial Expressions and Factoring** *Big Ideas Math Chapter 7* *Holt Sections:* 7.5-7.8 8.1-8.6	• 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. • N-Q-1. Use units as a way to understand problems and to guide the solution of multi-step problems; choose and interpret	• How can you add and subtract polynomials? • How can you multiply two polynomials? • What are the patterns in the special products? • How can you factor a trinomial	*Students will understand that…* • Polynomial expressions can be added, subtracted, and multiplied. • Polynomials can be factored by using the greatest common factor, factor by grouping, the difference of two squares, and perfect square trinomials. *Students will know…*	• Classwork • Practice • Homework • Quizzes • Test • Performance Task

21 days (Alg 1) *28 days (ICR Alg 1)*	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. • N-Q-3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. • 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. • A-SSE-2. Use the structure of an expression to identify ways to rewrite it. • A-SSE-3a. Factor a quadratic expression to reveal the zeros of the function it defines. • TECH.8.1.12.A.3 Collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue. • TECH.8.1.12.E.1 Demonstrate an understanding of the problem solving capacity of computer in our world.	into a product of two binomials? • How can you recognize and factor special products? • How can you factor a polynomial completely?	• Core Vocabulary: monomial, degree of a monomial, polynomial, binomial, trinomial, degree of a polynomial, standard form, leading coefficient, closed, distributive property, greatest common factor, factor by grouping, factored completely. *Students will be able to…* • Find the degrees of monomials. • Classify polynomials. • Add and subtract polynomials. • Solve real-life problems. • Multiply binomials. • Multiply binomials and trinomials. • Use the square of a binomial pattern. • Use the sum and difference pattern. • Factor trinomials. • Factor the difference of two squares. • Factor perfect square trinomials. • Use factoring to solve real-life problems. • Factor polynomials by grouping. • Factor polynomials completely.	

Unit 6 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving graphing quadratic functions.				
Unit 6: **Graphing Quadratic Functions** *Big Ideas Math Chapter 7* *Holt Sections:* 9.1 - 9.5 *16 days (all levels Alg 1)*	• 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-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-6. Calculate and interpret the average rate of a change of a function (presented symbolically or a table) over a specified interval. Estimate the rate of change from a graph. • F-IF-7a. Graph linear and quadratic functions and show intercepts, maxima, and minima • F-IF-9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • F-BF-1a. Determine an explicit expression, a recursive process, or steps of calculation from a context. • F-BF-3. Identify the effect on the graph of replace f(x) by f(x) + k, k	• What are some of the characteristics of the graph of a quadratic function? • How does the value of c affect the graph of a quadratic function? • How can you find the vertex of a quadratic function? • How can you describe the graph of a quadratic function? • How can you compare the rates of linear and quadratic functions?	*Students will understand that…* • The graph of a quadratic function is a parabola. • Quadratic functions can be used to model and solve real-life problems. *Students will know…* • Core Vocabulary: quadratic function, parabola, vertex, axis of symmetry, zero of a function, maximum value, minimum value, vertex form of a quadratic function, average rate of change *Students will be able to…* • Identify characteristics of quadratic functions. • Graph quadratic functions in standard form. • Find maximum and minimum values of quadratic functions. • Graph quadratic functions in vertex form. • Find the zeros of quadratic functions. • Use characteristics to graph and write quadratic functions. • Choose functions to model data. • Write functions to model data. • Compare functions using average rates of change.	• Classwork • Practice • Homework • Quizzes • Test • Performance Task – “Sky’s the Limit” (Holt Chapter 9 Multi-Step Test Prep page 620)

	f(x), f(kx), and f(x+k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology. • F-LE-3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. • TECH.8.1.12.A.3 Collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue. • TECH.8.1.12.E.1 Demonstrate an understanding of the problem solving capacity of computer in our world.		• Solve real-life problems involving quadratic functions.	
Unit 7 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving solving quadratic equations.				
***Unit 7*: Solving Quadratic Equations** *Big Ideas Math Chapter 9* *Holt Sections:* 9.6 - 9.9	• to identify ways to rewrite it. • **A-SSE-3a. Factor a quadratic** A-SSE-1a. Interpret parts of an expression, such as terms, factors, and coefficients. • A-SSE-2. Use the structure of an expression to reveal the zeros of the function it defines. • A-SSE-3b. Complete the square in a quadratic expression to reveal	• How can you simplify square roots? • Where are the solutions to a quadratic equation found on the graph? • How can you use square roots to	*Students will understand that…* • *Quadratic equations can be solved by graphing, using square roots, completing the square, factoring, and using the quadratic formula.* • *Real-life problems can be modeled and solved using quadratic equations.* *Students will know…*	• Classwork • Practice • Homework • Quizzes • Test • Performance Task – "Seeing Green" (Holt Chapter 9 Multi-Step Test Prep page 660)

14 days (Alg 1) *21 days (ICR Alg 1)*	the maximum or minimum value of the function it defines. • 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 $x^2 = 49$), 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-8a. Use the process of factoring and completing the square in a quadratic function to show zeros, of the graph, and interpret these terms in context. • F-IF-9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • 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.	solve a quadratic equation? • How can you use factoring and the zero product property to solve a quadratic equation? • How can you use completing the square to solve a quadratic equation? • How can you use the quadratic formula to solve a quadratic equation? • How can you solve a system of two equations when one is linear and the other is quadratic?	• *Core Vocabulary: radical expression, radicand, rationalizing the denominator, quadratic equation, zero product property, roots, completing the square, quadratic formula, discriminant, system of non-linear equations.* *Students will be able to…* • Use properties of radicals to simplify expressions. • Simplify expressions by rationalizing the denominator. • Solve quadratic equations using square roots. • Approximate the solutions of quadratic equations. • Use the zero product property. • Solve quadratic equations by completing the square. • Solve quadratic equations using the quadratic formula. • Interpret the discriminant. • Choose efficient methods for solving quadratic equations. • Solve real-life problems using quadratic equations. • Solve systems of non-linear equations by graphing. • Solve systems of non-linear equations algebraically. • Approximate solutions of non-linear systems and equations.	

	• N-Q-2. Define appropriate quantities for the purpose of descriptive modeling. • N-Q-3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. • A-REI-7. Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically. • 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. • A-CED-A.1. Create equations and inequalities in one variable and use them to solve problems. • A-CED-A.4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. • A-APR-3. Identify zeros of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial.			

	• N-RN-2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. • TECH.8.1.12.A.3 Collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue. • TECH.8.1.12.E.1 Demonstrate an understanding of the problem solving capacity of computer in our world.			
Unit 8 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving radical and exponential functions.				
Unit 8: **Radical and Exponential Functions** *Big Ideas Math Chapter 6 and 10* *Holt Sections:* 11.1 – 11.8 *21 days (Alg 1)* *21 days (ICR Alg 1)*	• 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-3c. Use the properties of exponents to transform expressions for exponential functions. • F-BF-3. Identify the effect on the graph of replace f(x) by f(x) + k, k f(x), f(kx), and f(x+k) for specific values of k (both positive and negative); find the value of k given the graphs. Experiment with cases and illustrate an explanation of the effects on the graph using technology.	• What are some of the characteristics of the graph of a square root function? • What are some of the characteristics of the graph of a cube root function? • How can you add, subtract, multiply, and divide square roots? • What are some of the characteristics of	*Students will understand that…* • Real-life problems can be modeled and solved using radical and exponential functions. • Geometric Sequences are an extension of exponential functions. *Students will know…* • Core Vocabulary: square root function, cube root function, radical function, exponential function, exponential growth, exponential decay, compound interest, half-life, geometric sequence, common ratio, explicit rule. *Students will be able to…* • Graph square root functions. • Graph cube root functions.	• Classwork • Practice • Homework • Quizzes • Test • Performance Task – "Dollars for Scholars" (Holt Chapter 11 Multi-Step Test Prep page 796)

	• F-IF-3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. • F-IF-7b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. • F-IF-9. Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). • 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-3. Observe using graphs and tables that a quantity increasing exponentially eventually exceeds a quantity increasing linearly, quadratically, or (more generally) as a polynomial function. • F-LE-5. Interpret the parameters in a linear or exponential function in terms of a context. • 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	the graph of an exponential function? • What are some of the characteristics of exponential growth and exponential decay functions? • How can you use a geometric sequence to describe a pattern?	• Perform operations with radicals. • Identify and evaluate exponential functions. • Graph exponential functions. • Use and identify exponential growth and decay. • Interpret and rewrite exponential growth and decay functions. • Solve real-life problems involving exponential functions. • Identify geometric sequences. • Write geometric sequences as functions.	

	and the origin in graphs and data displays. • N-Q-2. Define appropriate quantities for the purpose of descriptive modeling. • N-Q-3. Choose a level of accuracy appropriate to limitations on measurement when reporting quantities. • 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-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-7e. Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude. • F-BF-1a. Determine an explicit expression, a recursive process, or steps of 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.			

	• F-LE-1c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. • F-LE-1a. Prove that linear functions grow by equal differences over equal intervals, and that exponential grow by equal factors over equal intervals. • TECH.8.1.12.A.3 Collaborate in online courses, learning communities, social networks, or virtual worlds to discuss a resolution to a problem or issue. • TECH.8.1.12.E.1 Demonstrate an understanding of the problem solving capacity of computer in our world.			
Unit 9 Transfer Goal: Recognize and solve practical or theoretical problems involving mathematics, including those for which the solution approach is not obvious, by using mathematical reasoning and strategic thinking. In this Unit, students will solve real-life problems involving data analysis and displays.				
Unit 9: **Data Analysis and Displays** *Big Ideas Math Chapter 11* *Holt Sections*: 10.1 – 10.4 *7 days (Alg 1)* *7 days (ICR Alg 1)*	• S-ID-1. Represent data with plots on the real number line (dot plots, histograms, and box plots). • S-ID-2. Use statistics appropriate to the shape of the data distribution to compare center (median, mean) and spread (interquartile range, standard deviation) of two or more different data sets. • S-ID-3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers).	• How can you describe the center and variation of a data set? • How can you use a box and whisker plot to describe a data set? • How can you use a histogram to characterize the basic shape of a distribution?	*Students will understand that…* • Measures of center and variation can be used to analyze data sets. • Box and whisker plots, frequency tables, and other forms of data displays can be used to analyze data. *Students will know…* • Core Vocabulary: measure of center, mean, median, mode, outlier, measure of variation, range, standard deviation, box and whisker plot, quartile, five number summary, interquartile	• Classwork • Practice • Homework • Quizzes • Test • Performance Task – "USA! USA! USA!" (Holt Chapter 10 Multi-Step Test Prep page 710) and "College Student Study Time" (Big Ideas Assessment book page 153)

	• 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.	• How can you read and make a two-way table? • How can you display data in a way that helps you make decisions?	range, histogram, frequency table, two-way table, joint frequency, marginal frequency, joint relative frequency, marginal relative frequency, conditional relative frequency, qualitative data, quantitative data, misleading graph. *Students will be able to…* • Compare the mean, median, and mode of a data set. • Find the range and standard deviation of a data set. • Use box and whisker plots to represent data sets. • Interpret box and whisker plots. • Use box and whisker plots to compare data sets. • Describe the shapes of data distributions. • Use the shapes of data distributions to choose appropriate measures. • Compare data distributions. • Find and interpret marginal frequencies. • Make two-way tables. • Find relative and conditional relative frequencies. • Use two-way tables to recognize associations in data. • Classify data as quantitative or qualitative. • Choose and create appropriate data displays. • Analyze misleading graphs.	