


Algebra Curriculum Bundle # 3

Title		Suggested Dates
Functions		October 5 – October 23 (14 Days)

Big Idea/Enduring Understanding	Guiding Questions
Functions model real world phenomena when graphically represented and allow for analysis of trends and making predictions.	<ol style="list-style-type: none"> 1. What do domain and range represent in the context of the problem situation? 2. What information is needed to graph a linear function? 3. How can the graph of a linear function be used to analyze trends and make predictions?

The resources included here provide teaching examples and/or meaningful learning experiences to address the District Curriculum. In order to address the TEKS to the proper depth and complexity, teachers are encouraged to use resources to the degree that they are congruent with the TEKS and research-based best practices. Teaching using only the suggested resources does not guarantee student mastery of all standards. Teachers must use professional judgment to select among these and/or other resources to teach the District Curriculum.

Knowledge & Skills with Student Expectations	District Specificity/Examples	Suggested Resources (See note above)	
PSAT sample problems intended for use as warm-ups starting on Sept 17th can be found in the campus shared folder called “PSAT Math Preparation 2009-10” (10th and 11th grade only)			
<p>A.2 The student uses the properties and attributes of functions.</p> <p>A.2C The student interprets situations in terms of given graphs or creates situations that fit given graphs.</p>	<ul style="list-style-type: none"> • Create situations from a graph that match critical attribute of the graph; examples are speeding up, slowing down, positive or negative direction, horizontal segments of the graph, x-and y-intercepts. • Accurately sketch a graph including critical attributes of a given problem situation. 	<p>Holt: Section 4.1</p> <p>Discovering: Section 7.3</p>	<p><u>Dana Center</u> 600 Meter Race Distance and Time Gas Tank</p> <p>LTF: A Transforming Story</p>
<p>A.1 The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</p> <p>A.1A The student describes independent and dependent quantities in functional relationships.</p>	<ul style="list-style-type: none"> • Use linear and non-linear functions • Verbalize statements about dependent and independent quantities and their multi-representation. • Utilize graphing technology effectively • Connect to real world situations • Use tables, graphs, verbal descriptions, concrete models, diagrams and equations to relate dependent and independent quantities 	<p>Holt: Section 4.3, 4.3 lab</p> <p>Discovering: Section 1.6</p>	<p>LTF: Intro to Function Notation Connecting a Verbal Description to Table and Graph</p> <p>A&M: Fall Section 5.3 – 5.4</p>

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<p>A.1 The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</p> <p>A.1B The student gathers and records data, or uses data sets, to determine functional relationships between quantities.</p>	<ul style="list-style-type: none"> • Collect data that models linear and non-linear functions through exploration. • Analyze all given data and determine if a dependent relationship exists indicating the data represent a function, i.e. cost depends on amount purchased. 	<p>Holt: Section 4.2, 4.2 lab</p> <p>Discovering: Section 7.1, 7.2</p>	<p>Dana Center Extra Curricular Activities</p> <p>LTF: Characteristics of Functions</p> <p>A&M: Fall Section 5.3 – 5.4</p>
<p>A.2 Foundations for Functions. The student uses the properties and attributes of functions.</p> <p>A.2D The student collects and organizes data, makes and interprets scatterplots (including recognizing positive, negative, or no correlation for data approximating linear situations), and models, predicts, and makes decisions and critical judgments in problem situations.</p> <p>Note: focus on linear here – repeated for quadratics in bundle 8</p>	<ul style="list-style-type: none"> • Collect data through explorations and/or problem solving situations, • Then name axis, plot points, describe general trends in the data, and determine independent and dependent quantities. • Make critical judgments and predictions using graphs and tables. 	<p>Holt: Section 1.8</p>	
<p>A.2 The student uses the properties and attributes of functions.</p> <p>A.2B The student identifies the mathematical domains and ranges and determines reasonable domain and range values for given situations, both continuous and discrete.</p> <p>Note: Focus on linear here – repeated for quadratic in bundle 8</p>	<ul style="list-style-type: none"> • Identify domain and range from data in a table, a graph, concrete model, and/or verbal description of real world situation with inequality notation; for example the domain: $2 \leq x < 5$ 	<p>Holt: Section 4.2, 4.3</p>	<p>LTF: Discrete and Continuous Data</p> <p>A&M: Fall Section 5.2</p>
<p>A.1 Foundations for Functions. The student understands that a function represents a dependence of one quantity on another and can be described in a variety of ways.</p> <p>A.1E The student interprets and makes decisions, predictions, and critical judgments from functional relationships.</p> <p>Note: Focus on basics of linear functions – repeated – more linear in bundle 5, quadratic in bundle 8.</p>	<ul style="list-style-type: none"> • Relate functional relationships to real world situations • Extend data in a table, from a concrete model using equations, or from analyzing the graph. • Answer questions and make predictions based on the representations: verbal, tabular, graphical, model, and/or symbolic • Determine choices, options, or draw conclusions from different representations, of the problem situation. 	<p>Holt: Sections 4.1, 4.2, 4.5, 4.5 lab</p> <p>Discovering: Sections 4.6, 4.8</p> <p>TI.com: “Breaking Spaghetti” Line of Best Fit/Scatterplot Activity</p>	

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<p>A.4 Foundations for Functions. The student understands the importance of the skills required to manipulate symbols in order to solve problems and uses the necessary algebraic skills required to simplify algebraic expressions and solve equations and inequalities in problem situations.</p> <p>A.4C The student connects equation notation with function notation, such as $y = x + 1$ and $f(x) = x + 1$</p> <p>Note: repeated in bundle 3, 4 and 9</p>	<ul style="list-style-type: none"> • Compare advantages/disadvantages of both notations and when to use them. 	<p>Holt: Section 4.3</p> <p>Discovering: Section 7.4</p>	<p>LTF: Intro to Function Notation Characteristics of Functions</p>
<p>A.2 Foundations for Functions. The student uses the properties and attributes of functions.</p> <p>A.2A The student identifies and sketches the general forms of linear ($y = x$) and quadratic ($y = x^2$) parent functions.</p> <p>Note: focus on basics of basics of linear functions - repeated with graphing linear in bundle 6, and with graphing quadratics in bundle 8.</p>	<ul style="list-style-type: none"> • Investigations with and without a graphing calculator • Identify from a table, graph, concrete model, and/or verbal description as match to the parent function $y = x$ and $y = x^2$ • Connect from graphical representations of the parent functions to correct symbolic representation. • Sketch the graph corresponding to a given symbolic representation. 	<p>Incorporate into other resources</p>	
<p>A.5 Linear Functions. The student understands that linear functions can be represented in different ways and translates among their various representations.</p> <p>A.5A The student determines whether or not given situations can be represented by linear functions.</p> <p>Note: focus on basics of writing linear functions here - repeated with linear functions in bundle 4</p>	<ul style="list-style-type: none"> • Determine from a verbal description whether there is a constant rate of change. • Determine from graphs, tables, and symbolic representations whether the rate of change is constant. 	<p>Incorporate into other resources</p>	