YEAR AT A GLANCE: *Algebra IR (updated Dec 2022)*

	UNIT 01	**UNIT 02**	**UNIT 03**	**UNIT 04**	**UNIT 05**
Title	The Building Blocks of Algebra	Linear Expressions, Equations and Inequalities	Functions	Linear Functions and Arithmetic Sequences	System of Linear Equations and Inequalities
Unit Length *(weeks taught)*	3 weeks	3 weeks	3 Weeks	3 Weeks	3 Weeks
Performance Task *(e.g., Persuasive Essay, DBQ, Nutritional Analysis, etc.)*	Quiz Test Order of Operations Bingo English to Math Translating with PartnerWork	Quiz Test Inequality by Number Coloring Assignment Inequality Pair Packet Work	Quiz Test "Can You Translate?" Pair Work Does it Function Pair work	Quiz Test Make your own Word Problems Partner Translating Finding Sequences in the Real World	Quiz Test Dissecting Word Problems to Make your own with Pair Work
Enduring Understanding (The big ideas, the "why" we include these ideas	This unit revolves around the concept of equivalency. Within this larger framework, we review and develop the real number properties and use them to justify equivalency amongst algebraic expressions. Students get work in mindful manipulation of algebraic expressions and actively seek structure within expressions to understand	This unit is all about linear, which is a major focus of Common Core Algebra I. We develop general methods for solving linear expressions involving inverse operations. Thorough review is given to review of equation solving from Common Core 8th Grade Math. Solutions to equations and inequalities are defined in terms of making statements true. This theme is emphasized throughout the unit. Modeling with both linear equations and inequalities is stressed.	In this unit we review the basic concept of a function and emphasize multiple representations of these foundational tools. Graphical features of functions, including maximums, minimums, intervals of increase and decrease along with domain and range are introduced. Classic function notation is used throughout the unit. Average rate of change is introduced as a tool for measuring the growth or decline in a function. We hope that visitors will use these lessons and give us	This unit is all about understanding linear functions and using them to model real world scenarios. Fluency in interpreting the parameters of linear functions is emphasized as well as setting up linear functions to model a variety of situations. Linear inequalities are also taught. The unit ends with an introduction to sequences with an emphasis on arithmetic.	This unit begins by ensuring that students understand that solutions to equations are points that make the equation true, while solutions to systems make all equations (or inequalities) true. Graphical and substitution methods for solving systems are reviewed before the development of the Elimination Method. Modeling with systems of equations and inequalities is stressed. Finally, we develop the idea of using graphs to help solve equations.

	equivalency.		feedback to make them better.		
Essential Questions (What do we want students to think about)	What are the mathematical properties? How do we distribute? How do we write repeated multiplication as exponents How do we translate english into algebra? How do we use the hierarchy of the order of operations?	How do we recognize the difference between an expression and an equation? How do we use inverse operations to solve an equation for a variable? How are inequalities different from equations? What are all the ways to write a solution to an inequality? How do we tie real world problems into linear equations and inequalities?	What is a function? What is function notation form? How do we graph functions? What are some graphical features of functions? How can I use the calculator to graph a function? What does the average rate of change look like, act like and how do we calculate it? Determine a function's domain and range.	What is the difference between a ratio and a proportion? How do we do unit conversions? How do we write a linear function? How do we graph a linear function? What are the equations for horizontal and vertical lines? What are absolute value functions? What are step functions? How do we graph linear inequalities? What are the components to an arithmetic sequences?	What is a system of equations? How do we graph a system of equation? What are the characteristics of a system of equations graph? How do we algebraically solve systems of equations (substitution/elimination methods) How is systems of equations modeled in the real world? How do the solutions of a system of equation and inequality differ? How do we model systems of inequalities?
Common Core Standards	**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. **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 the concept of a function and use function notation.** 1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain 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 Understand the concept of a function and use function**	**F-IF.1 Understand the concept of a function and use function notation.** 1. Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain 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 Understand the concept of a function and use function**	**A-CED.2 Create equations that describe numbers or relationships.** 2. Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. **N-Q.1 Reason quantitatively and use units to solve problems.** 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	**A-CED.2 Create equations that describe numbers or relationships.** 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 Create equations that describe numbers or relationships.** 3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and interpret solutions as viable or

	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. Tasks are limited to quadratic equations. **A-SSE.1:** Interpret expressions that represent a quantity in terms of its context. **A-SSE.2:** Use the structure of an expression to identify ways to rewrite it. Tasks are limited to numerical expressions and polynomial expressions in one variable. Examples include seeing that $53^2 - 47^2 = (53 + 47)(53 - 47)$ **A-SSE.3:** Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression.	**notation.** 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.4 Interpret functions that arise in applications in terms of the context.** 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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. **F-IF.5 Interpret functions that arise in applications in terms of the context.** 5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate	**notation.** 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.4 Interpret functions that arise in applications in terms of the context.** 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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. **F-IF.5 Interpret functions that arise in applications in terms of the context.** 5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate	scale and the origin in graphs and data displays. **F-IF.6 Interpret functions that arise in applications in terms of the context.** 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.7(a) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **F-LE.1(a) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.	nonviable options in a modeling context **A-REI.5 Solve systems of equations.** 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 equations.** 6. Solve systems of linear equations exactly and approximately (e.g., with graphs), focusing on pairs of linear equations in two variables. **A-REI.10 Represent and solve equations and inequalities graphically.** 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). **A-REI.11 Represent and solve equations and inequalities graphically.** 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

		domain for the function. **F-IF.6 Interpret functions that arise in applications in terms of the context.**. 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.7(a) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **F-IF.7(b) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	domain for the function. **F-IF.6 Interpret functions that arise in applications in terms of the context.**. 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.7(a) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **F-IF.7(b) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	**F-LE.2 Construct and compare linear, quadratic, and exponential models and solve problems.** 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). **N-Q.2 Reason quantitatively and use units to solve problems.** 2. Define appropriate quantities for the purpose of descriptive modeling. **F-IF.5 Interpret functions that arise in applications in terms of the context.** 5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. **F-LE.1(b) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations that can be modeled with linear	functions, make tables of values, or find successive approximations. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. **A-REI.12 Represent and solve equations and inequalities graphically.** 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.

		N-Q.1 Extend the properties of exponents to rational exponents. 1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	**N-Q.1 Extend the properties of exponents to rational exponents.** 1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents.	functions and with exponential functions. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **F-LE.5 Interpret expressions for functions in terms of the situation they model.** 5. Interpret the parameters in a linear or exponential function in terms of a context. **A-SSE.1(a) Interpret the structure of expressions.** 1. Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. **F-IF.4 Interpret functions that arise in applications in terms of the context.** 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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior;	

				and periodicity. **A-REI.10 Represent and solve equations and inequalities graphically.** 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). **A-REI.12 Represent and solve equations and inequalities graphically.** 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. **F-IF.3 Understand the concept of a function and use function notation.** 3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. **F-BF.1(a) Build a function that models a relationship between two quantities.** 1. Write a function that describes a relationship between two quantities. a. Determine an explicit expression, a recursive process, or	

				steps for calculation from a context.	

	UNIT 6	UNIT 7	UNIT 8	UNIT 9	UNIT 10	UNIT 11
Title	Exponents and Exponential Functions	Polynomials	Quadratic Functions	Roots and Irrational Numbers	Statistics	A Final Look at Functions and Modeling
Unit Length *(weeks taught)*	3 Weeks	3 Weeks	3 Weeks	3 Weeks	3 Weeks	3 Weeks
Performance Task *(e.g., Persuasive Essay, DBQ, Nutritional Analysis, etc.)*	Quizzes Tests Exponential PBL Exponential Partner Project	Quizzes Tests Distribution Bingo Pair Worksheets Foil vs Punnett Square Class Race	Quizzes Tests Take Home Assignments Plotting Project Make your own Word Problems (Difficult) Real World Quadratic Function Graphing	Quizzes Tests Take Home Assignments Get Real Sorting Classroom Collaboration	Quizzes Tests Take Home Assignments Statistics Project Stats in the News Activity	Quizzes In Class Assignments **Regents Reviews Packets**
Enduring Understanding (The big ideas, the "why" we include these ideas	This unit begins with a fundamental treatment of exponent rules and the development of negative and zero exponents. We then develop the concepts of exponential growth and decay from a fraction perspective. Finally, percent work allows us to develop growth models based on constant percent rates of change. Geometric sequences are tied to exponential growth in the last	These lessons introduce polynomials as analogous to the integers and multiple parallel are drawn to the integers throughout the unit. Fluency skills are emphasized throughout the unit. These skills include adding, multiplying, and factoring polynomials. Applications problems are given in terms of primarily area models.	These lessons introduce quadratic polynomials from a basic perspective. We then build on the notion of shifting basic parabolas into their vertex form. Completing the square is used as a fundamental tool in finding the turning point of a parabola. Finally, the zero product law is introduced as a way to find the zeroes of a quadratic function.	This unit emphasizes basic root work and its applications in solving quadratic equations with irrational roots. We will also focus on how to simplify square roots.	This unit starts from the perspective of how we show the distribution, the central tendencies, and the variation within a data set. It then moves onto bivariate data analysis both by hand and with the calculator.	This final unit looks back on and expands topics that we have seen throughout the course. Rich modeling problems are included and should only be tackled if the rest of the text has been taught.

	lesson.					
Essential Questions (What do we want students to think about)	How do we simplified exponents using the exponent laws? How do zero and negative exponents affect our numbers? How do we set up an exponential growth/decay function? What are their respective parts. How do exponential functions behave? How do we find and represent percent increases and decreases of functions? How do exponential functions relate to geometric sequences?	What is a polynomial? What the different types of polynomials? (mono, bi, tri)? How do we multiply polynomials? What is the greatest common factor? (GCF?) How do you factor a polynomial? What is a conjugate pair? How do you factor a conjugate pair? If the lead coefficient is not 1 in a quadratic, how do you factor using grouping?	What is a quadratic function? How do we graph quadratic functions? How does a quadratic function shift around the coordinate plane? How do you stretch a parabola? What are the zeros of a quadratic function? What are the roots of a quadratic function? What are the solutions of a quadratic function? How do you find the axis of symmetry algebraically? What is the vertex of a parabola? What is vertex form of an equation? How do you use completing the square to find the vertex of a quadratic function? How do you find the zeros or solutions of a quadratic equation by factoring? How do you use factoring quadratics in real life scenarios including area problems, consecutive integers and maximum and minimums? How do you find the solution to a system of quadratics?	What exactly does it mean to be an irrational number? How do we simplify square roots? How can we use square root functions to solve quadratics? What is the relationship between vertex form of a quadratic and solving quadratics? How can we find the zeroes of a quadratic that is in vertex form? How do we simplify cube roots? Where does the quadratic formula derive from? How can we successfully utilize the quadratic formula?	How can we represent bivariate data graphically. What are the unique ways that we represent data on a coordinate plane? When do we use box-and whisker plots and what do they represent? How do we successfully read a box-and-whisker plot? What are the central means of tendencies and what do they represent? What kinds of regression graphs are there? How can we use a scientific calculator to create a regression function? How do we qualify predictions? What is a residual, what does it tell us about the graph, and why are they so important?	How do we stretch a function vertically? How do we stretch a graph horizontally? What is the difference between a discrete function and a continuous one? How can we determine if a scenario of a function is linear or exponential? Determine the domain and range of a step function. Draw a graph that models motion as a piecewise linear function. Exploring models of a quadratic function. Are there any limits to our models?

Common Core Standards	**A-CED.1 Create equations that describe numbers or relationships.** 1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. **A-CED.2 Create equations that describe numbers or relationships.** 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 Create equations that describe numbers or relationships.** 3. Represent constraints by equations or inequalities, and by systems of equations and/or inequalities, and	**A-APR.1 - Perform arithmetic operations on polynomials.** 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.1(a) - Interpret the structure of expressions.** Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. **A-SSE.1(b) - Interpret the structure of expressions.** Interpret expressions that represent a quantity in terms of its context b. Interpret complicated expressions by viewing one or more of their parts as a single entity	**A-CED.3 Create equations that describe numbers or relationships**. 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-CED.4 Create equations that describe numbers or relationships.** 4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. **F-IF.4 Interpret functions that arise in applications in terms of the context.** 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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and	**A-CED.3 Create equations that describe numbers or relationships**. 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-CED.4 Create equations that describe numbers or relationships.** 4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. **F-IF.4 Interpret functions that arise in applications in terms of the context.** 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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and	**N-Q.1 Extend the properties of exponents to rational exponents.** 1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. **N-Q.2 Extend the properties of exponents to rational exponents.** 2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. **S.ID.1 Summarize, represent, and interpret data on a single count or measurement variable** 1. Represent data with plots on the real number line (dot plots, histograms, and box plots). **S.ID.2 Summarize, represent, and interpret data on a single count or measurement variable.** 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 Summarize,**	**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. **F-BF.3**: Identify the effect on the graph of replacing 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. Identifying these transformations will be limited to linear and quadratic functions. Students should experiment, though, with functions listed in F-IF.4. **F-IF.1**: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain exactly one element of the range. If f is a function and x is an element of its

	interpret solutions as viable or nonviable options in a modeling context. **A-SSE.1(a)** Interpret the structure of expressions. 1. Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. **A-SSE.3(c) Write expressions in equivalent forms to solve problems.** 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. Use the properties of exponents to transform expressions for exponential functions **F-BF.1(a) Build a function that models a relationship between two**	**A-SSE.2 - Interpret the structure of expressions.** Use the structure of an expression to identify ways to rewrite it.	minimums; symmetries; end behavior; and periodicity. **F-IF.7(a) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **F-IF.8(a) Analyze functions using different representations.** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 58 a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context **F-IF.9 Analyze functions using**	minimums; symmetries; end behavior; and periodicity. **F-IF.7(a) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **F-IF.8(a) Analyze functions using different representations.** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 58 a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context **F-IF.9 Analyze functions using**	**represent, and interpret data on a single count or measurement variable.** 3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). **S.ID.5 Summarize, represent, and interpret data on two categorical and quantitative variables** 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 Summarize, represent, and interpret data on two categorical and quantitative variables** 6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. b. Informally assess the fit of	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.5**: Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. **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. The same limitation on function types applies to this standard as that for F-IF.4. **F-IF.7(b)**: Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and

	quantities. 1. Write a function that describes a relationship between two quantities. a. Determine an explicit expression, a recursive process, or steps for calculation from a context. **F-IF.3 Understand the concept of a function and use function notation.** 3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. **F-IF.5 Interpret functions that arise in applications in terms of the context.** 5. Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. **F-IF.6 Interpret functions that arise in applications in terms of the context.** 6.		**different representations.** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum. **F-BF.3 Build new functions from existing functions**. 3. Identify the effect on the graph of replacing 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. Include recognizing even and odd functions from their graphs and algebraic expressions for them. **A-APR.3 Understand the relationship between zeros and**	**different representations.** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum. **F-BF.3 Build new functions from existing functions**. 3. Identify the effect on the graph of replacing 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. Include recognizing even and odd functions from their graphs and algebraic expressions for them. **A-APR.3 Understand the relationship between zeros and**	a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. **S.ID.7 Interpret linear models** 7. Interpret the slope (rate of change) and the intercept (constant term) of a linear model in the context of the data. **S.ID.8 Interpret linear models.** 8. Compute (using technology) and interpret the correlation coefficient of a linear fit. **S.ID.9 Interpret linear models** 9. Distinguish between correlation and causation.	using technology for more complicated cases. - Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. **F-LE.1(a)**: Distinguish between situations that can be modeled with linear functions and with exponential functions. - Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. **F-LE.1(b)**: Distinguish between situations that can be modeled with linear functions and with exponential functions. - Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **F-LE.1(c)**: Distinguish between situations that can be modeled with linear functions and with exponential

	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-LE.1(a) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals. **F-LE.1(b) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations		**factors of polynomials**. 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. **A-REI.4(b) Solve equations and inequalities in one variable**. 4 b. 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 and write them as a ± bi for real numbers a and b. **A-SSE.3(a) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines.	**factors of polynomials**. 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. **A-REI.4(b) Solve equations and inequalities in one variable**. 4 b. 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 and write them as a ± bi for real numbers a and b. **A-SSE.3(a) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines.		functions. - Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. **F-LE.5**: Interpret the parameters in a linear or exponential function in terms of a context. Exponential functions will be limited to those with domains in the integers. **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.6(a)**: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related - Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and

	that can be modeled with linear functions and with exponential functions. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **F-LE.1(c) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another **F-LE.2 Construct and compare linear, quadratic, and exponential models and solve problems.** 2. Construct linear and exponential functions,		**A-SSE.3(b) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	**A-SSE.3(b) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.		exponential models. Exponential functions are limited to those with domains in the integers. **S-ID.6(b)**: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related - Informally assess the fit of a function by plotting and analyzing residuals. **S-ID.6(c)**: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related - Fit a linear function for a scatter plot that suggests a linear association.

	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 Construct and compare linear, quadratic, and exponential models and solve problems.** 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 expressions for functions in terms of the situation they model.** 5. Interpret the parameters in a linear or exponential function in terms of a context. **N-Q2 Reason quantitatively and use units to solve problems.**					

	2. Define appropriate quantities for the purpose of descriptive modeling.					

	UNIT 6	**UNIT 7**	**UNIT 8**	**UNIT 9**	**UNIT 10**	**UNIT 11**
Title	Exponents and Exponential Functions	Polynomials	Quadratic Functions	Roots and Irrational Numbers	Statistics	A Final Look at Functions and Modeling
Unit Length *(weeks taught)*	3 Weeks	3 Weeks	3 Weeks	3 Weeks	3 Weeks	3 Weeks
Performance Task *(e.g., Persuasive Essay, DBQ, Nutritional Analysis, etc.)*	Quizzes Tests Exponential PBL Exponential Partner Project	Quizzes Tests Distribution Bingo Pair Worksheets Foil vs Punnett Square Class Race	Quizzes Tests Take Home Assignments Plotting Project Make your own Word Problems (Difficult) Real World Quadratic Function Graphing	Quizzes Tests Take Home Assignments Get Real Sorting Classroom Collaboration	Quizzes Tests Take Home Assignments Statistics Project Stats in the News Activity	Quizzes In Class Assignments **Regents Reviews Packets**
Enduring Understanding (The big ideas, the "why" we include these ideas	This unit begins with a fundamental treatment of exponent rules and the development of negative and zero exponents. We then develop the concepts of exponential growth and decay from a fraction perspective. Finally, percent	These lessons introduce polynomials as analogous to the integers and multiple parallel are drawn to the integers throughout the unit. Fluency skills are emphasized throughout the unit. These skills include adding, multiplying, and factoring polynomials. Applications problems are given in terms of primarily area models.	These lessons introduce quadratic polynomials from a basic perspective. We then build on the notion of shifting basic parabolas into their vertex form. Completing the square is used as a fundamental tool in finding the turning point of a parabola. Finally, the zero product law is introduced as a way to find the zeroes of a quadratic function.	This unit emphasizes basic root work and its applications in solving quadratic equations with irrational roots. We will also focus on how to simplify square roots.	This unit starts from the perspective of how we show the distribution, the central tendencies, and the variation within a data set. It then moves onto bivariate data analysis both by hand and with the calculator.	This final unit looks back on and expands topics that we have seen throughout the course. Rich modeling problems are included and should only be tackled if the rest of the text has been taught.

	work allows us to develop growth models based on constant percent rates of change. Geometric sequences are tied to exponential growth in the last lesson.					
Essential Questions (What do we want students to think about)	How do we simplified exponents using the exponent laws? How do zero and negative exponents affect our numbers? How do we set up an exponential growth/decay function? What are their respective parts. How do exponential functions behave? How do we find and represent percent increases and decreases of functions? How do exponential functions relate to geometric sequences?	What is a polynomial? What the different types of polynomials? (mono, bi, tri)? How do we multiply polynomials? What is the greatest common factor? (GCF?) How do you factor a polynomial? What is a conjugate pair? How do you factor a conjugate pair? If the lead coefficient is not 1 in a quadratic, how do you factor using grouping?	What is a quadratic function? How do we graph quadratic functions? How does a quadratic function shift around the coordinate plane? How do you stretch a parabola? What are the zeros of a quadratic function? What are the roots of a quadratic function? What are the solutions of a quadratic function? How do you find the axis of symmetry algebraically? What is the vertex of a parabola? What is vertex form of an equation? How do you use completing the square to find the vertex of a quadratic function? How do you find the zeros or solutions of a quadratic equation by factoring? How do you use factoring quadratics in real life scenarios including area problems, consecutive integers and maximum and	What exactly does it mean to be an irrational number? How do we simplify square roots? How can we use square root functions to solve quadratics? What is the relationship between vertex form of a quadratic and solving quadratics? How can we find the zeroes of a quadratic that is in vertex form? How do we simplify cube roots? Where does the quadratic formula derive from? How can we successfully utilize the quadratic formula?	How can we represent bivariate data graphically. What are the unique ways that we represent data on a coordinate plane? When do we use box-and whisker plots and what do they represent? How do we successfully read a box-and-whisker plot? What are the central means of tendencies and what do they represent? What kinds of regression graphs are there? How can we use a scientific calculator to create a regression function? How do we qualify predictions? What is a residual, what does it tell us about the graph, and why are they so important?	How do we stretch a function vertically? How do we stretch a graph horizontally? What is the difference between a discrete function and a continuous one? How can we determine if a scenario of a function is linear or exponential? Determine the domain and range of a step function. Draw a graph that models motion as a piecewise linear function. Exploring models of a quadratic function. Are there any limits to our models?

			minimums? How do you find the solution to a system of quadratics?			
Common Core Standards	**A-CED.1 Create equations that describe numbers or relationships.** 1. Create equations and inequalities in one variable and use them to solve problems. Include equations arising from linear and quadratic functions, and simple rational and exponential functions. **A-CED.2 Create equations that describe numbers or relationships.** 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 Create equations that describe numbers or**	**A-APR.1 - Perform arithmetic operations on polynomials.** 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.1(a) - Interpret the structure of expressions.** Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. **A-SSE.1(b) - Interpret the structure of expressions.** Interpret expressions that represent a quantity in terms of its context b. Interpret complicated expressions by viewing one or more of their parts as a single entity **A-SSE.2 - Interpret the structure of expressions.** Use the	**A-CED.3 Create equations that describe numbers or relationships**. 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-CED.4 Create equations that describe numbers or relationships.** 4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. **F-IF.4 Interpret functions that arise in applications in terms of the context.** 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. Key features include: intercepts; intervals	**A-CED.3 Create equations that describe numbers or relationships**. 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-CED.4 Create equations that describe numbers or relationships.** 4. Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations. **F-IF.4 Interpret functions that arise in applications in terms of the context.** 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. Key features include: intercepts; intervals where the function is increasing,	**N-Q.1 Extend the properties of exponents to rational exponents.** 1. Explain how the definition of the meaning of rational exponents follows from extending the properties of integer exponents to those values, allowing for a notation for radicals in terms of rational exponents. **N-Q.2 Extend the properties of exponents to rational exponents.** 2. Rewrite expressions involving radicals and rational exponents using the properties of exponents. **S.ID.1 Summarize, represent, and interpret data on a single count or measurement variable** 1. Represent data with plots on the real number line (dot plots, histograms,	**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. **F-BF.3**: Identify the effect on the graph of replacing 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

	relationships. 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-SSE.1(a)** Interpret the structure of expressions. 1. Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. **A-SSE.3(c) Write expressions in equivalent forms to solve problems.** 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. Use the properties of exponents to transform expressions for	structure of an expression to identify ways to rewrite it.	where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. **F-IF.7(a) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **F-IF.8(a) Analyze functions using different representations.** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 58 a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context **F-IF.9 Analyze functions using different representations.**	decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. **F-IF.7(a) Analyze functions using different representations.** 7. Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. **F-IF.8(a) Analyze functions using different representations.** Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. 58 a. Use the process of factoring and completing the square in a quadratic function to show zeros, extreme values, and symmetry of the graph, and interpret these in terms of a context **F-IF.9 Analyze functions using different representations.** Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in	and box plots). **S.ID.2 Summarize, represent, and interpret data on a single count or measurement variable.** 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 Summarize, represent, and interpret data on a single count or measurement variable.** 3. Interpret differences in shape, center, and spread in the context of the data sets, accounting for possible effects of extreme data points (outliers). **S.ID.5 Summarize, represent, and interpret data on two categorical and quantitative variables** 5. Summarize categorical data for two categories in two-way frequency tables. Interpret relative frequencies	using technology. Identifying these transformation s will be limited to linear and quadratic functions. Students should experiment, though, with functions listed in F-IF.4. **F-IF.1**: Understand that a function from one set (called the domain) to another set (called the range) assigns to each element of the domain 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.5**: Relate the domain of a function to

	exponential functions **F-BF.1(a) Build a function that models a relationship between two quantities.** 1. Write a function that describes a relationship between two quantities. a. Determine an explicit expression, a recursive process, or steps for calculation from a context. **F-IF.3 Understand the concept of a function and use function notation.** 3. Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers. **F-IF.5 Interpret functions that arise in applications in terms of the context.** 5. Relate the domain of a function to its graph and, where		Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum. **F-BF.3 Build new functions from existing functions**. 3. Identify the effect on the graph of replacing 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. Include recognizing even and odd functions from their graphs and algebraic expressions for them. **A-APR.3 Understand the relationship between zeros and factors of polynomials**. 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.	tables, or by verbal descriptions). For example, given a graph of one quadratic function and an algebraic expression for another, say which has the larger maximum. **F-BF.3 Build new functions from existing functions**. 3. Identify the effect on the graph of replacing 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. Include recognizing even and odd functions from their graphs and algebraic expressions for them. **A-APR.3 Understand the relationship between zeros and factors of polynomials**. 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. **A-REI.4(b) Solve equations and inequalities in one variable**. 4 b. Solve quadratic equations by inspection (e.g., for x 2 = 49), taking square roots, completing the square, the quadratic formula and	in the context of the data (including joint, marginal, and conditional relative frequencies). Recognize possible associations and trends in the data. **S.ID.6 Summarize, represent, and interpret data on two categorical and quantitative variables** 6. Represent data on two quantitative variables on a scatter plot, and describe how the variables are related. a. Fit a function to the data; use functions fitted to data to solve problems in the context of the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. b. Informally assess the fit of a function by plotting and analyzing residuals. c. Fit a linear function for a scatter plot that suggests a linear association. **S.ID.7 Interpret linear models** 7. Interpret the slope (rate of change) and	its graph and, where applicable, to the quantitative relationship it describes. For example, if the function h(n) gives the number of person-hours it takes to assemble n engines in a factory, then the positive integers would be an appropriate domain for the function. **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. The same limitation on function types applies to this standard as that for F-IF.4. **F-IF.7(b)**: Graph

	applicable, to the quantitative relationship it describes. **F-IF.6 Interpret functions that arise in applications in terms of the context.** 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-LE.1(a) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. a. Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over		**A-REI.4(b) Solve equations and inequalities in one variable**. 4 b. 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 and write them as a ± bi for real numbers a and b. **A-SSE.3(a) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines. **A-SSE.3(b) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	factoring, as appropriate to the initial form of the equation. Recognize when the quadratic formula gives complex solutions and write them as a ± bi for real numbers a and b. **A-SSE.3(a) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. a. Factor a quadratic expression to reveal the zeros of the function it defines. **A-SSE.3(b) Write expressions in equivalent forms to solve problems**. 3. Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. b. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.	the intercept (constant term) of a linear model in the context of the data. **S.ID.8 Interpret linear models.** 8. Compute (using technology) and interpret the correlation coefficient of a linear fit. **S.ID.9 Interpret linear models** 9. Distinguish between correlation and causation.	functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. - Graph square root, cube root, and piecewise-defi ned functions, including step functions and absolute value functions. **F-LE.1(a)**: Distinguish between situations that can be modeled with linear functions and with exponential functions. - Prove that linear functions grow by equal differences over equal intervals, and that exponential functions grow by equal factors over equal intervals.

	equal intervals. **F-LE.1(b) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **F-LE.1(c) Construct and compare linear, quadratic, and exponential models and solve problems.** 1. Distinguish between situations that can be modeled with linear functions and with exponential functions. c. Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to					**F-LE.1(b)**: Distinguish between situations that can be modeled with linear functions and with exponential functions. - Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. **F-LE.1(c)**: Distinguish between situations that can be modeled with linear functions and with exponential functions. - Recognize situations in which a quantity grows or decays by a constant percent rate per unit interval relative to another. **F-LE.5**:

	another **F-LE.2 Construct and compare linear, quadratic, and exponential models and solve problems.** 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 Construct and compare linear, quadratic, and exponential models and solve problems.** 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 expressions for functions in terms of the**					Interpret the parameters in a linear or exponential function in terms of a context. Exponential functions will be limited to those with domains in the integers. **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.6(a)**: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related - Fit a function to the data; use functions fitted to data to solve problems in the context of

	situation they model. 5. Interpret the parameters in a linear or exponential function in terms of a context. **N-Q2 Reason quantitatively and use units to solve problems.** 2. Define appropriate quantities for the purpose of descriptive modeling.					the data. Use given functions or choose a function suggested by the context. Emphasize linear, quadratic, and exponential models. Exponential functions are limited to those with domains in the integers. **S-ID.6(b)**: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related - Informally assess the fit of a function by plotting and analyzing residuals. **S-ID.6(c)**: Represent data on two quantitative variables on a scatter plot, and describe how the variables are related - Fit a linear function for a scatter

						plot that suggests a linear association.