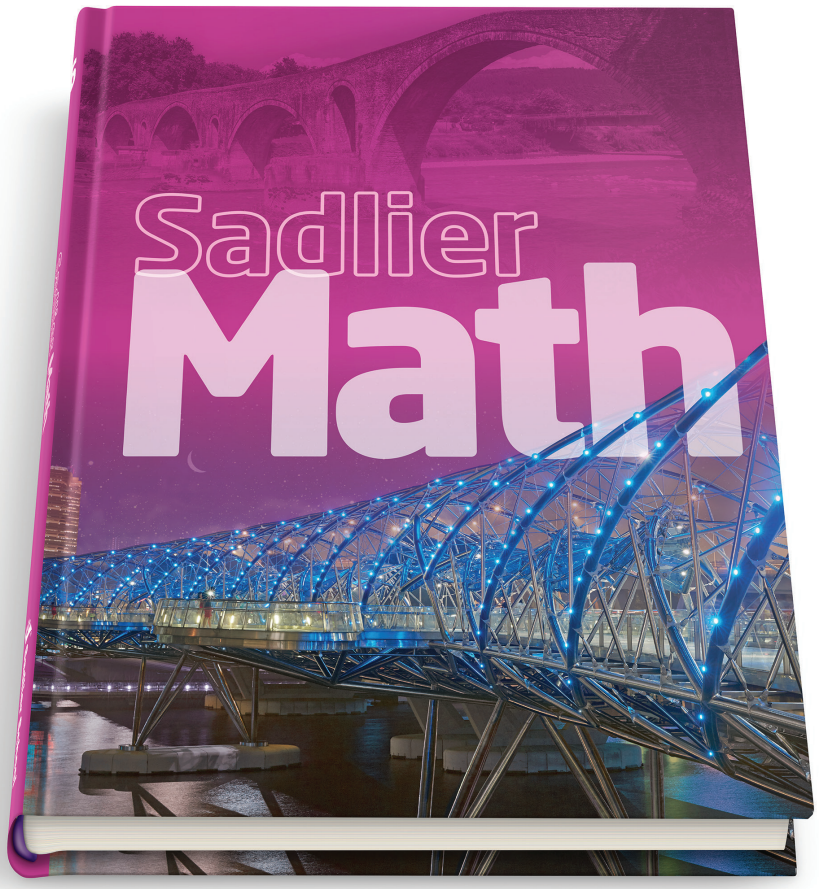
Sadlier Math™

Correlation to the Diocese of Raleigh Math Standards

Grade 6



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RATIO AND PROPORTIONAL RELATIONSHIPS

6th Grade Content Standards	*Sadlier Math*, Grade 6
Achievement Standard: 6.RP.1 Understand ratio concepts and use ratio reasoning to solve problems.	
6.RP.1.1 Understand the concept of a ratio and use ratio language to describe and model the relationship between two quantities.	**Chapter 10: 10-1** • 10-1 Ratios—pp. 226–227
6.RP.1.2 Understand that ratios (a:b) can be expressed as equivalent unit rates (a/b with b=1) by finding and interpreting both unit ratios in context.	**Chapter 10: 10-6 through 10-9** • 10-6 Rates and Unit Rates—pp. 238–239 • 10-7 Compare Prices—pp. 240–241 • 10-8 Equations for Proportional Relationships—pp. 242–243 • 10-9 Graphs of Proportional Relationships—pp. 244–245
6.RP.1.3 Use ratio reasoning with equivalent whole number ratios to solve real world and mathematical problems. • Create and use tables to compare ratios. • Plot ordered pairs on the coordinate plane. • Find missing values in equivalent ratio tables. • Convert and manipulate measurements using given ratios. • Solve unit rate problems including those involving unit pricing and constant speed.	**Chapter 10: 10-2 through 10-10** • 10-2 Tables of Equivalent Ratios—pp. 228–229 • 10-3 Tape Diagrams—pp. 230–231 • 10-4 Double Number Lines—pp. 232–233 • 10-5 Compare Ratios—pp. 236–237 • 10-6 Rates and Unit Rates—pp. 238–239 • 10-7 Compare Prices—pp. 240–241 • 10-8 Equations for Proportional Relationships—pp. 242–243 • 10-9 Graphs of Proportional Relationships—pp. 244–245 • 10-10 Problem Solving: Make a Model—pp. 246–247
6.RP.1.4 Use ratio reasoning to solve real world and mathematical problems with percents. • Find a percent of a quantity as a rate per 100; solve problems involving finding the whole, finding the part, and finding the percentage, given the other two values. • Use equivalent ratios, such as benchmark percentages (50%, 25%, 10%, 5%, 1%) to determine a part of any given quantity. • Use ratio reasoning to convert measurement units; manipulate and transform units appropriately when multiplying or dividing quantities. • Convert within customary and metric systems using ratios.	**Chapter 11: 11-1 through 11-10** • 11-1 Percent—pp. 254–255 • 11-2 Relate Percents to Fractions—pp. 256–257 • 11-3 Relate Percents to Decimals—pp. 258–259 • 11-4 Relate Decimals, Fractions, and Percents—pp. 260–261 • 11-5 Percents Greater Than 100%—pp. 262–263 • 11-6 Percents Less Than 1%—pp. 264–265 • 11-7 Find the Part—pp. 268–269 • 11-8 Find the Percent—pp. 270–271 • 11-9 Find the Whole—pp. 272–273 • 11-10 Problem Solving: Act it Out—pp. 274–275 **Chapter 12: 12-1 through 12-4** • 12-1 Convert Customary Units—pp. 282–283 • 12-2 Convert Metric Units—pp. 284–285 • 12-3 Convert Between Customary and Metric Units—pp. 288–289 • 12-4 Problem Solving: Choose a Strategy—pp. 290–291

THE NUMBER SYSTEM

6th Grade Content Standards	*Sadlier Math*, Grade 6
Achievement Standard: 6.NS.1 Apply and extend previous understandings of multiplication and division to divide fractions by fractions.	
6.NS.1.1 Use visual models and word problems to: • Interpret and compute products and quotients of fractions. • Solve real-world problems using multiplication and division of fractions.	**Chapter 8: 8-3 through 8-11** • 8-3 Meaning of Division by a Fraction—pp. 168–169 • 8-4 Model Dividing Fractions by Fractions—pp. 170–171 • 8-5 Divide Fractions by Fractions—pp. 172–173 • 8-6 Estimate Quotients of Fractions and Mixed Numbers—pp. 174–175 • 8-7 Divide with Whole and Mixed Numbers—pp. 176–177 • 8-8 Order of Operations with Fractions—pp. 180–181 • 8-9 Fractions with Money—pp. 182–183 • 8-10 Multiplication and Division Expressions with Fractions—pp. 184–185 • 8-11 Multiplication and Division Equations with Fractions—pp. 186–187
Achievement Standard: 6.NS.2 Compute fluently with multi-digit numbers and find common factors and multiples.	
6.NS.2.1 Fluently divide using long division, with a minimum of a four-digit dividend and interpreting the quotient and remainder.	**Chapter 3: 3-1** • 3-1 Divide Whole Numbers—pp. 42–43
6.NS.2.2 Apply and extend previous understanding of decimals to develop and fluently use the standard algorithms for addition, subtraction, multiplication, and division of decimals.	**Chapter 1: 1-1 through 1-3** • 1-1 Estimate Decimal Sums and Differences—pp. 2–3 • 1-2 Add Decimals—pp. 4–5 • 1-3 Subtract Decimals—pp. 6–7 **Chapter 2: 2-1 through 2-3** • 2-1 Multiply Decimals by 0.1, 0.01, and 0.001—pp. 22–23 • 2-2 Estimate Decimal Products—pp. 24–25 • 2-3 Multiply with Decimals—pp. 26–27 **Chapter 3: 3-2 through 3-7** • 3-2 Divide Decimals by 10, 100, and 1000—pp. 44–45 • 3-3 Divide Decimals by Whole Numbers—pp. 46–47 • 3-4 Divide Decimals by 0.1, 0.01, and 0.001—pp. 50–51 • 3-5 Estimate Decimal Quotients—pp. 52–53 • 3-6 Decimal Divisors—pp. 54–55 • 3-7 Zeros in Division—pp. 56–57 • 3-8 Write Division Expressions—pp. 58–59 • 3-9 Evaluate Division Expressions—pp. 60–61

THE NUMBER SYSTEM

6th Grade Content Standards	*Sadlier Math*, Grade 6
6.NS.2.3 Understand and use prime factorization and the relationships between factors to: • Find the unique prime factorization for a whole number. • Find the GCF of two whole numbers up to 100. • Use the GCF and the distributive property to express a sum of two whole numbers up to 100. • Find the LCM of two whole numbers less than or equal to 12 to add and subtract fractions with unlike denominators. • Use the divisibility rules of 4 and 6.	**Chapter 6: 6-1 through 6-4** • 6-1 Prime Factorization—pp. 124–125 • 6-2 Greatest Common Factor—pp. 126–127 • 6-3 The Distributive Property and Common Factors—pp. 128–129 • 6-4 Least Common Multiple—pp. 132–133

Achievement Standard: 6.NS.3 Apply and extend previous understandings of numbers to the system of rational numbers.

6.NS.3.1 Understand and use rational numbers to: • Describe positive and negative quantities having opposite directions or values. • Represent positive and negative numbers in real-world contexts, explaining the meaning of zero in each situation. • Understand the absolute value of a rational number as its distance from zero on the number line. • Interpret absolute value as magnitude for a positive or negative quantity in real-world contexts. • Distinguish comparisons of absolute value from statements about order.	**Chapter 9: 9-1 through 9-6** • 9-1 Integers on the Number Line—pp. 196–197 • 9-2 Integers in the Real World—pp. 198–199 • 9-3 Compare and Order Integers—pp. 200–201 (absolute value) • 9-4 Absolute Value as Magnitude—pp. 202–203 • 9-5 Rational Numbers—pp. 204–205 • 9-6 Compare and Order Rational Numbers—pp. 206–207

THE NUMBER SYSTEM

6th Grade Content Standards	*Sadlier Math*, Grade 6
6.NS.3.2 Understand rational numbers as points on the number line and as ordered pairs on a coordinate plane. • Extend number line diagrams and coordinate axes familiar from previous grades to represent points on the line and in the plane with negative number coordinates. • Recognize opposite signs of numbers as indicating locations on opposite sides of zero on the number line. • Recognize that the opposite of the opposite of a number is the number itself. • Understand signs of numbers in ordered pairs as indicating locations in quadrants of the coordinate plane; recognize that when two ordered pairs differ only by signs, the locations of the points are related by reflections across one or both axes. • Find and position integers and other rational numbers on a horizontal number line, or vertical number line, and coordinate plane.	**Chapter 9: 9-1 through 9-3, 9-5 through 9-11** • 9-1 Integers on the Number Line—pp. 196–197 • 9-2 Integers in the Real World—pp. 198–199 • 9-3 Compare and Order Integers—pp. 200–201 • 9-5 Rational Numbers—pp. 204–205 • 9-6 Compare and Order Rational Numbers—pp. 206–207 • 9-7 Plot Points in the Coordinate Plane—pp. 210–211 • 9-8 Reflections of Points—pp. 212–213 • 9-9 Distance on the Coordinate Plane—pp. 214–215 • 9-10 Plot Polygons—pp. 216–217 • 9-11 Problem Solving: Draw a Picture—pp. 218–219
6.NS.3.3 Understand ordering of rational numbers. • Interpret statements of inequality as statements about the relative position of two numbers on a number line diagram. • Write, interpret, and explain statements of order for rational numbers in real-world contexts.	**Chapter 9: 9-3 & 9-6** • 9-3 Compare and Order Integers—pp. 200–201 • 9-6 Compare and Order Rational Numbers—pp. 206–207

THE NUMBER SYSTEM

6th Grade Content Standards	*Sadlier Math*, Grade 6
6.NS.3.4 Solve real-world and mathematical problems by graphing points in all four quadrants of the coordinate plane. • Include use of coordinates and absolute value to find distances between points with the same first coordinate or the same second coordinate.	**Chapter 9: 9-4, 9-7 through 9-11** • 9-4 Absolute Value as Magnitude—pp. 202–203 • 9-7 Plot Points in the Coordinate Plane—pp. 210–211 • 9-8 Reflections of Points—pp. 212–213 • 9-9 Distance on the Coordinate Plane—pp. 214–215 • 9-10 Plot Polygons—pp. 216–217 • 9-11 Problem Solving: Draw a Picture—pp. 218–219
6.NS.3.5 Apply and extend previous understanding of addition and subtraction. • Understand additive inverses when adding and subtracting integers. o Describe real-world contexts in which opposite quantities combine to make zero (zero pair). o Use models to add and subtract integers from -20 to 20 and describe real-world contexts using sums and differences. o Understand subtraction of integers as adding the additive inverse. o Show that the distance between two integers is the absolute value of their difference.	N/A (Gr. 7)
6.NS.3.6 Apply and extend previous understanding of multiplication and division. • Solve multiplication and division problems that use positive and negative integers. • Solve problems using a combination of all four operations with positive and negative integers.	N/A (Gr. 7)

EXPRESSIONS AND EQUATIONS

6th Grade Content Standards	*Sadlier Math*, Grade 6
Achievement Standard: 6.EE.1 Apply and extend previous understandings of arithmetic to algebraic expressions.	
6.EE.1.1 Write and evaluate numerical expressions, with and without grouping symbols, involving whole number exponents.	**Chapter 4: 4-1& 4-2** • 4-1 Exponents—pp. 70–71 • 4-2 Order of Operations—pp. 72–73
6.EE.1.2 Write, read, and evaluate algebraic expressions. • Write expressions that record operations with numbers and with letters standing for numbers. • Identify parts of an expression using mathematical terms (sum, term, product, factor, quotient, and coefficient) and view one or more of those parts as a single entity. • Evaluate expressions with specific values for their variables, including expressions that arise from formulas used in real-world problems.	**Chapter 1: 1-1 & 1-5** • 1-4 Write Addition and Subtraction Expressions—pp. 10–11 • 1-5 Evaluate Addition and Subtraction Expressions—pp. 12–13 **Chapter 2: 2-4 & 2-5** • 2-4 Write Multiplication Expressions—pp. 30–31 • 2-5 Evaluate Multiplication Expressions—pp. 32–33 **Chapter 3: 3-8 & 3-9** • 3-8 Write Division Expressions—pp. 58–59 • 3-9 Evaluate Division Expressions—pp. 60–61 **Chapter 4: 4-2 through 4-10** • 4-2 Order of Operations—pp. 72–73 • 4-3 Parts of Expressions—pp. 74–75 • 4-4 Translate Expressions—pp. 76–77 • 4-5 Translate Expressions Involving Exponents—pp. 78–79 • 4-6 Use the Distributive Property and Evaluate Algebraic Expressions—pp. 82–83 • 4-7 Apply Properties to Write Equivalent Expressions—pp. 84–85 • 4-8 Identify Equivalent Expressions—pp. 86–87 • 4-9 Use Formulas—pp. 88–89 **Chapter 7: 7-5** • 7-5 Addition and Subtraction Expressions with Fractions—pp. 152–153 **Chapter 8: 8-10** • 8-10 Multiplication and Division Expressions with Fractions—pp. 184–185
6.EE.1.3 Apply the properties of operations to generate equivalent expressions with and without exponents.	**Chapter 4: 4-7** • 4-7 Apply Properties to Write Equivalent Expressions—pp. 84–85
6.EE.1.4 Identify when two expressions are equivalent and justify with mathematical reasoning.	**Chapter 4: 4-8** • 4-8 Identify Equivalent Expressions—pp. 86–87
Achievement Standard: 6.EE.2 Reason about and solve one-variable equations and inequalities.	
6.EE.2.1 Use substitution to determine whether a given number in a specified set makes an equation true.	**Chapter 5: 5-1 & 5-6** • 5-1 Solutions of Equations—pp. 98–99 • 5-6 Solutions of Inequalities—pp. 110–111

EXPRESSIONS AND EQUATIONS

6th Grade Content Standards	*Sadlier Math*, Grade 6
6.EE.2.2 Use variables to represent numbers and write expressions when solving a real-world or mathematical problem.	**Chapter 4: 4-4** • 4-4 Translate Expressions—pp. 76–77 **Chapter 5: 5-2 through 5-4, 5-7 through 5-9** • 5-2 Addition and Subtraction Equations—pp. 100–101 • 5-3 Multiplication and Division Equations—pp. 102–103 • 5-4 Write and Solve Equations—pp. 104–105 • 5-7 Write Inequalities—pp. 112–113 • 5-8 Solve Inequalities—pp. 114–115 • 5-9 Problem Solving: Write and Solve an Equation—pp. 116–117
6.EE.2.3 Solve real-world and mathematical problems by writing and solving one-step equations.	**Chapter 5: 5-1 through 5-4, 5-9** • 5-2 Addition and Subtraction Equations—pp. 100–101 • 5-3 Multiplication and Division Equations—pp. 102–103 **Chapter 7: 7-6** • 7-6 Addition and Subtraction Equations with Fractions—pp. 154–155 **Chapter 8: 8-11** • 8-11 Multiplication and Division Equations with Fractions—pp. 186–187
6.EE.2.4 Understand and solve inequalities. • Use substitution to determine whether a given number in a specified set makes an inequality true. • Write an inequality to represent a constraint or condition in a real-world or mathematical problem. • Recognize that inequalities have infinitely many solutions. • Represent solutions of such inequalities on number line diagrams.	**Chapter 5: 5-5 through 5-8** • 5-5 Inequalities—pp. 108–109 • 5-6 Solutions of Inequalities—pp. 110–111 • 5-7 Write Inequalities—pp. 112–113 • 5-8 Solve Inequalities—pp. 114–115

Achievement Standard: 6.EE.3 Represent and analyze quantitative relationships between dependent and independent variables.

6.EE.3.1 Represent, understand, and analyze quantitative relationships by: • Use variables to represent two quantities in a real-world problem that change in relationship to one another. • Analyze the relationship between quantities in different representations (context, equations, tables, and graphs).	**Chapter 13: 13-1 through 13-4** • 13-1 Related Quantities—pp. 298–299 • 13-2 Relationships in Words and Tables—pp. 300–301 • 13-3 Relationships in Equations and Graphs—pp. 302–303 • 13-4 Multiple Representations of a Relationship—pp. 306–307

GEOMETRY

6th Grade Content Standards	*Sadlier Math*, Grade 6
Achievement Standard: 6.G.1 Solve real-world and mathematical problems involving area, surface area, and volume.	
6.G.1.1 Create geometric models to: • Find the area of triangles by composing into rectangles and decomposing into right triangles. • Find the area of special quadrilaterals and polygons by decomposing into triangles and rectangles. • Know and apply formulas (perimeter and area) for triangles and quadrilaterals.	**Chapter 14: 14-1 through 14-3, 14-5 & 14-6** • 14-1 Areas of Parallelograms and Rhombuses—pp. 316–317 • 14-2 Areas of Triangles—pp. 318–319 • 14-3 Areas of Trapezoids—pp. 320–321 • 14-5 Areas of Regular Polygons—pp. 326–327 • 14-6 Areas of Composite Figures—pp. 328–329
6.G.1.2 Find the volume of a right rectangular prism. • Know and apply formulas $V = lwh$ and $V = Bh$. • Find volumes with fractional edge lengths. • Solve real-world and mathematical problems.	**Chapter 15: 15-4 through 15-6** • 15-4 Use Cubes to Find Volumes—pp. 346–347 • 15-5 Volumes of Right Rectangular Prisms—pp. 348–349 • 15-6 Problem Solving: Compare Models—pp. 350–351
6.G.1.3 Use the coordinate plane to solve real-world and mathematical problems. • Draw polygons in the coordinate plane given coordinates for vertices. • Use coordinates to find the length of a side joining points with the same first coordinate or same second coordinate.	**Chapter 9: 9-9 & 9-10** • 9-10 Plot Polygons—pp. 216–217 • 9-11 Problem Solving: Draw a Picture—pp. 218–219
6.G.1.4 Represent right prisms and right pyramids by: • Using the nets of rectangles and triangles. • Using the nets to find the surface area of these figures. • Applying these techniques in the context of solving real-world and mathematical problems.	**Chapter 15: 15-1 through 15-3** • 15-1 Nets of Three-Dimensional Figures—pp. 338–339 • 15-2 Use Nets to Find Surface Areas of Prisms—pp. 340–341 • 15-3 Use Nets to Find Surface Areas of Pyramids—pp. 342–343

GEOMETRY

6th Grade Content Standards	*Sadlier Math*, Grade 6
6.G.1.5 Investigate relationships between lines and angles.	See Grade 4 **Chapter 16: 16-1 through 16-6** • 16-1 Points, Lines, Line Segments, Rays, and Angles—pp. 350–351 • 16-2 Angle Measure—pp. 352–353 • 16-3 Measure Angles—pp. 356–357 • 16-4 Unknown Angle Measures—pp. 358–359 • 16-5 Parallel and Perpendicular Lines—pp. 360–361

STATISTICS AND PROBABILITY

6th Grade Content Standards	*Sadlier Math*, Grade 6
Achievement Standard: 6.SP.1 Develop an understanding of statistical variability.	
6.SP.1.1 Recognize a statistical question as one that anticipates variability in the data related to the question and accounts for it in the answers.	**Chapter 16: 16-1** • 16-1 Statistical Questions—pp. 358–359
6.SP.1.2 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.	**Chapter 16: 16-2 through 16-5** • 16-2 Measures of Center—pp. 360–361 • 16-3 Measures of Variation: Range and Interquartile Range—pp. 362–363 • 16-4 Measure of Variation: Mean Absolute Deviation—pp. 366–367 **Chapter 17: 17-2 & 17-4** • 17-2 Box Plots—pp. 380–381 • 17-4 Data Distributions—pp. 386–387
6.SP.1.3 Recognize that a measure of center for a numerical data set summarizes all of its values with a single number, while a measure of variation describes how its values vary with a single number. • Mean-measure of center that represents a balance point or fair share; can be influenced by extreme measures. • Median-measure of center that is the numerical middle of an ordered data set. • Describing the variability of a data set is necessary to distinguish between data sets in the same scale, by comparing graphical representations of different data sets in the *continued*	**Chapter 16: 16-2 through 16-4** • 16-2 Measures of Center—pp. 360–361 • 16-3 Measures of Variation: Range and Interquartile Range—pp. 362–363 • 16-4 Measure of Variation: Mean Absolute Deviation—pp. 366–367 **Chapter 17: 17-4** • 17-4 Data Distributions—pp. 386–387

STATISTICS AND PROBABILITY

6th Grade Content Standards	*Sadlier Math*, Grade 6
same scale that have similar measures of center, but different spreads.	
Achievement Standard: 6.SP.2 Use data samples of a population and describe the characteristics and limitations of the samples.	
6.SP.2.1 Display and compare numerical data sets in a variety of ways including dot plots (line plots), box plots, and histograms.	**Chapter 17: 17-1 through 17-6** • 17-1 Dot Plots—pp. 378–379 • 17-2 Box Plots—pp. 380–381 • 17-3 Histograms—pp. 382–383 • 17-4 Data Distributions—pp. 386–387 • 17-5 Interpret Circle Graphs—pp. 388–389 • 17-6 Problem Solving: Compare Models—pp. 390–391
6.SP.2.2 Sketch circle graphs.	**Chapter 17: 17-5** • 17-5 Interpret Circle Graphs—pp. 388–389
6.SP.2.3 Summarize data sets in relation to their context by: • Reporting the number of observations in dot plots and histograms. • Describing the nature of the attribute under investigation, including how it was measured and the units of measurement. • Giving quantitative measures of central tendency, as well as describing any overall pattern and any striking deviations from the overall pattern, to analyze center and variability. • Justifying the appropriate choice of measures of center using the shape of the data distribution.	**Chapter 17: 17-1 through 17-6** • 17-1 Dot Plots—pp. 378–379 • 17-2 Box Plots—pp. 380–381 • 17-3 Histograms—pp. 382–383 • 17-4 Data Distributions—pp. 386–387 (measures of center, measures of variation) • 17-5 Interpret Circle Graphs—pp. 388–389 • 17-6 Problem Solving: Compare Models—pp. 390–391