## Standards-Based Progress Mathematics

Aligned to the Chapter 111.

# Texas Essential Knowledge and Skills (TEKS) for Mathematics 

Subchapter B. Middle School, §111.26, Grade 6, Adopted 2012.

## Grade 6

## Contents

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## Sadlier

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(b) Knowledge and skills

## Grade 6 Texas Essential Knowledge and Skills for Mathematics

(2) Number and operations. The student applies mathematical process standards to represent and use rational numbers in a variety of forms. The student is expected to:
(A) classify whole numbers, integers, and rational numbers using a visual representation such as a Venn diagram to describe relationships between sets of numbers;
(B) identify a number, its opposite, and its absolute value;
(C) locate, compare, and order integers and rational numbers using a number line;
(D) order a set of rational numbers arising from mathematical and real-world contexts; and

## Sadlier Standards-Based Progress Mathematics Grade 6

## Lesson 16 Locate Points with Rational Coordinates-pp.

 136-143- Understand: Represent numbers on a number line
- Understand: How the coordinate plane is divided into four quadrants
- Understand: Represent points between the grid lines on a coordinate plane

Lesson 15 Understand Positive and Negative Numbers and Opposites-pp. 128-135

- Understand: What positive numbers and negative numbers represent
- Understand: Positions of positive numbers and negative numbers on a number line
- Understand: Numbers that are opposites

Lesson 18 Understand Absolute Value-pp. 152-159

- Understand: Meaning of absolute value
- Understand: Absolute value and elevation
- Understand: Absolute value and money

Lesson 16 Locate Points with Rational Coordinates-pp. 136-143

- Understand: Represent numbers on a number line
- Understand: How the coordinate plane is divided into four quadrants
- Understand: Represent points between the grid lines on a coordinate plane

Lesson 17 Compare and Order Rational Numbers-pp. 144151

- Understand: Compare numbers using a number line
- Understand: Order a set of numbers from least to greatest

Lesson 16 Locate Points with Rational Coordinates-pp. 136-143

- Understand: Represent numbers on a number line
- Understand: How the coordinate plane is divided into four quadrants
- Understand: Represent points between the grid lines on a coordinate plane

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(E) extend representations for division to include fraction notation such as $a / b$ represents the same number as $a \div b$ where $b \neq 0$.

Sadlier Standards-Based Progress Mathematics Grade 6
Lesson 17 Compare and Order Rational Numbers-pp. 144151

- Understand: Compare numbers using a number line
- Understand: Order a set of numbers from least to greatest

Lesson 18 Understand Absolute Value—pp. 152-159

- Understand: Meaning of absolute value
- Understand: Absolute value and elevation
- Understand: Absolute value and money

Lesson 22 Identify Parts of an Expression (show division with $\div$ or a fraction bar)—pp. 190-197

- Understand: How to define a term in an expression
- Understand: Identify the coefficient of an expression
- Understand: Count the terms in an expression
- Understand: How parentheses affect the number of terms

Foundational Skills Handbook-p. 369

- Understand: A fraction as the quotient of whole number division


Lesson 24 Generate and Identify Equivalent Expressionspp. 206-213

- Understand: Write an expression without parentheses
- Understand: Write an expression with parentheses
- Understand: Recognize equivalent expressions
n/a
n/a
n/a

Lesson 9 Divide a Fraction by a Fraction-pp. 80-87

- Understand: Use a diagram to compare one fraction to another fraction
- Understand: Divide a fraction by a fraction


## Grade 6 Texas Essential Knowledge and Skills for Mathematics

(4) Proportionality. 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 $y=$
$a x$ or $y=x+a$ in order to differentiate between additive and multiplicative relationships;
(B) apply qualitative and quantitative reasoning to solve prediction and comparison of real-world problems involving ratios and rates;
(C) give examples of ratios as multiplicative comparisons of two quantities describing the same attribute;

Sadlier Standards-Based Progress Mathematics Grade 6
Lesson 10 Problem Solving: Fraction Division—pp. 88-95

- Understand: Using visual fraction models
- Understand: Describing contexts for fraction division
- Understand: Using fraction division in an area problem

Lesson 13 Multiply and Divide Multi-digit Decimals-pp. 112-119

- Understand: The algorithm for multiplying multi-digit decimals
- Understand: The algorithm for dividing multidigit decimals

| Lesson 2 | Use Ratio Tables to Find Equivalent Ratios—pp. 18-25 <br> - Understand: Using a ratio table to find equivalent ratios <br> - Understand: Finding missing values in a ratio table |
| :---: | :---: |
| Lesson 3 | Use Ratio Tables to Compare Ratios—pp. 26-33 <br> - Understand: The multiplicative structure of a ratio table <br> - Understand: Using ratio tables to compare ratios |
| Lesson 1 | Understand Ratios and Unit Rates-pp. 10-17 <br> - Understand: What a ratio is <br> - Understand: What a unit rate is |
| Lesson 2 | Use Ratio Tables to Find Equivalent Ratios-pp. 18-25 <br> - Understand: Using a ratio table to find equivalent ratios <br> - Understand: Finding missing values in a ratio table |
| Lesson 3 | Use Ratio Tables to Compare Ratios-pp. 26-33 <br> - Understand: The multiplicative structure of a ratio table <br> - Understand: Using ratio tables to compare ratios |

Lesson 4 Solve Unit Rate Problems-pp. 34-41

- Understand: The difference between a unit rate and the units of a ratio
- Understand: Finding a unit price
- Understand: Finding a constant speed

Lesson 1 Understand Ratios and Unit Rates-pp. 10-17

- Understand: What a ratio is
- Understand: What a unit rate is

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(D) give examples of rates as the comparison by division of two quantities having different attributes, including rates as quotients;
(E) represent ratios and percents with concrete models, fractions, and decimals;
(F) represent benchmark fractions and percents such as $1 \%, 10 \%, 25 \%, 331 / 3 \%$, and multiples of these values using 10 by 10 grids, strip diagrams, number lines, and numbers;
(G) generate equivalent forms of fractions, decimals, and percents using real-world problems, including problems that involve money; and
(H) convert units within a measurement system, including the use of proportions and unit rates.

Sadlier Standards-Based Progress Mathematics Grade 6
Lesson 1 Understand Ratios and Unit Rates-pp. 10-17

- Understand: What a ratio is
- Understand: What a unit rate is

Lesson 1 Understand Ratios and Unit Rates-pp. 10-17

- Understand: What a ratio is
- Understand: What a unit rate is

Lesson 5 Calculate a Percent of a Quantity-pp. 42-49

- Understand: The meaning of a percent
- Understand: Finding a percent of a quantity

Lesson 5 Calculate a Percent of a Quantity (1\%, 10\%, 25\%,
$50 \%, 75 \%$; grids, strip/double number line diagrams)—pp. 42-49

- Understand: The meaning of a percent
- Understand: Finding a percent of a quantity

Lesson 6 Find the Whole Given a Part and the Percent ( $10 \%, 25 \%, 50 \%$; grids, strip/double number line diagrams)—pp. 50-57

- Understand: Using a diagram and reasoning to find a whole
- Understand: Using a double number line diagram and reasoning to find a whole

Lesson 16 Locate Points with Rational Coordinates-pp. 136-143

- Understand: Represent numbers on a number line
- Understand: How the coordinate plane is divided into four quadrants
- Understand: Represent points between the grid lines on a coordinate plane

Lesson 24 Generate and Identify Equivalent Expressionspp. 206-213

- Understand: Write an expression without parentheses
- Understand: Write an expression with parentheses
- Understand: Recognize equivalent expressions

Lesson 1 Understand Ratios and Unit Rates-pp. 10-17

- Understand: What a ratio is
- Understand: What a unit rate is

Lesson 7 Convert Measurement Units—pp. 58-65

- Understand: Using ratio reasoning to convert measurements
- Understand: Converting units in the metric system

| Grade 6 Texas Essential Knowledge and Skills for Mathematics |  |
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| (5) | Proportionality. The student applies mathematical <br> process standards to solve problems involving <br> proportional relationships. The student is expected to: |

(A) represent mathematical and real-world problems involving ratios and rates using scale factors, tables, graphs, and proportions;
(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
(C) use equivalent fractions, decimals, and percents to show equal parts of the same whole.

Sadlier Standards-Based Progress Mathematics Grade 6

Lesson 2 Use Ratio Tables to Find Equivalent Ratios-pp. 18-25

- Understand: Using a ratio table to find equivalent ratios
- Understand: Finding missing values in a ratio table

Lesson 3 Use Ratio Tables to Compare Ratios-pp. 26-33

- Understand: The multiplicative structure of a ratio table
- Understand: Using ratio tables to compare ratios

| Lesson 4 | Solve Unit Rate Problems-pp. 34-41 <br> - Understand: The difference between a unit rate and the units of a ratio <br> - Understand: Finding a unit price <br> - Understand: Finding a constant speed |
| :---: | :---: |
| Lesson 8 | Problem Solving: Ratios and Rates-pp. 66-73 <br> - Understand: Using tape diagrams to solve problems about mixtures <br> - Understand: Using tape diagrams with multistep problems |
| Lesson 5 | Calculate a Percent of a Quantity-pp. 42-49 <br> - Understand: The meaning of a percent <br> - Understand: Finding a percent of a quantity |
| Lesson 6 | Find the Whole Given a Part and the Percentpp. 50-57 <br> - Understand: Using a diagram and reasoning to find a whole <br> - Understand: Using a double number line diagram and reasoning to find a whole |
| Lesson 6 | Find the Whole Given a Part and the Percent (equivalent fraction, p. 52)—pp. 50-57 <br> - Understand: Using a diagram and reasoning to find a whole <br> - Understand: Using a double number line diagram and reasoning to find a whole |

Lesson 13 Multiply and Divide Multi-digit Decimals (equivalent decimal, p. 118)—pp. 112-119

- Understand: The algorithm for multiplying multi-digit decimals
- Understand: The algorithm for dividing multidigit decimals


## Grade 6 Texas Essential Knowledge and Skills for Mathematics

(6) Expressions, equations, and relationships. 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;
(B) write an equation that represents the relationship between independent and dependent quantities from a table; and
(C) represent a given situation using verbal descriptions, tables, graphs, and equations in the form $y=k x$ or $y=x+b$.
(7) Expressions, equations, and relationships. 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;

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| :---: | :---: |
| Lesson 30 | Represent Relationships Between Variables (independent variable/dependent variable)-pp. 254-261 <br> - Understand: Equations that have two variables <br> - Understand: Use a table to write an equation |
| Lesson 30 | Represent Relationships Between Variables (independent variable/dependent variable)-pp. 254-261 <br> - Understand: Equations that have two variables <br> - Understand: Use a table to write an equation |
| Lesson 30 | Represent Relationships Between Variables-pp. 254-261 <br> - Understand: Equations that have two variables <br> - Understand: Use a table to write an equation |

Lesson 20 Write and Evaluate Numerical Expressions with Exponents-pp. 174-181

- Understand: Evaluate an expression with exponents
- Understand: Write an expression using exponents

Lesson 22 Identify Parts of an Expression-pp. 190-197

- Understand: How to define a term in an expression
- Understand: Identify the coefficient of an expression
- Understand: Count the terms in an expression
- Understand: How parentheses affect the number of terms

Lesson 23 Evaluate Algebraic Expressions-pp. 198-205

- Understand: Evaluate an algebraic expression
- Understand: Use order of operations to evaluate an expression

Lesson 20 Write and Evaluate Numerical Expressions with Exponents-pp. 174-181

- Understand: Evaluate an expression with exponents
- Understand: Write an expression using exponents

Lesson 21 Write Algebraic Expressions to Record Operations-pp. 182-189

- Understand: Write expressions using addition

Grade 6 Texas Essential Knowledge and Skills for Mathematics

| (C) $\begin{array}{l}\text { determine if two expressions are equivalent } \\ \text { using concrete models, pictorial models, and } \\ \text { algebraic representations; and }\end{array}$ |
| :--- |

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- Understand: Write expressions using subtraction
- Understand: Write expressions using multiplication
- Understand: Write expressions using division

Lesson 22 Identify Parts of an Expression-pp. 190-197

- Understand: How to define a term in an expression
- Understand: Identify the coefficient of an expression
- Understand: Count the terms in an expression
- Understand: How parentheses affect the number of terms

Lesson 23 Evaluate Algebraic Expressions—pp. 198-205

- Understand: Evaluate an algebraic expression
- Understand: Use order of operations to evaluate an expression

Lesson 24 Generate and Identify Equivalent Expressionspp. 206-213

- Understand: Write an expression without parentheses
- Understand: Write an expression with parentheses
- Understand: Recognize equivalent expressions

Lesson 25 Identify Solutions to Equations and Inequalities-pp. 214-221

- Understand: Identify a solution to an equation
- Understand: Identify solutions of an inequality

Lesson 26 Write Algebraic Expressions to Represent Problems-pp. 222-229

- Understand: Use expressions to write an equation
- Understand: Use expressions to write an inequality

Foundational Skills Handbook-p. 373

- I. Understand: Writing and interpreting numerical expressions

Lesson 24 Generate and Identify Equivalent Expressionspp. 206-213

- Understand: Write an expression without parentheses
- Understand: Write an expression with parentheses
- Understand: Recognize equivalent expressions

Lesson 21 Write Algebraic Expressions to Record Operations-pp. 182-189

- Understand: Write expressions using addition
- Understand: Write expressions using subtraction

Grade 6 Texas Essential Knowledge and Skills for Mathematics
(8) Expressions, equations, and relationships. The student applies mathematical process standards to use geometry to represent relationships and solve problems. The student is expected to:
(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;
(B) model area formulas for parallelograms, trapezoids, and triangles by decomposing and rearranging parts of these shapes;

Sadlier Standards-Based Progress Mathematics Grade 6

- Understand: Write expressions using multiplication
- Understand: Write expressions using division

Lesson 22 Identify Parts of an Expression-pp. 190-197

- Understand: How to define a term in an expression
- Understand: Identify the coefficient of an expression
- Understand: Count the terms in an expression
- Understand: How parentheses affect the number of terms

Lesson 23 Evaluate Algebraic Expressions-pp. 198-205

- Understand: Evaluate an algebraic expression
- Understand: Use order of operations to evaluate an expression

Lesson 24 Generate and Identify Equivalent Expressionspp. 206-213

- Understand: Write an expression without parentheses
- Understand: Write an expression with parentheses
- Understand: Recognize equivalent expressions

Foundational Skills Handbook-p. 370

- Understand: How to divide using the Distributive Property

Properties of Addition and Multiplication
(associative, commutative, identify, inverse, distributive)-p. 380
n/a

Lesson 31 Find Areas of Parallelograms and Triangles-pp. 268-275

- Understand: Find the area of a parallelogram
- Understand: Find the area of a triangle

Lesson 32 Find Areas of Polygons-pp. 276-283

- Understand: Find the area of a trapezoid
- Understand: Find the area of a polygon


## Grade 6 Texas Essential Knowledge and Skills for Mathematics

(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
(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.
(9) Expressions, equations, and relationships. 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;

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Lesson 31 Find Areas of Parallelograms and Triangles-pp. 268-275

- Understand: Find the area of a parallelogram
- Understand: Find the area of a triangle

Lesson 32 Find Areas of Polygons-pp. 276-283

- Understand: Find the area of a trapezoid
- Understand: Find the area of a polygon

Lesson 33 Find Volumes of Rectangular Prisms—pp. 284291

- Understand: Find the volume of a right rectangular prism with fractional edge lengths
- Understand: Decide which formula to use when finding the volume of a right rectangular prism

Foundational Skills Handbook-p. 374

- K. Understand: How to solve problems using formulas for volume

Lesson 31 Find Areas of Parallelograms and Triangles-pp. 268-275

- Understand: Find the area of a parallelogram
- Understand: Find the area of a triangle

Lesson 32 Find Areas of Polygons-pp. 276-283

- Understand: Find the area of a trapezoid
- Understand: Find the area of a polygon

Lesson 33 Find Volumes of Rectangular Prisms-pp. 284291

- Understand: Find the volume of a right rectangular prism with fractional edge lengths
- Understand: Decide which formula to use when finding the volume of a right rectangular prism
Foundational Skills Handbook—p. 374
- K. Understand: How to solve problems using formulas for volume

| Lesson 25 | Identify Solutions to Equations and Inequalities-pp. 214-221 <br> - Understand: Identify a solution to an equation <br> - Understand: Identify solutions of an inequality |
| :---: | :---: |
| Lesson 26 | Write Algebraic Expressions to Represent Problems-pp. 222-229 <br> - Understand: Use expressions to write an equation <br> - Understand: Use expressions to write an inequality |

## Grade 6 Texas Essential Knowledge and Skills for Mathematics

(B) represent solutions for one-variable, one-step equations and inequalities on number lines; and
(C) write corresponding real-world problems given one-variable, one-step equations or inequalities.
(10) Expressions, equations, and relationships. 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

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Related content-
Lesson 28 Solve Equations of the Form px = q (no representing solutions on number lines)—pp. 238245

- Understand: Solve an equation algebraically
- Understand: Write an algebraic equation

Lesson 29 Graph Solutions to Inequalities-pp. 246-253

- Understand: Graph an inequality on a number line
- Understand: Constraints on solutions


## Related content-

Lesson 26 Write Algebraic Expressions to Represent Problems-pp. 222-229

- Understand: Use expressions to write an equation
- Understand: Use expressions to write an inequality

Lesson 27 Solve Equations of the Form $\mathbf{x}+\mathbf{p}=\mathbf{q - p p}$. 230237

- Understand: Solve an equation algebraically
- Understand: Write and solve an algebraic equation

Lesson 28 Solve Equations of the Form px = q-pp. 238-245

- Understand: Solve an equation algebraically
- Understand: Write an algebraic equation

Lesson 29 Graph Solutions to Inequalities-pp. 246-253

- Understand: Graph an inequality on a number line
- Understand: Constraints on solutions

Lesson 26 Write Algebraic Expressions to Represent Problems-pp. 222-229

- Understand: Use expressions to write an equation
- Understand: Use expressions to write an inequality

Lesson 27 Solve Equations of the Form $\mathbf{x}+\mathbf{p}=\mathbf{q - p p} .230-$ 237

- Understand: Solve an equation algebraically
- Understand: Write and solve an algebraic equation

Lesson 28 Solve Equations of the Form px = q-pp. 238-245

- Understand: Solve an equation algebraically
- Understand: Write an algebraic equation


## Grade 6 Texas Essential Knowledge and Skills for Mathematics

(B) determine if the given value(s) make(s) onevariable, one-step equations or inequalities true.
(11) Measurement and data. 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.

Sadlier Standards-Based Progress Mathematics Grade 6
Lesson 29 Graph Solutions to Inequalities—pp. 246-253

- Understand: Graph an inequality on a number line
- Understand: Constraints on solutions

Lesson 25 Identify Solutions to Equations and Inequalities-pp. 214-221

- Understand: Identify a solution to an equation
- Understand: Identify solutions of an inequality

Lesson 26 Write Algebraic Expressions to Represent Problems-pp. 222-229

- Understand: Use expressions to write an equation
- Understand: Use expressions to write an inequality

Lesson 27 Solve Equations of the Form $\mathbf{x}+\mathbf{p}=\mathbf{q - p p .} 230-$ 237

- Understand: Solve an equation algebraically
- Understand: Write and solve an algebraic equation

Lesson 28 Solve Equations of the Form px = q-pp. 238-245

- Understand: Solve an equation algebraically
- Understand: Write an algebraic equation

Lesson 29 Graph Solutions to Inequalities-pp. 246-253

- Understand: Graph an inequality on a number line
- Understand: Constraints on solutions

Lesson 16 Locate Points with Rational Coordinates-pp.
136-143

- Understand: Represent numbers on a number line
- Understand: How the coordinate plane is divided into four quadrants
- Understand: Represent points between the grid lines on a coordinate plane

Lesson 19 Problem Solving: The Coordinate Plane—pp. 160-167

- Understand: Find the distance between two points in the same quadrant
- Understand: Find the length of a segment with endpoints in different quadrants

Lesson 34 Plot and Analyze Polygons in the Coordinate Plane-pp. 292-299

- Understand: Plot and identify polygons in a coordinate plane
- Understand: Identify missing vertices for specific polygons


## Grade 6 Texas Essential Knowledge and Skills for Mathematics

(12) Measurement and data. 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;
(B) use the graphical representation of numeric data to describe the center, spread, and shape of the data distribution;
(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
(13) Measurement and data. The student applies mathematical process standards to use numerical or graphical representations to solve problems. The student is expected to:
(A) interpret numeric data summarized in dot plots, stem-and-leaf plots, histograms, and box plots; and

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