

PROGRAM OVERVIEW

Standards Correlations

Each topic in this TEKS Mathematical Models with Applications program was written specifically to address the Texas Essential Knowledge and Skills (TEKS). Each topic lists the standards covered in all the lessons, and each lesson lists the standards addressed in that particular lesson. In this section, you'll find a comprehensive list mapping the lessons to the TEKS.

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Unit 1: Data Collection and Analysis

Topic	Lesson number	Title	Standard(s)
Topic A	Summarizing, Representing, and Interpreting Data		
	1.1	Data Types and Visualizations	TEKS.MMA.9A
	1.2	Comparing Different Data Sets	TEKS.MMA.9A, TEKS.MMA.9B
	1.3	Interpreting Data and Recognizing Outliers	TEKS.MMA.9A, TEKS.MMA.9B
Topic B	The Normal Curve		
	1.4	The Normal Curve	TEKS.MMA.9B
Topic C	Identifying Surveys, Experiments, and Observational Studies		
	1.5	Identifying Surveys, Experiments, and Observational Studies	TEKS.MMA.9C

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Unit 2: Mathematical Models in Research

Topic	Lesson number	Title	Standard(s)
Topic A	Populations Versus Random Samples, Random Sampling, and Bias		
	2.1	Differences Between Populations and Samples	TEKS.MMA.9D
	2.2	Simple Random Sampling	TEKS.MMA.9D
	2.3	Sampling Methods and Sources of Bias	TEKS.MMA.9D
Topic B	Evaluating the Significance of Sample Statistics		
	2.4	Confidence in Sample Statistics	TEKS.MMA.9D
	2.5	Estimating with Confidence	TEKS.MMA.9D, TEKS.MMA.9E
	2.6	Reading Reports	TEKS.MMA.9E
Topic C	Line of Best Fit		
	2.7	Solving Problems Given Functions Fitted to Data	TEKS.MMA.9F
	2.8	Analyzing Residuals	TEKS.MMA.9F
	2.9	Fitting Linear Functions to Data	TEKS.MMA.9F
Topic D	Fitting Exponential Functions to Data		
	2.10	Fitting Exponential Functions to Data	TEKS.MMA.9F
	Interpreting Statistical Models		
	2.11	Interpreting Fitted Functions	TEKS.MMA.9F
	2.12	Calculating and Interpreting the Correlation Coefficient	TEKS.MMA.9F
	2.13	Distinguishing Between Correlation and Causation	TEKS.MMA.9F

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Unit 3: Mathematical Models in Science and Engineering

Topic	Lesson number	Title	Standard(s)
Topic A	Direct and Inverse Variations		
	3.1	Ramp-Up Lesson: Rearranging Formulas	TEKS.MMA.5A
	3.2	Direct and Inverse Variation	TEKS.MMA.5A
Topic B	Ramp-Up Topic: Interpreting Exponential Graphs		
	3.3	Ramp-Up Lesson: Identifying Key Features of Exponential Graphs	TEKS.A1.9B, TEKS.A1.9D
Topic C	Modeling with Exponential Equations		
	3.4	Exponential Regression in Science	TEKS.MMA.5B, TEKS.MMA.5F
	3.5	Exponential Functions as Models	TEKS.MMA.5B
Topic D	Ramp-Up Topic: Interpreting Structure in Expressions		
	3.6	Ramp-Up Lesson: Identifying Terms, Factors, and Coefficients	TEKS.6.7B
	3.7	Ramp-Up Lesson: Interpreting Complicated Expressions	TEKS.A1.7B
Topic E	Ramp-Up Topic: Factoring		
	3.8	Ramp-Up Lesson: Factoring Expressions by the Greatest Common Factor	TEKS.A1.10E
	3.9	Ramp-Up Lesson: Factoring Expressions with $a = 1$	TEKS.A1.10E
	3.10	Ramp-Up Lesson: Factoring Expressions with $a > 1$	TEKS.A1.10E
Topic F	Modeling with Quadratics		
	3.11	Converting Quadratic Equations to Different Forms	TEKS.MMA.5C
	3.12	Building Quadratic Equations from Context	TEKS.MMA.5C

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Unit 4: Probability

Topic	Lesson number	Title	Standard(s)
Topic A	Representing Sample Spaces and Events		
	4.1	Drawing and Interpreting Venn and Tree Diagrams	TEKS.MMA.8A, TEKS.MMA.9A
	4.2	Identifying Sample Spaces	TEKS.MMA.8A, TEKS.MMA.9A
	4.3	Identifying Events	TEKS.MMA.8A, TEKS.MMA.9A
	4.4	Describing Events	TEKS.MMA.8A, TEKS.MMA.9A
Topic B	4.5	Combinations and Permutations	TEKS.MMA.8A
	Calculating Probabilities		
	4.6	Calculating Probabilities and Expressing them in Equivalent Forms Using Fractions, Decimals, and Percents	TEKS.MMA.8A
Topic C	4.7	Probability with Combinatorics	TEKS.MMA.8A
	Theoretical and Empirical Probability		
	4.8	Comparing Theoretical to Empirical Probability	TEKS.MMA.8B
	4.9	Assessing Theoretical Probability Models	TEKS.MMA.8C

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Unit 5: Personal Finance: Income, Taxes, and Budgeting

Topic	Lesson number	Title	Standard(s)
Topic A	Income		
	5.1	Creating Equations and Inequalities—Gross Pay	TEKS.MMA.2A
	5.2	Creating Equations in Context—Net Pay	TEKS.MMA.2A
Topic B	Taxation		
	5.3	Creating and Solving Equations in Two Variables—Tax Brackets	TEKS.MMA.2B
Topic C	Budgeting		
	5.4	Functions, Systems and Budgets	TEKS.MMA.2A

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Unit 6: Personal Finance: Credit, Loans, and Insurance		
Topic	Sub-lesson number	Standard(s)
Topic A	Credit	
	6.1	Solving Linear Equations—Simple Interest TEKS.MMA.3B
	6.2	Analyzing Credit Offers with Linear and Exponential Equations TEKS.MMA.3B
Topic B	Loans and Financed Purchases	
	6.3	Recursion and Sequences—Payment Plans TEKS.MMA.3A, TEKS.MMA.3C, TEKS.MMA.3D
	6.4	Finite Geometric Series—Amortized Loans TEKS.MMA.3A, TEKS.MMA.3C, TEKS.MMA.3D
Topic C	Insurance	
	6.5	Insurance TEKS.MMA.4A

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Unit 7: Personal Finance: Savings and Investment

Topic	Lesson number	Title	Standard(s)
Topic A	Banking		
	7.1	Interpreting Complicated Expressions—Bank Statements and Savings Accounts	TEKS.MMA.2C, TEKS.MMA.4C
	7.2	Creating Equations and Inequalities—Savings Interest	TEKS.MMA.2C, TEKS.MMA.4C
Topic B	Investing		
	7.3	Interpreting Expressions and Equations—Stocks and Shares	TEKS.MMA.4B
	7.4	Interpreting Stock Parameters	TEKS.MMA.4B
	7.5	Reading Stock Reports	TEKS.MMA.4B
Topic C	Planning for Retirement		
	7.6	Planning for Retirement	TEKS.MMA.4B

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Unit 8: Mathematical Models in Architecture and Spatial Reasoning			
Topic	Sub-lesson number	Title	Standard(s)
Topic A	Ramp-Up: Investigating Properties of Dilations		
	8.1	Ramp-up: Dilations and Parallel Lines	TEKS.G.3B
	8.2	Ramp-up: Finding and Using Scale Factors	TEKS.G.3B
Topic B	Ramp-Up: Defining and Applying Similarity		
	8.3	Ramp-up: Defining Similarity	TEKS.G.7A
	8.4	Ramp-up: Applying Similarity Using the Angle-Angle (AA) Criterion	TEKS.G.7B
Topic C	Ramp-Up: Proving Similarity		
	8.5	Ramp-up: Side-Angle-Side (SAS) and Side-Side-Side (SSS) Similarity	TEKS.G.8A
	8.6	Ramp-up: Ratios and Similarity	TEKS.G.8A
	8.7	Ramp-up: The Pythagorean Theorem and Similarity	TEKS.G.6D, TEKS.G.8A
	8.8	Ramp-up: Solving Problems Using Similarity and Congruence	TEKS.G.6D, TEKS.G.8A
	8.9	Ramp-up: 45° – 45° – 90° and 30° – 60° – 90° Triangles	TEKS.G.9B
Topic D	Exploring and Applying Trigonometric Ratios		
	8.10	Defining Sine, Cosine, and Tangent	TEKS.MMA.6D
	8.11	Calculating Sine, Cosine, and Tangent	TEKS.MMA.6D
	8.12	Problem Solving with the Pythagorean Theorem and Trigonometry	TEKS.MMA.6D, TEKS.MMA.6C
Topic E	Creating and Using Geometric Models		
	8.13	Scaling Across Dimensions	TEKS.MMA.6B, TEKS.MMA.7D
	8.14	Modeling in Three Dimensions	TEKS.MMA.6A, TEKS.MMA.6B, TEKS.MMA.6C, TEKS.MMA.6D

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Unit 9: Mathematical Models in the Fine Arts

Topic	Sub-lesson number	Title	Standard(s)
Topic A	Introducing Trigonometric Functions		
	9.1	Ramp-Up Lesson: Radians	TEKS.G.12D
	9.2	Ramp-Up Lesson: The Unit Circle	TEKS.G.12D
	9.3	Ramp-Up Lesson: Special Angles in the Unit Circle	TEKS.G.12D
	9.4	Ramp-Up Lesson: Evaluating Trigonometric Functions	TEKS.G.9A
Topic B	Trigonometric Functions in Art and Music		
	9.5	Periodic Phenomena and Amplitude, Frequency, and Midline	TEKS.MMA.7A, TEKS.MMA.7C
	9.6	Using Trigonometric Functions to Model Periodic Phenomena	TEKS.MMA.7A, TEKS.MMA.7C
Topic C	Math in Music		
	9.7	Patterns and Symmetry in Music	TEKS.MMA.7C
	9.8	Applying Mathematics to Music	TEKS.MMA.7A, TEKS.MMA.7C
Topic D	Scale and Dimension in Art		
	9.9	Proportions and Perspective	TEKS.MMA.7B
	9.10	Dimension in Art	TEKS.MMA.7B, TEKS.MMA.7D