## Berlin Brothersvalley School District Curriculum Frame 2nd 9 Weeks Algebra 1

<u>Big Idea(s) of 2<sup>nd</sup> nine weeks</u>	Concept(s) of 1st nine weeks	Competencies of 2nd nine weeks	<u>Essential Questions of 2<sup>nd</sup> nine weeks</u>
Mathematical relations and functions can be modeled through multiple representations and analyzed to raise and answer equations. Mathematical relationships can be represented as expressions, equations, and inequalities in mathematical situations.	<ul> <li>Students will know:</li> <li>Functions</li> <li>Three forms of lines</li> <li>Transformations of linear graphs</li> <li>Absolute value functions</li> <li>Parallel and perpendicular lines</li> <li>Scatterplots</li> <li>Sequences</li> </ul>	<ul> <li>Students will be able to: <ul> <li>Interpret, solve, and graph functions</li> <li>Write and graph equations of lines in standard, slope intercept, and point-slope form</li> <li>Translate, reflect, and shrink/stretch graphs</li> <li>Graph and apply transformations on absolute value functions</li> <li>Write and graph equations of parallel and perpendicular lines</li> <li>Interpret scatter plots and best fit lines</li> <li>Write arithmetic sequences</li> </ul> </li> </ul>	How are relationships represented mathematically? How is mathematics used to quantify, compare, represent, and model numbers? How can polynomials be simplified and applied to solve problems?

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Unit/Chapter/Selection of	Approx. # of weeks - % of	PA Academic Standards	Assessment Anchors & Eligible Content
<u>Study</u>	<u>time</u>		
		CC.2.2.HS.C.3 Write functions or	A1.2.1.1.2 Determine whether a relation is a
Functions	4.5 weeks	sequences that model relationships	function, given a set of points or a graph.
Determine whether relations		between two quantities.	A1.2.1.1.3 Identify the domain or range of a
are functions		CC.2.2.8.C.1	relation (may be presented as ordered pairs,
Find the domain and range		Define, evaluate, and compare	a graph, or a table).
Identify independent and		functions.	
dependent variables		between quantities.	
		CC.2.2.HS.C.1	
Linear Functions		Use the concept and notation of	
Identify using graphs, tables,		functions to interpret	
and equations		and apply them in terms of their	
Graph using discrete and		context.	
continuous data		CC.2.2.HS.C.2	
		Graph and analyze functions and	
Function Notation		use their properties to	
Use function notation to		make connections between the	
evaluate and interpret functions		different representations.	
Use function notation to solve		CC.2.2.HS.C.1	
and graph functions		Use the concept and notation of	
Solve real-life problems using		functions to interpret	
function notation		and apply them in terms of their	
		context.	
Graphing Linear Equations in		CC.2.2.HS.C.2 Graph and analyze	
Standard Form		functions and use their properties to	
Graph horizontal and vertical		make connections between the	
lines		different representations.	
Graph lines using intercepts		CC.2.2.HS.C.6 Interpret functions in	
Use linear equations in		terms of the situations they model.	
standard form to solve real-life		CC.2.2.HS.C.2 Graph and analyze	
problems		functions and use their properties to	
		make connections between the	
Graphing Linear Equations in		different representations.	
Slope Intercept Form		CC.2.2.HS.C.3 Write functions or	

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Find the slope of a line Use slope-intercept form Use slopes and y-intercepts to solve real-life problems <b>Transformations and Graphs</b> <b>of Linear Functions</b> Translate and reflect graphs Stretch and shrink graphs Combine transformations of graphs of linear functions <b>Graphing Absolute Value</b> <b>Functions</b> Translate graphs Stretch, shrink, and reflect graphs Combine transformations of graphs of absolute value functions		sequences that model relationships between two quantities. <b>CC.2.2.HS.C.4</b> Interpret the effects transformations have on functions and find the inverses of functions. <b>CC.2.2.HS.C.6</b> Interpret functions in terms of the situations they model. <b>CC.2.2.HS.D.7</b> Create and graph equations or inequalities to describe numbers or relationships <b>CC.2.2.HS.D.9</b> Use reasoning to solve equations and justify the solution method. <b>CC.2.2.HS.C.6</b> Interpret functions in terms of the situations they model. <b>CC.2.1.HS.F.3</b> Apply quantitative reasoning to choose and interpret units and scales in formulas, graphs, and data displays. <b>CC.2.1.HS.F.5</b> Choose a level of accuracy appropriate to limitations on measurement when reporting quantities.	
Unit/Chapter/Selection of Study Writing Equations in Slope-Intercept Form Write equations in slope-intercept form Use linear equations to solve real-life problems Writing Equations in	Approx. # of weeks - % of time 4.5 weeks	PA Academic Standards CC.2.4.HS.B.2 Summarize, represent, and interpret data on two categorical and quantitative variables. CC.2.4.HS.B.3 Analyze linear models to make interpretations based on the data. CC.2.2.HS.C.3 Write functions or sequences that model relationships between two quantities.	<ul> <li><u>Assessment Anchors &amp; Eligible Content</u></li> <li>A1.2.2.1.1 Identify, describe, and/or use constant rates of change.</li> <li>A1.2.2.1.2 Apply the concept of linear rate of change (slope) to solve problems.</li> <li>A1.2.2.1.3 Write or identify a linear equation when given the graph of the line, two points on the line, or the slope and a point on the line. Note: Linear equation may be in point-slope,</li> </ul>

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<ul> <li>Point-Slope Form</li> <li>Write and equation of a line given its slope and a point on the line</li> <li>Write an equation of a line given two points on the line</li> <li>Use linear equations to solve real-life problems</li> <li>Writing Equations of Parallel and Perpendicular Lines</li> <li>Identify and write equations of parallel lines</li> <li>Identify and write equations of perpendicular lines</li> <li>Use parallel and perpendicular lines</li> <li>Scatter Plots and Lines of Best Fit Interpret scatter plots</li> </ul>	CC.2.2.HS.C.5 Construct and compare linear, quadratic, and exponential models to solve problems. CC.2.4.HS.B.1 Summarize, represent, and interpret data on a single count or measurement variable.	standard, and/or slope-intercept form. <b>A1.2.2.1.4</b> Determine the slope and/or y-intercept represented by a linear equation or graph. <b>A1.2.1.2.1</b> Create, interpret, and/or use the equation, graph, or table of a linear function. <b>A1.2.1.2.2</b> Translate from one representation of a linear function to another (i.e., graph, table, and equation). <b>A1.2.2.2.1</b> Draw, identify, find, and/or write an equation for a line of best fit for a scatter plot.
data sets		
Analyzing Lines of Fit Use technology to find lines of best fit		
Arithmetic Sequences Write the terms of arithmetic sequences Write arithmetic sequences as functions		

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