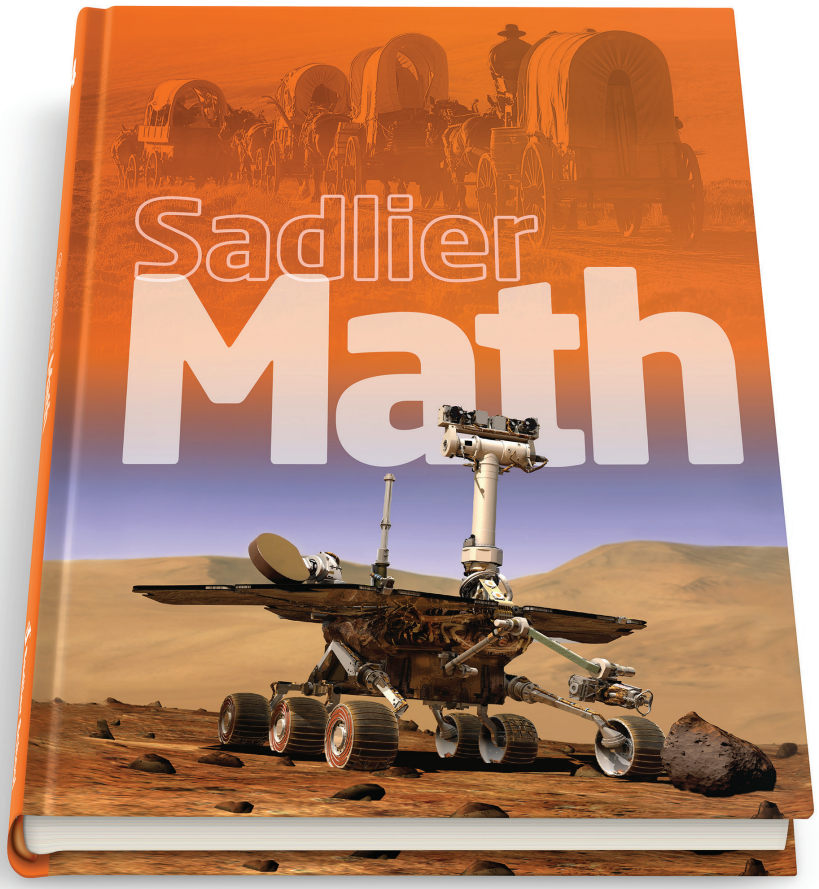
Sadlier Math™

Correlation to the Diocese of Raleigh Math Standards

Grade 4



Learn more at www.SadlierSchool.com/SadlierMath

OPERATIONS AND ALGEBRAIC THINKING

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.OA.1 Represent and solve problems involving multiplication and division.	
4.OA.1.1 Interpret multiplication equations as multiplicative comparisons. • Multiply or divide to solve word problems involving multiplicative comparisons using models and equations with a symbol for the unknown number. • Assess the reasonableness of answers using mental computation, estimation strategies, and rounding. • Distinguish multiplicative comparisons from additive comparisons.	**Chapter 4: 4-5** • 4-5 Multiply to Compare Numbers—pp. 78–79 **Chapter 5: 5-5** • 5-5 Multiplicative and Additive Comparisons—pp. 98–99 **Chapter 7: 7-6** • 7-6 Problem Solving: Work Backward—pp. 140–141 **Chapter 8: 8-8** • 8-8 Problem Solving: Use a Model—pp. 164–165
Achievement Standard: 4.OA.2 Use the four operations with whole numbers to solve problems.	
4.OA.2.1 Solve two-step word problems involving the four operations with whole numbers. • Use estimation strategies to assess reasonableness of answers. • Apply commutative, distributive, associative and identity properties. • Understand and interpret remainders of word problems. • Represent problems using equations with a letter standing for the unknown quantity.	**Chapter 2: 2-1 through 2-3** • 2-1 Mathematical Expressions—pp. 24–25 • 2-2 Addition Properties—pp. 26–27 • 2-3 Estimate Sums—pp. 28–29 **Chapter 3: 3-1 & 3-6** • 3-1 Estimate Differences—pp. 46–47 • 3-6 Multistep Problems Using Addition and Subtraction—pp. 58–59 **Chapter 4: 4-4** • 4-4 Estimate Products—pp. 76–77 **Chapter 7: 7-3** • 7-3 Estimate Quotients—pp. 132–133 **Chapter 8: 8-1 & 8-3** • 8-1 One-Digit Quotients—pp. 148–149 • 8-3 Two-Digit Quotients—pp. 152–153
Achievement Standard: 4.OA.3 Gain familiarity with factors and multiples.	
4.OA.3.1 Find all factor pairs for whole numbers up to and including 144. • Recognize that a whole number is a multiple of each of its factors. • Determine if a given whole number is a multiple of a given one-digit number. • Define and understand prime and composite numbers.	**Chapter 9: 9-1 through 9-5** • 9-1 Factors—pp. 172–173 • 9-2 Factor Pairs—pp. 174–175 • 9-3 Prime and Composite Numbers—pp. 176–177 • 9-4 Multiples—pp. 180–181 • 9-5 Common Multiples—pp. 182–183

OPERATIONS AND ALGEBRAIC THINKING

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.OA.4 Generate and analyze patterns.	
4.OA.4.1 Generate and analyze a number, letter or shape pattern that follows a given rule. • Identify apparent features of the pattern that were not explicit in the rule, itself. • Explain why the numbers, letters or shape patterns will continue to alternate in this way.	**Chapter 6: 6-5** • 6-5 Multiplication Patterns—pp. 118–119 **Chapter 7: 7-5** • 7-5 Number Patterns—pp. 138–139 **Chapter 17: 17-5** • 17-5 Shape Patterns—pp. 380–381

NUMBER AND OPERATIONS IN BASE TEN

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.NBT.1 Generalize place value understanding for multi-digit numbers whole numbers and decimals.	
4.NBT.1.1 Explain that in a multi-digit whole number and a decimal number, a digit in the one's place represents 10 times as much as it represents in the place to its right, up to the hundredth thousands and to the hundredths.	**Chapter 1: 1-1 through 1-3** • 1-1 Thousands—pp. 2–3 • 1-2 What Is One Million?—pp. 4–5 • 1-3 Millions—pp. 6–7 **Chapter 13: 13-5** • 13-5 Decimal Place Value—pp. 280–281
4.NBT.1.2 Read and write multi-digit whole numbers up to and including 100,000 using numerals, word and expanded form.	**Chapter 1: 1-1 through 1-4** • 1-1 Thousands—pp. 2–3 • 1-2 What Is One Million?—pp. 4–5 • 1-3 Millions—pp. 6–7 • 1-4 Expanded Form—pp. 8–9
4.NBT.1.3 Compare and order multi-digit numbers up to and including 100,000 based on the value of the digits in each place, using <, >, and = symbols to record the results of comparisons. • Use place value understanding to round multi-digit whole numbers to any place.	**Chapter 1: 1-5 & 1-6** • 1-5 Round Whole Numbers—pp. 12–13 • 1-6 Compare and Order Whole Numbers—pp. 14–15

NUMBER AND OPERATIONS IN BASE TEN

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.NBT.2 Use place value understanding and properties of operations to perform multi-digit algorithms.	
4.NBT.2.1 Fluently add and subtract multi-digit whole numbers up to and including 100,000 using the standard algorithm with place value understanding.	**Chapter 2: 2-1 through 2-6** • 2-1 Mathematical Expressions—pp. 24–25 • 2-2 Addition Properties—pp. 26–27 • 2-3 Estimate Sums—pp. 28–29 • 2-4 Add Thousands—pp. 30–31 • 2-5 Add Millions—pp. 34–35 • 2-6 Three or More Addends—pp. 36–37 **Chapter 3: 3-1 through 3-6** • 3-1 Estimate Differences—pp. 46–47 • 3-2 Subtract with One Regrouping—pp. 48–49 • 3-3 Subtract with Two Regroupings—pp. 50–51 • 3-4 Subtract Greater Numbers—pp. 54–55 • 3-5 Zeros in Subtraction—pp. 56–57 • 3-6 Multistep Problems Using Addition and Subtraction—pp. 58–59
4.NBT.2.2 Multiply a whole number of up to four digits by a one-digit whole number, and multiply up to two-digit numbers, using strategies based on place value, area models, partial products, and properties of operation.	**Chapter 4: 4-1 through 4-3** • 4-1 Multiplication Properties—pp. 68–69 • 4-2 Use Place-Value Models—pp. 70–71 • 4-3 Multiply Tens, Hundreds, and Thousands—pp. 74–75 **Chapter 5: 5-1 through 5-5** • 5-1 Multiply with Regrouping—pp. 88–89 • 5-2 Use Properties to Multiply by One-Digit Numbers—pp. 90–91 • 5-3 Use Area Models to Multiply by One-Digit Numbers—pp. 92–93 • 5-4 Multiply Three- and Four-Digit Numbers—pp. 96–97 • 5-5 Multiplicative and Additive Comparisons—pp. 98–99 **Chapter 6: 6-1 through 6-6** • 6-1 Use Area Models to Multiply by Two-Digit Numbers—pp. 108–109 • 6-2 Break Apart Numbers to Multiply—pp. 110–111 • 6-3 Multiply by Two-Digit Numbers: No Regrouping—pp. 114–115 • 6-4 Multiply by Two-Digit Numbers: Regrouping—pp. 116–117 • 6-5 Multiplication Patterns—pp. 118–119 • 6-6 Problem Solving: Write and Solve an Equation—pp. 120–121 **Chapter 8: 8-7** • 8-7 Multistep Problems Using Multiplication and Division—pp. 162–163
4.NBT.2.3 Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value, rectangular arrays, area models, repeated subtraction, partial quotients, properties of operations, and/or relationship between multiplication and division.	**Chapter 7: 7-1, 7-2 & 7-4** • 7-1 Division Rules—pp. 128–129 • 7-2 Relate Multiplication and Division—pp. 130–131 • 7-4 Use Models to Divide—pp. 136–137 **Chapter 8: 8-1 through 8-7** • 8-1 One-Digit Quotients—pp. 148–149 • 8-2 Divisibility—pp. 150–151 • 8-3 Two-Digit Quotients—pp. 152–153 • 8-4 Zeros in Quotients—pp. 154–155 • 8-5 More Quotients—pp. 158–159 • 8-6 Order of Operations—pp. 160–161 • 8-7 Multistep Problems Using Multiplication and Division—pp. 162–163

NUMBER AND OPERATIONS—FRACTIONS

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.NF.1 Extend understanding of fraction equivalence and ordering.	
4.NF.1.1 Explain why a fraction is equivalent to another fraction by using a fraction models (area and length), with focus on how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	**Chapter 10: 10-2 through 10-6** • 10-1 Fractions of a Set—pp. 192–193 • 10-2 Equivalent Fractions: Number Line Diagrams—pp. 194–195 • 10-3 Write Equivalent Fractions: Use Models—pp. 196–197 • 10-4 Write Equivalent Fractions: Use Multiplication and Division—pp. 198–199 • 10-5 Fractions: Lowest Terms—pp. 200–201 • 10-6 Compare Fractions: Use Benchmarks—pp. 204–205
4.NF.1.2 Compare two fractions with different numerators and different denominators, using 2, 3, 4, 5, 6, 8, 10, 12, and 100 as denominators. Understand that the comparisons are valid only when the two fractions refer to the same whole number. Use the symbols <, >, and = to record results and justify conclusions by: • Reasoning about their size • Using benchmark fractions 0, ½, and a whole • Comparing common numerator or common denominator.	**Chapter 10: 10-7 through 10-11** • 10-7 Compare Fractions with the Same Denominator—pp. 206–207 • 10-8 Compare Fractions—pp. 208–209 • 10-9 Mixed Numbers—pp. 210–211 • 10-10 Compare Mixed Numbers—pp. 212–213 • 10-11 Order Fractions and Mixed Numbers—pp. 214–215
Achievement Standard: 4.NF.2 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	
4.NF.2.1 Understand and justify decompositions of fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100. • Understand addition and subtraction of fractions as complete and/or separate parts, referring to the same whole or group. • Decompose a fraction into a sum of unit fractions and a sum of fractions with the same denominator in more than one way using area and length models and equations. • Add, subtract, multiply and divide fractions and mixed numbers with like and remove denominators. *continued*	**Chapter 10: 10-2m 10-3 & 10-9** • 10-2 Equivalent Fractions: Number Line Diagrams—pp. 194–195 • 10-3 Write Equivalent Fractions: Use Models—pp. 196–197 • 10-9 Mixed Numbers—pp. 210–211 **Chapter 11: 11-1 through 11-8** • 11-1 Use Models to Add Fractions—pp. 224–225 • 11-2 Add Fractions: Like Denominators—pp. 226–227 • 11-3 Decompose Fractions as Sums of Unit Fractions—pp. 228–229 • 11-4 Use Models to Subtract Fractions—pp. 230–231 • 11-5 Subtract Fractions: Like Denominators—pp. 232–233 • 11-6 Write Mixed Numbers as Equivalent Fractions—pp. 236–237 • 11-7 Add Mixed Numbers: Like Denominators—pp. 238–239 • 11-8 Subtract Mixed Numbers: Like Denominators—pp. 240–241 **Chapter 12: 12-1 through 12-7** • 12-1 Add Unit Fractions to Multiply—pp. 250–251 • 12-2 Model Multiplying a Unit Fraction and a Whole Number—pp. 252–253 • 12-3 Multiply a Unit Fraction and a Whole Number—pp. 254–255 *continued*

NUMBER AND OPERATIONS—FRACTIONS

4th Grade Content Standards	*Sadlier Math*, Grade 4
• Replace mixed numbers with equivalent fractions, using properties of operations and the relationship between addition and subtraction. • Solve word problems involving addition and subtraction of fractions and mixed numbers by using a visual representation of the problems and writing equations.	• 12-4 Model Multiplying a Fraction and a Whole Number—pp. 258–259 • 12-5 Multiply a Fraction and a Whole Number—pp. 260–261 • 12-6 Represent Situations Involving Multiplying a Fraction and a Whole Number—pp. 262–263 • 12-7 Problem Solving: Choose a Strategy—pp. 264–265 See also Grade 5 **Chapter 9: 9-1 through 9-7** • 9-1 Divide Whole Numbers by Unit Fractions—pp. 198–199 • 9-2 Reciprocals—pp. 200–201 • 9-3 Divide Whole Numbers by Fractions—pp. 202–203 • 9-4 Divide Unit Fractions by Whole Numbers—pp. 206–207 • 9-5 Divide Fractions by Whole Numbers—pp. 208–209 • 9-6 Word Problems Involving Fraction Division—pp. 210–211

Achievement Standard: 4.NF.3 Use unit fractions to understand operations of fractions.

4.NF.3.1 Apply and extend previous understanding of multiplication to: • Explain and model the representation of fractions by multiplying a whole number by a unit fraction. • Solve word problems involving multiplication of a fraction by a whole number.	**Chapter 12: 12-1 through 12-7** • 12-1 Add Unit Fractions to Multiply—pp. 250–251 • 12-2 Model Multiplying a Unit Fraction and a Whole Number—pp. 252–253 • 12-3 Multiply a Unit Fraction and a Whole Number—pp. 254–255 • 12-4 Model Multiplying a Fraction and a Whole Number—pp. 258–259 • 12-5 Multiply a Fraction and a Whole Number—pp. 260–261 • 12-6 Represent Situations Involving Multiplying a Fraction and a Whole Number—pp. 262–263 • 12-7 Problem Solving: Choose a Strategy—pp. 264–265

Achievement Standard: 4.NF.4 Understand decimal notation for fractions, and compare decimals and fractions.

4.NF.4.1 Use decimal notation to represent fractions: • Express, model and explain the equivalence of fractions with a denominator of 10 with fractions with a denominator of 100. • Use equivalent fractions to add fractions with denominators of 10 and 100. • Use decimal notation for fractions with denominators 10 or 100. • Use tenths and hundredths models to make connections between fractions and decimals.	**Chapter 13: 13-1 through 13-5** • 13-1 Equivalent Fractions: Rename Tenths as Hundredths—pp. 272–273 • 13-2 Add and Subtract Fractions with Denominators of 10 and 100—pp. 274–275 • 13-3 Tenths and Hundredths as Fractions and Decimals—pp. 276–277 • 13-4 Decimals Greater than One—pp. 278–279 • 13-5 Decimal Place Value—pp. 280–281

NUMBER AND OPERATIONS—FRACTIONS

4th Grade Content Standards	*Sadlier Math*, Grade 4
4.NF.4.2 Compare two decimals to hundredths by reasoning about their size. Record the results of comparisons with the symbols <, >, and = and justify conclusions with visual models. • Recognize that comparisons are valid only when the two decimals refer to the same whole. • Estimate and compute sum or difference of whole numbers with decimals, and decimals with decimals.	**Chapter 13: 13-6 & 13-7** • 13-6 Compare Decimals with Models and Symbols—pp. 284–285 • 13-7 Order Decimals—pp. 286–287

MEASUREMENT AND DATA

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.MD.1 Solve problems involving measurement	
4.MD.1.1 Know relative sizes of measurement units. • Solve problems by using customary and metric systems of measurement. • Measure to solve problems involving systems of units including km, m, cm; kg, g; lb, oz.; hr, min, sec. • Use the four operations to solve one-step word problems involving whole-number measurements of length, mass, and capacity which are given in customary and metric units.	**Chapter 14: 14-1 through 14-10** • 14-1 Measure with Inches—pp. 296–297 • 14-2 Customary Units of Length—pp. 298–299 • 14-3 Customary Units of Capacity—pp. 300–301 • 14-4 Customary Units of Weight—pp. 302–303 • 14-5 Operations with Customary Units—pp. 304–305 • 14-6 Metric Units of Length—pp. 308–311 • 14-7 Metric Units of Capacity—pp. 310–313 • 14-8 Metric Units of Mass—pp. 312–313 • 14-9 Operations with Metric Units—pp. 314–315 • 14-10 Problem Solving: Make a Table—pp. 316–317
4.MD.1.2 Use multiplicative reasoning to convert customary and metric measurements from a larger unit to a smaller unit using place value understanding, two-column tables, number line diagrams and modeling.	**Chapter 14: 14-2 through 14-10** • 14-2 Customary Units of Length—pp. 298–299 • 14-3 Customary Units of Capacity—pp. 300–301 • 14-4 Customary Units of Weight—pp. 302–303 • 14-5 Operations with Customary Units—pp. 304–305 • 14-6 Metric Units of Length—pp. 308–311 • 14-7 Metric Units of Capacity—pp. 310–313 • 14-8 Metric Units of Mass—pp. 312–313 • 14-9 Operations with Metric Units—pp. 314–315 • 14-10 Problem Solving: Make a Table—pp. 316–317

MEASUREMENT AND DATA

4th Grade Content Standards	*Sadlier Math*, Grade 4
4.MD.1.3 Solve word problems involving distances, masses of objects, and money, including problems involving simple fractions or decimals, and problems that involve addition and subtraction of time intervals that cross the hour.	**Chapter 14: 14-1 through 14-10** • 14-1 Measure with Inches—pp. 296–297 • 14-2 Customary Units of Length—pp. 298–299 • 14-3 Customary Units of Capacity—pp. 300–301 • 14-4 Customary Units of Weight—pp. 302–303 • 14-5 Operations with Customary Units—pp. 304–305 • 14-6 Metric Units of Length—pp. 308–311 • 14-7 Metric Units of Capacity—pp. 310–313 • 14-8 Metric Units of Mass—pp. 312–313 • 14-9 Operations with Metric Units—pp. 314–315 • 14-10 Problem Solving: Make a Table—pp. 316–317 **Chapter 15: 15-1 through 15-3** • 15-1 Represent Measures on a Number Line—pp. 324–325 • 15-2 Use Multiplication to Rename Measures—pp. 326–327 • 15-3 Elapsed Time—pp. 328–329 See also Grade 3 **Chapter 13: 13-2 through 13-5** • 13-2 Measure Elapsed Time—pp. 278–279 • 13-3 Find Start and End Times—pp. 282–283 • 13-4 Operations with Time—pp. 284–285 • 13-5 Problem Solving: Use Logical Reasoning—pp. 286–287
Achievement Standard: 4.MD.2 Solve problems involving area and perimeter.	
4.MD.2.1 Solve problems involving a fixed area and varying perimeters, and a fixed perimeter and varying areas. • Apply the area and perimeter formulas for rectangles in real-world and mathematical problems. • Find areas of rectilinear figures with known side lengths.	**Chapter 17: 17-7 & 17-8** • 17-7 Use Area Formulas—pp. 384–385 • 17-8 Problem Solving: Draw a Picture—pp. 386–387 See also Grade 3 **Chapter 15: 15-1 through 15-5** • 15-1 Understand Area—pp. 312–313 • 15-2 Find Area Using Standard Units—pp. 314–315 • 15-3 Find the Area of a Rectangle and a Square—pp. 316–317 • 15-4 Find Area Using the Distributive Property—pp. 320–321 • 15-5 Find Area of Composite Shapes—pp. 322–323 **Chapter 16: 16-1 through 16-6** • 16-1 Understand Perimeter—pp. 332–333 • 16-2 Find Perimeter—pp. 334–335 • 16-3 Find Unknown Side Lengths—pp. 336–337 • 16-4 Problem Solving: Compare Strategies—pp. 340–341 • 16-5 Same Perimeter, Different Areas—pp. 342–343 • 16-6 Same Area, Different Perimeters—pp. 344–345

MEASUREMENT AND DATA

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.MD.3 Represent and interpret data.	
4.MD.3.1 Represent and interpret data using whole numbers. • Collect data by asking questions which yield numerical data. • Create a frequency table, scaled bar graph and/or a dot plot (line plot) to show a representation of data and interpretation of a data set of measurements in fractions of a unit (½,¼, ⅛). • Solve problems involving addition and subtraction of fractions by using information presented in a dot plot (line plot). • Determine whether a survey question will yield categorical or numerical data. • Introduce measures of central tendency (range, median, mean, and mode).	**Chapter 15: 15-5 through 15-8** • 15-5 Line Graphs—pp. 334–335 • 15-6 Line Plots—pp. 336–337 • 15-7 Surveys and Line Plots—pp. 338–339 • 15-8 Choose an Appropriate Display—pp. 340–341 See also Grade 5 **Chapter 17: 17-1 through 17-7** • 17-1 Line Plots with Whole Numbers and Decimals—pp. 380–381 • 17-2 Line Plots with Fractions and Mixed Numbers—pp. 382–383

GEOMETRY

4th Grade Content Standards	*Sadlier Math*, Grade 4
Achievement Standard: 4.G.1 Classify two and three-dimensional shapes based on lines, angles, faces, edges and vertices.	
4.G.1.1 Define, identify and draw points, lines, line segments, rays, angles (right, acute, obtuse), perpendicular and parallel lines.	**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 • 16-6 Problem Solving: Use a Diagram—pp. 362–363

GEOMETRY

4th Grade Content Standards	*Sadlier Math*, Grade 4
4.G.1.2 Classify quadrilaterals and triangles by their angle measurements, side lengths, and the presence or absence of parallel or perpendicular lines, and two and three-dimensional figures by their specific size and shape. • Identify intersecting, parallel, and perpendicular lines and line segments and their midpoints: identify in the environment. • Understand the concept of similarity and congruence. • Recognize congruent plane figures after geometric transformations, such as rotations (turns), reflections (flips), and translations (slides). • Classify quadrilaterals and triangles by their angles and sides. • Classify attributes of three-dimensional solid figures including the faces, edges and vertices of cubes, cylinders, cones, spheres, rectangular and triangular prisms and pyramids.	**Chapter 16: 16-1 & 16-5** • 16-1 Points, Lines, Line Segments, Rays, and Angles—pp. 350–351 • 16-5 Parallel and Perpendicular Lines—pp. 360–361 **Chapter 17: 17-1 through 17-8** • 17-1 Polygons—pp. 370–371 • 17-2 Quadrilaterals—pp. 372–373 • 17-3 Triangles—pp. 374–375 • 17-4 Symmetry—pp. 376–377 • 17-5 Shape Patterns—pp. 380–381 • 17-6 Use Perimeter Formulas—pp. 382–383 • 17-7 Use Area Formulas—pp. 384–385 • 17-8 Problem Solving: Draw a Picture—pp. 386–387 See also Grade 5 **Chapter 16: 16-1** • 16-1 Solid Figures—pp. 360–361 *No discussion of similarity, congruence, or transformations at this level.
4.G.1.3 Identify and model symmetry and congruence with concrete materials and drawings.	**Chapter 17: 17-4** • 17-4 Symmetry—pp. 376–377
4.G.1.4 Identify attributes of 3-dimensional solid figures including the faces, edges and vertices of cubes, cylinders, cones, spheres, rectangular and triangular prisms and pyramids.	See Grade 5 **Chapter 16: 16-1** • 16-1 Solid Figures—pp. 360–361 See also Grade 2 **Chapter 13: 13-3** • 13-3 Identify Three-Dimensional Shapes—pp. 565–568