SADLIER

Common Core Progress Mathematics

Aligned to the

Colorado Academic Standards in Mathematics

Fifth Grade

Contents

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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 describes place value patterns and relationships that are repeated in large and small numbers and forms the foundation for efficient algorithms

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Explain that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left. (CCSS: 5.NBT.1)	**Lesson 4** **Understand Place Value**—pp. 40–47
i. Explain patterns in the number of zeros of the product when multiplying a number by powers of 10. (CCSS: 5.NBT.2)	**Lesson 5** **Powers of 10: Use Patterns and Whole-Number Exponents**—pp. 48–55
ii. Explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. (CCSS: 5.NBT.2)	**Lesson 5** **Powers of 10: Use Patterns and Whole-Number Exponents**—pp. 48–55
iii. Use whole-number exponents to denote powers of 10. (CCSS: 5.NBT.2)	**Lesson 5** **Powers of 10: Use Patterns and Whole-Number Exponents**—pp. 48–55
b. Read, write, and compare decimals to thousandths. (CCSS: 5.NBT.3)	
i. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form. (CCSS: 5.NBT.3a)	**Lesson 6** **Read and Write Decimals to Thousandths**—pp. 56–63
ii. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. (CCSS: 5.NBT.3b)	**Lesson 7** **Compare Decimals to Thousandths**—pp. 64–71
c. Use place value understanding to round decimals to any place. (CCSS: 5.NBT.4)	**Lesson 8** **Round Decimals: Use Place Value**—pp. 72–79
d. Convert like measurement units within a given measurement system. (CCSS: 5.MD)	
i. Convert among different-sized standard measurement units within a given measurement system. (CCSS: 5.MD.1)	**Lesson 25** **Convert Customary Measurement Units**—pp. 226–233 **Lesson 26** **Convert Metric Measurement Units**—pp. 234–241

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
ii. Use measurement conversions in solving multi-step, real world problems. (CCSS: 5.MD.1)	**Lesson 25** **Convert Customary Measurement Units**—pp. 226–233 **Lesson 26** **Convert Metric Measurement Units**—pp. 234–241

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:

2. Formulate, represent, and use algorithms with multi-digit whole numbers and decimals with flexibility, accuracy, and efficiency

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Fluently multiply multi-digit whole numbers using standard algorithms. (CCSS: 5.NBT.5)	**Lesson 9** **Multiply Fluently with Multi-Digit Numbers**—pp. 80–87
b. Find whole-number quotients of whole numbers. (CCSS: 5.NBT.6)	
i. Use strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. (CCSS: 5.NBT.6)	**Lesson 10** **Divide Whole Numbers: Use Place Value Strategies**—pp. 88–95 **Lesson 11** **Divide Whole Numbers: Use Properties of Operations**—pp. 96–103
ii. Illustrate and explain calculations by using equations, rectangular arrays, and/or area models. (CCSS: 5.NBT.6)	**Lesson 10** **Divide Whole Numbers: Use Place Value Strategies**—pp. 88–95 **Lesson 11** **Divide Whole Numbers: Use Properties of Operations**—pp. 96–103
c. Add, subtract, multiply, and divide decimals to hundredths. (CCSS: 5.NBT.7)	
i. Use concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction. (CCSS: 5.NBT.7)	**Lesson 12** **Add and Subtract Decimals to Hundredths**—pp. 104–111 **Lesson 13** **Multiply Decimals to Hundredths**—pp. 112–119 **Lesson 14** **Divide Decimals to Hundredths**—pp. 120–127

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
ii. Relate strategies to a written method and explain the reasoning used. (CCSS: 5.NBT.7)	**Lesson 12** **Add and Subtract Decimals to Hundredths**—pp. 104–111
	Lesson 13 **Multiply Decimals to Hundredths**—pp. 112–119
	Lesson 14 **Divide Decimals to Hundredths**—pp. 120–127
d. Write and interpret numerical expressions. (CCSS: 5.OA)	
i. Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols. (CCSS: 5.OA.1)	**Lesson 1** **Use Grouping Symbols and Evaluate Numerical Expressions**—pp. 10–17
ii. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them.4 (CCSS: 5.OA.2)	**Lesson 2** **Write and Interpret Numerical Expressions**—pp. 18–25

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 with multi-digit whole numbers and decimals with flexibility, accuracy, and efficiency

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Use equivalent fractions as a strategy to add and subtract fractions. (CCSS: 5.NF)	
i. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. (CCSS: 5.NF.2)	**Lesson 16** **Problem Solving: Add and Subtract Fractions**—pp. 142–149
ii. Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions with like denominators. (CCSS: 5.NF.1)	**Lesson 15** **Add and Subtract Fractions with Unlike Denominators**—pp. 134–141
iii. Solve word problems involving addition and subtraction of fractions referring to the same whole. (CCSS: 5.NF.2)	**Lesson 16** **Problem Solving: Add and Subtract Fractions**—pp. 142–149

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:

4. The concepts of multiplication and division can be applied to multiply and divide fractions (CCSS: 5.NF)

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Interpret a fraction as division of the numerator by the denominator ($a/b = a \div b$). (CCSS: 5.NF.3)	**Lesson 17** **Interpret Fractions as Division**—pp. 150–157
b. Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers. (CCSS: 5.NF.3)	**Lesson 17** **Interpret Fractions as Division**—pp. 150–157
c. Interpret the product $(a/b) \times q$ as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations $a \times q \div b$. In general, $(a/b) \times (c/d) = ac/bd$. (CCSS: 5.NF.4a)	**Lesson 18** **Interpret Products of Fractions**—pp. 158–165
d. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. (CCSS: 5.NF.4b)	
i. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas. (CCSS: 5.NF.4b)	**Lesson 19** **Find Areas of Rectangles: Tile and Multiply**—pp. 166–173
e. Interpret multiplication as scaling (resizing). (CCSS: 5.NF.5)	
i. Compare the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication. (CCSS: 5.NF.5a)	**Lesson 20** **Interpret Multiplication of Fractions as Scaling**—pp. 174–181
ii. Apply the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1. (CCSS: 5.NF.5b)	**Lesson 20** **Interpret Multiplication of Fractions as Scaling**—pp. 174–181
f. Solve real world problems involving multiplication of fractions and mixed numbers. (CCSS: 5.NF.6)	**Lesson 21** **Problem Solving: Multiply Fractions and Mixed Numbers**—pp. 182–189
g. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. (CCSS: 5.NF.7a)	**Lesson 22** **Divide Unit Fractions by Whole Numbers**—pp. 190–197
h. Interpret division of a whole number by a unit fraction, and compute such quotients. (CCSS: 5.NF.7b)	**Lesson 23** **Divide Whole Numbers by Unit Fractions**—pp. 198–205

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
i. Solve real world problems involving division of unit fractions by nonzero whole numbers and division of whole numbers by unit fractions. (CCSS: 5.NF.7c)	**Lesson 24** **Problem Solving: Divide Unit Fractions and Whole Numbers**—pp. 206–213

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

Concepts and skills students master:

1. Number patterns are based on operations and relationships

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Generate two numerical patterns using given rules. (CCSS: 5.OA.3)	**Lesson 3** **Analyze Numerical Patterns**—pp. 26–33
b. Identify apparent relationships between corresponding terms. (CCSS: 5.OA.3)	**Lesson 3** **Analyze Numerical Patterns**—pp. 26–33
c. Form ordered pairs consisting of corresponding terms from the two patterns, and graphs the ordered pairs on a coordinate plane. (CCSS: 5.OA.3)	**Lesson 3** **Analyze Numerical Patterns**—pp. 26–33
d. Explain informally relationships between corresponding terms in the patterns. (CCSS: 5.OA.3)	**Lesson 3** **Analyze Numerical Patterns**—pp. 26–33
e. Use patterns to solve problems including those involving saving and checking accounts (PFL)	**Lesson 3** **Analyze Numerical Patterns**—pp. 26–33
f. Explain, extend, and use patterns and relationships in solving problems, including those involving saving and checking accounts such as understanding that spending more means saving less (PFL)	**Lesson 3** **Analyze Numerical Patterns**—pp. 26–33

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 interpret data

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Represent and interpret data. (CCSS: 5.MD)	
i. Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). (CCSS: 5.MD.2)	**Lesson 27** **Problem Solving: Use Line Plots**—pp. 242–249
ii. Use operations on fractions for this grade to solve problems involving information presented in line plots.1 (CCSS: 5.MD.2)	**Lesson 27** **Problem Solving: Use Line Plots**—pp. 242–249

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. Properties of multiplication and addition provide the foundation for volume an attribute of solids.

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Model and justify the formula for volume of rectangular prisms. (CCSS: 5.MD.5b)	
i. Model the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes. (CCSS: 5.MD.5b)	**Lesson 32** **Problem Solving: Apply Volume Formulas for Prisms**—pp. 282–289
ii. Show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. (CCSS: 5.MD.5a)	**Lesson 30** **Find Volume: Relate Packing of Unit Cubes to Multiplying**—pp. 266–273 **Lesson 31** **Find Volume: Use the Associate Property**—pp. 274–281
iii. Represent threefold whole-number products as volumes to represent the associative property of multiplication. (CCSS: 5.MD.5a)	**Lesson 30** **Find Volume: Relate Packing of Unit Cubes to Multiplying**—pp. 266–273 **Lesson 31** **Find Volume: Use the Associate Property**—pp. 274–281

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
b. Find volume of rectangular prisms using a variety of methods and use these techniques to solve real world and mathematical problems. (CCSS: 5.MD.5a)	
i. Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units. (CCSS: 5.MD.4)	**Lesson 29** **Measure Volume**—pp. 258–265
ii. Apply the formulas $V = l \times w \times h$ and $V = b \times h$ for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths. (CCSS: 5.MD.5b)	**Lesson 32** **Problem Solving: Apply Volume Formulas for Prisms**—pp. 282–289
iii. Use the additive nature of volume to find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts. (CCSS: 5.MD.5c)	**Lesson 33** **Problem Solving: Decompose Figures to Find Volume**—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 can be described by their attributes and specific locations in the plane

Fifth Grade Evidence Outcomes	Sadlier Common Core Progress Mathematics, Grade 5
Students can:	
a. Graph points on the coordinate plane to solve real-world and mathematical problems. (CCSS: 5.G)	**Lesson 34** **Understand Points on the Coordinate Plane**—pp. 304–311
	Lesson 35 **Graph Points to Represent Problem Situations**—pp. 312–319
b. Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation. (CCSS: 5.G.2)	**Lesson 35** **Graph Points to Represent Problem Situations**—pp. 312–319
c. Classify two-dimensional figures into categories based on their properties. (CCSS: 5.G)	
i. Explain that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. (CCSS: 5.G.3)	**Lesson 36** **Analyze Properties to Classify Two-Dimensional Figures**—pp. 320–327
ii. Classify two-dimensional figures in a hierarchy based on properties. (CCSS: 5.G.4)	**Lesson 36** **Analyze Properties to Classify Two-Dimensional Figures**—pp. 320–327