Course: ___Algebra I___

Quarter 4:   **Zanesville City**

CLUSTER	STANDARD
Interpret expressions for functions in terms of the situation they model. F.**LE**.5	F-LE.5 Interpret the parameters in a linear or exponential function in terms of a context.
Solve equations and inequalities in one variable. A-**REI**.3, 4a,4b	A-REI.4a Use the method of completing the square to transform any quadratic equation in x into an equation of the form $(x – p)2 = q$ that has the same solutions. Derive the quadratic formula from this form.
	A-REI.4b Solve quadratic equations by inspection (e.g., for x2 = 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 $a \pm bi$ for real numbers a and b.
Solve systems of equations. A-**REI**.5-7	A-REI.7 Solve a simple system consisting of a linear equation and a quadratic equation in two variables algebraically and graphically.
Represent and solve equations and inequalities graphically. A-**REI**.10-12	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.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.*
Analyze functions using different representations. F-**IF**.7a, 7b, 7e, 8a, 8b, 9	F-IF.7a Graph linear and quadratic functions and show intercepts, maxima, and minima.
	F-I**F**.7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.

	F-IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
	F-IF.8a 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.8b Use the properties of exponents to interpret expressions for exponential functions.
	F-IF.9 Compare properties of two functions each represented in a different way (algebraically, graphically, numerically in tables, or by verbal descriptions).
Build a function that models a relationship between two quantities. F-**BF** 1a, 1b, 2	F-BF.1a Determine an explicit expression, a recursive process, or steps for calculation from a context.
	F-BF.1b Combine standard function types using arithmetic operations.
	F-BF.2 Write arithmetic and geometric sequences both recursively and with an explicit formula, use them to model situations, and translate between the two forms.*
Build new functions from existing functions. F-**BF**.3,4a	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. *Include recognizing even and odd functions from their graphs and algebraic expressions for them.*
	F-BF.4a Solve an equation of the form f(x) = c for a simple function f that has an inverse and write an expression for the inverse.