Course: Algebra II

Quarter 3: Functions **Zanesville City**

CLUSTER	STANDARD
Interpret functions that arise in applications in terms of a context. F-**IF**.4-6	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.**
	F-IF.5 Relate the domain of a function to its graph and, where applicable, to the quantitative relationship it describes. *
	F-IF.6 Calculate and interpret the average rate of change of a function (presented symbolically or as a table) over a specified interval. Estimate the rate of change from a graph.*
Construct and compare linear, quadratic and exponential models and solve problems. F-**LE**.4	F-LE.4 For exponential models, express as a logarithm the solution to *ab*ct = *d* where *a*, *c*, and *d* are numbers and the base *b* is 2, 10, or *e*; evaluate the logarithm using technology.
Analyze functions using different representations. F-**IF**.7b,7c,7e,8,9	F-IF.7b Graph square root, cube root, and piecewise-defined functions, including step functions and absolute value functions.
	F-*IF*.7c Graph polynomial functions, identifying zeros when suitable factorizations are available, and showing end behavior.
	F-IF.7e Graph exponential and logarithmic functions, showing intercepts and end behavior, and trigonometric functions, showing period, midline, and amplitude.
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	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**.1b	F-BF.1b Combine standard function types using arithmetic operations.
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.