SADLIER

Common Core Progress Mathematics

Aligned to the

Colorado Academic Standards in Mathematics

Fourth Grade

Contents

Sadlier

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Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Understand the structure and properties of our number system. At their most basic level numbers are abstract symbols that represent real-world quantities

Concepts and skills students master:

1. The decimal number system to the hundredths place describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4	
Students can:		
a. Generalize place value understanding for multi-digit whole numbers (CCSS: 4.NBT)		
i. Explain that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. (CCSS: 4.NBT.1)	**Lesson 6**	**Understand Place Value of Whole Numbers**—pp. 56–63
ii. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. (CCSS: 4.NBT.2)	**Lesson 7**	**Read, Write, and Compare Whole Numbers**—pp. 64–71
iii. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (CCSS: 4.NBT.2)	**Lesson 7**	**Read, Write, and Compare Whole Numbers**—pp. 64–71
iv. Use place value understanding to round multi-digit whole numbers to any place. (CCSS: 4.NBT.3)	**Lesson 8**	**Apply Place Value to Round Whole Numbers**—pp. 72–79
b. Use decimal notation to express fractions, and compare decimal fractions (CCSS: 4.NF)		
i. 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. (CCSS: 4.NF.5)	**Lesson 24**	**Add Fractions: Denominators of 10 and 100**—pp. 206–213
ii. Use decimal notation for fractions with denominators 10 or 100. (CCSS: 4.NF.6)	**Lesson 25**	**Write and Compare Decimal Fractions**—pp. 214–221
iii. Compare two decimals to hundredths by reasoning about their size. (CCSS: 4.NF.7)	**Lesson 25**	**Write and Compare Decimal Fractions**—pp. 214–221

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Understand that equivalence is a foundation of mathematics represented in numbers, shapes, measures, expressions, and equations

Concepts and skills students master:

2. Different models and representations can be used to compare fractional parts

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4
Students can:	
a. Use ideas of fraction equivalence and ordering to: (CCSS: 4.NF)	
i. Explain equivalence of fractions using drawings and models	**Lesson 14** **Understand Equivalent Fractions**—pp. 126–133
	Lesson 15 **Write Equivalent Fractions**—pp. 134–141
ii. Use the principle of fraction equivalence to recognize and generate equivalent fractions. (CCSS: 4.NF.1)	**Lesson 14** **Understand Equivalent Fractions**—pp. 126–133
	Lesson 15 **Write Equivalent Fractions**—pp. 134–141
iii. Compare two fractions with different numerators and different denominators, and justify the conclusions. (CCSS: 4.NF.2)	**Lesson 16** **Compare Two Fractions**—pp. 142–149
b. Build fractions from unit fractions by applying understandings of operations on whole numbers. (CCSS: 4.NF)	
i. Apply previous understandings of addition and subtraction to add and subtract fractions.	**Lesson 17** **Add and Subtract Fractions with Like Denominators**—pp. 150–157
1. Compose and decompose fractions as sums and differences of fractions with the same denominator in more than one way and justify with visual models.	**Lesson 18** **Decompose a Fraction as a Sum of Fractions**—pp. 158–165
2. Add and subtract mixed numbers with like denominators. (CCSS: 4.NF.3c)	**Lesson 19** **Add and Subtract Mixed Numbers with Like Denominators**—pp. 166–173
3. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators. (CCSS: 4.NF.3d)	**Lesson 20** **Problem Solving: Add and Subtract Fractions**—pp. 174–181
ii. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (CCSS: 4.NF.4)	
1. Express a fraction *a/b* as a multiple of 1/*b*. (CCSS: 4.NF.4a)	**Lesson 21** **Multiply Unit Fractions by Whole Numbers**—pp. 182–189

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2. Use a visual fraction model to express a/b as a multiple of 1/b, and apply to multiplication of whole number by a fraction. (CCSS: 4.NF.4b)	**Lesson 22** **Multiply Fractions by Whole Numbers**—pp. 190–197
3. Solve word problems involving multiplication of a fraction by a whole number. (CCSS: 4.NF.4c)	**Lesson 23** **Problem Solving: Multiply Fractions by Whole Numbers**—pp. 198–205

Standard: 1. Number Sense, Properties, and Operations

Prepared Graduates:

- Are fluent with basic numerical and symbolic facts and algorithms, and are able to select and use appropriate (mental math, paper and pencil, and technology) methods based on an understanding of their efficiency, precision, and transparency

Concepts and skills students master:

3. Formulate, represent, and use algorithms to compute with flexibility, accuracy, and efficiency

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4
Students can:	
a. Use place value understanding and properties of operations to perform multi-digit arithmetic. (CCSS: 4.NBT)	
i. Fluently add and subtract multi-digit whole numbers using standard algorithms. (CCSS: 4.NBT.4)	**Lesson 9** **Add and Subtract Fluently with Whole Numbers**—pp. 80–87
ii. 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. (CCSS: 4.NBT.5)	**Lesson 10** **Multiply Whole Numbers: Use Place Value**—pp. 88–95 **Lesson 11** **Multiply Whole Numbers: Use Properties of Operations**—pp. 96–103
iii. 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. (CCSS: 4.NBT.6)	**Lesson 12** **Divide Whole Numbers: Use Place Value**—pp. 104–111 **Lesson 13** **Divide Whole Numbers: Use Properties of Operations**—pp. 112–119
iv. Illustrate and explain multiplication and division calculation by using equations, rectangular arrays, and/or area models. (CCSS: 4.NBT.6)	**Lesson 10** **Multiply Whole Numbers: Use Place Value**—pp. 88–95 **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

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4	
b. Use the four operations with whole numbers to solve problems. (CCSS: 4.OA)		
i. Interpret a multiplication equation as a comparison. (CCSS: 4.OA.1)	**Lesson 1**	**Interpret Multiplication Equations as Comparisons**—pp. 10–17
ii. Represent verbal statements of multiplicative comparisons as multiplication equations. (CCSS: 4.OA.1)	**Lesson 1**	**Interpret Multiplication Equations as Comparisons**—pp. 10–17
iii. Multiply or divide to solve word problems involving multiplicative comparison. (CCSS: 4.OA.2)	**Lesson 2**	**Problem Solving: Use Multiplication and Division to Make Comparisons**—pp. 18–25
iv. Solve multistep word problems posed with whole numbers and having whole-number answers using the four operations, including problems in which remainders must be interpreted. (CCSS: 4.OA.3)	**Lesson 3**	**Problem Solving: Multistep Problems**—pp. 26–33
v. Represent multistep word problems with equations using a variable to represent the unknown quantity. (CCSS: 4.OA.3)	**Lesson 3**	**Problem Solving: Multistep Problems**—pp. 26–33
vi. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. (CCSS: 4.OA.3)	**Lesson 3**	**Problem Solving: Multistep Problems**—pp. 26–33
vii. Using the four operations analyze the relationship between choice and opportunity cost (PFL)	**Lesson 3**	**Problem Solving: Multistep Problems**—pp. 26–33

Standard: 2. Patterns, Functions, and Algebraic Structures

Prepared Graduates:

- Make sound predictions and generalizations based on patterns and relationships that arise from numbers, shapes, symbols, and data
- Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics

Concepts and skills students master:

1. Number patterns and relationships can be represented by symbols

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4	
Students can:		
a. Generate and analyze patterns and identify apparent features of the pattern that were not explicit in the rule itself. (CCSS: 4.OA.5)		
i. Use number relationships to find the missing number in a sequence	**Lesson 5**	**Generate and Analyze Number and Shape Patterns**—pp. 42–49
ii. Use a symbol to represent and find an unknown quantity in a problem situation	**Lesson 5**	**Generate and Analyze Number and Shape Patterns**—pp. 42–49

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4
iii. Complete input/output tables	**Lesson 5** **Generate and Analyze Number and Shape Patterns**—pp. 42–49
iv. Find the unknown in simple equations	**Lesson 5** **Generate and Analyze Number and Shape Patterns**—pp. 42–49
b. Apply concepts of squares, primes, composites, factors, and multiples to solve problems	
i. Find all factor pairs for a whole number in the range 1–100. (CCSS: 4.OA.4)	**Lesson 4** **Find Factors and Multiples for Whole Numbers**—pp. 34–41
ii. Recognize that a whole number is a multiple of each of its factors. (CCSS: 4.OA.4)	**Lesson 4** **Find Factors and Multiples for Whole Numbers**—pp. 34–41
iii. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. (CCSS: 4.OA.4)	**Lesson 4** **Find Factors and Multiples for Whole Numbers**—pp. 34–41
iv. Determine whether a given whole number in the range 1–100 is prime or composite. (CCSS: 4.OA.4)	**Lesson 4** **Find Factors and Multiples for Whole Numbers**—pp. 34–41

Standard: 3. Data Analysis, Statistics, and Probability

Prepared Graduates:

- Solve problems and make decisions that depend on understanding, explaining, and quantifying the variability in data

Concepts and skills students master:

1. Visual displays are used to represent data

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4
Students can:	
a. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). (CCSS: 4.MD.4)	**Lesson 30** **Problem Solving: Use Line Plots**—pp. 266–273
b. Solve problems involving addition and subtraction of fractions by using information presented in line plots. (CCSS: 4.MD.4)	**Lesson 30** **Problem Solving: Use Line Plots**—pp. 266–273

Standard: 4. Shape, Dimension, and Geometric Relationships

Prepared Graduates:

- Understand quantity through estimation, precision, order of magnitude, and comparison. The reasonableness of answers relies on the ability to judge appropriateness, compare, estimate, and analyze error

Concepts and skills students master:

1. Appropriate measurement tools, units, and systems are used to measure different attributes of objects and time

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4	
Students can:		
a. Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. (CCSS: 4.MD)		
i. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. (CCSS: 4.MD.1)	**Lesson 26**	**Convert Customary Measurement Units**—pp. 234–241
	Lesson 27	**Convert Metric Measurement Units**—pp. 242–249
ii. Within a single system of measurement, express measurements in a larger unit in terms of a smaller unit. Record measurement equivalents in a two-column table. (CCSS: 4.MD.1)	**Lesson 26**	**Convert Customary Measurement Units**—pp. 234–241
	Lesson 27	**Convert Metric Measurement Units**—pp. 242–249
iii. 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. (CCSS: 4.MD.2)	**Lesson 28**	**Problem Solving: Measurement**—pp. 250–257
iv. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. (CCSS: 4.MD.2)	**Lesson 28**	**Problem Solving: Measurement**—pp. 250–257
v. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. (CCSS: 4.MD.3)	**Lesson 29**	**Problem Solving: Apply Area and Perimeter Formulas**—pp. 258–265
b. Use concepts of angle and measure angles. (CCSS: 4.MD)		
i. Describe angles as geometric shapes that are formed wherever two rays share a common endpoint, and explain concepts of angle measurement. (CCSS: 4.MD.5)	**Lesson 31**	**Understand Angle Measures**—pp. 274–281
ii. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. (CCSS: 4.MD.6)	**Lesson 32**	**Use a Protractor to Measure Angles**—pp. 282–289

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iii. Demonstrate that angle measure as additive. (CCSS: 4.MD.7)	**Lesson 33** **Problem Solving: Find Unknown Angle Measures**—pp. 290–297
iv. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems. (CCSS: 4.MD.7)	**Lesson 33** **Problem Solving: Find Unknown Angle Measures**—pp. 290–297

Standard: 4. Shape, Dimension, and Geometric Relationships

Prepared Graduates:

- Make claims about relationships among numbers, shapes, symbols, and data and defend those claims by relying on the properties that are the structure of mathematics

Concepts and skills students master:

2. Geometric figures in the plane and in space are described and analyzed by their attributes

Fourth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 4
Students can:	
a. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. (CCSS: 4.G.1)	**Lesson 34** **Draw and Identify Points, Lines, and Angles**—pp. 304–311
b. Identify points, line segments, angles, and perpendicular and parallel lines in two-dimensional figures. (CCSS: 4.G.1)	**Lesson 34** **Draw and Identify Points, Lines, and Angles**—pp. 304–311
c. Classify and identify two-dimensional figures according to attributes of line relationships or angle size.6 (CCSS: 4.G.2)	**Lesson 35** **Classify Two-Dimensional Figures**—pp. 312–319
d. Identify a line of symmetry for a two-dimensional figure.7 (CCSS: 4.G.3)	**Lesson 36** **Identify Lines of Symmetry**—pp. 320–327