

Mathematical Models with Applications Curriculum Bundle #3

Title	Suggested Dates
Linear Functions	October 5 – October 23 (14 days)

Big Idea/Enduring Understanding	Guiding Questions
<p>Linear functions can be used to model real life situations that have a constant rate of change.</p> <p>The rate of change in a real life situation represents the slope of the graph.</p> <p>The starting point (for example: initial distance from a point, a one time fee, etc...) represents the y-intercept.</p>	<ol style="list-style-type: none"> 1. How are the rate of change of a function and the slope of a function related? 2. How does slope affect the graph of a line? 3. What does the y-intercept represent in a real life situation? X-intercept? 4. How do you determine when a function has zero slope or undefined slope? 5. How are linear functions, proportional relationships, and functions that vary directly related to each other?

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"		
<p>M.1 The student uses a variety of strategies and approaches to solve both routine and nonroutine problems.</p> <p>M.1A compare and analyze various methods for solving a real-life problem</p>	<ul style="list-style-type: none"> • Ongoing skill 	
<p>M.1 The student uses a variety of strategies and approaches to solve both routine and nonroutine problems.</p> <p>M.1B use multiple approaches (algebraic, graphical, and geometric methods) to solve problems from a variety of disciplines;</p>	<ul style="list-style-type: none"> • Use patterns to write equations • Write equations from graphs, tables and word problems 	<p><u>A&M Curriculum</u> Fall Section 4.1-4.3</p> <p>Region IV/Comap <u>Modeling with Mathematics – A Bridge to Algebra II</u> Sections 6.7 p.371-373B</p>
<p>M.1 The student uses a variety of strategies and approaches to solve both routine and nonroutine problems.</p> <p>M.1C select a method to solve a problem, defend the method, and justify the reasonableness of the results.</p>	<ul style="list-style-type: none"> • Incorporate transformations of linear functions and explain/communicate verbally the effects of changes to the graphs based on parameter changes in equation 	<p><u>A&M Curriculum</u> Fall Section 5.1</p>

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<p>M.2 The student uses graphical and numerical techniques to study patterns and analyze data.</p> <p>M.2A interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, line plots, stem and leaf plots, and box and whisker plots to draw conclusions from the data;</p>	<ul style="list-style-type: none"> • Use scatterplots to plat data and line graphs to graph equations • Use graphs and data to make predictions 	<p><u>A&M Curriculum</u> Fall Section 5.2, 5.3</p> <p>Pearson <u>Mathematical Models with Applications</u> Appendix C p. A-25-A-30</p>
<p>M.2 The student uses graphical and numerical techniques to study patterns and analyze data.</p> <p>M.2D use regression methods available through technology to describe various models for data such as linear, quadratic, exponential, etc., select the most appropriate model, and use the model to interpret information.</p>	<ul style="list-style-type: none"> • Use calculators to find regression equations for linear functions 	<p>Pearson <u>Mathematical Models with Applications</u> Activity 3.9 #2 A-E p. 334-337 Assignment 2.3 (do with Regression) p. 85 – 87B</p>
<p>M.3 The student develops and implements a plan for collecting and analyzing data in order to make decisions.</p> <p>M.3A formulate a meaningful question, determine the data needed to answer the question, gather the appropriate data, analyze the data, and draw reasonable conclusions;</p>	<ul style="list-style-type: none"> • Linear only 	<p>Pearson <u>Mathematical Models with Applications</u> Section 3.1 – 3.8 p. 239 - 318</p>
<p>M.3 The student develops and implements a plan for collecting and analyzing data in order to make decisions.</p> <p>M.3B communicate methods used, analyses conducted, and conclusions drawn for a data-analysis project by written report, visual display, oral report, or multi-media presentation;</p>	<ul style="list-style-type: none"> • Ongoing skill 	<p><u>Share Drive</u> !PISD Public Math Models Data Collection Project</p>
<p>M.3 The student develops and implements a plan for collecting and analyzing data in order to make decisions.</p> <p>M.3C determine the appropriateness of a model for making predictions from a given set of data.</p>	<ul style="list-style-type: none"> • Linear only 	