

## PROGRAM OVERVIEW

# Table of Contents for Instructional Units

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### Unit 1: Data Collection and Analysis

#### Unit 1 Pre-Assessment

#### Topic A: Summarizing, Representing, and Interpreting Data

Lesson 1.1: Data Types and Visualizations (TEKS.MMA.9A)

Lesson 1.2: Comparing Different Data Sets (TEKS.MMA.9A, TEKS.MMA.9B)

Lesson 1.3: Interpreting Data and Recognizing Outliers (TEKS.MMA.9A, TEKS.MMA.9B)

#### Conceptual Task

What Does The Real Data Show? (TEKS.MMA.9A, TEKS.MMA.9B)

#### Topic B: The Normal Curve

Lesson 1.4: The Normal Curve (TEKS.MMA.9B)

#### Conceptual Task

Tons of Tuna (TEKS.MMA.9B)

#### Topic C: Identifying Surveys, Experiments, and Observational Studies

Lesson 1.5: Identifying Surveys, Experiments, and Observational Studies (TEKS.MMA.9C)

#### Answer Keys

#### Unit 1 Assessment

### Unit 2: Mathematical Models in Research

#### Unit 2 Pre-Assessment

#### Topic A: Populations Versus Random Samples, Random Sampling, and Bias

Lesson 2.1: Differences Between Populations and Samples (TEKS.MMA.9D)

Lesson 2.2: Simple Random Sampling (TEKS.MMA.9D)

Lesson 2.3: Sampling Methods and Sources of Bias (TEKS.MMA.9D)

#### Topic B: Evaluating the Significance of Sample Statistics

Lesson 2.4: Confidence in Sample Statistics (TEKS.MMA.9D)

Lesson 2.5: Estimating with Confidence (TEKS.MMA.9D, TEKS.MMA.9E)

Lesson 2.6: Reading Reports (TEKS.MMA.9E)

#### Conceptual Tasks

Tracking Ticks

#### Topic C: Line of Best Fit

Lesson 2.7: Solving Problems Given Functions Fitted to Data (TEKS.MMA.9F)

Lesson 2.8: Analyzing Residuals (TEKS.MMA.9F)

Lesson 2.9: Fitting Linear Functions to Data (TEKS.MMA.9F)

Lesson 2.10: Fitting Exponential Functions to Data (TEKS.MMA.9F)

#### Conceptual Tasks

Time to Print in 3D

Smartphone Surge

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#### **Topic D: Interpreting Statistical Models**

Lesson 2.11: Interpreting Fitted Functions (TEKS.MMA.9F)

Lesson 2.12: Calculating and Interpreting the Correlation Coefficient (TEKS.MMA.9F)

Lesson 2.13: Distinguishing Between Correlation and Causation (TEKS.MMA.9F)

#### **Answer Keys**

#### **Making Connections Task**

Mathematical Models in Research (TEKS.MMA.10A, TEKS.MMA.10B)

#### **Unit 2 Assessment**

### **Unit 3: Mathematical Models in Science and Engineering**

#### **Unit 3 Pre-Assessment**

#### **Topic A: Direct and Inverse Variations**

Lesson 3.1: Ramp-Up Lesson: Rearranging Formulas (TEKS.MMA.5A)

Lesson 3.2: Direct and Inverse Variation (TEKS.MMA.5A)

#### **Topic B: Ramp-Up Topic: Interpreting Exponential Graphs**

Lesson 3.3: Ramp-Up Lesson: Identifying Key Features of Exponential Graphs  
(TEKS.A1.9B, TEKS.A1.9D)

#### **Conceptual Task**

Infectious Dilemma

#### **Topic C: Modeling with Exponential Equations**

Lesson 3.4: Exponential Regression in Science (TEKS.MMA.5B, TEKS.MMA.5F)

Lesson 3.5: Exponential Functions as Models (TEKS.MMA.5B)

#### **Conceptual Task**

Weighing Job Offers

#### **Topic D: Ramp-Up Topic: Interpreting Structure in Expressions**

Lesson 3.6: Ramp-Up Lesson: Identifying Terms, Factors, and Coefficients (TEKS.6.7B)

Lesson 3.7: Ramp-Up Lesson: Interpreting Complicated Expressions (TEKS.A1.7B)

#### **Topic E: Ramp-Up Topic: Factoring**

Lesson 3.8: Ramp-Up Lesson: Factoring Expressions by the  
Greatest Common Factor (TEKS.A1.10E)

Lesson 3.9: Ramp-Up Lesson: Factoring Expressions with  $a = 1$  (TEKS.A1.10E)

Lesson 3.10: Ramp-Up Lesson: Factoring Expressions with  $a > 1$  (TEKS.A1.10E)

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#### **Topic F: Modeling with Quadratics**

Lesson 3.11: Converting Quadratic Equations to Different Forms (TEKS.MMA.5C)

Lesson 3.12: Building Quadratic Equations from Context (TEKS.MMA.5C)

#### **Answer Keys**

#### **Performance Task**

Mathematical Models in Science and Engineering (TEKS.MMA.9B, TEKS.MMA.9F)

#### **Ramp-Up Unit 3 Assessment**

#### **Unit 3 Assessment**

### **Unit 4: Probability**

#### **Unit 4 Pre-Assessment**

#### **Topic A: Representing Sample Spaces and Events**

Lesson 4.1: Drawing and Interpreting Venn and Tree Diagrams  
(TEKS.MMA.8A, TEKS.MMA.9A)

Lesson 4.2: Identifying Sample Spaces (TEKS.MMA.8A, TEKS.MMA.9A)

Lesson 4.3: Identifying Events (TEKS.MMA.8A, TEKS.MMA.9A)

Lesson 4.4: Describing Events (TEKS.MMA.8A, TEKS.MMA.9A)

Lesson 4.5: Combinations and Permutations (TEKS.MMA.8A)

#### **Topic B: Calculating Probabilities**

Lesson 4.6: Calculating Probabilities and Expressing them in Equivalent Forms Using  
Fractions, Decimals, and Percents (TEKS.MMA.8A)

Lesson 4.7: Probability with Combinatorics (TEKS.MMA.8A)

#### **Topic C: Theoretical and Empirical Probability**

Lesson 4.8: Comparing Theoretical to Empirical Probability (TEKS.MMA.8B)

Lesson 4.9: Assessing Theoretical Probability Models (TEKS.MMA.8C)

#### **Conceptual Task**

Shooting Hoops (TEKS.MMA.8B)

#### **Answer Keys**

#### **Unit 4 Assessment**

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

#### **Unit 5 Pre-Assessment**

##### **Topic A: Income**

Lesson 5.1: Creating Equations and Inequalities—Gross Pay (TEKS.MMA.2A)

Lesson 5.2: Creating Equations in Context—Net Pay (TEKS.MMA.2A)

##### **Topic B: Taxation**

Lesson 5.3: Creating and Solving Equations in Two Variables—  
Tax Brackets (TEKS.MMA.2B)

##### **Conceptual Task**

Making Tax Models (TEKS.MMA.2B)

##### **Topic C: Budgeting**

Lesson 5.4: Functions, Systems and Budgets (TEKS.MMA.2A)

#### **Answer Keys**

#### **Performance Task**

Independent Living: Taxes (TEKS.MMA.2B)

#### **Unit 5 Assessment**

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#### **Unit 6: Personal Finance: Credit, Loans, and Insurance**

##### **Unit 6 Pre-Assessment**

##### **Topic A: Credit**

Lesson 6.1: Solving Linear Equations—Simple Interest (TEKS.MMA.3B)

Lesson 6.2: Analyzing Credit Offers with Linear and Exponential Equations (TEKS.MMA.3B)

##### **Topic B: Loans and Financed Purchases**

Lesson 6.3: Recursion and Sequences—Payment Plans (TEKS.MMA.3A, TEKS.MMA.3C, TEKS.MMA.3D)

Lesson 6.4: Finite Geometric Series—Amortized Loans (TEKS.MMA.3A, TEKS.MMA.3C, TEKS.MMA.3D)

##### **Conceptual Task**

Evaluating Vehicle Equity (TEKS.MMA.3A, TEKS.MMA.3C, TEKS.MMA.3D)

##### **Topic C: Insurance**

Lesson 6.5: Insurance (TEKS.MMA.4A)

##### **Answer Keys**

##### **Performance Task**

Automobile Ownership (TEKS.MMA.3D)

##### **Unit 6 Assessment**

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#### **Unit 7: Personal Finance: Savings and Investment**

##### **Unit 7 Pre-Assessment**

##### **Topic A: Banking**

Lesson 7.1: Interpreting Complicated Expressions—Bank Statements and Savings Accounts (TEKS.MMA.2C, TEKS.MMA.4C)

Lesson 7.2: Creating Equations and Inequalities—Savings Interest (TEKS.MMA.2C, TEKS.MMA.4C)

##### **Topic B: Investing**

Lesson 7.3: Interpreting Expressions and Equations—Stocks and Shares (TEKS.MMA.4B)

Lesson 7.4: Interpreting Stock Parameters (TEKS.MMA.4B)

Lesson 7.5: Reading Stock Reports (TEKS.MMA.4B)

##### **Conceptual Task**

Making Money Move (TEKS.MMA.4B)

##### **Topic C: Planning for Retirement**

Lesson 7.6: Planning for Retirement (TEKS.MMA.4B)

##### **Answer Keys**

##### **Performance Task**

Banking (TEKS.MMA.2C, TEKS.MMA.4C)

##### **Unit 7 Assessment**

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#### Unit 8: Mathematical Models in Architecture and Spatial Reasoning

##### Unit 8 Pre-Assessment

##### Ramp-Up Topic A: Investigating Properties of Dilations

Lesson 8.1: Ramp-up: Dilations and Parallel Lines (TEKS.G.3B)

Lesson 8.2: Ramp-up: Finding and Using Scale Factors (TEKS.G.3B)

##### Ramp-Up Topic B: Defining and Applying Similarity

Lesson 8.3: Ramp-up: Defining Similarity (TEKS.G.7A)

Lesson 8.4: Ramp-up: Applying Similarity Using the  
Angle-Angle (AA) Criterion (TEKS.G.7B)

##### Conceptual Task

Similarity Investigation (TEKS.G.7B)

##### Ramp-Up Topic C: Problem Solving Using Similarity and Congruence

Lesson 8.5: Ramp-up: Side-Angle-Side (SAS) and  
Side-Side-Side (SSS) Similarity (TEKS.G.8A)

Lesson 8.6: Ramp-up: Ratios and Similarity (TEKS.G.8A)

Lesson 8.7: Ramp-up: The Pythagorean Theorem and Similarity (TEKS.G.6D, TEKS.G.8A)

Lesson 8.8: Ramp-up: Solving Problems Using Similarity and  
Congruence (TEKS.G.6D, TEKS.G.8A)

Lesson 8.9: Ramp-up:  $45^\circ$ – $45^\circ$ – $90^\circ$  and  $30^\circ$ – $60^\circ$ – $90^\circ$  Triangles (TEKS.G.9B)

##### Topic D: Exploring and Applying Trigonometric Ratios

Lesson 8.10: Defining Sine, Cosine, and Tangent (TEKS.MMA.6D)

Lesson 8.11: Calculating Sine, Cosine, and Tangent (TEKS.MMA.6D)

Lesson 8.12: Problem Solving with the Pythagorean Theorem and Trigonometry  
(TEKS.MMA.6D, TEKS.MMA.6C)

##### Conceptual Task

Triangles? Yeah, Right. (TEKS.MMA.6D)

##### Topic E: Creating and Using Geometric Models

Lesson 8.13: Scaling Across Dimensions (TEKS.MMA.6B, TEKS.MMA.7D)

Lesson 8.14: Modeling in Three Dimensions  
(TEKS.MMA.6A, TEKS.MMA.6B, TEKS.MMA.6C, TEKS.MMA.6D)

#### Answer Keys

#### RAMP-UP Unit 8 Assessment

#### Unit 8 Assessment

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### Unit 9: Mathematical Models in the Fine Arts

#### Unit 9 Pre-Assessment

#### Topic A: Introducing Trigonometric Functions

Lesson 9.1: Ramp-Up Lesson: Radians (TEKS.G.12D)

Lesson 9.2: Ramp-Up Lesson: The Unit Circle (TEKS.G.12D)

Lesson 9.3: Ramp-Up Lesson: Special Angles in the Unit Circle (TEKS.G.12D)

Lesson 9.4: Ramp-Up Lesson: Evaluating Trigonometric Functions (TEKS.G.9A)

#### Conceptual Activity

Cutting Cakes (TEKS.G.12D)

#### Topic B: Trigonometric Functions in Art and Music

Lesson 9.5: Periodic Phenomena and Amplitude, Frequency, and Midline  
(TEKS.MMA.7A, TEKS.MMA.7C)

Lesson 9.6: Using Trigonometric Functions to Model Periodic Phenomena  
(TEKS.MMA.7A, TEKS.MMA.7C)

#### Topic C: Math in Music

Lesson 9.7: Patterns and Symmetry in Music (TEKS.MMA.7C)

Lesson 9.8: Applying Mathematics to Music (TEKS.MMA.7A, TEKS.MMA.7C)

#### Topic D: Scale and Dimension in Art

Lesson 9.9: Proportions and Perspective (TEKS.MMA.7B)

Lesson 9.10: Dimension in Art (TEKS.MMA.7B, TEKS.MMA.7D)

#### Answer Keys

#### Performance Task

Origami (TEKS.MMA.7B, TEKS.MMA.7D)

#### RAMP-UP Unit 9 Assessment

#### Unit 9 Assessment