Southern Cayuga Central School District – Curriculum Map

Subject: _____Algebra I   Enriched_____   School Year: _____2021-2022_____

Title or Topics w/ NYS Standards	Essential Questions & Vocabulary	Content Skills (Activities to cover Essential Questions)	Major Assessments (Tests, Project, etc.)	Time Frame
The Building Blocks of Algebra 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. 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.2 Use the structure of an expression to identify ways to rewrite it. Tasks are limited to numerical expressions and	Scale, Rate of change, properties of addition multiplication and equality, variable, distribution, substitution, replace, Evaluate Translation of English into algebraic equations. How can we represent this scenario with an algebraic expression or equation? How can we manipulate equations without changing either side's values? What is an exponent?	- Rates, Patterns and Problem - Solving - Variables and Expressions - The Commutative and - Associative Properties - The Distributive Property - Equivalent Expressions - Seeing Structure in Expressions - Exponents as Repeated - Multiplication - More Complex Equivalency - More Structure Work - Translating English to Algebra - Algebraic Puzzles - Solving by Patterns	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	13-15 Days

polynomial expressions in one variable. A-SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. A-CED.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. Tasks are limited to linear, quadratic, or exponential equations with integer exponents				
Linear Expressions, Equations and Inequalities A-REI.3 Solve linear equations and inequalities in one variable, including equations with coefficients represented by letters. 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. 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.	Equation, solution, inequality, linear, variable, justification, literal equations, combine, element, term, like terms, Consecutive Translation of English into algebraic equations. How can we represent this scenario with an algebraic expression or equation? What does it mean to solve?	• Equations and Their Solutions • Seeing Structure to Solve Equations • A Linear Equation Solving Review • Justifying Steps in Solving an Equation • Linear Word Problems • More Linear Equations and Consecutive Integer Games • Solving Linear Equations with Unspecified Constants • Inequalities • Solving Linear Inequalities • Compound Inequalities • More Work with Compound Inequalities • Interval Notation • Modeling with Inequalities	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	15-16 days

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-CED.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. Tasks are limited to linear, quadratic, or exponential equations with integer exponents. A-CED.4 Rearrange formulas to highlight a quantity of interest, using the same reasoning as in solving equations.				
Introduction to Functions 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.2 Use function notation, evaluate functions for inputs in their omains, and interpret statements that use function notation in	Function, Function notation, Interval, Domain, Range, Average Rate of change, impact, describe, behavior What is domain and range? What is an Interval? When looking at a function's behavior what can we associate the x	• Introduction to Functions • Function Notation • Graphs of Function • Graphical Features • Exploring Functions Using the • Graphing Calculator • Average Rate of Change • The Domain and Range of a • Function	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	

terms of a context.	variable with that makes sense?			
F-IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. a. Graph linear and quadratic functions and show intercepts, maxima, and minima. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.	What does average rate of change sound like it means?			
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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. Functions can include: linear, quadratic, square root, cube root, piecewise-defined (including step and absolute value) and exponential functions. No logarithmic, higher order polynomial, or trigonometric functions.				
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.				
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.				
Linear Functions and Arithmetic Sequences 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.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. 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. 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-LE.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.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). Tasks are limited to constructing linear and exponential functions in simple context (not multi-step) N-Q.2 Define appropriate quantities for the purpose of descriptive modeling. 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-BF.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. Tasks are limited to linear functions, quadratic functions, and exponential functions with domains in the integers. F-LE.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.5 Interpret the parameters in a linear or exponential function in terms of a context.	Slope, proportional, Unit, modeling, vertical, horizontal, Step, graph, sequence What does it mean to be on the graph? What makes the rate of change special for a line? What do we mean when we say modeling? Are there limits to modeling situations?	• Proportional Relationships • Unit Conversions • Non-proportional Linear Relationships • More Work Graphing Linear Functions (Lines) • Writing Equations in Slope-Intercept Form • Modeling with Linear Functions • More Linear Modeling • Strange Lines = Vertical and Horizontal • Absolute Value and Step Functions • The Truth About Graphs • Graphs of Linear Inequalities • Introduction to Sequences • Arithmetic Sequences	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	15-17 Days

Exponential functions will be limited to those with domains in the integers. A-SSE.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-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-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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. Functions can include: linear, quadratic, square root, cube root, piecewise-defined (including step and absolute value) and exponential functions. No logarithmic, higher order polynomial, or trigonometric functions. 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). 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. F-IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.				
Systems of Linear Equations and Inequalities A-CED.2 Create equations in two or more variables to represent relationships between quantities; graph equations on coordinate axes with labels and scales. A-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.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).	Solution, System, Substitution, Elimination, modeling. What is a solution? What would need to be true for something to be a solution to multiple equations? Inequalities? Why is modeling so important?	• Solutions to Systems and Solving by Graphing • Solving Systems by Substitution • Properties of Systems and Their Solutions • The Elimination Method • Modeling with Systems of Equations • Solving Equations Graphically • Solving Systems of Inequalities • Modeling with Systems of Inequalities • Systems with more than two equations	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	11-13 Days

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-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.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. Include cases where f(x) and/or g(x) are linear, polynomial, rational, absolute value, exponential, and logarithmic functions. Algebra I will include all function types except exponential and logarithmic. 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.				
Exponents A-SSE.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. Tasks are limited to exponential expressions with integer coefficients. A-CED.2 Create equations in two or more variables to represent relationships between	Exponent, percent, Growth, decay, increase, decrease, geometric, initial What is an exponent?	• Simplifying Expressions Involving Exponents • Zero and Negative Exponents • Exponential Growth • Introduction to Exponential • Functions • Percent Review	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	13-15 Days

quantities; graph equations on coordinate axes with labels and scales. 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-BF.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. Tasks are limited to linear functions, quadratic functions, and exponential functions with domains in the integers. F-LE.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 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). Tasks are limited to constructing linear and exponential functions in simple context (not multi-step). 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. A-CED.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. Tasks are limited to linear, quadratic, or exponential equations with integer exponents. 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. Exponential functions will be limited to those with domains in the integers. N-Q.2 Define appropriate quantities for the purpose of descriptive modeling.	Why are exponents useful? Why can't we just always use linear modeling?	• Percent increase and Decrease • Exponential Models Based on • Percent Growth • Linear Versus Exponential • Geometric Sequences • Using sequences in everyday settings • Arithmetic vs Geometric Sequences		

A-SSE.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-LE.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. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another. 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-IF.3 Recognize that sequences are functions, sometimes defined recursively, whose domain is a subset of the integers.				
Polynomials 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.1 Interpret expressions that represent a quantity in terms of its context. a. Interpret parts of an expression, such as terms, factors, and coefficients. b. Interpret complicated expressions by viewing one or more of their parts as a single entity. A-SSE.2 Use the structure of an expression to identify ways to rewrite it. Tasks are limited to numerical expressions and polynomial expressions in one variable.	Polynomial, factor, factoring, trinomial, conjugate, standard form, coefficient, terms What can we use that we already know to manipulate these new expressions?	• Introduction to Polynomials • Multiplying Polynomials • Factoring Polynomials • Factor Based Conjugate Pairs • Factoring Trinomials • More Work Factoring Trinomials	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	8-10 Days

Quadratic Functions and their Algebra	Quadratic, Parabola, shifting, transformations, square, zeros, intercept	• Introduction to Quadratic Functions	Observations Homework Checkpoint quizzes Chapter	12-14 Days

Quadratic Functions and their Algebra

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-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. Key features include: intercepts; intervals where the function is increasing, decreasing, positive, or negative; relative maximums and minimums; symmetries; end behavior; and periodicity. Functions can include: linear, quadratic, square root, cube root, piecewise-defined (including step and absolute value) and exponential functions. No logarithmic, higher order polynomial, or trigonometric functions.

F-IF.7 Graph functions expressed symbolically and show key feature 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-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.

A-SSE.3 Choose and produce an equivalent form of an expression to reveal and explain properties of the quantity represented by the expression. c. Complete the square in a quadratic expression to reveal the maximum or minimum value of the function it defines.

F-IF.8 Write a function defined by an expression in different but equivalent forms to reveal and explain different properties of the function. a. Use the process of factoring and completing the square in a quadratic function to show zeroes, extreme values, and symmetry of the graph, and interpret these in terms of a context.

F-IF.9 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

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Essential Questions:

Quadratic, Parabola, shifting, transformations, square, zeros, intercept

What must one factor of a product be if the product is equal to zero?

What impact does adding to an equation have? Is the impact the same when I add directly to the inputs?

What are zeros? Why are they important?

Topics:

• Introduction to Quadratic Functions
• More Work with Parabolas
• The Shifted Form of a Parabola
• Completing the Square
• Stretching Parabolas and More Completing the Square
• The Zeroes of a Quadratic
• More Zero Product Law Work
• Quadratic Word Problems

Assessment:

Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)

Duration: 12-14 Days

function and an algebraic expression for another, say which has the larger maximum. Limitations on function types are the same as those laid out in F-IF.4. A-SSE.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-APR.3 Identify zeroes of polynomials when suitable factorizations are available, and use the zeros to construct a rough graph of the function defined by the polynomial. Tasks are limited to quadratic and cubic polynomials in which linear and quadratic factors are available. A-REI.4 Solve quadratic equations in one variable. b. Solve quadratic equations by inspection (e.g., for $2x \square 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Tasks do not require students to solve quadratics for non-zero imaginary solutions, but students should recognize cases in which no real solutions exist. A-CED.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. Tasks are limited to linear, quadratic, or exponential equations with integer exponents.				
Roots and Irrational Numbers N-RN.3 Explain why the sum or product of two rational numbers is rational; that the sum of a rational number and an irrational number is irrational; and that the product of a nonzero rational number and an irrational number is irrational. F-IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. F-IF.1 Understand that a function from one set (called the domain) to another	Square root, Coefficient, standard form, vertex form, factored form, inverse, shifting, translation, quadratic, Cube Can we see the values of a vertex of a parabola in standard form? Zeroes?	• Square Roots • Irrational Numbers • Square Root Functions and Shifting • Solving Quadratics Using Inverse Operations • Finding Zeroes by Completing the Square • The Quadratic Formula • Final Work with Quadratic Equations • Cube Roots • Using Logarithms to Solve	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	11-13 Days

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-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. A-SSE.1 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-REI.4 Solve quadratic equations in one variable. a. Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x \square p)^2 \square q$ that has the same solutions. Derive the quadratic formula from this form. b. Solve quadratic equations by inspection (e.g., for $x^2 \square 49$), taking square roots, completing the square, the quadratic formula and factoring, as appropriate to the initial form of the equation. Tasks do not require students to solve quadratics for non-zero imaginary solutions, but students should recognize cases in which no real solutions exist. A-SSE.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 zeroes of the function it defines. 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.				
Statistics 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. S-ID.1 Represent data with plots on the real number line (dot plots, histograms, and box plots). 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). 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. N-Q.2 Define appropriate quantities for the purpose of descriptive modeling. 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).	Mean, median, mode, range(statistical), maximum, minimum, data, regression, residual, tendency, inference, appropriate, describe How can we tell if a model is predicting values accurately? What does it mean that a data set is linear or exponential and how can we tell by looking at our data sets?	• Graphical Displays of Data • Quartiles and Box Plots • Measures of Central Tendency • Variation within a Data Set • Two Way Frequency Tables • Bivariate Data Analysis • Linear Regression on the Calculator • Other Types of Regression • Quantifying Predictability • Residuals • Designing Non-Biased Observation	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	12-14 days

Recognize possible associations and trends in the data. S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related 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. Exponential functions are limited to those with domains in the integers. c. Fit a linear function for a scatter plot that suggests a linear association. S-ID.9 Distinguish between correlation and causation. S-ID.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 Compute (using technology) and interpret the correlation coefficient of a linear fit. S-ID.6 Represent data on two quantitative variables on a scatter plot, and describe how the variables are related b. Informally				
Final Look at Functions 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-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)	Shifting, range, stretching, discrete, models, piecewise, predictability, compairable	• Function Transformations • Horizontal Stretching of Functions • Discrete Functions • Another Look at Linear and Exponential Models • Step Functions Revisited • Piecewise Linear Functions • Quadratic Models	Observations Homework Checkpoint quizzes Chapter assessments Self Assessment (Possibly Projects)	**11-13 days**

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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. 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-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-LE.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. b. Recognize situations in which one quantity changes at a constant rate per unit interval relative to another c. 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. S-ID.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. Exponential functions are limited to those with domains in the integers. 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.		• Limits on the Accuracy of Our Models

F-IF.7 Graph functions expressed symbolically and show key features of the graph, by hand in simple cases and using technology for more complicated cases. b. Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions. 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. 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.			