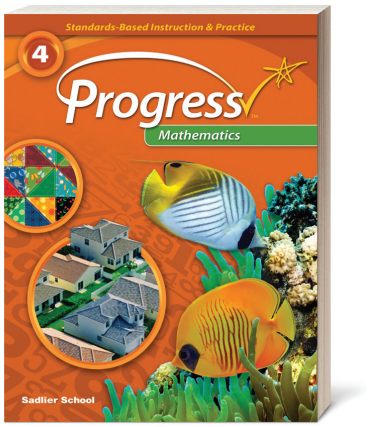
SADLIER

Progress Mathematics

Standards-Based Instruction & Practice



Aligned to the

Georgia Standards of Excellence 2015–2016: Mathematics

Grade 4

Contents

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Operations and Algebraic Thinking 4.OA

Standards		Sadlier *Progress Mathematics*, Grade 4	
Use the four operations with whole numbers to solve problems.			
MGSE4.OA.1	Understand that a multiplicative comparison is a situation in which one quantity is multiplied by a specified number to get another quantity.		
	a. Interpret a multiplication equation as a comparison e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5.	**Lesson 1**	**Interpret Multiplication Equations as Comparisons**—pp. 10–17
	b. Represent verbal statements of multiplicative comparisons as multiplication equations.	**Lesson 1**	**Interpret Multiplication Equations as Comparisons**—pp. 10–17
MGSE4.OA.2	Multiply or divide to solve word problems involving multiplicative comparison. Use drawings and equations with a symbol or letter for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	**Lesson 2**	**Problem Solving: Use Multiplication and Division to Make Comparisons**—pp. 18–25
MGSE4.OA.3	Solve multistep word problems with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. Represent these problems using equations with a symbol or letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.	**Lesson 3**	**Problem Solving: Multistep Problems**—pp. 26–33
Gain familiarity with factors and multiples.			
MGSE4.OA.4	Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite.	**Lesson 4**	**Find Factors and Multiples for Whole Numbers**—pp. 34–41

Operations and Algebraic Thinking 4.OA

Standards		Sadlier *Progress Mathematics*, Grade 4	
Generate and analyze patterns.			
MGSE4.OA.5	Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. Explain informally why the pattern will continue to develop in this way. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers.*	**Lesson 5**	**Generate and Analyze Number and Shape Patterns**—pp. 42–49

Number and Operations in Base Ten 4.NBT

(Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)

Standards		Sadlier *Progress Mathematics*, Grade 4	
Generalize place value understanding for multi-digit whole numbers.			
MGSE4.NBT.1	Recognize that in a multi-digit whole number, a digit in any one place represents ten times what it represents in the place to its right. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*	**Lesson 6**	**Understand Place Value of Whole Numbers**—pp. 56–63
MGSE4.NBT.2	Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	**Lesson 7**	**Read, Write, and Compare Whole Numbers**—pp. 64–71
MGSE4.NBT.3	Use place value understanding to round multi-digit whole numbers to any place.	**Lesson 8**	**Apply Place Value to Round Whole Numbers**—pp. 72–79
Use place value understanding and properties of operations to perform multi-digit arithmetic.			
MGSE4.NBT.4	Fluently add and subtract multi-digit whole numbers using the standard algorithm.	**Lesson 9**	**Add and Subtract Fluently with Whole Numbers**—pp. 80–87

Number and Operations in Base Ten — 4.NBT

(Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)

Standards		Sadlier *Progress Mathematics*, Grade 4	
MGSE4.NBT.5	Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	**Lesson 10**	**Multiply Whole Numbers: Use Place Value**—pp. 88–95
MGSE4.NBT.6	Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models.	**Lesson 11**	**Multiply Whole Numbers: Use Properties of Operations**—pp. 96–103
		Lesson 12	**Divide Whole Numbers: Use Place Value**—pp. 104–111
		Lesson 13	**Divide Whole Numbers: Use Properties of Operations**—pp. 112–119

Number and Operations—Fractions — 4.NF

(Grade 4 expectations in this domain are limited to fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

Standards		Sadlier *Progress Mathematics*, Grade 4	
Extend understanding of fraction equivalence and ordering.			
MGSE4.NF.1	Explain why two or more fractions are equivalent $a/b = n \times a/n \times b$ ex. $1/4 = 3 \times 1/3 \times 4$ by using visual fraction models. Focus attention on how the number and size of the parts differ even though the fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	**Lesson 14**	**Understand Equivalent Fractions**—pp. 126–133
		Lesson 15	**Write Equivalent Fractions**—pp. 134–141
MGSE4.NF.2	Compare two fractions with different numerators and different denominators, e.g., by using visual fraction models, by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions.	**Lesson 16**	**Compare Two Fractions**—pp. 142–149

Number and Operations—Fractions 4.NF

(Grade 4 expectations in this domain are limited to fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

STANDARDS		SADLIER *PROGRESS MATHEMATICS*, GRADE 4	
Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.			
MGSE4.NF.3	Understand a fraction *a*/*b* with a numerator > 1 as a sum of fractions 1/*b*.		
	a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	**Lesson 17**	**Add and Subtract Fractions with Like Denominators**—pp. 150–157
	b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*	**Lesson 18**	**Decompose a Fraction as a Sum of Fractions**—pp. 158–165
	c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	**Lesson 19**	**Add and Subtract Mixed Numbers with Like Denominators**—pp. 166–173
	d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	**Lesson 20**	**Problem Solving: Add and Subtract Fractions**—pp. 174–181
MGSE4.NF.4	Apply and extend previous understandings of multiplication to multiply a fraction by a whole number e.g., by using a visual such as a number line or area model.		
	a. Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*	**Lesson 21**	**Multiply Unit Fractions by Whole Numbers**—pp. 182–189
	b. Understand a multiple of *a*/*b* as a multiple of 1/*b*, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*	**Lesson 22**	**Multiply Fractions by Whole Numbers**—pp. 190–197

Number and Operations—Fractions 4.NF

(Grade 4 expectations in this domain are limited to fractions with denominators of 2, 3, 4, 5, 6, 8, 10, 12, and 100.)

STANDARDS		SADLIER *PROGRESS MATHEMATICS*, GRADE 4	
	c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	**Lesson 23**	**Problem Solving: Multiply Fractions by Whole Numbers**—pp. 198–205
Understand decimal notation for fractions, and compare decimal fractions.			
MGSE4NF.5	Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.* (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.)	**Lesson 24**	**Add Fractions: Denominators of 10 and 100**—pp. 206–213
MGSE4.NF.6	Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*	**Lesson 25**	**Write and Compare Decimal Fractions**—pp. 214–221
MGSE4.NF.7	Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual model.	**Lesson 25**	**Write and Compare Decimal Fractions**—pp. 214–221

Measurement and Data 4.MD

Standards		Sadlier *Progress Mathematics*, Grade 4	
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.			
MGSE4.MD.1	Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. a. Understand the relationship between gallons, cups, quarts, and pints. b. Express larger units in terms of smaller units within the same measurement system. c. Record measurement equivalents in a two column table.	**Lesson 26** **Lesson 27**	**Convert Customary Measurement Units**—pp. 234–241 **Convert Metric Measurement Units**—pp. 242–249
MGSE4.MD.2	Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	**Lesson 28**	**Problem Solving: Measurement**—pp. 250–257
MGSE4.MD.3	Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	**Lesson 29**	**Problem Solving: Apply Area and Perimeter Formulas**—pp. 258–265
Represent and interpret data.			
MGSE4.MD.4	Make a line plot to display a data set of measurements in fractions of a unit (1/2, 2/4, 1/8). Solve problems involving addition and subtraction of fractions with common denominators by using information presented in line plots. *For example, from a line plot, find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	**Lesson 30**	**Problem Solving: Use Line Plots**—pp. 266–273

Measurement and Data 4.MD

STANDARDS		SADLIER *PROGRESS MATHEMATICS*, GRADE 4	
Geometric measurement: understand concepts of angle and measure angles.			
MGSE4.MD.5	Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:		
	a. An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles.	**Lesson 31**	**Understand Angle Measures**—pp. 274–281
	b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	**Lesson 31**	**Understand Angle Measures**—pp. 274–281
MGSE4.MD.6	Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	**Lesson 32**	**Use a Protractor to Measure Angles**—pp. 282–289
MGSE4.MD.7	Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol or letter for the unknown angle measure.	**Lesson 33**	**Problem Solving: Find Unknown Angle Measures**—pp. 290–297
MGSE4.MD.8	Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	**Lesson 29**	**Problem Solving: Apply Area and Perimeter Formulas**—pp. 258–265

Geometry 4.G

Standards		Sadlier *Progress Mathematics*, Grade 4	
Draw and identify lines and angles, and classify shapes by properties of their lines and angles.			
MGSE4.G.1	Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	**Lesson 34**	**Draw and Identify Points, Lines, and Angles**—pp. 304–311
MGSE4.G.2	Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	**Lesson 35**	**Classify Two-Dimensional Figures**—pp. 312–319
MGSE4.G.3	Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	**Lesson 36**	**Identify Lines of Symmetry**—pp. 320–327