


Mathematical Models with Applications Curriculum Bundle #1

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| Title |  | Suggested Dates |
| Proportional vs. Non-proportional Relationships | | August 25 – September 11 (13 Days) |

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| Big Idea/Enduring Understanding | Guiding Questions |
| A proportional relationship shows a constant rate of change between two quantities and both quantities reach 0 at the same point. Any relationship that doesn't have a constant rate of change and/or does not go through the origin can be called a non-proportional relationship. | <ol style="list-style-type: none"> 1. How can you determine if the relationship between two variables is proportional or not? 2. What models are most appropriate representations of proportional or non-proportional relationships? |

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) |
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| M.1 The student uses a variety of strategies and approaches to solve both routine and nonroutine problems. M.1A compare and analyze various methods for solving a real-life problem | <ul style="list-style-type: none"> • Ongoing skill | |
| M.1 The student uses a variety of strategies and approaches to solve both routine and nonroutine problems. M.1B use multiple approaches (algebraic, graphical, and geometric methods) to solve problems from a variety of disciplines; | <ul style="list-style-type: none"> • Make connection between Pythagorean triples and proportions, • Similar triangles to solve proportions | <u>A&M Curriculum</u> Spring Section 2.4-2.5 Pearson <u>Mathematical Models with Applications</u> Section 6.6 p. 717 - 720 |
| M.1 The student uses a variety of strategies and approaches to solve both routine and nonroutine problems. M.1C select a method to solve a problem, defend the method, and justify the reasonableness of the results. | <ul style="list-style-type: none"> • Ongoing skill | |

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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 data from line graphs, scatter plots, bar graphs, and circle graphs to determine if there is a proportional relationship. • Compare data within graphs • Discuss intercepts and slope | <p>Pearson <u>Mathematical Models with Applications</u> Section 1.4 p. 20-25</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"> • Proportional and non-proportional linear relationships only. • Discuss intercepts to determine proportionality • Discuss slope | <p>Region IV/Comap <u>Modeling with Mathematics – A Bridge to Algebra II</u> Sections 1.2 – 1.5 p. 8 – 21A</p> |
| <p>M.2 The student uses graphical and numerical techniques to study patterns and analyze data.</p> <p>M.2C analyze graphs from journals, newspapers, and other sources to determine the validity of stated arguments</p> | <ul style="list-style-type: none"> • Ongoing skill | |