



PowerTeaching[®] Math

3rd Edition

**Alignment to the
Texas Essential Knowledge and Skills
for Mathematics**

Standards for Mathematical Knowledge and Skills

This document is organized as follows:

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Section II: Grade 6 Alignment to the Standards for Essential Knowledge and Skills for Mathematics

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**Section I: PowerTeaching Math 3rd Edition Alignment to the Texas Essential Knowledge and Skills
Mathematical Process Standards**

Standard for Mathematical Process A: Apply mathematics to problems arising in everyday life, society, and the workplace.

Math problems and performance tasks in the PowerTeaching curriculum frequently draw from real-life experiences and data to give students opportunities to see how math applies to everyday life.

- **Team Mastery/Homework**—Students will find many problems that focus on real-world experiences and numbers while completing Team Mastery in class and Homework at home. Problems may draw from real sources, such as census data, government surveys, and geographical data. They will also solve problems based on the experiences of young people, such as saving and investing income, planning school events, etc.
- **Performance Task cycles**—Each PowerTeaching Math level includes at least four performance task cycles. These cycles involve three days of work on a single, rich, real-world context. Students apply the content they have already learned to a real-world scenario in which math is required to solve many interrelated problems, such as in starting your own food truck business (6-2: Computation Skills), designing a bathroom remodel (7-8: Geometry and Shapes), deciding whether to rent or buy a home (8-10: Modeling with Functions), or planning healthy menus (Algebra-3: Equations and Relationships).

Lessons focusing on this mathematical process:

Grade 6: TEKS 6.b.1.A

- Unit 2 Cycle 3—Computation Skills Performance Task (Starting a Food Truck Business)
- Unit 6 Cycle 3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)
- Unit 13 Cycle 3—Volume and Surface Area Performance Task (Kitchen Remodel)
- Unit 15 Cycle 3—Statistics Performance Task (Family Vacation)

Grade 7: TEKS 7.b.1.A

- Unit 3 Cycle 3—Rational Numbers Performance Task (Underwater Exploration)
- Unit 5 Cycle 2—Ratios and Percents Performance Task (Starting a Sports Team)
- Unit 8 Cycle 3—Geometry Performance Task (Bathroom Remodel)
- Unit 11 Cycle 3—Probability Performance Task (Consumer Contest)

Grade 8: TEKS 8.b.1.A

- Unit 3 Cycle 3—Rational and Irrational Numbers Performance Task (Volcano Exploration)
- Unit 6 Cycle 3—Geometry Performance Task (Architecture, Maps, and Art)
- Unit 10 Cycle 3—Linear Functions Performance Task (Renting vs. Buying a Home)
- Unit 13 Cycle 3—Real-World Data Associations Performance Task (Analyzing Survey Data)

Algebra 1: TEKS A1.c.1.A

- Unit 3 Cycle 3—Equations and Inequalities Performance Task (Planning Healthy Menus)
- Unit 7 Cycle 2—Constructing Functions Performance Task (Photography)
- Unit 9 Cycle 2—Modeling Functions Performance Task (Commuting Cost Models)
- Unit 12 Cycle 3—Quadratic and Exponential Equations Performance Task (Hotel Revenue)
- Unit 13 Cycle 3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
- Unit 14 Cycle 2—Functions in Context Performance Task (Genetics in Medicine)

Standard for Mathematical Process B: 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.

The PowerTeaching curriculum consistently encourages students to ask questions, look for relationships, plan for solutions, estimate, solve and then assess their reasoning and the reasonableness of their answers, and finally check their work. Students focus on these good habits as a part of the daily PowerTeaching lesson structure as well as in specific strategy lessons throughout the curriculum.

- **Teamwork**—During daily Team Huddle, Team Mastery, and prep for Lightning Round activities, students work with their teammates to discuss, plan for, and solve math problems. Within the team, they must work through disagreements, ensure that each teammate understands and can explain the solution, and encourage each other when problems seem difficult.
- **Extended response**—Many PowerTeaching learning cycles culminate in an extended response lesson. The math problems in these lessons are complex and combine multiple math topics. The teacher modeling, teamwork activities, and individual practice are all centered on solving these real-world problems in steps: understand the problem, find the parts, make a plan, estimate the answer, find the solution, and assess the reasonableness and correctness of the solution. Students are also asked to explain their thinking and make sense of problems daily during Get the Goof and Team Mastery, and while completing homework.
- **Performance Task cycles**—Each PowerTeaching Math level includes at least four performance task cycles. These cycles involve three days of work on a single, rich, real-world context. Students apply the content they have already learned to a real-world scenario in which math is required to solve many interrelated problems. Students work in teams, with team help, and then individually to make sense of a rich, real-world context and then test out which math tools and models can help them arrive at a reasonable answer.
- **Think Like a Mathematician lessons**—In grades 6–8, students practice various problem-solving strategies at multiple points. Specific lessons introduce and have students practice strategies such as identifying extraneous data, solving simpler problems, and guess and check.

Lessons focusing on this mathematical process:

Grade 6: TEKS 6.b.1.B

- Unit 1 Cycle 1 Lesson 3—Think Like a Mathematician: Making Sense 1
Unit 1 Cycle 1 Lesson 4—Think Like a Mathematician: Making Sense 2
Unit 1 Cycle 1 Lesson 5—Think Like a Mathematician: Making Sense 3
Unit 2 Cycle 3—Computation Skills Performance Task (Starting a Food Truck Business)
Unit 6 Cycle 2 Lesson 5—Think Like a Mathematician: Making Sense 4

Grade 7: TEKS 7.b.1.B

- Unit 1 Cycle 1 Lesson 3—Think Like a Mathematician: Making Sense 1
Unit 1 Cycle 1 Lesson 4—Think Like a Mathematician: Making Sense 2
Unit 1 Cycle 1 Lesson 5—Think Like a Mathematician: Making Sense 3
Unit 3 Cycle 3 Lessons 1–3—Rational Numbers Performance Task (Underwater Exploration)
Unit 5 Cycle 1 Lesson 6—Think Like a Mathematician: Making Sense 4
Unit 6 Cycle 1 Lesson 6—Think Like a Mathematician: Find the Patterns and Structure 2

Grade 8: TEKS 8.b.1.B

- Unit 1 Cycle 1 Lesson 3—Think Like a Mathematician: Making Sense 1
- Unit 1 Cycle 1 Lesson 4—Think Like a Mathematician: Making Sense 2
- Unit 1 Cycle 1 Lesson 5—Think Like a Mathematician: Making Sense 3
- Unit 6 Cycle 2 Lesson 5—Think Like a Mathematician: Making Sense 4

Algebra 1: TEKS A1.c.1.B

- Unit 1 Cycle 1 Lesson 3—Think Like a Mathematician: Making Sense 1
- Unit 1 Cycle 1 Lesson 4—Think Like a Mathematician: Making Sense 2
- Unit 1 Cycle 1 Lesson 5—Think Like a Mathematician: Making Sense 3

Standard for Mathematical Process C: 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.

Throughout PowerTeaching Math, students will be guided to use various tools, such as calculators, spreadsheet software, protractors, compasses, estimation and mental math, manipulatives, equivalent fractions, equation structures, and properties of operations, to solve math problems and answer questions. They will also be faced with opportunities to choose which tool would best help them solve more complex math problems or real-world scenarios. The students will more often be faced with choices when completing extended response and project-based learning activities.

Standard for Mathematical Process D: Communicate mathematical ideas, reasoning, and their implications using multiple representations, including symbols, diagrams, graphs, and language as appropriate.

Throughout PowerTeaching, students will routinely approach math concepts by decontextualizing and contextualizing situations and using both concrete and abstract tools and methods. Given a description of a situation or visual, such as a graph, students decontextualize it to determine the numbers and operations involved to solve the problem, whether numbers represent a ratio, or the relationships between the values. Students also contextualize problems by translating math into real-world situations or visual representations to help them see relationships.

- **Think Like a Mathematician lessons**—In grades 6–8, students practice various problem-solving strategies at multiple points. The problem-solving strategies that students learn help them break apart word problems and real-world math scenarios into the important information, then represent this information as numeric and algebraic models.
- **Get the Goof/Team Mastery/Homework**—In each cycle, students will apply the problem solving strategies they have learned. Many lessons include real-world math problems. Students learn to represent the solutions to these problems concretely and abstractly. Students are also routinely asked to design a math story for a numeric or algebraic model.
- **Performance Task cycles**—The PowerTeaching curriculum includes quarterly project-based learning opportunities. These activities will be multi-day cycles of learning that include planning, research, modeling, reporting, and presenting. Students will be required to represent their project topic mathematically, use the math to find a solution to the problem they researched or an answer to the question they asked, and then explain how the mathematical model relates back to their original problem or question.

Standard for Mathematical Process E: Create and use representations to organize, record, and communicate mathematical ideas.

Students will use tables, graphs, charts and diagrams to represent mathematical information. They will also use number sentences, expressions, and equations to describe a situation. Students will also use the information they gather in tables, graphs, charts, and diagrams to identify patterns, determine relationships, and draw conclusions.

- **Think Like a Mathematician lessons**—In grades 6–8, students practice various problem-solving strategies at multiple points. Specific lessons introduce and have students practice strategies such as building various models, like organized lists, tree diagrams, or number lines.
- **Think Alouds**—Through the Think Alouds in Interactive Instruction and Guided Practice, students are exposed to modeling relationships with ratios and percents, tables, graphs, tape diagrams, formulas, expressions, equations, inequalities, etc.
- **Get the Goof/Team Mastery/Homework**—The ongoing problem solving experiences, word problems, real-world scenarios, and extended response, often require students to represent the data as a model. Students must determine which model would best help them find the solution or answer the question.

Lessons focusing on this mathematical process:

Grade 6: TEKS 6.b.1.E

- Unit 3 Cycle 3 Lesson 4—Think Like a Mathematician: Build a Math Model 1
Unit 4 Cycle 2 Lesson 4—Think Like a Mathematician: Build a Math Model 2

Grade 7: TEKS 7.b.1.E

- Unit 2 Cycle 2 Lesson 5—Think Like a Mathematician: Build a Math Model 1
Unit 4 Cycle 2 Lesson 4—Think Like a Mathematician: Build a Math Model 2

Grade 8: TEKS 8.b.1.E

- Unit 3 Cycle 2 Lesson 4—Think Like a Mathematician: Build a Math Model 1
Unit 4 Cycle 2 Lesson 5—Think Like a Mathematician: Build a Math Model 2

Standard for Mathematical Process F: Analyze mathematical relationships to connect and communicate mathematical ideas.

Specific targeted skills in the PowerTeaching curriculum address the topics of structure and patterns. When students can recognize how certain properties, such as the commutative properties of addition and multiplication, or distributive property, can help them rearrange problems in different ways to reach the same solution, they are prepared to look at problems in multiple ways and use different methods to solve problems.

- **Think Like a Mathematician lessons**—In grades 6–8, students practice various problem-solving strategies at multiple points. Specific lessons introduce and have students practice strategies such as working backward through problems, finding patterns, and recognizing sequences.
- **Expressions and Equations domain**—Within the Expressions and Equations domain, students will consistently work to make sense of data by defining any patterns they notice and translating those patterns into expressions, equations, and graphs.

Lessons focusing on this mathematical process:
<p>Grade 6: TEKS 6.b.1.F</p> <ul style="list-style-type: none"> Unit 5 Cycle 1 Lesson 5—Think Like a Mathematician: Find the Patterns and Structure 1 Unit 6 Cycle 2 Lesson 5—Think Like a Mathematician: Making Sense 4 Unit 7 Cycle 3 Lesson 5—Think Like a Mathematician: Find the Patterns and Structure 2
<p>Grade 7: TEKS 7.b.1.F</p> <ul style="list-style-type: none"> Unit 4 Cycle 3 Lesson 5—Think Like a Mathematician: Find the Patterns and Structure 1 Unit 6 Cycle 1 Lesson 6—Think Like a Mathematician: Find the Patterns and Structure 2
<p>Grade 8: TEKS 8.b.1.F</p> <ul style="list-style-type: none"> Unit 5 Cycle 2 Lesson 5—Think Like a Mathematician: Find the Patterns and Structure 1 Unit 7 Cycle 2 Lesson 5—Think Like a Mathematician: Find the Patterns and Structure 2 Unit 10 Cycle 2 Lesson 1—Exploring Distance-Time Graphs Unit 10 Cycle 2 Lesson 2—Matching Distance-Time Graphs
<p>Algebra 1: TEKS A1.c.1.F</p> <ul style="list-style-type: none"> Unit 2 Cycle 1 Lesson 1—Units as a Guide to Solving Problems Unit 2 Cycle 1 Lesson 2—Units in Formulas Unit 2 Cycle 1 Lesson 3—Units and Graphing Unit 2 Cycle 2 Lesson 1—Defining Quantities Unit 2 Cycle 2 Lesson 4—Quantities in Complex Problems Unit 10 Cycle 3 Lessons 1–3—Linear Functions Performance Task (Renting vs. Buying a Home)
<p>Standard for Mathematical Process G: Display, explain, and justify mathematical ideas and arguments using precise mathematical language in written or oral communication.</p>
<p>Students will use symbols, math vocabulary, and clear explanations in their team discussions and written and oral explanations to provide precise solutions to their problems. Students will also make choices to best represent their solution and reasoning clearly and efficiently. PowerTeaching Math teaches students to check their accuracy as they translate situations into expressions and mathematical sentences, calculate problems using various units of measure, especially when converting between units, preserving balance of equations, representing inequalities on number lines, and thinking critically about statistical data.</p> <ul style="list-style-type: none"> Random Reporter Rubric—A part of the daily PowerTeaching routine includes teamwork and team discussion to solve problems. At various points during each lesson, the teacher will use Random Reporter to have a student from each team share their answer and support that answer with their team’s reasoning. During Team Huddle, students work together in their teams to answer the first question from Team Mastery, complete with an explanation of their thinking and the strategies they used to solve the problem. After students have completed the rest of their Team Mastery problems independently, they discuss their answers to the Lightning Round question as a team to make sure everyone has a correct answer and explanation of their thinking. They are given feedback using the Random Reporter rubric for both Team Huddle and the Lightning Round. Vocabulary/Vocabulary Vault—Key vocabulary is highlighted in each lesson. The definition is built into the lesson instead of only existing in a separate glossary. Students will see the vocabulary used correctly within the teacher modeling and be expected to use key vocabulary and precise definitions to support their mathematical thinking in their answers. Each cycle, students are encouraged to earn extra team points with Vocabulary Vault by finding and explaining examples of math vocabulary used outside the classroom.

Section II: Grade 6 Alignment to the Texas Essential Knowledge and Skills for Mathematics

Grade 6	
Number and Operations	
<p>Texas Essential Knowledge and Skills for Mathematics 6.b.2: The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to:</p>	
<p>A. classify whole numbers, integers, and rational numbers using a visual representation such as a Venn diagram to describe relationships between sets of numbers;</p>	
	<ul style="list-style-type: none"> • Unit 4 Cycle 2 Lesson 1—Comparing and Ordering Integers
<p>B. identify a number, its opposite, and its absolute value;</p>	
	<ul style="list-style-type: none"> • Unit 4 Cycle 1 Lesson 1—Exploring Integers • Unit 4 Cycle 2 Lesson 2—Absolute Value <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 2 Cycle 1 Lesson 2—Adding Opposites
<p>C. locate, compare, and order integers and rational numbers using a number line;</p>	
	<ul style="list-style-type: none"> • Unit 3 Cycle 2 Lesson 1—Estimating the Value of Fractions • Unit 4 Cycle 2 Lesson 1—Comparing and Ordering Integers <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 2 Cycle 2 Lesson 1—Subtracting Integers
<p>D. order a set of rational numbers arising from mathematical and real-world contexts; and</p>	
	<ul style="list-style-type: none"> • Unit 3 Cycle 2 Lesson 1—Estimating the Value of Fractions • Unit 4 Cycle 2 Lesson 1—Comparing and Ordering Integers
<p>E. extend representations for division to include fraction notation such as a/b represents the same number as $a \div b$ where $b \neq 0$.</p>	
<p>This standard is covered by lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 3 Cycle 2 Lesson 3—Rational Numbers as Decimals 	

<p>Texas Essential Knowledge and Skills for Mathematics 6.b.3: The student applies mathematical process standards to represent addition, subtraction, multiplication, and division while solving problems and justifying solutions. The student is expected to:</p>
<p>A. recognize that dividing by a rational number and multiplying by its reciprocal result in equivalent values;</p>
<ul style="list-style-type: none"> • Unit 3 Cycle 3 Lesson 1—Dividing Whole Numbers by Fractions • Unit 3 Cycle 3 Lesson 2—Dividing Fractions by Fractions • Unit 3 Cycle 3 Lesson 3—Problem Solving with Multiplying and Dividing Fractions
<p>B. determine, with and without computation, whether a quantity is increased or decreased when multiplied by a fraction, including values greater than or less than one;</p>
<ul style="list-style-type: none"> • Unit 2 Cycle 1 Lesson 2—Estimation • Unit 3 Cycle 2 Lesson 2—Multiplying Fractions • Unit 3 Cycle 2 Lesson 3—Multiplying Mixed Numbers • Unit 3 Cycle 3 Lesson 1—Dividing Whole Numbers by Fractions • Unit 3 Cycle 3 Lesson 2—Dividing Fractions by Fractions • Unit 3 Cycle 3 Lesson 3—Problem Solving with Multiplying and Dividing Fractions <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 3 Cycle 2 Lesson 1—Using Properties to Divide Integers
<p>C. represent integer operations with concrete models and connect the actions with the models to standardized algorithms;</p>
<p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 2 Cycle 1 Lesson 2—Adding Opposites • Grade 7 Unit 2 Cycle 1 Lesson 3—Adding Rational Numbers 1 • Grade 7 Unit 3 Cycle 1 Lesson 1—Multiplying Integers • Grade 7 Unit 3 Cycle 2 Lesson 1—Using Properties to Divide Integers
<p>D. add, subtract, multiply, and divide integers fluently; and</p>
<p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 3 Cycle 1 Lesson 2—Using Properties to Multiply Integers
<p>E. multiply and divide positive rational numbers fluently.</p>

- Unit 2 Cycle 1 Lesson 1—Mental Math
- Unit 2 Cycle 1 Lesson 2—Estimation
- Unit 2 Cycle 1 Lesson 3—Whole Number Division 1
- Unit 2 Cycle 1 Lesson 4—Whole Number Division 2
- Unit 2 Cycle 2 Lesson 1—Estimating with Decimals
- Unit 2 Cycle 2 Lesson 3—Multiplying Decimals
- Unit 2 Cycle 2 Lesson 4—Dividing Decimals
- Unit 2 Cycle 2 Lesson 5—Problem Solving with Decimals
- Unit 2 Cycle 3 Lessons 1–3—Computation Skills Performance Task (Starting a Food Truck Business)
- Unit 3 Cycle 1 Lesson 1—Greatest Common Factor
- Unit 3 Cycle 1 Lesson 2—Least Common Multiple
- Unit 3 Cycle 1 Lesson 3—Problem Solving with GCF and LCM
- Unit 3 Cycle 2 Lesson 2—Multiplying Fractions
- Unit 3 Cycle 2 Lesson 3—Multiplying Mixed Numbers
- Unit 3 Cycle 3 Lesson 1—Dividing Whole Numbers by Fractions
- Unit 3 Cycle 3 Lesson 2—Dividing Fractions by Fractions
- Unit 3 Cycle 3 Lesson 3—Problem Solving with Multiplying and Dividing Fractions

Proportionality

Texas Essential Knowledge and Skills for Mathematics 6.b.4: The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations. The student is expected to:

- A. compare two rules verbally, numerically, graphically, and symbolically in the form of $y = ax$ or $y = x + a$ in order to differentiate between additive and multiplicative relationships;

- Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)

Lessons in other grade levels:

- Grade 7 Unit 4 Cycle 2 Lesson 1—Defining Proportional Relationships

- B. apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates;

<ul style="list-style-type: none"> • Unit 5 Cycle 1 Lesson 4—Comparing Rates • Unit 6 Cycle 1 Lesson 2—Problem Solving with Unit Rates • Unit 6 Cycle 1 Lesson 4—Problem Solving with Ratios and Tape Diagrams • Unit 6 Cycle 1 Lesson 5—Rate and Ratio Problem Solving • Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)
<p>C. give examples of ratios as multiplicative comparisons of two quantities describing the same attribute;</p>
<ul style="list-style-type: none"> • Unit 6 Cycle 1 Lesson 1—Converting Measurements • Unit 6 Cycle 1 Lesson 4—Problem Solving with Ratios and Tape Diagrams • Unit 6 Cycle 1 Lesson 5—Rate and Ratio Problem Solving • Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)
<p>D. give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients;</p>
<ul style="list-style-type: none"> • Unit 5 Cycle 1 Lesson 3—Rate and Unit Rate • Unit 6 Cycle 1 Lesson 2—Problem Solving with Unit Rates • Unit 6 Cycle 1 Lesson 4—Problem Solving with Ratios and Tape Diagrams • Unit 6 Cycle 1 Lesson 5—Rate and Ratio Problem Solving • Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)
<p>E. represent ratios and percents with concrete models, fractions, and decimals;</p>
<ul style="list-style-type: none"> • Unit 5 Cycle 1 Lesson 1—What are ratios? • Unit 6 Cycle 1 Lesson 4—Problem Solving with Ratios and Tape Diagrams • Unit 6 Cycle 1 Lesson 5—Rate and Ratio Problem Solving • Unit 6 Cycle 2 Lesson 1—Understanding Percent • Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)

F. represent benchmark fractions and percents such as 1%, 10%, 25%, 33 1/3%, and multiples of these values using 10 by 10 grids, strip diagrams, number lines, and numbers;
<ul style="list-style-type: none"> Unit 6 Cycle 2 Lesson 1—Understanding Percent Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)
G. generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money; and
<ul style="list-style-type: none"> Unit 6 Cycle 2 Lesson 1—Understanding Percent Unit 6 Cycle 2 Lesson 2—Comparing and Ordering Percents, Fractions, and Decimals Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)
H. convert units within a measurement system, including the use of proportions and unit rates.
<ul style="list-style-type: none"> Unit 6 Cycle 1 Lesson 1—Converting Measurements Unit 6 Cycle 3 Lessons 1–3—Ratio and Percent Applications Performance Task (Preparing for a Dinner Fundraiser)
Texas Essential Knowledge and Skills for Mathematics 6.b.5: The student applies mathematical process standards to develop an understanding of proportional relationships in problem situations. The student is expected to:
A. represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions;
<ul style="list-style-type: none"> Unit 5 Cycle 1 Lesson 2—Ratios and Tables Unit 6 Cycle 1 Lesson 3—Graphing Equivalent Ratios <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Algebra 1 Unit 14 Cycle 2 Lessons 1–3—Functions in Context Performance Task (Genetics in Medicine)
B. solve real-world problems to find the whole given a part and the percent, to find the part given the whole and the percent, and to find the percent given the part and the whole, including the use of concrete and pictorial models; and
<ul style="list-style-type: none"> Unit 6 Cycle 2 Lesson 3—Solving Percent Problems Unit 6 Cycle 2 Lesson 4—Problem Solving with Percents
C. use equivalent fractions, decimals, and percents to show equal parts of the same whole.
<ul style="list-style-type: none"> Unit 6 Cycle 2 Lesson 2—Comparing and Ordering Percents, Fractions, and Decimals Unit 6 Cycle 2 Lesson 3—Solving Percent Problems

Expressions, Equations, and Relationships

Texas Essential Knowledge and Skills for Mathematics 6.b.6: The student applies mathematical process standards to use multiple representations to describe algebraic relationships. The student is expected to:

A. identify independent and dependent quantities from tables and graphs;

- Unit 7 Cycle 3 Lesson 3—Expressions and Patterns
- Unit 11 Cycle 1 Lesson 1—Independent and Dependent Variables
- Unit 11 Cycle 1 Lesson 2—Tables and Equations 1
- Unit 11 Cycle 1 Lesson 4—Graphing Equations

B. write an equation that represents the relationship between independent and dependent quantities from a table; and

- Unit 7 Cycle 3 Lesson 3—Expressions and Patterns
- Unit 11 Cycle 1 Lesson 4—Graphing Equations

C. represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y = kx$ or $y = x + b$.

- Unit 7 Cycle 3 Lesson 3—Expressions and Patterns
- Unit 11 Cycle 1 Lesson 4—Graphing Equations

Texas Essential Knowledge and Skills for Mathematics 6.b.7: The student applies mathematical process standards to develop concepts of expressions and equations. The student is expected to:

A. generate equivalent numerical expressions using order of operations, including whole number exponents and prime factorization;

- Unit 7 Cycle 1 Lesson 1—Understanding Exponents
- Unit 7 Cycle 1 Lesson 2—Order of Operations
- Unit 7 Cycle 1 Lesson 3—Writing and Evaluating Numeric Expressions
- Unit 7 Cycle 2 Lesson 3—Writing Expressions 1
- Unit 7 Cycle 2 Lesson 4—Writing Expressions 2
- Unit 7 Cycle 3 Lesson 1—Evaluating Expressions 1
- Unit 7 Cycle 3 Lesson 4—Writing and Evaluating Algebraic Expressions
- Unit 8 Cycle 1 Lesson 2—Properties of Addition

Lessons in other grade levels:

- Grade 7 Unit 6 Cycle 1 Lesson 1—Equivalent Algebraic Expressions
- Grade 7 Unit 6 Cycle 1 Lesson 2—Evaluating Algebraic Expressions
- Grade 7 Unit 6 Cycle 1 Lesson 4—Writing Expressions Multiple Ways

<p>B. distinguish between expressions and equations verbally, numerically, and algebraically;</p>
<ul style="list-style-type: none"> • Unit 7 Cycle 2 Lesson 3—Writing Expressions 1 • Unit 7 Cycle 2 Lesson 4—Writing Expressions 2 • Unit 7 Cycle 3 Lesson 1—Evaluating Expressions 1 • Unit 7 Cycle 3 Lesson 4—Writing and Evaluating Algebraic Expressions • Unit 9 Cycle 1 Lesson 1—Defining Equations
<p>C. determine if two expressions are equivalent using concrete models, pictorial models, and algebraic representations; and</p>
<ul style="list-style-type: none"> • Unit 7 Cycle 2 Lesson 3—Writing Expressions 1 • Unit 7 Cycle 2 Lesson 4—Writing Expressions 2 • Unit 7 Cycle 3 Lesson 1—Evaluating Expressions 1 • Unit 7 Cycle 3 Lesson 4—Writing and Evaluating Algebraic Expressions • Unit 8 Cycle 1 Lesson 3—Proving Expressions Equivalent 1 • Unit 8 Cycle 2 Lesson 4—Proving Expressions Equivalent 2
<p>D. generate equivalent expressions using the properties of operations: inverse, identity, commutative, associative, and distributive properties.</p>
<ul style="list-style-type: none"> • Unit 7 Cycle 2 Lesson 3—Writing Expressions 1 • Unit 7 Cycle 2 Lesson 4—Writing Expressions 2 • Unit 7 Cycle 3 Lesson 1—Evaluating Expressions 1 • Unit 7 Cycle 3 Lesson 4—Writing and Evaluating Algebraic Expressions • Unit 8 Cycle 1 Lesson 1—Combining Like Terms • Unit 8 Cycle 1 Lesson 2—Properties of Addition • Unit 8 Cycle 1 Lesson 3—Proving Expressions Equivalent 1 • Unit 8 Cycle 2 Lesson 1—Properties of Multiplication • Unit 8 Cycle 2 Lesson 2—Greatest Common Factors of Monomials • Unit 8 Cycle 2 Lesson 3—Distributive Property • Unit 8 Cycle 2 Lesson 4—Proving Expressions Equivalent 2 • Unit 9 Cycle 2 Lesson 1—Inverse Operations <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 6 Cycle 1 Lesson 1—Equivalent Algebraic Expressions • Grade 7 Unit 6 Cycle 1 Lesson 2—Evaluating Algebraic Expressions • Grade 7 Unit 6 Cycle 1 Lesson 4—Writing Expressions Multiple Ways

<p>Texas Essential Knowledge and Skills for Mathematics 6.b.8: The student applies mathematical process standards to use geometry to represent relationships and solve problems. The student is expected to:</p>
<p>A. extend previous knowledge of triangles and their properties to include the sum of angles of a triangle, the relationship between the lengths of sides and measures of angles in a triangle, and determining when three lengths form a triangle;</p>
<ul style="list-style-type: none"> • Unit 13 Cycle 3 Lessons 1–3—Volume and Surface Area Performance Task (Kitchen Remodel)
<p>B. model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes;</p>
<ul style="list-style-type: none"> • Unit 12 Cycle 2 Lesson 2—Area of Rectangles and Triangles • Unit 12 Cycle 2 Lesson 3—Area of Quadrilaterals • Unit 12 Cycle 2 Lesson 4—Area of Complex Shapes • Unit 12 Cycle 2 Lesson 5—Problem Solving with Area • Unit 13 Cycle 3 Lessons 1–3—Volume and Surface Area Performance Task (Kitchen Remodel) <p>Lessons that review earlier related standards:</p> <ul style="list-style-type: none"> • Unit 12 Cycle 2 Lesson 1—Properties of Polygons (TEKS 5.b.5)
<p>C. write equations that represent problems related to the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers; and</p>
<ul style="list-style-type: none"> • Unit 7 Cycle 3 Lesson 2—Evaluating Expressions 2 • Unit 11 Cycle 1 Lesson 3—Tables and Equations 2 • Unit 12 Cycle 2 Lesson 5—Problem Solving with Area • Unit 13 Cycle 1 Lesson 1—Unit Fraction Cubes • Unit 13 Cycle 1 Lesson 2—Finding Volume 1 • Unit 13 Cycle 1 Lesson 3—Finding Volume 2 • Unit 13 Cycle 1 Lesson 4—Additive and Subtractive Volume • Unit 13 Cycle 1 Lesson 5—Problem Solving with Volume • Unit 13 Cycle 3 Lessons 1–3—Volume and Surface Area Performance Task (Kitchen Remodel) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 7 Unit 8 Cycle 1 Lesson 1—Area, Perimeter, and Volume
<p>D. determine solutions for problems involving the area of rectangles, parallelograms, trapezoids, and triangles and volume of right rectangular prisms where dimensions are positive rational numbers.</p>
<ul style="list-style-type: none"> • Unit 9 Cycle 1 Lesson 4—Geometry and Equations • Unit 11 Cycle 1 Lesson 3—Tables and Equations 2 • Unit 13 Cycle 1 Lesson 3—Finding Volume 2

- Unit 13 Cycle 1 Lesson 4—Additive and Subtractive Volume
- Unit 13 Cycle 1 Lesson 5—Problem Solving with Volume
- Unit 13 Cycle 3 Lessons 1–3—Volume and Surface Area Performance Task (Kitchen Remodel)

Lessons in other grade levels:

- Grade 7 Unit 8 Cycle 1 Lesson 1—Area, Perimeter, and Volume

Texas Essential Knowledge and Skills for Mathematics 6.b.9: The student applies mathematical process standards to use equations and inequalities to represent situations. The student is expected to:

A. write one-variable, one-step equations and inequalities to represent constraints or conditions within problems;

- Unit 9 Cycle 3 Lesson 1—Choosing the Correct Equation 1
- Unit 9 Cycle 3 Lesson 2—Choosing the Correct Equation 2
- Unit 10 Cycle 1 Lesson 1—Introduction to Inequalities

B. represent solutions for one-variable, one-step equations and inequalities on number lines; and

- Unit 10 Cycle 1 Lesson 2—Graphing Inequalities

C. write corresponding real-world problems given one-variable, one-step equations or inequalities.

- Unit 10 Cycle 1 Lesson 4—Problem Solving with Inequalities

Texas Essential Knowledge and Skills for Mathematics 6.b.10: The student applies mathematical process standards to use equations and inequalities to solve problems. The student is expected to:

A. model and solve one-variable, one-step equations and inequalities that represent problems, including geometric concepts; and

- Unit 9 Cycle 1 Lesson 1—Defining Equations
- Unit 9 Cycle 2 Lesson 2—Solving Addition and Subtraction Equations
- Unit 9 Cycle 2 Lesson 3—Solving Multiplication and Division Equations
- Unit 9 Cycle 2 Lesson 4—Solving Equations to Answer Questions
- Unit 9 Cycle 3 Lesson 3—Writing and Solving Equations
- Unit 10 Cycle 1 Lesson 3—Solutions in Inequalities
- Unit 10 Cycle 1 Lesson 4—Problem Solving with Inequalities

B. determine if the given value(s) make(s) one-variable, one-step equations or inequalities true.

- Unit 9 Cycle 1 Lesson 2—Solutions to Equations
- Unit 9 Cycle 1 Lesson 3—Solving Equations

Measurement and Data

Texas Essential Knowledge and Skills for Mathematics 6.b.11: The student applies mathematical process standards to use coordinate geometry to identify locations on a plane. The student is expected to graph points in all four quadrants using ordered pairs of rational numbers.

- Unit 4 Cycle 1 Lesson 2—Graphing Ordered Pairs in All Quadrants
- Unit 4 Cycle 1 Lesson 3—Exploring Graphing
- Unit 4 Cycle 2 Lesson 3—Problem Solving with Coordinates

Texas Essential Knowledge and Skills for Mathematics 6.b.12: The student applies mathematical process standards to use numerical or graphical representations to analyze problems. The student is expected to:

A. represent numeric data graphically, including dot plots, stem-and-leaf plots, histograms, and box plots;

- Unit 14 Cycle 2 Lesson 3—Line Plots
- Unit 14 Cycle 2 Lesson 4—Histograms
- Unit 14 Cycle 2 Lesson 5—Line Graphs
- Unit 14 Cycle 2 Lesson 6—Data Displays
- Unit 15 Cycle 1 Lesson 2—Creating a Box Plot
- Unit 15 Cycle 1 Lesson 3—Comparing Data Shown on Box Plots
- Unit 15 Cycle 3 Lessons 1–3—Statistics Performance Task (Family Vacation)

Lessons in other grade levels:

- Algebra 1 Unit 10 Cycle 1 Lesson 1—Dot Plots, Histograms, and Box Plots

B. use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution;

- Unit 15 Cycle 1 Lesson 1—Describing the Distribution of Numerical Data
- Unit 15 Cycle 1 Lesson 2—Creating a Box Plot
- Unit 15 Cycle 2 Lesson 1—Measures of Center 1
- Unit 15 Cycle 2 Lesson 2—Measures of Center 2
- Unit 15 Cycle 2 Lesson 3—Measures of Variability
- Unit 15 Cycle 2 Lesson 4—Describing Data

<ul style="list-style-type: none"> Unit 15 Cycle 3 Lessons 1–3—Statistics Performance Task (Family Vacation) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 7 Unit 13 Cycle 2 Lesson 1—Find Measures of Center and Variability Algebra 1 Unit 10 Cycle 1 Lesson 2—Summary Statistics
<p>C. summarize numeric data with numerical summaries, including the mean and median (measures of center) and the range and interquartile range (IQR) (measures of spread), and use these summaries to describe the center, spread, and shape of the data distribution; and</p>
<ul style="list-style-type: none"> Unit 15 Cycle 2 Lesson 1—Measures of Center 1 Unit 15 Cycle 2 Lesson 2—Measures of Center 2 Unit 15 Cycle 2 Lesson 3—Measures of Variability Unit 15 Cycle 2 Lesson 4—Describing Data Unit 15 Cycle 3 Lessons 1–3—Statistics Performance Task (Family Vacation) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 7 Unit 13 Cycle 2 Lesson 1—Find Measures of Center and Variability
<p>D. summarize categorical data with numerical and graphical summaries, including the mode, the percent of values in each category (relative frequency table), and the percent bar graph, and use these summaries to describe the data distribution.</p>
<ul style="list-style-type: none"> Unit 15 Cycle 3 Lessons 1–3—Statistics Performance Task (Family Vacation) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 8 Unit 13 Cycle 2 Lesson 1—Frequency Tables Algebra 1 Unit 10 Cycle 2 Lesson 1—Categorical Data in Frequency Tables
<p>Texas Essential Knowledge and Skills for Mathematics 6.b.13: The student applies mathematical process standards to use numerical or graphical representations to solve problems. The student is expected to:</p>
<p>A. interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots; and</p>
<ul style="list-style-type: none"> Unit 14 Cycle 2 Lesson 2—Numeric Data Unit 14 Cycle 2 Lesson 6—Data Displays <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 7 Unit 13 Cycle 1 Lesson 1—Read and Interpret a Numerical Data Display Algebra 1 Unit 10 Cycle 1 Lesson 3—Interpreting Graphs in Context
<p>B. distinguish between situations that yield data with and without variability.</p>
<ul style="list-style-type: none"> Unit 14 Cycle 1 Lesson 1—Statistical Questions 1 Unit 14 Cycle 1 Lesson 2—Statistical Questions 2 Unit 14 Cycle 1 Lesson 3—Variability

Personal Financial Literacy

Texas Essential Knowledge and Skills for Mathematics 6.b.14: The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

- A. compare the features and costs of a checking account and a debit card offered by different local financial institutions;
- B. distinguish between debit cards and credit cards;
- C. balance a check register that includes deposits, withdrawals, and transfers;
- D. explain why it is important to establish a positive credit history;
- E. describe the information in a credit report and how long it is retained;
- F. describe the value of credit reports to borrowers and to lenders;
- G. explain various methods to pay for college, including through savings, grants, scholarships, student loans, and work-study; and
- H. compare the annual salary of several occupations requiring various levels of post-secondary education or vocational training and calculate the effects of the different annual salaries on lifetime income.

Although PowerTeaching Math 3rd Edition doesn't include lessons dedicated to the specific financial literacy standards, it does include many lessons on related real-world personal financial topics.

- Grade 6 Unit 2 Cycle 3—Computation Skills Performance Task (Starting a Food Truck Business)
- Grade 6 Unit 6 Cycle 3—Ratio and Percent Applications Performance Task (Preparing a Dinner Fundraiser)
- Grade 7 Unit 5 Cycle 1 Lesson 2—Discounts and Markups
- Grade 7 Unit 5 Cycle 1 Lesson 3—Percent Change and Percent Error
- Grade 7 Unit 5 Cycle 1 Lesson 4—Simple Interest
- Grade 7 Unit 5 Cycle 2—Ratios and Percents Performance Task (Starting a Sports Team)
- Grade 8 Unit 10 Cycle 3—Linear Functions Performance Task (Renting vs. Buying a Home)
- Algebra 1 Unit 9 Cycle 2—Modeling Functions Performance Task (Commuting Cost Models)

Section III: Grade 7 Alignment to the Texas Essential Knowledge and Skills for Mathematics

Grade 7	
Number and Operations	
Texas Essential Knowledge and Skills for Mathematics 7.b.2: The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of rational numbers.	
<ul style="list-style-type: none">Unit 2 Cycle 1 Lesson 1—Definition of Rational Numbers	
Texas Essential Knowledge and Skills for Mathematics 7.b.3: The student applies mathematical process standards to add, subtract, multiply, and divide while solving problems and justifying solutions. The student is expected to:	
A. add, subtract, multiply, and divide rational numbers fluently; and	
<ul style="list-style-type: none">Unit 2 Cycle 1 Lesson 4—Adding Rational Numbers 2Unit 2 Cycle 2 Lesson 2—Using Properties to Subtract Rational NumbersUnit 2 Cycle 2 Lesson 3—Subtracting Rational NumbersUnit 2 Cycle 2 Lesson 4—Adding and Subtracting Rational NumbersUnit 3 Cycle 1 Lesson 3—Multiplying Rational NumbersUnit 3 Cycle 1 Lesson 4—Multiplying Rational Numbers to Solve Real-World ProblemsUnit 3 Cycle 2 Lesson 2—Dividing Rational NumbersUnit 3 Cycle 2 Lesson 3—Rational Numbers as DecimalsUnit 3 Cycle 2 Lesson 4—Using the Four operations to Solve Real-World ProblemsUnit 3 Cycle 3 Lessons 1–3—Rational Numbers Performance Task (Underwater Exploration)	

B. apply and extend previous understandings of operations to solve problems using addition, subtraction, multiplication, and division of rational numbers.

- Unit 2 Cycle 1 Lesson 4—Adding Rational Numbers 2
- Unit 2 Cycle 2 Lesson 2—Using Properties to Subtract Rational Numbers
- Unit 2 Cycle 2 Lesson 3—Subtracting Rational Numbers
- Unit 2 Cycle 2 Lesson 4—Adding and Subtracting Rational Numbers
- Unit 3 Cycle 1 Lesson 3—Multiplying Rational Numbers
- Unit 3 Cycle 1 Lesson 4—Multiplying Rational Numbers to Solve Real-World Problems
- Unit 3 Cycle 2 Lesson 2—Dividing Rational Numbers
- Unit 3 Cycle 2 Lesson 3—Rational Numbers as Decimals
- Unit 3 Cycle 2 Lesson 4—Using the Four operations to Solve Real-World Problems
- Unit 3 Cycle 3 Lessons 1–3—Rational Numbers Performance Task (Underwater Exploration)

Proportionality

Texas Essential Knowledge and Skills for Mathematics 7.b.4: The student applies mathematical process standards to represent and solve problems involving proportional relationships. The student is expected to:

A. represent constant rates of change in mathematical and real-world problems given pictorial, tabular, verbal, numeric, graphical, and algebraic representations, including $d = rt$;

- Unit 4 Cycle 2 Lesson 2—Solving Proportions
- Unit 4 Cycle 2 Lesson 3—Proportions in Tables and Graphs
- Unit 4 Cycle 2 Lesson 4—Problem Solving with Proportions 1
- Unit 4 Cycle 3 Lesson 2—Represent a Proportion as an Equation
- Unit 4 Cycle 3 Lesson 3—Interpret Points of a Proportional Relationship
- Unit 4 Cycle 3 Lesson 4—Problem Solving with Proportions 2
- Unit 5 Cycle 2 Lessons 1–3—Ratios and Percents Performance Task (Starting a Sports Team)
- Unit 6 Cycle 1 Lesson 3—Writing Expressions with Percents

Lessons in other grade levels:

- Grade 8 Unit 10 Cycle 2 Lesson 1—Exploring Distance-Time Graphs
- Grade 8 Unit 10 Cycle 2 Lesson 2—Matching Distance-Time Graphs
- Grade 8 Unit 10 Cycle 2 Lesson 3—Comparing Functions 2

<p>B. calculate unit rates from rates in mathematical and real-world problems;</p>
<ul style="list-style-type: none"> • Unit 4 Cycle 1 Lesson 1—Basic Unit Rates • Unit 4 Cycle 1 Lesson 2—Unit Rates with Fractions • Unit 4 Cycle 1 Lesson 3—Problem Solving with Unit Rates • Unit 5 Cycle 2 Lessons 1–3—Ratios and Percents Performance Task (Starting a Sports Team)
<p>C. determine the constant of proportionality ($k = y/x$) within mathematical and real-world problems;</p>
<ul style="list-style-type: none"> • Unit 4 Cycle 3 Lesson 1—Constant of Proportionality • Unit 4 Cycle 3 Lesson 2—Represent a Proportion as an Equation • Unit 4 Cycle 3 Lesson 3—Interpret Points of a Proportional Relationship • Unit 4 Cycle 3 Lesson 4—Problem Solving with Proportions 2 • Unit 5 Cycle 2 Lessons 1–3—Ratios and Percents Performance Task (Starting a Sports Team)
<p>D. solve problems involving ratios, rates, and percents, including multi-step problems involving percent increase and percent decrease, and financial literacy problems; and</p>
<ul style="list-style-type: none"> • Unit 4 Cycle 1 Lesson 3—Problem Solving with Unit Rates • Unit 4 Cycle 2 Lesson 4—Problem Solving with Proportions 1 • Unit 5 Cycle 1 Lesson 1—Understanding Percent • Unit 5 Cycle 1 Lesson 2—Discounts and Markups • Unit 5 Cycle 1 Lesson 3—Percent Change and Percent Error • Unit 5 Cycle 1 Lesson 4—Simple Interest • Unit 5 Cycle 1 Lesson 5—Multistep Percent Problems • Unit 5 Cycle 2 Lessons 1–3—Ratios and Percents Performance Task (Starting a Sports Team)
<p>E. convert between measurement systems, including the use of proportions and the use of unit rates.</p>
<ul style="list-style-type: none"> • Unit 5 Cycle 2 Lessons 1–3—Ratios and Percents Performance Task (Starting a Sports Team) • Unit 6 Cycle 1 Lesson 3—Writing Expressions with Percents <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 6 Unit 12 Cycle 1 Lesson 2—Measurements and Linear Relationships • Grade 6 Unit 12 Cycle 1 Lesson 3—Measurement in Problem Solving
<p>Texas Essential Knowledge and Skills for Mathematics 7.b.5: The student applies mathematical process standards to use geometry to describe or solve problems involving proportional relationships. The student is expected to:</p>
<p>A. generalize the critical attributes of similarity, including ratios within and between similar shapes;</p>

<ul style="list-style-type: none"> • Unit 8 Cycle 1 Lesson 2—Using Scale Drawings to Find Length • Unit 8 Cycle 1 Lesson 5—Using Scale Drawings to Find Volume and Surface Area • Unit 8 Cycle 3 Lessons 1–3—Geometry Performance Task (Bathroom Remodel)
B. describe π as the ratio of the circumference of a circle to its diameter; and
<ul style="list-style-type: none"> • Unit 9 Cycle 1 Lesson 1—Pi and the Parts of Circles
C. solve mathematical and real-world problems involving similar shape and scale drawings.
<ul style="list-style-type: none"> • Unit 8 Cycle 1 Lesson 2—Using Scale Drawings to Find Length • Unit 8 Cycle 1 Lesson 3—Completing Scale Drawings • Unit 8 Cycle 1 Lesson 4—Using Scale Drawings to Find Area and Perimeter • Unit 8 Cycle 1 Lesson 5—Using Scale Drawings to Find Volume and Surface Area • Unit 8 Cycle 3 Lessons 1–3—Geometry Performance Task (Bathroom Remodel)
Texas Essential Knowledge and Skills for Mathematics 7.b.6: The student applies mathematical process standards to use probability and statistics to describe or solve problems involving proportional relationships. The student is expected to:
A. represent sample spaces for simple and compound events using lists and tree diagrams;
<ul style="list-style-type: none"> • Unit 2 Cycle 2 Lesson 5—Think Like a Mathematician: Build a Math Model 1 • Unit 11 Cycle 2 Lesson 1—Probability of Independent Compound Events • Unit 11 Cycle 2 Lesson 4—Independent and Dependent Events • Unit 11 Cycle 3 Lessons 1–3—Probability Performance Task (Consumer Contest)
B. select and use different simulations to represent simple and compound events with and without technology;
<ul style="list-style-type: none"> • Unit 11 Cycle 2 Lesson 1—Probability of Independent Compound Events • Unit 11 Cycle 2 Lesson 4—Independent and Dependent Events • Unit 11 Cycle 3 Lessons 1–3—Probability Performance Task (Consumer Contest)

<p>C. make predictions and determine solutions using experimental data for simple and compound events;</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 2 Lesson 2—Uniform Experimental Probability • Unit 11 Cycle 2 Lesson 3—Nonuniform Experimental Probability • Unit 11 Cycle 2 Lesson 4—Independent and Dependent Events • Unit 11 Cycle 3 Lessons 1–3—Probability Performance Task (Consumer Contest)
<p>D. make predictions and determine solutions using theoretical probability for simple and compound events;</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 1—Understanding Probability • Unit 11 Cycle 1 Lesson 2—Decimal and Percent Probability • Unit 11 Cycle 1 Lesson 3—Describing Probability • Unit 11 Cycle 2 Lesson 1—Probability of Independent Compound Events • Unit 11 Cycle 2 Lesson 2—Uniform Experimental Probability • Unit 11 Cycle 2 Lesson 3—Nonuniform Experimental Probability • Unit 11 Cycle 2 Lesson 4—Independent and Dependent Events • Unit 11 Cycle 3 Lessons 1–3—Probability Performance Task (Consumer Contest)
<p>E. find the probabilities of a simple event and its complement and describe the relationship between the two;</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 2—Decimal and Percent Probability • Unit 11 Cycle 2 Lesson 4—Independent and Dependent Events • Unit 11 Cycle 3 Lessons 1–3—Probability Performance Task (Consumer Contest)
<p>F. use data from a random sample to make inferences about a population;</p>
<ul style="list-style-type: none"> • Unit 12 Cycle 1 Lesson 1—Understanding Random Sampling • Unit 12 Cycle 1 Lesson 2—Characteristics of Random Sampling • Unit 12 Cycle 1 Lesson 3—Good vs. Bad Random Samples • Unit 12 Cycle 2 Lesson 1—Analyzing a Random Sample • Unit 12 Cycle 2 Lesson 2—Creating a Random Sample • Unit 12 Cycle 2 Lesson 3—Conducting a Survey of a Random Sample

G. solve problems using data represented in bar graphs, dot plots, and circle graphs, including part-to-whole and part-to-part comparisons and equivalents;
Lessons in other grade levels: <ul style="list-style-type: none"> Grade 6 Unit 14 Cycle 2 Lesson 1—Categorical Data
H. solve problems using qualitative and quantitative predictions and comparisons from simple experiments; and
<ul style="list-style-type: none"> Unit 11 Cycle 2 Lesson 4—Independent and Dependent Events Unit 11 Cycle 3 Lessons 1–3—Probability Performance Task (Consumer Contest) Unit 13 Cycle 1 Lesson 2—Compare and Contrast Number Data
I. determine experimental and theoretical probabilities related to simple and compound events using data and sample spaces.
<ul style="list-style-type: none"> Unit 11 Cycle 2 Lesson 4—Independent and Dependent Events Unit 11 Cycle 3 Lessons 1–3—Probability Performance Task (Consumer Contest)

Expressions, Equations, and Relationships
Texas Essential Knowledge and Skills for Mathematics 7.b.7: The student applies mathematical process standards to represent linear relationships using multiple representations. The student is expected to represent linear relationships using verbal descriptions, tables, graphs, and equations that simplify to the form $y = mx + b$.
<ul style="list-style-type: none"> Unit 6 Cycle 1 Lesson 5—Writing and Evaluating Expressions
Texas Essential Knowledge and Skills for Mathematics 7.b.8: The student applies mathematical process standards to develop geometric relationships with volume. The student is expected to:
A. model the relationship between the volume of a rectangular prism and a rectangular pyramid having both congruent bases and heights and connect that relationship to the formulas;
<ul style="list-style-type: none"> Unit 10 Cycle 1 Lesson 2—Volume of Pyramids
B. explain verbally and symbolically the relationship between the volume of a triangular prism and a triangular pyramid having both congruent bases and heights and connect that relationship to the formulas; and
<ul style="list-style-type: none"> Unit 10 Cycle 1 Lesson 2—Volume of Pyramids

<p>C. use models to determine the approximate formulas for the circumference and area of a circle and connect the models to the actual formulas.</p>
<ul style="list-style-type: none"> Unit 9 Cycle 1 Lesson 3—Area of Circles
<p>Texas Essential Knowledge and Skills for Mathematics 7.b.9: The student applies mathematical process standards to solve geometric problems. The student is expected to:</p>
<p>A. solve problems involving the volume of rectangular prisms, triangular prisms, rectangular pyramids, and triangular pyramids;</p>
<ul style="list-style-type: none"> Unit 10 Cycle 1 Lesson 1—Volume of Prisms Unit 10 Cycle 1 Lesson 2—Volume of Pyramids Unit 10 Cycle 1 Lesson 4—Problem Solving with Volume
<p>B. determine the circumference and area of circles;</p>
<ul style="list-style-type: none"> Unit 9 Cycle 1 Lesson 2—Circumference Unit 9 Cycle 1 Lesson 3—Area of Circles Unit 9 Cycle 1 Lesson 4—Problem Solving with Circles
<p>C. determine the area of composite figures containing combinations of rectangles, squares, parallelograms, trapezoids, triangles, semicircles, and quarter circles; and</p>
<p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 6 Unit 12 Cycle 2 Lesson 4—Area of Complex Shapes
<p>D. solve problems involving the lateral and total surface area of a rectangular prism, rectangular pyramid, triangular prism, and triangular pyramid by determining the area of the shape's net.</p>
<ul style="list-style-type: none"> Unit 8 Cycle 1 Lesson 4—Using Scale Drawings to Find Area and Perimeter Unit 10 Cycle 2 Lesson 1—Surface Area of Prisms Unit 10 Cycle 2 Lesson 2—Surface Area of Pyramids Unit 10 Cycle 2 Lesson 4—Problem Solving with Surface Area <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 6 Unit 13 Cycle 2 Lesson 1—Nets Grade 6 Unit 13 Cycle 2 Lesson 2—Surface Area of Prisms Grade 6 Unit 13 Cycle 2 Lesson 3—Surface Area of Pyramids

<p>Texas Essential Knowledge and Skills for Mathematics 7.b.10: The student applies mathematical process standards to use one-variable equations and inequalities to represent situations. The student is expected to:</p>
<p>A. write one-variable, two-step equations and inequalities to represent constraints or conditions within problems;</p>
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 4—Writing and Solving Inequalities for Real-World Situations
<p>B. represent solutions for one-variable, two-step equations and inequalities on number lines; and</p>
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 1—Solving Single-Step Inequalities
<p>C. write a corresponding real-world problem given a one-variable, two-step equation or inequality.</p>
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 1—Solving Single-Step Inequalities
<p>Texas Essential Knowledge and Skills for Mathematics 7.b.11: The student applies mathematical process standards to solve one-variable equations and inequalities. The student is expected to:</p>
<p>A. model and solve one-variable, two-step equations and inequalities;</p>
<ul style="list-style-type: none"> Unit 7 Cycle 1 Lesson 1—Solving Two-Step Equations Unit 7 Cycle 2 Lesson 1—Solving Single-Step Inequalities Unit 7 Cycle 2 Lesson 2—Solving Multiple-Step Inequalities Unit 7 Cycle 2 Lesson 3—Solving Inequalities to Answer Questions <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 8 Unit 8 Cycle 1 Lesson 1—Solving Linear Equations 1
<p>B. determine if the given value(s) make(s) one-variable, two-step equations and inequalities true; and</p>
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 1—Solving Single-Step Inequalities Unit 7 Cycle 2 Lesson 2—Solving Multiple-Step Inequalities Unit 7 Cycle 2 Lesson 3—Solving Inequalities to Answer Questions
<p>C. write and solve equations using geometry concepts, including the sum of the angles in a triangle, and angle relationships.</p>
<ul style="list-style-type: none"> Unit 9 Cycle 2 Lesson 2—Complementary and Supplementary Angles Unit 9 Cycle 2 Lesson 3—Adjacent and Vertical Angles Unit 9 Cycle 2 Lesson 4—Problem Solving with Angles <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 8 Unit 8 Cycle 1 Lesson 2—Solving Geometric Equations <p>Lessons that review earlier related standards:</p> <ul style="list-style-type: none"> Grade 7 Unit 9 Cycle 2 Lesson 1—Identifying Types of Angles (TEKS 4.b.6.C, 4.b.6.D)

Measurement and Data	
Texas Essential Knowledge and Skills for Mathematics 7.b.12: The student applies mathematical process standards to use statistical representations to analyze data. The student is expected to:	
A.	compare two groups of numeric data using comparative dot plots or box plots by comparing their shapes, centers, and spreads;
	<ul style="list-style-type: none"> • Unit 13 Cycle 1 Lesson 2—Compare and Contrast Number Data • Unit 13 Cycle 1 Lesson 3—Compare and Contrast Graphs • Unit 13 Cycle 2 Lesson 2—Compare and Contrast Measures of Center • Unit 13 Cycle 2 Lesson 3—Compare and Contrast Measures of Variability • Unit 13 Cycle 2 Lesson 4—Problem Solving with Data Distributions <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 6 Unit 15 Cycle 1 Lesson 3—Comparing Data Shown on Box Plots
B.	use data from a random sample to make inferences about a population; and
	<ul style="list-style-type: none"> • Unit 11 Cycle 2 Lesson 1—Analyzing a Random Sample • Unit 11 Cycle 2 Lesson 2—Creating a Random Sample • Unit 11 Cycle 2 Lesson 3—Conducting a Survey of a Random Sample • Unit 13 Cycle 2 Lesson 4—Problem Solving with Data Distributions
C.	compare two populations based on data in random samples from these populations, including informal comparative inferences about differences between the two populations.
	<ul style="list-style-type: none"> • Unit 13 Cycle 2 Lesson 4—Problem Solving with Data Distributions

Personal Financial Literacy

Texas Essential Knowledge and Skills for Mathematics 7.b.13: The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

- A. calculate the sales tax for a given purchase and calculate income tax for earned wages;
- B. identify the components of a personal budget, including income; planned savings for college, retirement, and emergencies; taxes; and fixed and variable expenses, and calculate what percentage each category comprises of the total budget;
- C. create and organize a financial assets and liabilities record and construct a net worth statement;
- D. use a family budget estimator to determine the minimum household budget and average hourly wage needed for a family to meet its basic needs in the student's city or another large city nearby;
- E. calculate and compare simple interest and compound interest earnings; and
- F. analyze and compare monetary incentives, including sales, rebates, and coupons.

Although PowerTeaching Math 3rd Edition doesn't include lessons dedicated to the specific financial literacy standards, it does include many lessons on related real-world personal financial topics.

- Grade 6 Unit 2 Cycle 3—Computation Skills Performance Task (Starting a Food Truck Business)
- Grade 6 Unit 6 Cycle 3—Ratio and Percent Applications Performance Task (Preparing a Dinner Fundraiser)
- Grade 7 Unit 5 Cycle 1 Lesson 2—Discounts and Markups
- Grade 7 Unit 5 Cycle 1 Lesson 3—Percent Change and Percent Error
- Grade 7 Unit 5 Cycle 1 Lesson 4—Simple Interest
- Grade 7 Unit 5 Cycle 2—Ratios and Percents Performance Task (Starting a Sports Team)
- Grade 8 Unit 10 Cycle 3—Linear Functions Performance Task (Renting vs. Buying a Home)
Algebra 1 Unit 9 Cycle 2—Modeling Functions Performance Task (Commuting Cost Models)

Section IV: Grade 8 Alignment to the Texas Essential Knowledge and Skills for Mathematics

Grade 8	
Number and Operations	
Texas Essential Knowledge and Skills for Mathematics 8.b.2: The student applies mathematical process standards to represent and use real numbers in a variety of forms. The student is expected to:	
A.	extend previous knowledge of sets and subsets using a visual representation to describe relationships between sets of real numbers;
	<ul style="list-style-type: none"> • Unit 2 Cycle 1 Lesson 1—Defining Irrational Numbers • Unit 2 Cycle 1 Lesson 2—Classifying Numbers • Unit 2 Cycle 1 Lesson 3—Converting a Decimal Expansion
B.	approximate the value of an irrational number, including π and square roots of numbers less than 225, and locate that rational number approximation on a number line;
	<ul style="list-style-type: none"> • Unit 2 Cycle 1 Lesson 4—Ordering Rational and Irrational Numbers • Unit 2 Cycle 1 Lesson 5—Estimating and Comparing Irrational Expressions • Unit 3 Cycle 3 Lessons 1–3—Rational and Irrational Numbers Performance Task (Volcano Exploration)
C.	convert between standard decimal notation and scientific notation; and
	<ul style="list-style-type: none"> • Unit 3 Cycle 2 Lesson 1—Estimating with Powers of 10 • Unit 3 Cycle 2 Lesson 2—Scientific Notation 1 • Unit 3 Cycle 2 Lesson 3—Scientific Notation 2 • Unit 3 Cycle 3 Lessons 1–3—Rational and Irrational Numbers Performance Task (Volcano Exploration) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Algebra 1 Unit 2 Cycle 2 Lesson 2—Quantities in Scientific Notation
D.	order a set of real numbers arising from mathematical and real-world contexts.
	<ul style="list-style-type: none"> • Unit 2 Cycle 1 Lesson 4—Ordering Rational and Irrational Numbers • Unit 2 Cycle 1 Lesson 5—Estimating and Comparing Irrational Expressions • Unit 3 Cycle 3 Lessons 1–3—Rational and Irrational Numbers Performance Task (Volcano Exploration)

Proportionality	
Texas Essential Knowledge and Skills for Mathematics 8.b.3: The student applies mathematical process standards to use proportional relationships to describe dilations. The student is expected to:	
A. generalize that the ratio of corresponding sides of similar shapes are proportional, including a shape and its dilation;	
	<ul style="list-style-type: none"> • Unit 6 Cycle 2 Lesson 2—Real-World Scale Problems • Unit 6 Cycle 2 Lesson 3—Dilations on the Coordinate Plane • Unit 6 Cycle 2 Lesson 4—Verifying Similarity
B. compare and contrast the attributes of a shape and its dilation(s) on a coordinate plane; and	
	<ul style="list-style-type: none"> • Unit 6 Cycle 2 Lesson 2—Real-World Scale Problems • Unit 6 Cycle 2 Lesson 3—Dilations on the Coordinate Plane • Unit 6 Cycle 2 Lesson 4—Verifying Similarity
C. use an algebraic representation to explain the effect of a given positive rational scale factor applied to two-dimensional figures on a coordinate plane with the origin as the center of dilation.	
	<ul style="list-style-type: none"> • Unit 6 Cycle 2 Lesson 2—Real-World Scale Problems • Unit 6 Cycle 2 Lesson 3—Dilations on the Coordinate Plane • Unit 6 Cycle 2 Lesson 4—Verifying Similarity
Texas Essential Knowledge and Skills for Mathematics 8.b.4: The student applies mathematical process standards to explain proportional and non-proportional relationships involving slope. The student is expected to:	
A. use similar right triangles to develop an understanding that slope, m , given as the rate comparing the change in y -values to the change in x -values, $\frac{(y_2 - y_1)}{(x_2 - x_1)}$, is the same for any two points (x_1, y_1) and (x_2, y_2) on the same line;	
	<ul style="list-style-type: none"> • Unit 7 Cycle 2 Lesson 2—Triangles and Slope
B. graph proportional relationships, interpreting the unit rate as the slope of the line that models the relationship; and	
	<ul style="list-style-type: none"> • Unit 7 Cycle 1 Lesson 1—Analyzing Graphs of Proportional Relationships • Unit 7 Cycle 1 Lesson 2—Finding the Slope of Proportional Relationships • Unit 7 Cycle 1 Lesson 3—Comparing Proportional Relationships

C. use data from a table or graph to determine the rate of change or slope and y -intercept in mathematical and real-world problems.
<ul style="list-style-type: none"> Unit 7 Cycle 1 Lesson 2—Finding the Slope of Proportional Relationships Unit 7 Cycle 1 Lesson 3—Comparing Proportional Relationships
Texas Essential Knowledge and Skills for Mathematics 8.b.5: The student applies mathematical process standards to use proportional and non-proportional relationships to develop foundational concepts of functions. The student is expected to:
A. represent linear proportional situations with tables, graphs, and equations in the form of $y = kx$;
<ul style="list-style-type: none"> Unit 7 Cycle 1 Lesson 1—Analyzing Graphs of Proportional Relationships Unit 7 Cycle 1 Lesson 2—Finding the Slope of Proportional Relationships Unit 7 Cycle 1 Lesson 3—Comparing Proportional Relationships
B. represent linear non-proportional situations with tables, graphs, and equations in the form of $y = mx + b$, where $b \neq 0$;
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 1—Exploring Linear Relationships
C. contrast bivariate sets of data that suggest a linear relationship with bivariate sets of data that do not suggest a linear relationship from a graphical representation;
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 1—Exploring Linear Relationships Unit 13 Cycle 1 Lesson 1—Constructing and Interpreting Scatterplots Unit 13 Cycle 1 Lesson 3—Linear vs. Nonlinear Associations 1
D. use a trend line that approximates the linear relationship between bivariate sets of data to make predictions;
<ul style="list-style-type: none"> Unit 13 Cycle 1 Lesson 2—Lines of Best Fit Unit 13 Cycle 1 Lesson 3—Linear vs. Nonlinear Associations 1 Unit 13 Cycle 1 Lesson 4—Linear vs. Nonlinear Associations 2
E. solve problems involving direct variation;
<ul style="list-style-type: none"> Unit 11 Cycle 1 Lesson 1—Introduction to Simultaneous Linear Equations Unit 11 Cycle 1 Lesson 2—Solving Simultaneous Linear Equations 1 Unit 11 Cycle 1 Lesson 3—Solving Simultaneous Linear Equations 2 Unit 11 Cycle 1 Lesson 4—Problem Solving with Simultaneous Linear Equations
F. distinguish between proportional and non-proportional situations using tables, graphs, and equations in the form $y = kx$ or $y = mx + b$, where $b \neq 0$;

<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 1—Exploring Linear Relationships <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 7 Unit 4 Cycle 2 Lesson 1—Defining Proportional Relationships
G. identify functions using sets of ordered pairs, tables, mappings, and graphs;
<ul style="list-style-type: none"> Unit 9 Cycle 1 Lesson 1—Definition of a Function Unit 10 Cycle 3 Lessons 1–3—Linear Functions Performance Task (Renting vs. Buying a Home) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Algebra 1 Unit 6 Cycle 1 Lesson 1—Defining Functions
H. identify examples of proportional and non-proportional functions that arise from mathematical and real-world problems; and
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 4—Linear Graphs and Real-World Situations
I. write an equation in the form $y = mx + b$ to model a linear relationship between two quantities using verbal, numerical, tabular, and graphical representations.
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lesson 3—Finding the Slope and the Equation Unit 7 Cycle 2 Lesson 4—Linear Graphs and Real-World Situations

Expressions, Equations, and Relationships

Texas Essential Knowledge and Skills for Mathematics 8.b.6: The student applies mathematical process standards to develop mathematical relationships and make connections to geometric formulas. The student is expected to:

A. describe the volume formula $V = Bh$ of a cylinder in terms of its base area and its height;

This standard is covered by lessons in other grade levels:

- Grade 7 Unit 10 Cycle 1 Lesson 3—Volume of Cones and Cylinders
- Grade 7 Unit 10 Cycle 1 Lesson 4—Problem Solving with Volume

B. model the relationship between the volume of a cylinder and a cone having both congruent bases and heights and connect that relationship to the formulas; and

This standard is covered by lessons in other grade levels:

- Grade 7 Unit 10 Cycle 1 Lesson 3—Volume of Cones and Cylinders
- Grade 7 Unit 10 Cycle 1 Lesson 4—Problem Solving with Volume

C. use models and diagrams to explain the Pythagorean Theorem.

- Unit 4 Cycle 1 Lesson 1—Exploring Right Triangles
- Unit 4 Cycle 2 Lesson 4—Problem Solving with the Pythagorean Theorem
- Unit 6 Cycle 3 Lessons 1–3—Geometry Performance Task (Architecture, Maps, and Art)

Lessons in other grade levels:

- Algebra 1 Unit 14 Cycle 1 Lesson 1—The Pythagorean Theorem and Its Converse

Texas Essential Knowledge and Skills for Mathematics 8.b.7: The student applies mathematical process standards to use geometry to solve problems. The student is expected to:

A. solve problems involving the volume of cylinders, cones, and spheres;

- Unit 12 Cycle 1 Lesson 1—Volume of Cylinders
- Unit 12 Cycle 1 Lesson 2—Volume of Cones
- Unit 12 Cycle 1 Lesson 3—Volume of Spheres
- Unit 12 Cycle 1 Lesson 4—Problem Solving with Volume
- Unit 12 Cycle 2 Lesson 1—Percent and Fractional Volume
- Unit 12 Cycle 2 Lesson 2—Is Volume Additive?
- Unit 12 Cycle 2 Lesson 3—Measuring Volume with Objects
- Unit 12 Cycle 2 Lesson 4—Filling Containers

Lessons in other grade levels:

- Grade 7 Unit 10 Cycle 1 Lesson 3—Volume of Cones and Cylinders
- Grade 7 Unit 10 Cycle 1 Lesson 4—Problem Solving with Volume

B. use previous knowledge of surface area to make connections to the formulas for lateral and total surface area and determine solutions for problems involving rectangular prisms, triangular prisms, and cylinders;

Lessons in other grade levels:

- Grade 7 Unit 10 Cycle 2 Lesson 3—Surface Area of Cones and Cylinders
- Grade 7 Unit 10 Cycle 2 Lesson 4—Problem Solving with Surface Area

C. use the Pythagorean Theorem and its converse to solve problems; and

- Unit 4 Cycle 1 Lesson 1—Exploring Right Triangles
- Unit 4 Cycle 1 Lesson 2—The Pythagorean Theorem 1
- Unit 4 Cycle 1 Lesson 3—The Pythagorean Theorem 2
- Unit 4 Cycle 1 Lesson 4—Special Right Triangles
- Unit 4 Cycle 2 Lesson 1—The Converse of the Pythagorean Theorem
- Unit 4 Cycle 2 Lesson 3—The Pythagorean Theorem and 3-D Figures
- Unit 4 Cycle 2 Lesson 4—Problem Solving with the Pythagorean Theorem
- Unit 6 Cycle 3 Lessons 1–3—Geometry Performance Task (Architecture, Maps, and Art)

Lessons in other grade levels:

- Algebra 1 Unit 14 Cycle 1 Lesson 1—The Pythagorean Theorem and Its Converse
- Algebra 1 Unit 14 Cycle 1 Lesson 2—Using the Pythagorean Theorem
- Algebra 1 Unit 14 Cycle 1 Lesson 3—Special Right Triangles

D. determine the distance between two points on a coordinate plane using the Pythagorean Theorem.

- Unit 4 Cycle 2 Lesson 2—The Pythagorean Theorem and the Coordinate System
- Unit 4 Cycle 2 Lesson 4—Problem Solving with the Pythagorean Theorem
- Unit 6 Cycle 3 Lessons 1–3—Geometry Performance Task (Architecture, Maps, and Art)

Lessons in other grade levels:

- Algebra 1 Unit 14 Cycle 1 Lesson 4—The Distance Formula

Texas Essential Knowledge and Skills for Mathematics 8.b.8: The student applies mathematical process standards to use one-variable equations or inequalities in problem situations. The student is expected to:

A. write one-variable equations or inequalities with variables on both sides that represent problems using rational number coefficients and constants;

This standard is covered by lessons in other grade levels:

- Grade 7 Unit 7 Cycle 1 Lesson 3—Writing and Solving Equations for Real-World Situations
- Algebra 1 Unit 3 Cycle 1 Lesson 1—Creating Equations and Inequalities in One Variable

B. write a corresponding real-world problem when given a one-variable equation or inequality with variables on both sides of the equal sign using rational number coefficients and constants;

This standard is covered by lessons in other grade levels:

- Grade 7 Unit 7 Cycle 1 Lesson 3—Writing and Solving Equations for Real-World Situations

C. model and solve one-variable equations with variables on both sides of the equal sign that represent mathematical and real-world problems using rational number coefficients and constants; and

- Unit 8 Cycle 1 Lesson 3—Solving Linear Equations 2

Lessons in other grade levels:

- Grade 7 Unit 7 Cycle 1 Lesson 2—Solving Equations with Rational Numbers
- Grade 7 Unit 7 Cycle 1 Lesson 3—Writing and Solving Equations for Real-World Situations
- Grade 7 Unit 7 Cycle 2 Lesson 2—Solving Multiple-Step Inequalities

D. use informal arguments to establish facts about the angle sum and exterior angle of triangles, the angles created when parallel lines are cut by a transversal, and the angle-angle criterion for similarity of triangles.

- Unit 6 Cycle 1 Lesson 1—Exploring Vertical Angles
- Unit 6 Cycle 1 Lesson 2—Lines and Transversals
- Unit 6 Cycle 1 Lesson 3—Parallel Lines
- Unit 6 Cycle 1 Lesson 4—Triangle Angle Sum Theorem
- Unit 6 Cycle 2 Lesson 1—Reasoning with Similar Triangles
- Unit 6 Cycle 2 Lesson 2—Real-World Scale Problems

Texas Essential Knowledge and Skills for Mathematics 8.b.9: The student applies mathematical process standards to use multiple representations to develop foundational concepts of simultaneous linear equations. The student is expected to identify and verify the values of x and y that simultaneously satisfy two linear equations in the form $y = mx + b$ from the intersections of the graphed equations.

- Unit 11 Cycle 1 Lesson 1—Introduction to Simultaneous Linear Equations
- Unit 11 Cycle 1 Lesson 2—Solving Simultaneous Linear Equations 1
- Unit 11 Cycle 1 Lesson 3—Solving Simultaneous Linear Equations 2
- Unit 11 Cycle 1 Lesson 4—Problem Solving with Simultaneous Linear Equations
- Unit 11 Cycle 2 Lesson 1—Writing Equations for Given Intersecting Lines
- Unit 11 Cycle 2 Lesson 2—Graphing Lines for a Given Solution
- Unit 11 Cycle 2 Lesson 3—Solving Systems of Linear Equations for Real-World Situations
- Unit 11 Cycle 2 Lesson 4—Graphing Systems of Linear Equations for Real-World Situations

Two-Dimensional Shapes	
Texas Essential Knowledge and Skills for Mathematics 8.b.10: The student applies mathematical process standards to develop transformational geometry concepts. The student is expected to:	
A.	generalize the properties of orientation and congruence of rotations, reflections, translations, and dilations of two-dimensional shapes on a coordinate plane;
	<ul style="list-style-type: none"> • Unit 5 Cycle 1 Lesson 1—Experimenting with Translations • Unit 5 Cycle 1 Lesson 2—Experimenting with Reflections • Unit 5 Cycle 1 Lesson 3—Experimenting with Rotations • Unit 5 Cycle 1 Lesson 4—Rotations and Circles • Unit 6 Cycle 3 Lessons 1–3—Geometry Performance Task (Architecture, Maps, and Art)
B.	differentiate between transformations that preserve congruence and those that do not;
	<ul style="list-style-type: none"> • Unit 5 Cycle 2 Lesson 4—Verifying Congruence • Unit 6 Cycle 3 Lessons 1–3—Geometry Performance Task (Architecture, Maps, and Art)
C.	explain the effect of translations, reflections over the x - or y -axis, and rotations limited to 90° , 180° , 270° , and 360° as applied to two-dimensional shapes on a coordinate plane using an algebraic representation; and
	<ul style="list-style-type: none"> • Unit 5 Cycle 1 Lesson 2—Experimenting with Reflections • Unit 5 Cycle 1 Lesson 3—Experimenting with Rotations • Unit 5 Cycle 1 Lesson 4—Rotations and Circles • Unit 5 Cycle 2 Lesson 1—The Effects of Transformations • Unit 5 Cycle 2 Lesson 2—Reasoning About Transformations • Unit 5 Cycle 2 Lesson 3—Combining Transformations • Unit 6 Cycle 2 Lesson 3—Dilations on the Coordinate Plane • Unit 6 Cycle 2 Lesson 4—Verifying Similarity • Unit 6 Cycle 3 Lessons 1–3—Geometry Performance Task (Architecture, Maps, and Art)
D.	model the effect on linear and area measurements of dilated two-dimensional shapes.
	<ul style="list-style-type: none"> • Unit 6 Cycle 2 Lesson 3—Dilations on the Coordinate Plane • Unit 6 Cycle 2 Lesson 4—Verifying Similarity • Unit 6 Cycle 3 Lessons 1–3—Geometry Performance Task (Architecture, Maps, and Art)

Measurement and Data

Texas Essential Knowledge and Skills for Mathematics 8.b.11: The student applies mathematical process standards to use statistical procedures to describe data. The student is expected to:

A. construct a scatterplot and describe the observed data to address questions of association such as linear, non-linear, and no association between bivariate data;

- Unit 13 Cycle 1 Lesson 1—Constructing and Interpreting Scatterplots
- Unit 13 Cycle 1 Lesson 2—Lines of Best Fit
- Unit 13 Cycle 1 Lesson 3—Linear vs. Nonlinear Associations 1
- Unit 13 Cycle 1 Lesson 4—Linear vs. Nonlinear Associations 2
- Unit 13 Cycle 1 Lesson 5—Problem Solving with Scatterplots
- Unit 13 Cycle 3 Lessons 1–3—Real-World Data Associations (Analyzing Survey Data)

Lessons in other grade levels:

- Algebra 1 Unit 10 Cycle 2 Lesson 2—Constructing Scatter Plots for Bivariate Data
- Algebra 1 Unit 10 Cycle 2 Lesson 4—Line of Best Fit

B. determine the mean absolute deviation and use this quantity as a measure of the average distance data are from the mean using a data set of no more than 10 data points; and

This standard is covered by lessons in other grade levels:

- Grade 6 Unit 15 Cycle 2 Lesson 3—Measures of Variability

C. simulate generating random samples of the same size from a population with known characteristics to develop the notion of a random sample being representative of the population from which it was selected.

This standard is covered by lessons in other grade levels:

- Grade 7 Unit 12 Cycle 1 Lesson 1—Understanding Random Sampling
- Grade 7 Unit 12 Cycle 1 Lesson 2—Characteristics of Random Sampling
- Grade 7 Unit 12 Cycle 1 Lesson 3—Good vs. Bad Random Samples
- Grade 7 Unit 12 Cycle 2 Lesson 1—Analyzing a Random Sample
- Grade 7 Unit 12 Cycle 2 Lesson 2—Creating a Random Sample
- Grade 7 Unit 12 Cycle 2 Lesson 3—Conducting a Survey of a Random Sample

Personal Financial Literacy

Texas Essential Knowledge and Skills for Mathematics 8.b.12: The student applies mathematical process standards to develop an economic way of thinking and problem solving useful in one's life as a knowledgeable consumer and investor. The student is expected to:

- A. solve real-world problems comparing how interest rate and loan length affect the cost of credit;
- B. calculate the total cost of repaying a loan, including credit cards and easy access loans, under various rates of interest and over different periods using an online calculator;
- C. explain how small amounts of money invested regularly, including money saved for college and retirement, grow over time;
- D. calculate and compare simple interest and compound interest earnings;
- E. identify and explain the advantages and disadvantages of different payment methods;
- F. analyze situations to determine if they represent financially responsible decisions and identify the benefits of financial responsibility and the costs of financial irresponsibility; and
- G. estimate the cost of a two-year and four-year college education, including family contribution, and devise a periodic savings plan for accumulating the money needed to contribute to the total cost of attendance for at least the first year of college.

Although PowerTeaching Math 3rd Edition doesn't include lessons dedicated to the specific financial literacy standards, it does include many lessons on related real-world personal financial topics.

- Grade 6 Unit 2 Cycle 3—Computation Skills Performance Task (Starting a Food Truck Business)
- Grade 6 Unit 6 Cycle 3—Ratio and Percent Applications Performance Task (Preparing a Dinner Fundraiser)
- Grade 7 Unit 5 Cycle 1 Lesson 2—Discounts and Markups
- Grade 7 Unit 5 Cycle 1 Lesson 3—Percent Change and Percent Error
- Grade 7 Unit 5 Cycle 1 Lesson 4—Simple Interest
- Grade 7 Unit 5 Cycle 2—Ratios and Percents Performance Task (Starting a Sports Team)
- Grade 8 Unit 10 Cycle 3—Linear Functions Performance Task (Renting vs. Buying a Home)

Algebra 1 Unit 9 Cycle 2—Modeling Functions Performance Task (Commuting Cost Models)

Section V: Algebra 1 Alignment to the Texas Essential Knowledge and Skills for Mathematics

In PowerTeaching Math 3rd Edition, the Algebra 1 curriculum is intended for eighth-grade students on an accelerated track in mathematics. This course is traditional algebra 1 high school content plus key content from the grade 8 standards, including the Pythagorean Theorem and the introduction to functions. Note that the Grade 8 Alignment to the Texas Essential Knowledge and Skills above (Section IV) indicates where the PowerTeaching Math Algebra 1 course covers grade 8 standards. Content covered in this Algebra 1 course does not include all Algebra or high school standards.

Algebra 1	
Linear Functions, Equations, and Inequalities	
<p>Texas Essential Knowledge and Skills for Mathematics A1.c.2: The student applies the mathematical process standards when using properties of linear functions to write and represent in multiple ways, with and without technology, linear equations, inequalities, and systems of equations. The student is expected to:</p>	
<p>A. determine the domain and range of a linear function in mathematical problems; determine reasonable domain and range values for real-world situations, both continuous and discrete; and represent domain and range using inequalities;</p>	
	<ul style="list-style-type: none"> • Unit 3 Cycle 1 Lesson 3—Representing Constraints • Unit 3 Cycle 3 Lessons 1–3—Equations and Inequalities Performance Task (Planning Healthy Menus) • Unit 6 Cycle 1 Lesson 2—Domain and Range • Unit 7 Cycle 1 Lesson 3—Functions and Graphs 2 • Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>B. write linear equations in two variables in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$, given one point and the slope and given two points;</p>	
	<ul style="list-style-type: none"> • Unit 3 Cycle 3 Lessons 1–3—Equations and Inequalities Performance Task (Planning Healthy Menus) • Unit 9 Cycle 1 Lesson 2—Fitting Linear and Exponential Functions to the Same Points • Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) • Unit 11 Cycle 1 Lesson 3—Rewriting Quadratic and Exponential Expressions • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects) • Unit 14 Cycle 2 Lessons 1–3—Functions in Context Performance Task (Genetics in Medicine)
<p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 8 Unit 11 Cycle 2 Lesson 1—Writing Equations for Given Intersecting Lines 	

C. write linear equations in two variables given a table of values, a graph, and a verbal description;
<ul style="list-style-type: none"> • Unit 3 Cycle 1 Lesson 2—Creating Equations in Two Variables • Unit 3 Cycle 1 Lesson 3—Representing Constraints • Unit 3 Cycle 3 Lessons 1–3—Equations and Inequalities Performance Task (Planning Healthy Menus) • Unit 9 Cycle 1 Lesson 3—Constructing Linear and Exponential Functions • Unit 9 Cycle 1 Lesson 4—Comparing Linear and Exponential Function Models • Unit 9 Cycle 1 Lesson 5—Interpreting Parameters of Linear and Exponential Functions • Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects) • Unit 14 Cycle 2 Lessons 1–3—Functions in Context Performance Task (Genetics in Medicine) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 8 Unit 10 Cycle 1 Lesson 1—Representing Functions • Grade 8 Unit 11 Cycle 2 Lesson 1—Writing Equations for Given Intersecting Lines
D. write and solve equations involving direct variation;
<ul style="list-style-type: none"> • Unit 3 Cycle 3 Lessons 1–3—Equations and Inequalities Performance Task (Planning Healthy Menus) • Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
E. write the equation of a line that contains a given point and is parallel to a given line;
This standard is not covered.
F. write the equation of a line that contains a given point and is perpendicular to a given line;
This standard is not covered.
G. write an equation of a line that is parallel or perpendicular to the X or Y axis and determine whether the slope of the line is zero or undefined;
This standard is not covered.

H. write linear inequalities in two variables given a table of values, a graph, and a verbal description; and
<ul style="list-style-type: none">• Unit 3 Cycle 1 Lesson 2—Creating Equations in Two Variables• Unit 3 Cycle 1 Lesson 3—Representing Constraints• Unit 5 Cycle 3 Lesson 2—Solutions to Inequalities in Context• Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models)• Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)• Unit 14 Cycle 2 Lessons 1–3—Functions in Context Performance Task (Genetics in Medicine)
I. write systems of two linear equations given a table of values, a graph, and a verbal description.
<ul style="list-style-type: none">• Unit 5 Cycle 2 Lesson 4—Problem Solving with Systems of Equations• Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models)• Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none">• Grade 8 Unit 11 Cycle 2 Lesson 3—Solving Systems of Linear Equations for Real-World Situations• Grade 8 Unit 11 Cycle 2 Lesson 4—Graphing Systems of Linear Equations for Real-World Situations

Texas Essential Knowledge and Skills for Mathematics A1.c.3: The student applies the mathematical process standards when using graphs of linear functions, key features, and related transformations to represent in multiple ways and solve, with and without technology, equations, inequalities, and systems of equations. The student is expected to:

A. determine the slope of a line given a table of values, a graph, two points on the line, and an equation written in various forms, including $y = mx + b$, $Ax + By = C$, and $y - y_1 = m(x - x_1)$;

- Unit 6 Cycle 2 Lesson 1—Linear Functions
- Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models)
- Unit 10 Cycle 3 Lesson 1—Interpreting Slope and Intercept of a Linear Function in Context
- Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

Lessons in other grade levels:

- Grade 8 Unit 10 Cycle 1 Lesson 3—Rate of Change and Initial Values of a Function

B. calculate the rate of change of a linear function represented tabularly, graphically, or algebraically in context of mathematical and real-world problems;

- Unit 7 Cycle 1 Lesson 1—Rate of Change
- Unit 9 Cycle 1 Lesson 1—Exponential and Linear Patterns of Growth
- Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models)
- Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

Lessons in other grade levels:

- Grade 8 Unit 10 Cycle 1 Lesson 3—Rate of Change and Initial Values of a Function

C. graph linear functions on the coordinate plane and identify key features, including x -intercept, y -intercept, zeros, and slope, in mathematical and real-world problems;

- Unit 3 Cycle 1 Lesson 2—Creating Equations in Two Variables
- Unit 6 Cycle 2 Lesson 1—Linear Functions
- Unit 6 Cycle 2 Lesson 2—Exponential Functions
- Unit 7 Cycle 1 Lesson 2—Functions and Graphs 1
- Unit 7 Cycle 1 Lesson 3—Functions and Graphs 2
- Unit 8 Cycle 1 Lesson 1—Graphing and Analyzing Linear and Quadratic Functions
- Unit 8 Cycle 1 Lesson 3—Comparing Functions 1
- Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models)
- Unit 13 Cycle 1 Lesson 1—Graphing Linear and Quadratic Functions
- Unit 13 Cycle 1 Lesson 5—Comparing Functions 2
- Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

<p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 8 Unit 10 Cycle 1 Lesson 2—Functions and Real-World Situations
<p>D. graph the solution set of linear inequalities in two variables on the coordinate plane;</p>
<ul style="list-style-type: none"> Unit 5 Cycle 3 Lesson 1—Graphing Linear Inequalities Unit 5 Cycle 3 Lesson 2—Solutions to Inequalities in Context Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 8 Unit 10 Cycle 1 Lesson 2—Functions and Real-World Situations
<p>E. determine the effects on the graph of the parent function $f(x) = x$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d;</p>
<ul style="list-style-type: none"> Unit 8 Cycle 3 Lesson 1—Vertical Translations of Linear Functions Unit 8 Cycle 3 Lesson 3—Scaling Functions Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>F. graph systems of two linear equations in two variables on the coordinate plane and determine the solutions if they exist;</p>
<ul style="list-style-type: none"> Unit 5 Cycle 1 Lesson 3—Graphing Solutions to Systems of Equations Unit 5 Cycle 2 Lesson 3—Solving Systems of Equations Using Graphing Technology Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> Grade 8 Unit 11 Cycle 2 Lesson 4—Graphing Systems of Linear Equations for Real-World Situations
<p>G. estimate graphically the solutions to systems of two linear equations with two variables in real-world problems; and</p>
<ul style="list-style-type: none"> Unit 5 Cycle 1 Lesson 1—Solutions to Equations in Two Variables Unit 5 Cycle 1 Lesson 2—Intersections on Graphs Unit 5 Cycle 2 Lesson 3—Solving Systems of Equations Using Graphing Technology Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

H. graph the solution set of systems of two linear inequalities in two variables on the coordinate plane.
<ul style="list-style-type: none"> Unit 5 Cycle 3 Lesson 3—Solving Systems of Inequalities
Texas Essential Knowledge and Skills for Mathematics A1.c.4: The student applies the mathematical process standards to formulate statistical relationships and evaluate their reasonableness based on realworld data. The student is expected to:
A. calculate, using technology, the correlation coefficient between two quantitative variables and interpret this quantity as a measure of the strength of the linear association;
<ul style="list-style-type: none"> Unit 10 Cycle 3 Lesson 2—Correlation Coefficient
B. compare and contrast association and causation in real-world problems; and
<ul style="list-style-type: none"> Unit 10 Cycle 3 Lesson 3—Correlation vs. Causation
C. write, with and without technology, linear functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems.
<ul style="list-style-type: none"> Unit 2 Cycle 3 Lesson 4—Writing Complicated Expressions Unit 8 Cycle 1 Lesson 3—Comparing Functions 1 Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
Texas Essential Knowledge and Skills for Mathematics A1.c.5: The student applies the mathematical process standards to solve, with and without technology, linear equations and evaluate the reasonableness of their solutions. The student is expected to:
A. solve linear equations in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides;
<ul style="list-style-type: none"> Unit 3 Cycle 2 Lesson 1—Equation Proofs Unit 3 Cycle 2 Lesson 2—Solving Equations Unit 3 Cycle 3 Lessons 1–3—Equations and Inequalities Performance Task (Planning Healthy Menus) Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) Unit 12 Cycle 1 Lesson 1—Creating Equations and Inequalities in One Variable 2 Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
B. solve linear inequalities in one variable, including those for which the application of the distributive property is necessary and for which variables are included on both sides; and

<ul style="list-style-type: none"> • Unit 3 Cycle 2 Lesson 3—Solving Linear Inequalities • Unit 3 Cycle 3 Lessons 1–3—Equations and Inequalities Performance Task (Planning Healthy Menus) • Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) • Unit 12 Cycle 1 Lesson 1—Creating Equations and Inequalities in One Variable 2 • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>C. solve systems of two linear equations with two variables for mathematical and real-world problems.</p>
<ul style="list-style-type: none"> • Unit 3 Cycle 3 Lessons 1–3—Equations and Inequalities Performance Task (Planning Healthy Menus) • Unit 5 Cycle 1 Lesson 2—Intersections on Graphs • Unit 5 Cycle 1 Lesson 3—Graphing Solutions to Systems of Equations • Unit 5 Cycle 2 Lesson 1—Solving Systems of Equations Using Algebra 1 • Unit 5 Cycle 2 Lesson 2—Solving Systems of Equations Using Algebra 2 • Unit 5 Cycle 2 Lesson 4—Problem Solving with Systems of Equations • Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models) • Unit 12 Cycle 1 Lesson 2—Creating Equations in Two Variables 2 • Unit 12 Cycle 3 Lessons 1–3—Quadratic and Exponential Equations Performance Task (Hotel Revenue) • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

Quadratic Functions and Equations	
Texas Essential Knowledge and Skills for Mathematics A1.c.6: The student applies the mathematical process standards when using properties of quadratic functions to write and represent in multiple ways, with and without technology, quadratic equations. The student is expected to:	
A. determine the domain and range of quadratic functions and represent the domain and range using inequalities;	
	<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 1—Parts of an Expression • Unit 13 Cycle 1 Lesson 4—Interpreting Quadratic Functions • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
B. write equations of quadratic functions given the vertex and another point on the graph, write the equation in vertex form ($f(x) = a(x - h)^2 + k$), and rewrite the equation from vertex form to standard form ($f(x) = ax^2 + bx + c$); and	
	<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 1—Parts of an Expression • Unit 11 Cycle 2 Lesson 1—Factoring Quadratic Expressions 2 • Unit 11 Cycle 1 Lesson 3—Rewriting Quadratic and Exponential Expressions • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
C. write quadratic functions when given real solutions and graphs of their related equations.	
	<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 1—Parts of an Expression • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
Texas Essential Knowledge and Skills for Mathematics A1.c.7: The student applies the mathematical process standards when using graphs of quadratic functions and their related transformations to represent in multiple ways and determine, with and without technology, the solutions to equations. The student is expected to:	
A. graph quadratic functions on the coordinate plane and use the graph to identify key attributes, if possible, including x-intercept, y-intercept, zeros, maximum value, minimum values, vertex, and the equation of the axis of symmetry;	
	<ul style="list-style-type: none"> • Unit 13 Cycle 1 Lesson 1—Graphing Linear and Quadratic Functions • Unit 13 Cycle 1 Lesson 4—Interpreting Quadratic Functions • Unit 13 Cycle 1 Lesson 5—Comparing Functions 2 • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
B. describe the relationship between the linear factors of quadratic expressions and the zeros of their associated quadratic functions; and	

<ul style="list-style-type: none"> Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>C. determine the effects on the graph of the parent function $f(x) = x^2$ when $f(x)$ is replaced by $af(x)$, $f(x) + d$, $f(x - c)$, $f(bx)$ for specific values of a, b, c, and d.</p>
<ul style="list-style-type: none"> Unit 13 Cycle 2 Lesson 3—Building New Functions 1 Unit 13 Cycle 2 Lesson 4—Building New Functions 2 Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>Texas Essential Knowledge and Skills for Mathematics A1.c.8: The student applies the mathematical process standards to solve, with and without technology, quadratic equations and evaluate the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to:</p>
<p>A. solve quadratic equations having real solutions by factoring, taking square roots, completing the square, and applying the quadratic formula; and</p>
<ul style="list-style-type: none"> Unit 11 Cycle 1 Lesson 2—Factoring Quadratic Expressions 1 Unit 11 Cycle 2 Lesson 1—Factoring Quadratic Expressions 2 Unit 11 Cycle 2 Lesson 2—Completing the Square Unit 12 Cycle 1 Lesson 1—Creating Equations and Inequalities in One Variable 2 Unit 12 Cycle 1 Lesson 2—Creating Equations in Two Variables 2 Unit 12 Cycle 2 Lesson 1—Solving Quadratic Equations by Factoring Unit 12 Cycle 2 Lesson 2—Deriving the Quadratic Formula Unit 12 Cycle 2 Lesson 3—Solving Quadratic Equations Using the Quadratic Formula Unit 12 Cycle 3 Lessons 1–3—Quadratic and Exponential Equations Performance Task (Hotel Revenue) Unit 13 Cycle 1 Lesson 3—Rewriting Functions Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>B. write, using technology, quadratic functions that provide a reasonable fit to data to estimate solutions and make predictions for real-world problems.</p>
<ul style="list-style-type: none"> Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

Exponential Functions and Equations

Texas Essential Knowledge and Skills for Mathematics A1.c.9: The student applies the mathematical process standards when using properties of exponential functions and their related transformations to write, graph, and represent in multiple ways exponential equations and evaluate, with and without technology, the reasonableness of their solutions. The student formulates statistical relationships and evaluates their reasonableness based on real-world data. The student is expected to:

A. determine the domain and range of exponential functions of the form $f(x) = ab^x$ and represent the domain and range using inequalities;

- Unit 2 Cycle 3 Lesson 3—Expressions in Context
- Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

B. interpret the meaning of the values of a and b in exponential functions of the form $f(x) = ab^x$ in real-world problems;

- Unit 2 Cycle 3 Lesson 3—Expressions in Context
- Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

C. write exponential functions in the form $f(x) = ab^x$ (where b is a rational number) to describe problems arising from mathematical and real-world situations, including growth and decay;

- Unit 3 Cycle 1 Lesson 2—Creating Equations in Two Variables
- Unit 8 Cycle 1 Lesson 3—Comparing Functions 1
- Unit 9 Cycle 1 Lesson 1—Exponential and Linear Patterns of Growth
- Unit 9 Cycle 1 Lesson 2—Fitting Linear and Exponential Functions to the Same Points
- Unit 9 Cycle 1 Lesson 3—Constructing Linear and Exponential Functions
- Unit 9 Cycle 1 Lesson 4—Comparing Linear and Exponential Function Models
- Unit 9 Cycle 1 Lesson 5—Interpreting Parameters of Linear and Exponential Functions
- Unit 9 Cycle 2 Lessons 1–3—Modeling Functions Performance Task (Commuting Cost Models)
- Unit 11 Cycle 1 Lesson 3—Rewriting Quadratic and Exponential Expressions
- Unit 12 Cycle 1 Lesson 1—Creating Equations and Inequalities in One Variable 2
- Unit 12 Cycle 1 Lesson 2—Creating Equations in Two Variables 2
- Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

<p>D. graph exponential functions that model growth and decay and identify key features, including y-intercept and asymptote, in mathematical and real-world problems; and</p>
<ul style="list-style-type: none"> • Unit 3 Cycle 1 Lesson 2—Creating Equations in Two Variables • Unit 6 Cycle 2 Lesson 2—Exponential Functions • Unit 8 Cycle 1 Lesson 2—Graphing and Analyzing Exponential Functions • Unit 8 Cycle 1 Lesson 3—Comparing Functions 1 • Unit 12 Cycle 1 Lesson 1—Creating Equations and Inequalities in One Variable 2 • Unit 12 Cycle 1 Lesson 2—Creating Equations in Two Variables 2 • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)
<p>E. write, using technology, exponential functions that provide a reasonable fit to data and make predictions for real-world problems.</p>
<ul style="list-style-type: none"> • Unit 2 Cycle 3 Lesson 4—Writing Complicated Expressions • Unit 13 Cycle 3 Lessons 1–3—Linear vs. Quadratic Functions Performance Task (Free-Falling Objects)

Number and Algebraic Methods
<p>Texas Essential Knowledge and Skills for Mathematics A1.c.10: The student applies the mathematical process standards and algebraic methods to rewrite in equivalent forms and perform operations on polynomial expressions. The student is expected to:</p>
<p>A. add and subtract polynomials of degree one and degree two;</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 3 Lesson 1—Adding and Subtracting Polynomials • Unit 11 Cycle 3 Lesson 3—Combining Polynomials in Context
<p>B. multiply polynomials of degree one and degree two;</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 3 Lesson 2—Multiplying Polynomials • Unit 11 Cycle 3 Lesson 3—Combining Polynomials in Context
<p>C. determine the quotient of a polynomial of degree one and polynomial of degree two when divided by a polynomial of degree one and polynomial of degree two when the degree of the divisor does not exceed the degree of the dividend;</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 3 Lesson 2—Multiplying Polynomials • Unit 11 Cycle 3 Lesson 3—Combining Polynomials in Context

<p>D. rewrite polynomial expressions of degree one and degree two in equivalent forms using the distributive property;</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 2—Factoring Quadratic Expressions 1 • Unit 11 Cycle 1 Lesson 3—Rewriting Quadratic and Exponential Expressions • Unit 11 Cycle 2 Lesson 1—Factoring Quadratic Expressions 2 • Unit 11 Cycle 2 Lesson 2—Transforming Exponential Expressions
<p>E. factor, if possible, trinomials with real factors in the form $ax^2 + bx + c$, including perfect square trinomials of degree two; and</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 2—Factoring Quadratic Expressions 1 • Unit 11 Cycle 1 Lesson 3—Rewriting Quadratic and Exponential Expressions • Unit 11 Cycle 2 Lesson 1—Factoring Quadratic Expressions 2 • Unit 11 Cycle 2 Lesson 2—Transforming Exponential Expressions
<p>F. decide if a binomial can be written as the difference of two squares and, if possible, use the structure of a difference of two squares to rewrite the binomial.</p>
<ul style="list-style-type: none"> • Unit 11 Cycle 1 Lesson 2—Factoring Quadratic Expressions 1 • Unit 11 Cycle 1 Lesson 3—Rewriting Quadratic and Exponential Expressions • Unit 11 Cycle 2 Lesson 1—Factoring Quadratic Expressions 2 • Unit 11 Cycle 2 Lesson 2—Transforming Exponential Expressions
<p>Texas Essential Knowledge and Skills for Mathematics A1.c.11: The student applies the mathematical process standards and algebraic methods to rewrite algebraic expressions into equivalent forms. The student is expected to:</p>
<p>A. simplify numerical radical expressions involving square roots; and</p>
<ul style="list-style-type: none"> • Unit 4 Cycle 1 Lesson 2—Square Roots • Unit 4 Cycle 1 Lesson 4—Rational Exponents • Unit 4 Cycle 1 Lesson 5—Rewriting Expressions with Radicals and Rational Exponents <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 8 Unit 3 Cycle 1 Lesson 2—Properties of Powers 2 • Grade 8 Unit 3 Cycle 1 Lesson 3—Square and Cube Roots • Grade 8 Unit 3 Cycle 1 Lesson 4—Simplifying Square Roots • Grade 8 Unit 3 Cycle 1 Lesson 5—Solving Equations with Exponents

<p>B. simplify numeric and algebraic expressions using the laws of exponents, including integral and rational exponents.</p>
<ul style="list-style-type: none"> • Unit 4 Cycle 1 Lesson 1—Properties of Integer Exponents • Unit 4 Cycle 1 Lesson 4—Rational Exponents • Unit 4 Cycle 1 Lesson 5—Rewriting Expressions with Radicals and Rational Exponents • Unit 11 Cycle 2 Lesson 3—Transforming Exponential Expressions • Unit 13 Cycle 1 Lesson 3—Rewriting Functions • Unit 14 Cycle 2 Lessons 1–3—Functions in Context Performance Task (Genetics in Medicine) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 8 Unit 3 Cycle 1 Lesson 1—Properties of Powers 1 • Grade 8 Unit 3 Cycle 1 Lesson 5—Solving Equations with Exponents • Grade 8 Unit 3 Cycle 2 Lesson 1—Estimating with Powers of 10 • Grade 8 Unit 3 Cycle 3 Lessons 1–3—Rational and Irrational Numbers Performance Task (Volcano Exploration)
<p>Texas Essential Knowledge and Skills for Mathematics A1.c.12: The student applies the mathematical process standards and algebraic methods to write, solve, analyze, and evaluate equations, relations, and functions. The student is expected to:</p>
<p>A. decide whether relations represented verbally, tabularly, graphically, and symbolically define a function;</p>
<ul style="list-style-type: none"> • Unit 6 Cycle 1 Lesson 1—Defining Functions • Unit 7 Cycle 2 Lessons 1–3—Constructing Functions Performance Task (Photography) <p>Lessons in other grade levels:</p> <ul style="list-style-type: none"> • Grade 8 Unit 9 Cycle 1 Lesson 1—Definition of a Function • Grade 8 Unit 9 Cycle 1 Lesson 2—Describing Functions in Words • Grade 8 Unit 9 Cycle 1 Lesson 3—Comparing Functions 1 • Grade 8 Unit 9 Cycle 1 Lesson 4—Linear vs. Nonlinear Functions
<p>B. evaluate functions, expressed in function notation, given one or more elements in their domains;</p>
<ul style="list-style-type: none"> • Unit 6 Cycle 1 Lesson 3—Evaluating Functions • Unit 7 Cycle 2 Lessons 1–3—Constructing Functions Performance Task (Photography)
<p>C. identify terms of arithmetic and geometric sequences when the sequences are given in function form using recursive processes;</p>
<ul style="list-style-type: none"> • Unit 7 Cycle 2 Lessons 1–3—Constructing Functions Performance Task (Photography) • Unit 8 Cycle 2 Lesson 1—Using Context to Find an Explicit Expression, a Recursive Process, or Steps for Calculation

D. write a formula for the n^{th} term of arithmetic and geometric sequences, given the value of several of their terms; and
<ul style="list-style-type: none"> Unit 7 Cycle 2 Lessons 1–3—Constructing Functions Performance Task (Photography) Unit 8 Cycle 2 Lesson 3—Modeling Situations with Arithmetic Sequences Unit 8 Cycle 2 Lesson 4—Modeling Situations with Geometric Sequences
E. solve mathematic and scientific formulas, and other literal equations, for a specified variable.
<ul style="list-style-type: none"> Unit 2 Cycle 1 Lesson 2—Units in Formulas Unit 3 Cycle 1 Lesson 4—Rearranging Linear Formulas Unit 12 Cycle 1 Lesson 3—Solving Formulas for a Given Variable Unit 12 Cycle 2 Lesson 2—Deriving the Quadratic Formula Unit 12 Cycle 2 Lesson 3—Solving Quadratic Equations Using the Quadratic Formula Unit 12 Cycle 3 Lessons 1–3—Quadratic and Exponential Equations Performance Task (Hotel Revenue) Unit 14 Cycle 2 Lessons 1–3—Functions in Context Performance Task (Genetics in Medicine)

Algebra II / Attributes of Functions and Their Inverses

Texas Essential Knowledge and Skills for Mathematics A2.c.2: The student applies mathematical processes to understand that functions have distinct key attributes and understand the relationship between a function and its inverse. The student is expected to:

A. graph the functions $f(x) = \sqrt{x}$, $f(x) = \frac{1}{x}$, $f(x) = x^3$, $f(x) = \sqrt[3]{x}$, $f(x) = b^x$, $f(x) = x $, and $f(x) = \log_b(x)$ where b is 2, 10, and e , and, when applicable, analyze the key attributes such as domain, range, intercepts, symmetries, asymptotic behavior, and maximum and minimum given an interval;
<ul style="list-style-type: none"> Unit 13 Cycle 1 Lesson 4—Interpreting Quadratic Functions
B. graph and write the inverse of a function using notation such as $f^{-1}(x)$;
<ul style="list-style-type: none"> Unit 13 Cycle 2 Lesson 5—Finding the Inverse of a Function

Algebra II / Exponential and Logarithmic Functions and Equations

Texas Essential Knowledge and Skills for Mathematics A2.c.5: The student applies mathematical processes to understand that exponential and logarithmic functions can be used to model situations and solve problems. The student is expected to:

A. determine the effects on the key attributes on the graphs of $f(x) = b^x$ and $f(x) = \log_b(x)$ where b is 2, 10, and e when $f(x)$ is replaced by $af(x)$, $f(x) + d$, and $f(x - c)$ for specific positive and negative real values of a , c , and d ;

- Unit 8 Cycle 3 Lesson 2—Vertical Translations of Exponential Functions
- Unit 8 Cycle 3 Lesson 3—Scaling Functions

D. solve exponential equations of the form $y = ab^x$ where a is a nonzero real number and b is greater than zero and not equal to one and single logarithmic equations having real solutions; and

- Unit 3 Cycle 2 Lesson 3—Solving Linear Inequalities

Algebra II / Cubic, Cube Root, Absolute Value and Rational Functions, Equations, and Inequalities

Texas Essential Knowledge and Skills for Mathematics A2.c.6: The student applies mathematical processes to understand that cubic, cube root, absolute value and rational functions, equations, and inequalities can be used to model situations, solve problems, and make predictions. The student is expected to:

B. solve cube root equations that have real roots;

- Unit 4 Cycle 1 Lesson 3—Cube Roots

Units at other grade levels:

- Grade 8 Unit 3 Cycle 1 Lesson 3—Square and Cube Roots

Geometry / Logical Argument and Constructions

Texas Essential Knowledge and Skills for Mathematics G.c.5: The student uses constructions to validate conjectures about geometric figures. The student is expected to:

B. construct congruent segments, congruent angles, a segment bisector, an angle bisector, perpendicular lines, the perpendicular bisector of a line segment, and a line parallel to a given line through a point not on a line using a compass and a straightedge;

This standard is covered by lessons in other grade levels:

- Grade 7 Unit 8 Cycle 2 Lesson 3—Constructing Quadrilaterals
- Grade 7 Unit 8 Cycle 2 Lesson 4—Constructing Triangles 1
- Grade 7 Unit 8 Cycle 2 Lesson 3—Constructing Triangles 2

Geometry / Two-Dimensional and Three-Dimensional Figures

Texas Essential Knowledge and Skills for Mathematics G.c.10: The student uses the process skills to recognize characteristics and dimensional changes of two- and three-dimensional figures. The student is expected to:

- A. identify the shapes of two-dimensional cross-sections of prisms, pyramids, cylinders, cones, and spheres and identify three-dimensional objects generated by rotations of two-dimensional shapes; and

This standard is covered by lessons in other grade levels:

- Grade 7 Unit 8 Cycle 2 Lesson 2— 2-D Figures Within 3-D Figures

Lessons that review earlier related standards:

- Grade 7 Unit 8 Cycle 2 Lesson 1—Identifying 2-D Shapes (TEKS 5.b.5)

Precalculus / Functions

Texas Essential Knowledge and Skills for Mathematics PC.c.2: The student uses process standards in mathematics to explore, describe, and analyze the attributes of functions. The student makes connections between multiple representations of functions and algebraically constructs new functions. The student analyzes and uses functions to model real-world problems. The student is expected to:

- F. graph exponential, logarithmic, rational, polynomial, power, trigonometric, inverse trigonometric, and piecewise defined functions, including step functions;

- Unit 13 Cycle 1 Lesson 2—Graphing Absolute Value, Step, and Piecewise Functions

Precalculus / Algebraic Reasoning

Texas Essential Knowledge and Skills for Mathematics PC.c.5: The student uses process standards in mathematics to evaluate expressions, describe patterns, formulate models, and solve equations and inequalities using properties, procedures, or algorithms. The student is expected to:

- A. evaluate finite sums and geometric series, when possible, written in sigma notation;

- Unit 6 Cycle 2 Lesson 3—Arithmetic Sequences as Functions
- Unit 6 Cycle 2 Lesson 4—Geometric Sequences as Functions

- B. represent arithmetic sequences and geometric sequences using recursive formulas;

- Unit 6 Cycle 2 Lesson 3—Arithmetic Sequences as Functions
- Unit 6 Cycle 2 Lesson 4—Geometric Sequences as Functions
- Unit 13 Cycle 2 Lesson 1—Writing a Function from Context

C. calculate the n^{th} term and the n^{th} partial sum of an arithmetic series in mathematical and real-world problems;
<ul style="list-style-type: none"> Unit 6 Cycle 2 Lesson 3—Arithmetic Sequences as Functions Unit 6 Cycle 2 Lesson 4—Geometric Sequences as Functions
D. represent arithmetic series and geometric series using sigma notation;
<ul style="list-style-type: none"> Unit 6 Cycle 2 Lesson 3—Arithmetic Sequences as Functions Unit 6 Cycle 2 Lesson 4—Geometric Sequences as Functions
E. calculate the n^{th} term of a geometric series, the n^{th} partial sum of a geometric series, and sum of an infinite geometric series when it exists;
<ul style="list-style-type: none"> Unit 6 Cycle 2 Lesson 3—Arithmetic Sequences as Functions Unit 6 Cycle 2 Lesson 4—Geometric Sequences as Functions

Mathematical Models with Applications / Mathematical Modeling in Social Sciences

Texas Essential Knowledge and Skills for Mathematics MMA.c.9: The student applies mathematical processes and mathematical models to analyze data as it applies to social sciences. The student is expected to:

A. 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;
<ul style="list-style-type: none"> Unit 10 Cycle 1 Lesson 1—Dot Plots, Histograms, and Box Plots Unit 10 Cycle 2 Lesson 2—Constructing Scatter Plots for Bivariate Data Unit 10 Cycle 2 Lesson 3—Residuals
B. 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;
<ul style="list-style-type: none"> Unit 10 Cycle 1 Lesson 2—Summary Statistics Unit 10 Cycle 1 Lesson 3—Interpreting Graphs in Context

Advanced Quantitative Reasoning / Numeric Reasoning

Texas Essential Knowledge and Skills for Mathematics AQR.c.2: The student applies the process standards in mathematics to generate new understandings by extending existing knowledge. The student generates new mathematical understandings through problems involving numerical data that arise in everyday life, society, and the workplace. The student extends existing knowledge and skills to analyze real-world situations. The student is expected to:

A. use precision and accuracy in real-life situations related to measurement and significant figures;

- Unit 2 Cycle 2 Lesson 3—Accuracy with Quantities

Advanced Quantitative Reasoning / Probabilistic and Statistical Reasoning

Texas Essential Knowledge and Skills for Mathematics AQR.c.4: The student uses the process standards in mathematics to generate new understandings of probability and statistics. The student analyzes statistical information and evaluates risk and return to connect mathematical ideas and make informed decisions. The student applies a problem-solving model and statistical methods to design and conduct a study that addresses one or more particular question(s). The student uses multiple representations to communicate effectively the results of student-generated statistical studies and the critical analysis of published statistical studies. The student is expected to:

A. use a two-way frequency table as a sample space to identify whether two events are independent and to interpret the results;

- Unit 10 Cycle 2 Lesson 1—Categorical Data in Frequency Tables

Lessons in other grade levels:

- Grade 8 Unit 13 Cycle 2 Lesson 2—Interpreting Two-Way Tables 1
- Grade 8 Unit 13 Cycle 2 Lesson 3—Interpreting Two-Way Tables 2
- Grade 8 Unit 13 Cycle 2 Lesson 4—Constructing Two-Way Tables
- Grade 8 Unit 13 Cycle 3 Lessons 1–3—Real-World Data Associations Performance Task (Analyzing Survey Data)