

<u>Big Idea(s) of 2<sup>nd</sup> nine weeks</u>	<u>Concept(s) of 2<sup>nd</sup> nine weeks</u>	<u>Competencies of 2<sup>nd</sup> nine weeks</u>	<u>Essential Questions of 2<sup>nd</sup> nine weeks</u>
<p>Mathematical relationships can be represented as expressions, equations and inequalities in mathematical situations.</p>	<p><b>Students will know:</b></p> <ul style="list-style-type: none"> <li>● Slope</li> <li>● Intercepts</li> <li>● Graphing lines</li> <li>● Systems</li> <li>● Functions</li> </ul>	<p><b>Students will be able to:</b></p> <ul style="list-style-type: none"> <li>● Identify slope</li> <li>● Identify Intercepts</li> <li>● Graph lines using slope and intercept</li> <li>● Write and solve systems</li> <li>● Analyze and represent functions</li> </ul>	<p>How can expressions, equations and inequalities be used to quantify, solve, model and/or analyze mathematical situations?</p>
<p><u>Unit/Chapter/Selection of Study</u></p> <p>Rates of Change Slope Slope intercept Equations Graphing Lines using Intercepts</p>	<p><u>Approx. # of weeks - % of time</u></p> <p>3 weeks</p>	<p><u>PA Academic Standards</u></p> <p><b>CC.2.2.8.B.2</b></p> <p>Understand the connections between proportional relationships, lines, and linear equations.</p>	<p><u>Assessment Anchors &amp; Eligible Content</u></p> <p><b>M08.B-E.2.1.1</b></p> <p>Graph proportional relationships, interpreting the unit rate as the slope of the graph. Compare two different proportional relationships represented in different ways.</p> <p><b>M08.B-E.2.1.2</b></p> <p>Use similar right triangles to show and explain why the slope <math>m</math> is the same between any two distinct points on a non-vertical line in the coordinate plane.</p> <p><b>M08.B-E.2.1.3</b></p> <p>Derive the equation <math>y = mx</math> for a line through the origin and the equation <math>y = mx + b</math> for a line intercepting the vertical axis at <math>b</math>.</p>

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<p>Systems of Equations Solving by Graphing Solving Algebraically</p>	<p>2 weeks</p>	<p><b>CC.2.2.8.B.3</b> CC.2.2.8.B.3 Analyze and solve linear equations and pairs of simultaneous linear equations.</p>	<p><b>M08.B-E.3.1.1</b> Write and identify linear equations in one variable with one solution, infinitely many solutions, or no solutions. Show which of these possibilities is the case by successively transforming the given equation into simpler forms until an equivalent equation of the form <math>x = a</math>, <math>a = a</math>, or <math>a = b</math> results (where <math>a</math> and <math>b</math> are different numbers).</p> <p><b>M08.B-E.3.1.2</b> Solve linear equations that have rational number coefficients, including equations whose solutions require expanding expressions using the distributive property and collecting like terms.</p> <p><b>M08.B-E.3.1.3</b> Interpret solutions to a system of two linear equations in two variables as points of intersection of their graphs because points of intersection satisfy both equations simultaneously.</p> <p><b>M08.B-E.3.1.4</b> Solve systems of two linear equations in two variables algebraically and estimate solutions by graphing the equations. Solve simple cases by inspection.</p> <p><b>M08.B-E.3.1.5</b> Solve real-world and mathematical problems leading to two linear equations in two variables. Example: Given coordinates for two pairs of points, determine whether the line through the first pair of points intersects the line through the second pair.</p>

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<p>           Functions            Relations            Linear Functions            Slope            Direct Variation            Domain and Range            (Independent and Dependent            Variables)            Discrete and Continuous            Nonlinear Functions         </p>	<p>4 weeks</p>	<p> <u>CC.2.2.8.C.1</u>            Define, evaluate, and compare functions.  <u>CC.2.2.8.C.2</u>            Use concepts of functions to model relationships between quantities.         </p>	<p> <u>M08.B-F.1.1.1</u>            Determine whether a relation is a function.  <u>M08.B-F.1.1.2</u>            Compare properties of two functions, each represented in a different way (i.e., algebraically, graphically, numerically in tables, or by verbal descriptions).  <u>M08.B-F.1.1.3</u>            Interpret the equation <math>y = mx + b</math> as defining a linear function whose graph is a straight line; give examples of functions that are not linear.    <u>M08.B-F.2.1.1</u>            Construct a function to model a linear relationship between two quantities. Determine the rate of change and initial value of the function from a description of a relationship or from two <math>(x, y)</math> values, including reading these from a table or from a graph. Interpret the rate of change and initial value of a linear function in terms of the situation it models and in terms of its graph or a table of values.  <u>M08.B-F.2.1.2</u>            Describe qualitatively the functional relationship between two quantities by analyzing a graph (e.g., where the function is increasing or decreasing, linear or nonlinear). Sketch or determine a graph that exhibits the qualitative features of a function that has been described verbally.         </p>

