| Current TEKS | Proposed TEKS |
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| (a) General requirements. The provisions of this section shall be implemented beginning September 1, 1998. Students can be awarded one-half to one credit for successful completion of this course. Recommended prerequisite: Algebra I. | (a) General requirements. Students can be awarded one-half to one credit for successful completion of this course. Prerequisite: Algebra I. This course must be taken before receiving credit for Algebra II. |
| | (b) Introduction.<br>(1) The desire to achieve educational excellence is the driving force behind the Texas essential knowledge and skills for mathematics, guided by the college and career Readiness Standards. By embedding statistics, probability, and finance, while focusing on fluency and solid understanding, Texas will lead the way in mathematics education and prepare all Texas students for the challenges they will face in the 21st century. |
| (b) Introduction.<br>(1) In Mathematical Models with Applications, students continue to build on the K-8 and Algebra I foundations as they expand their understanding through other mathematical experiences. Students use algebraic, graphical, and geometric reasoning to recognize patterns and structure, to model information, and to solve problems from various disciplines. Students use mathematical methods to model and solve real-life applied problems involving money, data, chance, patterns, music, design, and science. Students use mathematical models from algebra, geometry, probability, and statistics and connections among these to solve problems from a wide variety of advanced applications in both mathematical and nonmathematical situations. Students use a variety of representations (concrete, pictorial, numerical, symbolic, graphical, and verbal), tools, and technology (including, but not limited to, calculators with graphing capabilities, data collection devices, and computers) to link modeling techniques and purely mathematical concepts and to solve applied problems. | (b) Introduction.<br>(3) Mathematical Models with Applications is designed to build on knowledge and skills from Kindergarten to Grade 8 and Algebra I. This mathematics course provides a path for students to succeed in Algebra II and prepares them for various post-secondary choices. Students learn to apply mathematics through experiences in personal finance, science, engineering, fine arts, and social sciences. Students use algebraic, graphical, and geometric reasoning to recognize patterns and structure; model information; solve problems; and communicate solutions. Students will select from tools such as physical objects, manipulatives, technology, including graphing calculators, data collection devices, and computers, paper and pencil and from methods such as algebraic techniques, geometric reasoning, patterns, and mental math to solve problems. |

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| (b) Introduction.<br><br>(2) As students do mathematics, they continually use problem-solving, language and communication, connections within and outside mathematics, and reasoning (justification and proof). Students also use multiple representations, technology, applications and modeling, and numerical fluency in problem-solving contexts. | (b) Introduction.<br><br>(2) The process standards describe ways in which students are expected to engage in the content. The placement of the process standards at the beginning of the knowledge and skills listed for each grade and course is intentional. The process standards weave the other knowledge and skills together so that students may be successful problem solvers and use mathematics effieciently and effectively in daily life. The process standards integrated at every grade level and course. When possible, students will apply mathematics to problems arising in everyday life, society, and the workplace. Students will use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution. Students will select appropriate tools such as real objects, manipulatives, paper and pencil, and technology and techniques such as mental math, estimation, and number sense to solve problems. Students will effectively communicate mathematical ideas, reasoning, and their implications using multiple representations such as symbols, diagrams, graphs, and language. Students will use mathematical relationships to generate solutions and make connections and predictions. Students will analyze mathematical relationships to connect and communicate mathematical ideas. Students will display, explain, or justify mathematical ideas and arguments using precise mathematical language in written or oral communication. |

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| | (b) Introduction.<br>(4) In Mathematical Models with Applications students will use a mathematical modeling cycle to analyze problems, understand problems better, and improve decisions. A basic mathematical modeling cycle is summarized below. The student will:<br>(A) Represent:<br>(i) identify the variables in the problem and select those that represent essential features;<br>(ii) formulate a model by creating and selecting from representations such as geometric, graphical, tabular, algebraic, or statistical that describe the relationships between the variables;<br>(B) Compute: analyze and perform operations on these relationships between the variables to draw conclusions;<br>(C) Interpret: interpret the results of the mathematics in terms of the original problem;<br>(D) Revise: confirm the conclusions by comparing the conclusions with the problem and revising as necessary; and<br>(E) Report: report on the conclusions and the reasoning behind the conclusions. |
| | (b) Introduction.<br>(5) Statements that contain the word "including" reference content that must be mastered, while those containing the phrase "such as" are intended as possible illustrative examples. |

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| | M.1A Mathematical Process Standards.<br>The student uses mathematical processes to acquire and demonstrate mathematical understanding.<br>**The student is expected to apply mathematics to problems arising in everyday life, society, and the workplace.** |
| | M.1B Mathematical Process Standards.<br>The student uses mathematical processes to acquire and demonstrate mathematical understanding.<br>**The student is expected to use a problem-solving model that incorporates analyzing given information, formulating a plan or strategy, determining a solution, justifying the solution, and evaluating the problem-solving process and the reasonableness of the solution.** |
| | M.1C Mathematical Process Standards.<br>The student uses mathematical processes to acquire and demonstrate mathematical understanding.<br>**The student is expected to select tools, including real objects, manipulatives, paper and pencil, and technology as appropriate, and techniques, including mental math, estimation, and number sense as appropriate, to solve problems.** |
| | M.1D Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.<br>**The student is expected to communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.** |

| Current TEKS | Proposed TEKS |
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| | M.1E Mathematical Process Standards.<br>The student uses mathematical processes to acquire and demonstrate mathematical understanding.<br>**The student is expected to create and use representations to organize, record, and communicate mathematical ideas.** |
| | M.1F Mathematical Process Standards.<br>The student uses mathematical processes to acquire and demonstrate mathematical understanding.<br>**The student is expected to analyze mathematical relationships to connect and communicate mathematical ideas.** |
| | M.1G Mathematical Process Standards. The student uses mathematical processes to acquire and demonstrate mathematical understanding.<br>**The student is expected to display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.** |

| Current TEKS | Proposed TEKS |
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| M.1A The student uses a variety of strategies and approaches to solve both routine and non-routine problems.<br><br>**The student is expected to compare and analyze various methods for solving a real-life problem.** | |
| M.1B The student uses a variety of strategies and approaches to solve both routine and non-routine problems.<br><br>**The student is expected to use multiple approaches (algebraic, graphical, and geometric methods) to solve problems from a variety of disciplines.** | |
| M.1C The student uses a variety of strategies and approaches to solve both routine and non-routine problems.<br><br>**The student is expected to select a method to solve a problem, defend the method, and justify the reasonableness of the results.** | |
| M.2A The student uses graphical and numerical techniques to study patterns and analyze data.<br><br>**The student is expected to 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.** | M.9A Mathematical Modeling in Social Sciences.<br>The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences.<br><br>**The student is expected to interpret information from various graphs, including line graphs, bar graphs, circle graphs, histograms, scatterplots, dot plots, stem-and-leaf plots, and box and whisker plots to draw conclusions from the data and determine the strengths and weaknesses of conclusions.** |

| Current TEKS | Proposed TEKS |
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| M.2B The student uses graphical and numerical techniques to study patterns and analyze data.<br><br>**The student is expected to analyze numerical data using measures of central tendency, variability, and correlation in order to make inferences.** | M.9B Mathematical Modeling in Social Sciences.<br>The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences.<br><br>**The student is expected to analyze numerical data using measures of central tendency (mean, median, and mode) and variability (range, interquartile range or IQR, and standard deviation) in order to make inferences with normal distributions.** |
| | M.9D Mathematical Modeling in Social Sciences.<br>The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences.<br><br>**The student is expected to use data from a sample to estimate population mean or population proportion.** |
| M.2C The student uses graphical and numerical techniques to study patterns and analyze data.<br><br>**The student is expected to analyze graphs from journals, newspapers, and other sources to determine the validity of stated arguments.** | M.9E Mathematical Modeling in Social Sciences.<br>The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences.<br><br>**The student is expected to analyze marketing claims based on graphs and statistics from electronic and print media and justify the validity of stated or implied conclusions.** |
| | M.9C Mathematical Modeling in Social Sciences.<br>The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences.<br><br>**The student is expected to distinguish the purposes and differences among types of research, including surveys, experiments, and observational studies.** |

| Current TEKS | Proposed TEKS |
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| M.2D The student uses graphical and numerical techniques to study patterns and analyze data.<br><br>**The student is expected to 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.** | M.9F Mathematical Modeling in Social Sciences. The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences.<br><br>**The student is expected to use regression methods available through technology to model linear and exponential functions, interpret correlations, and make predictions.** |
| M.3A The student develops and implements a plan for collecting and analyzing data (qualitative and quantitative) in order to make decisions.<br><br>**The student is expected to formulate a meaningful question, determine the data needed to answer the question, gather the appropriate data, analyze the data, and draw reasonable conclusions.** | M.10A Mathematical Modeling in Social Sciences. The student applies mathematical processes to design a study and use graphical, numerical, and analytical techniques to communicate the results of the study.<br><br>**The student is expected to formulate a meaningful question, determine the data needed to answer the question, gather the appropriate data, analyze the data, and draw reasonable conclusions.** |
| M.3B The student develops and implements a plan for collecting and analyzing data (qualitative and quantitative) in order to make decisions.<br><br>**The student is expected to communicate methods used, analyses conducted, and conclusions drawn for a data-analysis project by written report, visual display, oral report, or multi-media presentation.** | M.10B Mathematical Modeling in Social Sciences. The student applies mathematical processes to design a study and use graphical, numerical, and analytical techniques to communicate the results of the study.<br><br>**The student is expected to communicate methods used, analyses conducted, and conclusions drawn for a data-analysis project through the use of one or more of a written report, a visual display, an oral report, or a multi-media presentation.** |
| M.3C The student develops and implements a plan for collecting and analyzing data (qualitative and quantitative) in order to make decisions.<br><br>**The student is expected to determine the appropriateness of a model for making predictions from a given set of data.** | |

| Current TEKS | Proposed TEKS |
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| M.4A The student uses probability models to describe everyday situations involving chance.<br><br>**The student is expected to compare theoretical and empirical probability.** | M.8B Mathematical Modeling in Social Sciences. The student applies mathematical processes to determine the number of elements in a finite sample space and compute the probability of an event.<br><br>**The student is expected to compare theoretical to empirical probability.** |
| | M.8A Mathematical Modeling in Social Sciences. The student applies mathematical processes to determine the number of elements in a finite sample space and compute the probability of an event.<br><br>**The student is expected to determine the number of ways an event may occur using combinations, permutations, and the Fundamental Counting Principle.** |
| M.4B The student uses probability models to describe everyday situations involving chance.<br><br>**The student is expected to use experiments to determine the reasonableness of a theoretical model such as binomial, geometric, etc.** | M.8C Mathematical Modeling in Social Sciences. The student applies mathematical processes to determine the number of elements in a finite sample space and compute the probability of an event.<br><br>**The student is expected to use experiments to determine the reasonableness of a theoretical model such as binomial or geometric.** |
| M.5A The student uses functional relationships to solve problems related to personal income.<br><br>**The student is expected to use rates, linear functions, and direct variation to solve problems involving personal finance and budgeting, including compensations and deductions.** | M.2A Mathematical Modeling in Personal Finance. The student uses mathematical processes with graphical and numerical techniques to study patterns and analyze data related to personal finance.<br><br>**The student is expected to use rates and linear functions to solve problems involving personal finance and budgeting, including compensations and deductions.** |
| M.5B The student uses functional relationships to solve problems related to personal income.<br><br>**The student is expected to solve problems involving personal taxes.** | M.2B Mathematical Modeling in Personal Finance. The student uses mathematical processes with graphical and numerical techniques to study patterns and analyze data related to personal finance.<br><br>**The student is expected to solve problems involving personal taxes.** |
| **Current TEKS** | **Proposed TEKS** |

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| M.5C The student uses functional relationships to solve problems related to personal income.<br><br>**The student is expected to analyze data to make decisions about banking.** | M.2C Mathematical Modeling in Personal Finance. The student uses mathematical processes with graphical and numerical techniques to study patterns and analyze data related to personal finance.<br><br>**The student is expected to analyze data to make decisions about banking, including options for online banking, checking accounts, overdraft protection, processing fees, and debit card/ATM fees.** |
| M.6A The student uses algebraic formulas, graphs, and amortization models to solve problems involving credit.<br><br>**The student is expected to analyze methods of payment available in retail purchasing and compare relative advantages and disadvantages of each option.** | M.3B Mathematical Modeling in Personal Finance. The student uses mathematical processes with algebraic formulas, graphs, and amortization modeling to solve problems involving credit.<br><br>**The student is expected to analyze personal credit options in retail purchasing and compare relative advantages and disadvantages of each option.** |
| M.6B The student uses algebraic formulas, graphs, and amortization models to solve problems involving credit.<br><br>**The student is expected to use amortization models to investigate home financing and compare buying and renting a home.** | M.3A Mathematical Modeling in Personal Finance. The student uses mathematical processes with algebraic formulas, graphs, and amortization modeling to solve problems involving credit.<br><br>**The student is expected to use formulas to generate tables to display series of payments for loan amortizations resulting from financed purchases.** |
| | M.3C Mathematical Modeling in Personal Finance. The student uses mathematical processes with algebraic formulas, graphs, and amortization modeling to solve problems involving credit.<br><br>**The student is expected to use technology to create amortization models to investigate home financing and compare buying a home to renting a home.** |

| Current TEKS | Proposed TEKS |
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| M.6C The student uses algebraic formulas, graphs, and amortization models to solve problems involving credit.<br><br>**The student is expected to use amortization models to investigate automobile financing and compare buying and leasing a vehicle.** | M.3D Mathematical Modeling in Personal Finance. The student uses mathematical processes with algebraic formulas, graphs, and amortization modeling to solve problems involving credit.<br><br>**The student is expected to use technology to create amortization models to investigate automobile financing and compare buying a vehicle to leasing a vehicle.** |
| M.7A The student uses algebraic formulas, numerical techniques, and graphs to solve problems related to financial planning.<br><br>**The student is expected to analyze types of savings options involving simple and compound interest and compare relative advantages of these options.** | M.4C Mathematical Modeling in Personal Finance. The student uses mathematical processes with algebraic formulas, numerical techniques, and graphs to solve problems related to financial planning.<br><br>**The student is expected to analyze types of savings options involving simple and compound interest and compare relative advantages of these options.** |
| M.7B The student uses algebraic formulas, numerical techniques, and graphs to solve problems related to financial planning.<br><br>**The student is expected to analyze and compare coverage options and rates in insurance.** | M.4A Mathematical Modeling in Personal Finance. The student uses mathematical processes with algebraic formulas, numerical techniques, and graphs to solve problems related to financial planning.<br><br>**The student is expected to analyze and compare coverage options and rates in insurance.** |
| M.7C The student uses algebraic formulas, numerical techniques, and graphs to solve problems related to financial planning.<br><br>**The student is expected to investigate and compare investment options including stocks, bonds, annuities, and retirement plans.** | M.4B Mathematical Modeling in Personal Finance. The student uses mathematical processes with algebraic formulas, numerical techniques, and graphs to solve problems related to financial planning.<br><br>**The student is expected to investigate and compare investment options, including stocks, bonds, annuities, certificates of deposit, and retirement plans.** |
| M.8A The student uses algebraic and geometric models to describe situations and solve problems.<br><br>**The student is expected to use geometric models available through technology to model growth and decay in areas such as population, biology, and ecology.** | M.5B Mathematical Modeling in Science and Engineering. The student applies mathematical processes with algebraic techniques to study patterns and analyze data as it applies to science.<br><br>**The student is expected to use exponential models available through technology to model growth and decay in areas including radioactive decay.** |

| Current TEKS | Proposed TEKS |
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| M.8B The student uses algebraic and geometric models to describe situations and solve problems.<br><br>**The student is expected to use trigonometric ratios and functions available through technology to calculate distances and model periodic motion.** | M.6D Mathematical Modeling in Science and Engineering. The student applies mathematical processes with algebra and geometry to study patterns and analyze data as it applies to architecture and engineering.<br><br>**The student is expected to use trigonometric ratios to calculate distances and angle measures as applied to fields.** |
| | M.7A Mathematical Modeling in Fine Arts. The student uses mathematical processes with algebra and geometry to study patterns and analyze data as it applies to fine arts.<br><br>**The student is expected to use trigonometric ratios and functions available through technology to model periodic behavior in art and music.** |
| M.8C The student uses algebraic and geometric models to describe situations and solve problems.<br><br>**The student is expected to use direct and inverse variation to describe physical laws such as Hook's, Newton's, and Boyle's laws.** | M.5A Mathematical Modeling in Science and Engineering. The student applies mathematical processes with algebraic techniques to study patterns and analyze data as it applies to science.<br><br>**The student is expected to use proportionality and inverse variation to describe physical laws such as Hook's Law, Newton's Second Law of Motion, and Boyle's Law.** |
| M.9A The student uses algebraic and geometric models to represent patterns and structures.<br><br>**The student is expected to use geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in art and architecture.** | M.6A Mathematical Modeling in Science and Engineering. The student applies mathematical processes with algebra and geometry to study patterns and analyze data as it applies to architecture and engineering.<br><br>**The student is expected to use similarity, geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in architecture.** |
| | M.7B Mathematical Modeling in Fine Arts. The student uses mathematical processes with algebra and geometry to study patterns and analyze data as it applies to fine arts.<br><br>**The student is expected to use similarity, geometric transformations, symmetry, and perspective drawings to describe mathematical patterns and structure in art and photography.** |

| Current TEKS | Proposed TEKS |
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| M.9B The student uses algebraic and geometric models to represent patterns and structures.<br><br>**The student is expected to use geometric transformations, proportions, and periodic motion to describe mathematical patterns and structure in music.** | M.6B Mathematical Modeling in Science and Engineering. The student applies mathematical processes with algebra and geometry to study patterns and analyze data as it applies to architecture and engineering.<br><br>**The student is expected to use scale factors with two-dimensional and three-dimensional objects to demonstrate proportional and non-proportional changes in surface area and volume as applied to fields.** |
| | M.7C Mathematical Modeling in Fine Arts. The student uses mathematical processes with algebra and geometry to study patterns and analyze data as it applies to fine arts.<br><br>**The student is expected to use geometric transformations, proportions, and periodic motion to describe mathematical patterns and structure in music.** |
| | M.7D Mathematical Modeling in Fine Arts. The student uses mathematical processes with algebra and geometry to study patterns and analyze data as it applies to fine arts.<br><br>**The student is expected to use scale factors with two-dimensional and three-dimensional objects to demonstrate proportional and non-proportional changes in surface area and volume as applied to fields.** |
| | M.5C Mathematical Modeling in Science and Engineering. The student applies mathematical processes with algebraic techniques to study patterns and analyze data as it applies to science.<br><br>**The student is expected to use quadratic functions to model motion.** |
| | M.6C Mathematical Modeling in Science and Engineering. The student applies mathematical processes with algebra and geometry to study patterns and analyze data as it applies to architecture and engineering.<br><br>**The student is expected to use the Pythagorean Theorem and special right-triangle relationships to calculate distances.** |