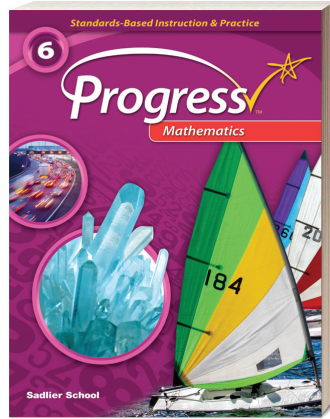


SADLIER

Progress Mathematics



Aligned to the

College and Career Ready Indiana Academic Standards Mathematics: Grade 6

Contents

- 2 Number Sense
- 3 Computation
- 5 Algebra and Functions
- 7 Geometry and Measurement
- 8 Data Analysis and Statistics

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Number Sense

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 6

6.NS.1: Understand that positive and negative numbers are used to describe quantities having opposite directions or values (e.g., temperature above/below zero, elevation above/below sea level, credits/debits, positive/negative electric charge). Use positive and negative numbers to represent and compare quantities in real-world contexts, explaining the meaning of 0 in each situation.

6.NS.2: Understand the integer number system. Recognize opposite signs of numbers as indicating locations on opposite sides of 0 on the number line; recognize that the opposite of the opposite of a number is the number itself (e.g., $-(-3) = 3$), and that 0 is its own opposite.

6.NS.3: Compare and order rational numbers and plot them on a number line. Write, interpret, and explain statements of order for rational numbers in real-world contexts.

6.NS.4: Understand that the absolute value of a number is the distance from zero on a number line. Find the absolute value of real numbers and know that the distance between two numbers on the number line is the absolute value of their difference. Interpret absolute value as magnitude for a positive or negative quantity in a real-world situation.

6.NS.5: Know commonly used fractions (halves, thirds, fourths, fifths, eighths, tenths) and their decimal and percent equivalents. Convert between any two representations (fractions, decimals, percents) of positive rational numbers without the use of a calculator.

6.NS.6: Identify and explain prime and composite numbers.

6.NS.7: Find the greatest common factor of two whole numbers less than or equal to 100 and the least common multiple of two whole numbers less than or equal to 12. Use the distributive property to express a sum of two whole numbers from 1 to 100, with a common factor as a multiple of a sum of two whole numbers with no common factor.

6.NS.8: Interpret, model, and use ratios to show the relative sizes of two quantities. Describe how a ratio shows the relationship between two quantities. Use the following notations: a/b , a to b , $a:b$.

SADLIER PROGRESS MATHEMATICS, GRADE 6

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

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Understand: Numbers that are opposites

Lesson 16 Locate Points with Rational Coordinates—pp. 136–143
Understand: Represent numbers on a number line

Lesson 17 Compare and Order Rational Numbers—pp. 144–151
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 5 Calculate a Percent of a Quantity—pp. 42–49
Understand: The meaning of a percent
Understand: Finding a percent of a quantity

**Related content*
Lesson 6 Find the Whole Given a Part and the Percent—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

Not addressed at this level.

Lesson 14 Find the Greatest Common Factor and Least Common Multiple—pp. 120–127
Understand: Finding and using the greatest common factor
Understand: Finding and using the least common multiple

Lesson 1 Understand Ratios and Unit Rates—pp. 10–17
Understand: What a ratio is
Understand: What a unit rate is

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

Number Sense

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 6

6.NS.9: Understand the concept of a unit rate and use terms related to rate in the context of a ratio relationship.

6.NS.10: Use reasoning involving rates and ratios to model real-world and other mathematical problems (e.g., by reasoning about tables of equivalent ratios, tape diagrams, double number line diagrams, or equations).

SADLIER PROGRESS MATHEMATICS, GRADE 6

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

Lesson 6 Find the Whole Given a Part and the Percent—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 7 Convert Measurement Units—pp. 58–65
Understand: Using ratio reasoning to convert measurements

Lesson 8 Problem Solving: Ratios and Rates—pp. 66–73
Understand: Using tape diagrams to solve problems about mixtures
Understand: Using tape diagrams with multi-step problems

Computation

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 6

6.C.1: Divide multi-digit whole numbers fluently using a standard algorithmic approach.

6.C.2: Compute with positive fractions and positive decimals fluently using a standard algorithmic approach.

SADLIER PROGRESS MATHEMATICS, GRADE 6

Lesson 11 Divide Multi-digit Numbers—pp. 96–103
Understand: The process of dividing multi-digit numbers
Understand: Using the standard algorithm for multi-digit division

Foundational Skills Handbook—p. 370
C. Understand: How to divide using the standard division algorithm
D. Understand: How to divide using the Distributive Property

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

Lesson 12 Add and Subtract Multi-digit Decimals—pp. 104–111
Understand: Adding multi-digit decimals
Understand: The algorithm for subtracting multi-digit decimals

Lesson 13 Multiply and Divide Multi-digit Decimals—pp. 112–119
Understand: The algorithm for multiplying multi-digit decimals
Understand: The algorithm for dividing multi-digit decimals

Computation

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 5

6.C.3: Solve real-world problems with positive fractions and decimals by using one or two operations.

6.C.4: Compute quotients of positive fractions and solve real-world problems involving division of fractions by fractions. Use a visual fraction model and/or equation to represent these calculations.

6.C.5: Evaluate positive rational numbers with whole number exponents.

6.C.6: Apply the order of operations and properties of operations (identity, inverse, commutative properties of addition and multiplication, associative properties of addition and multiplication, and distributive property) to evaluate numerical expressions with nonnegative rational numbers, including those using grouping symbols, such as parentheses, and involving whole number exponents. Justify each step in the process.

SADLIER PROGRESS MATHEMATICS, GRADE 5

Foundational Skills Handbook—pp. 369, 371–372

- B. Understand: Dividing unit fractions and whole numbers
- E. Understand: How to add and subtract decimals using place value
- F. Understand: Multiplying two decimals using the standard multiplication algorithm
- G. Understand: How to divide a decimal by a decimal

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

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 12 **Add and Subtract Multi-digit Decimals**—pp. 104–111
Understand: Adding multi-digit decimals
Understand: The algorithm for subtracting multi-digit decimals

Lesson 13 **Multiply and Divide Multi-digit Decimals**—pp. 112–119
Understand: The algorithm for multiplying multi-digit decimals
Understand: The algorithm for dividing multi-digit decimals

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

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 20 **Write and Evaluate Numerical Expressions with Exponents**—pp. 174–181
Understand: Evaluate an expression with exponents
Understand: Write an expression using exponents

Lesson 23 **Evaluate Algebraic Expressions**—pp. 198–205
Understand: Evaluate an algebraic expression
Understand: Use order of operations to evaluate an expression

Foundational Skills Handbook—p. 372
H. Understand: Evaluating expressions that contain grouping symbols

Properties of Addition and Multiplication—p. 380

Algebra and Functions

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 6

6.AF.1: Evaluate expressions for specific values of their variables, including expressions with whole-number exponents and those that arise from formulas used in real-world problems.

6.AF.2: Apply the properties of operations (e.g., identity, inverse, commutative, associative, distributive properties) to create equivalent linear expressions and to justify whether two linear expressions are equivalent when the two expressions name the same number regardless of which value is substituted into them.

6.AF.3: Define and use multiple variables when writing expressions to represent real-world and other mathematical problems, and evaluate them for given values.

6.AF.4: Understand that solving an equation or inequality is the process of answering the following question: Which values from a specified set, if any, make the equation or inequality true? Use substitution to determine whether a given number in a specified set makes an equation or inequality true.

SADLIER PROGRESS MATHEMATICS, GRADE 6

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

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 Expressions—pp. 206–213
Understand: Write an expression without parentheses
Understand: Write an expression with parentheses
Understand: Recognize equivalent expressions

Properties of Addition and Multiplication—p. 380

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
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

Foundational Skills Handbook—p. 373
H. Understand: Writing and interpreting numerical 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

Algebra and Functions

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 6

6.AF.5: Solve equations of the form $x + p = q$ and $px = q$ fluently for cases in which p , q and x are all nonnegative rational numbers. Represent real world problems using equations of these forms and solve such problems.

6.AF.6: Write an inequality of the form $x > c$, $x \geq c$, $x < c$, or $x \leq c$, where c is a rational number, to represent a constraint or condition in a real-world or other mathematical problem. Recognize inequalities have infinitely many solutions and represent solutions on a number line diagram.

6.AF.7: Understand that signs of numbers in ordered pairs indicate the quadrant containing the point; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. Graph points with rational number coordinates on a coordinate plane.

6.AF.8: Solve real-world and other mathematical problems by graphing points with rational number coordinates on a coordinate plane. Include the use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.

6.AF.9: Make tables of equivalent ratios relating quantities with whole-number measurements, find missing values in the tables, and plot the pairs of values on the coordinate plane.

6.AF.10: Use variables to represent two quantities in a proportional relationship in a real-world problem; write an equation to express one quantity, the dependent variable, in terms of the other quantity, the independent variable. Analyze the relationship between the dependent and independent variables using graphs and tables, and relate these to the equation.

SADLIER PROGRESS MATHEMATICS, GRADE 6

Lesson 27 **Solve Equations of the Form $x + p = q$** —pp. 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 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 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 30 **Represent Relationships Between Variables**—pp. 254–261
Understand: Equations that have two variables
Understand: Use a table to write an equation

Geometry and Measurement

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 6

6.GM.1: Convert between measurement systems (English to metric and metric to English) given conversion factors, and use these conversions in solving real-world problems.

6.GM.2: Know that the sum of the interior angles of any triangle is 180° and that the sum of the interior angles of any quadrilateral is 360° . Use this information to solve real-world and mathematical problems.

6.GM.3: Draw polygons in the coordinate plane given coordinates for the vertices; use coordinates to find the length of a side joining points with the same first coordinate or the same second coordinate; apply these techniques to solve real-world and other mathematical problems.

6.GM.4: Find the area of complex shapes composed of polygons by composing or decomposing into simple shapes; apply this technique to solve real-world and other mathematical problems.

6.GM.5: Find the volume of a right rectangular prism with fractional edge lengths using unit cubes of the appropriate unit fraction edge lengths (e.g., using technology or concrete materials), and show that the volume is the same as would be found by multiplying the edge lengths of the prism. Apply the formulas $V = lwh$ and $V = Bh$ to find volumes of right rectangular prisms with fractional edge lengths to solve real-world and other mathematical problems.

6.GM.6: Construct right rectangular prisms from nets and use the nets to compute the surface area of prisms; apply this technique to solve real-world and other mathematical problems.

SADLIER PROGRESS MATHEMATICS, GRADE 6

Lesson 7 **Convert Measurement Units**—pp. 58–65
Understand: Using ratio reasoning to convert measurements
Understand: Converting units in the metric system

Not addressed at this level.

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

Foundational Skills Handbook—p. 373
J. Understand: Using properties to classify triangles and quadrilaterals

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. 284–291
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 35 **Use Nets to Find Surface Area**—pp. 300–307
Understand: Relate a solid figure and its net
Understand: Use a net to find surface area

Data Analysis and Statistics

MATHEMATICS STANDARDS & DESCRIPTION, GRADE 6

6.DS.1: Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for the variability in the answers. Understand that a set of data collected to answer a statistical question has a distribution which can be described by its center, spread, and overall shape.

6.DS.2: Select, create, and interpret graphical representations of numerical data, including line plots, histograms, and box plots.

6.DS.3: Formulate statistical questions; collect and organize the data (e.g., using technology); display and interpret the data with graphical representations (e.g., using technology).

6.DS.4: Summarize numerical data sets in relation to their context in multiple ways, such as: report the number of observations; describe the nature of the attribute under investigation, including how it was measured and its units of measurement; determine quantitative measures of center (mean and/or median) and spread (range and interquartile range), as well as describe any overall pattern and any striking deviations from the overall pattern with reference to the context in which the data were gathered; and relate the choice of measures of center and spread to the shape of the data distribution and the context in which the data were gathered.

SADLIER PROGRESS MATHEMATICS, GRADE 6

Lesson 36 **Statistical Questions**—pp. 314–321
Understand: What a statistical question is
Understand: Ways to describe data

Lesson 37 **Find the Median and Interquartile Range**—pp. 322–329
Understand: How to find the range and median
Understand: How to find the interquartile range
Understand: Comparing data with the same median but different IQRs

Lesson 39 **Display Numerical Data**—pp. 338–345
Understand: Box plots
Understand: Histograms

Foundational Skills Handbook—p. 374
L. Understand: Using line plots to solve problems

Lesson 40 **Summarize Numerical Data**—pp. 346–353
Understand: Interpreting graphs and statistics
Understand: Interpreting data with outliers

Lesson 37 **Find the Median and Interquartile Range**—pp. 322–329
Understand: How to find the range and median
Understand: How to find the interquartile range
Understand: Comparing data with the same median but different IQRs

Lesson 38 **Find the Mean and Mean Absolute Deviation**—pp. 330–337
Understand: How to calculate the mean
Understand: How to calculate the mean absolute deviation
Understand: Comparing data with the same mean but different MADs

Lesson 40 **Summarize Numerical Data**—pp. 346–353
Understand: Interpreting graphs and statistics
Understand: Interpreting data with outliers