Learning Progression Grade 5

Math Trailblazers®

Fourth Edition

Kendall Hunt Publishing Company

Math Trailblazers®

Common Core State Standards

Math Trailblazers Grade 5 Learning Progression

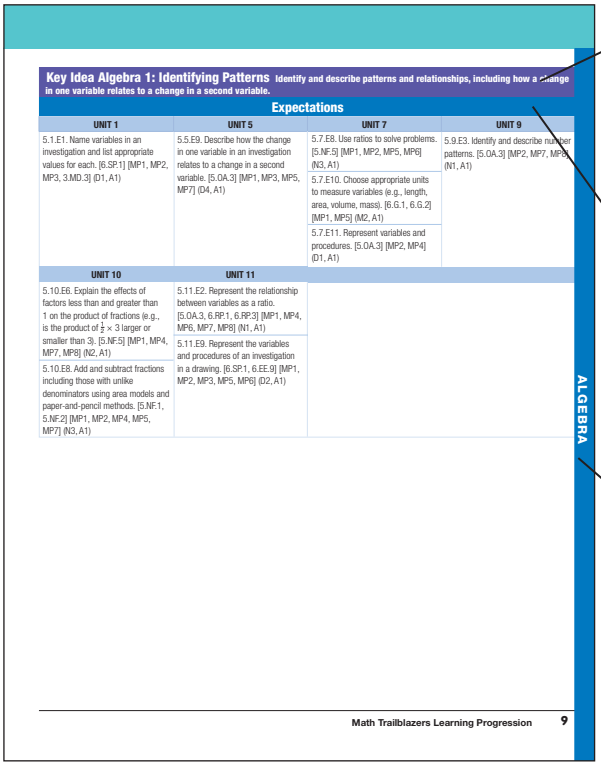
Program Scope and Sequence

Kendall Hunt

TIMS®
MATH SCIENCE

A TIMS® CURRICULUM
University of Illinois at Chicago

The Learning Progression outlines the Key Ideas that guide the Math Trailblazers® program. These Key Ideas fall within five strands: Number, Algebra, Geometry, Measurement, and Data. Each Key Idea is listed, followed by a chart that details each unit that addresses that Key Idea. Under each unit number is a list of the specific Math Trailblazers Expectations that correlate with the larger Key Idea. Expectations are also correlated with Common Core State Standards for Mathematics, Standards for Mathematical Practice, and mathematical strands. Together, these elements provide a comprehensive Scope and Sequence for the Math Trailblazers curriculum.



Key Idea Algebra 1: Identifying Patterns Identify and describe patterns and relationships, including how a change in one variable relates to a change in a second variable.

Expectations

UNIT 1	UNIT 5	UNIT 7	UNIT 9
5.1.E1. Name variables in an investigation and list appropriate values for each. [6.SP.1] [MP1, MP2, MP3, 3.MD.3] (D1, A1)	5.5.E9. Describe how the change in one variable in an investigation relates to a change in a second variable. [5.OA.3] [MP1, MP3, MP5, MP7] (D4, A1)	5.7.E8. Use ratios to solve problems. [5.NF.5] [MP1, MP2, MP5, MP6] (N3, A1) 5.7.E10. Choose appropriate units to measure variables (e.g., length, area, volume, mass). [6.G.1, 6.G.2] [MP1, MP5] (M2, A1) 5.7.E11. Represent variables and procedures. [5.OA.3] [MP2, MP4] (D1, A1)	5.9.E3. Identify and describe number patterns. [5.OA.3] [MP2, MP7, MP8] (N1, A1)

UNIT 10	UNIT 11
5.10.E6. Explain the effects of factors less than and greater than 1 on the product of fractions (e.g., is the product of $\frac{1}{2} \times 3$ larger or smaller than 3). [5.NF.5] [MP1, MP4, MP7, MP8] (N2, A1) 5.10.E8. Add and subtract fractions including those with unlike denominators using area models and paper-and-pencil methods. [5.NF.1, 5.NF.2] [MP1, MP2, MP4, MP5, MP7] (N3, A1)	5.11.E2. Represent the relationship between variables as a ratio. [5.OA.3, 6.RP.1, 6.RP.3] [MP1, MP4, MP6, MP7, MP8] (N1, A1) 5.11.E9. Represent the variables and procedures of an investigation in a drawing. [6.SP.1, 6.EE.9] [MP1, MP2, MP3, MP5, MP6] (D2, A1)

ALGEBRA

Math Trailblazers Learning Progression 9

- Key Idea: Every grade of the Math Trailblazers program is designed around the same set of Key Ideas. These Key Ideas appear as horizontal headers in the Learning Progression.
- Expectations: Expectations are listed by unit under the Key Ideas. These Expectations correlate with Key Ideas, but are more specific to the content taught in the listed unit
- Mathematical Strand: The Learning Progression is organized by mathematical strands, which are color-coded and listed vertically along the edge of each page

- Correlations: Each Expectation includes a list of codes indicating the correlations to the Common Core State Standards, the Standards for Mathematical Practice, and the mathematical strands.

5.4.E7. Solve multistep problems using addition, subtraction, multiplication and division.
[5.NBT.5, 5.NBT.6]
[MP1, MP2, MP3, MP4]
(N3, A4)

- Common Core State Standards
- Standards for Mathematical Practice
- Mathematical strands, numbered by Key Ideas

GRADE 5

Students use multiple representations and real-world contexts to continue to support their development of fraction concepts and operations. They use graphs, tables, and stories to interpret ratios—a fraction as a multiplicative relationship between two numbers. Students use these relationships to make generalizations, problem solve, and compare units of measure. Students continue to develop and apply a variety of strategies for solving multistep problems involving addition, subtraction, multiplication, and division. They extend these whole number and fractional representations, strategies, and procedures to models of decimals. Students classify two-dimensional shapes using properties

Key Idea Number 1: Number Sense Understand the base-ten number system, recognize relationships among quantities and numbers, and represent numbers in multiple ways.

Expectations

UNIT 2	UNIT 3	UNIT 4	UNIT 5
5.2.E1. Represent and identify fractions (e.g., proper, improper, mixed number) using area models, drawings, number lines, words, symbols, and number sentences. [5.NF.3] [MP1, MP2, MP4, MP5] (N1, A3)	5.3.E1. Read and write large numbers (to the billions). [5.NBT.1] [MP2, MP3, MP6] (N1)	5.4. E1. Demonstrate understanding of the place-value concepts and mathematical properties involved in operations with multidigit numbers (e.g., making trades in addition and subtraction, and using the distributive property to multiply). [MP1, MP2, MP7] (N1, A4)	5.5.E1. Represent and identify fractions and ratios (e.g., proper, improper, mixed number) using area models, number lines, tables, graphs, words, and symbols. [5.NF.3] [MP1, MP2, MP3, MP5] (N1, A3)
5.2.E2. Recognize that equal fractional parts of a unit whole are the same size (e.g., all fourths of a rectangle are the same size). [MP1, MP2, MP7] (N1)	5.3.E2. Compare and order large numbers. [MP2] (N1)		5.5.E2. Represent and identify the simplest form of a fraction or ratio using tools (e.g., area models) and multiplication and division strategies. [5.NF.1] [MP1, MP2, MP5] (N1)
5.2.E3. Identify the unit whole when given a fractional part of a whole. [MP2] (N1)	5.3.E3. Use strategies to estimate quantities (e.g., rounding, using benchmarks). [MP2, MP3, MP6] (N1)		
5.2.E4. Find equivalent fractions using tools (e.g., area models, number lines) and multiplication and division strategies. [5.NF.1] [MP2, MP3, MP5, MP6] (N1, N3, A4)	5.3.E4. Show different partitions of large numbers using a place value chart, number lines and number sentences (e.g., 10,705 = 10,000 + 700 + 5; 40,879 = 4 x 10,000 + 8 x 100 + 7 x 10 + 9). [5.NBT.2] [MP1, MP2, MP3, MP5, MP6] (N1, A3)		
5.2.E5. Decompose fractions into the sums of smaller fractions (e.g., $\frac{3}{4} = \frac{1}{2} + \frac{1}{4}$). [5.NF.1] [MP1, MP2, MP6] (N1, A4)	5.3.E5. Represent numbers with exponents. [5.NBT.2] [MP1, MP2, MP7] (N1)		
5.2.E6. Compare and order fractions using tools (e.g., area models, number lines), benchmarks, and multiplication and division strategies to find common denominators. [5.NF.1] [MP2] (N1)			

Key Idea Number 1: Number Sense *continued*

Expectations

UNIT 6	UNIT 8	UNIT 9	UNIT 10
5.6.E1. Represent negative numbers using a number line. [6.NS.6, 5.G.1] [MP1, MP3, MP4, MP5] (N1)	5.8.E1. Represent numbers to the thousandths using fractions, decimals, words, area models, base-ten pieces, number lines and expanded form. [5.NBT.3] [MP2, MP4, MP5, MP7] (N1)	5.9.E1. Identify and categorize prime, composite, and square numbers. [4.OA.4, 6.NS.2, 6.NS.3, 6.NS.4] [MP2, MP7, MP8] (N1)	5.10.E1. Identify and find equivalent fractions using tools (e.g., area models, number lines) and multiplication and division strategies. [5.NF.1] [MP4, MP5, MP7] (N1, A3)
5.6.E2. Solve problems involving negative numbers. [6.NS.6, 5.G.2] [MP1, MP4, MP5] (N1)	5.8.E2. Make connections among representations of decimals including fractions, words, area models, base-ten pieces, number lines, and number sentences. [5.NBT.3] [MP2, MP4, MP5, MP7] (N1)	5.9.E2. Identify and find multiples of numbers. [4.OA.4, 5.NF.1] [MP2, MP7] (N1)	5.10.E2. Represent and identify the simplest form of a fraction using tools (e.g., area models) and multiplication and division strategies. [5.NF.1] [MP4, MP5, MP7, MP8] (N1, A4)
	5.8.E3. Compare and order decimals to the thousandths using place value understanding and benchmarks. [5.NBT.3] [MP2, MP3, MP4, MP5, MP6] (N1, A3)	5.9.E3. Identify and describe number patterns. [5.OA.3] [MP2, MP7, MP8] (N1, A1)	
	5.8.E4. Round decimals using place value understanding. [5.NBT.4] [MP1, MP2, MP3, MP4, MP5, MP6, MP7] (N1)		
	5.8.E5. Recognize that in a multidigit number, a digit in one place represents 10 times as much as it represents in the place to its right and $\frac{1}{10}$ of what it represents in the place to its left. [5.NBT.1] [MP2, MP4, MP6, MP7, MP8] (N1)		
	5.8.E6. Explain the patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of ten. [5.NBT.2] [MP2, MP4, MP6, MP7, MP8] (N1, A4)		

Key Idea Number 1: Number Sense *continued*

Expectations

UNIT 11
5.11.E1. Represent ratios with words and as fractions. [6.RP.1, 6.RP.3] [MP1, MP4, MP6, MP7, MP8] (N1, A3)
5.11.E2. Represent the relationship between variables as a ratio. [5.OA.3, 6.RP.1, 6.RP.3] [MP1, MP4, MP6, MP7, MP8] (N1, A1)

Key Idea Number 2: Operations Understand the meaning of numerical operations and their application for solving problems.

UNIT 2	UNIT 3	UNIT 4	UNIT 7
5.2.E7. Add and subtract fractions including those with unlike denominators. [5.NF.1] [MP1, MP2, MP5] (N2, A3, A4)	5.3.E6. Determine the unknown in an equation involving multiple addends. [MP1, MP2] (N2, A4)	5.4.E2. Show connections between models and strategies for multiplication (e.g., demonstrate partial products using a rectangle model for multiplication). [5.NBT.5] [MP2, MP7] (N2, A4)	5.7.E1. Demonstrate understanding of division of multidigit numbers by one- and two-digit numbers using models. [5.NBT.6] [MP1, MP2, MP3, MP4] (N2)
5.2.E8. Represent the solution for word problems involving addition and subtraction of fractions using visual models and number sentences. [5.NF.2] [MP1, MP2, MP5] (N2, A3)	5.3.E7. Multiply numbers that are multiples of ten represented as powers of ten (e.g., $64{,}320 = 6 \times 10^4 + 4 \times 10^3 + 3 \times 10^2 + 2 \times 10^1 + 0$. $300{,}00 = 3 \times 10^5$). [5.NBT.2] [MP2, MP7] (N2)		5.7.E2. Show connections between models and strategies for multidigit division. [5.NBT.6] [MP1, MP2, MP4] (N2, A4)
	5.3.E8. Estimate products. [MP2, MP6] (N2)		5.7.E3. Interpret remainders from division of multidigit numbers. [5.NBT.6] [MP1, MP2, MP4] (N2)
			5.7.E4. Follow the order of operations (e.g., using parentheses). [5.OA.1] [MP1, MP2, MP6] (N2, A4)

Key Idea Number 2: Operations *continued*

Expectations

UNIT 8	UNIT 10		
5.8.E7. Add and subtract decimals to the thousandths using models and strategies. [5.NBT.7] [MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8] (N2)	5.10.E3. Represent addition, subtraction, multiplication, and division of fractions with area models, number lines, number sentences, drawings, and stories. [5.NF.2, 5.NF.4, 5.NF.7] [MP1, MP3, MP4, MP5, MP7] (N2, A3)		
5.8.E8. Multiply and divide decimals using models and strategies. [5.NBT.7] [MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8] (N2)	5.10.E4. Multiply and divide fractions using area models, drawings, and number lines. [5.NF.4, 5.NF.7] [MP1, MP2, MP3, MP4, MP5, MP8] (N2, A3)		
	5.10.E5. Solve word problems involving addition, subtraction, and multiplication of fractions. [5.NF.2, 5.NF.4, 5.NF.6] [MP1, MP2, MP3, MP5] (N2)		
	5.10.E6. Explain the effects of factors less than and greater than 1 on the product of fractions (e.g., is the product of $\frac{1}{2} \times 3$ larger or smaller than 3). [5.NF.5] [MP1, MP4, MP7, MP8] (N2, A1)		
	5.10.E7. Choose appropriately from among estimation and computation strategies. [5.NF.2] [MP1, MP2, MP5, MP6] (N2)		

Key Idea Number 3: Computation and Estimation Use efficient and flexible procedures to compute accurately and make reasonable estimates.

Expectations

UNIT 2	UNIT 3	UNIT 4	UNIT 5
5.2.E4. Find equivalent fractions using tools (e.g., area models, number lines) and multiplication and division strategies. [5.NF.1] [MP2, MP3, MP5, MP6] (N1, N3, A4)	5.3.E9. Demonstrate fluency with multiplication and division facts for the 2s and 3s. (N3)	5.4.E3. Add and subtract multidigit numbers using more than one strategy. [MP1, MP2] (N3)	5.5.E3. Find equivalent fractions and ratios using tools (e.g., area models, number lines, tables, graphs) and multiplication and division strategies. [5.NF.1] [MP1, MP2, MP3, MP5, MP6] (N3, A4)
5.2.E9. Use benchmark fractions to estimate sums and differences and assess the reasonableness of answers. [MP1, MP2, MP5, MP6] (N3)		5.4.E4. Multiply multidigit numbers using mental math and paper-and-pencil methods (expanded form, rectangle model, all-partials, compact). [5.NBT.5] [MP2, MP4] (N3)	5.5.E4. Use ratios to solve problems. [5.NF.5] [MP1, MP2, MP3, MP4, MP5, MP7] (N3)
5.2.E10. Demonstrate fluency with the multiplication and division facts for the 5s and 10s. [5.NBT.5, 5.NBT.6] (N3)		5.4.E5. Estimate sums, differences, and products. [MP2, MP6] (N3)	5.5.10. Demonstrate fluency with the multiplication and division facts for the square numbers. (N3)
		5.4.E6. Choose appropriately from among mental math, estimation, and paper-and-pencil methods to find sums, differences, and products. [5.NBT.5] [MP1, MP2, MP6] (N3)	
		5.4.E7. Solve multistep problems using addition, subtraction, multiplication and division. [5.NBT.5, 5.NBT.6] [MP1, MP2, MP3, MP4] (N3, A4)	
		5.4.E10. Demonstrate fluency with multiplication and division facts for the nines. (N3)	

Key Idea Number 3: Computation and Estimation *continued*

Expectations

UNIT 6	UNIT 7	UNIT 8	UNIT 9
5.6.E3. Use ratios to solve scale and distance problems. [5.NF.5] [MP1, MP2, MP3, MP4, MP5, MP7] (N3, A4)	5.7.E5. Estimate quotients for division of multidigit numbers by one- and two-digit numbers. [5.NBT.6] [MP2, MP6] (N3)	5.8.E9. Estimate sums, differences, products, and quotients involving decimals and fractions. [5.NBT.7] [MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8] (N3)	5.9.E4. Use variables in formulas to represent number patterns and make predictions. [5.OA.3] [MP2, MP7] (N3)
5.6.E8. Demonstrate fluency with the multiplication and division facts for the last six facts (4 x 6, 4 x 7, 4 x 8, 6 x 7, 6 x 8, 7 x 8). [5.NBT.5, 5.NBT.6] (N3)	5.7.E6. Divide numbers that are multiples of ten. [5.NBT.1] [MP1, MP2, MP4, MP8] (N3)	5.8.E13. Demonstrate fluency with the multiplication and division facts. [5.NBT.5, 5.NBT.6] (N3)	5.9.E5. Find all the factors of a number for numbers between 1 and 100. [4.OA.4, 6.NS.2, 6.NS.3, 6.NS.4] [MP2, MP6, MP7] (N3)
	5.7.E7. Divide multidigit numbers by one- and two-digit divisors using paper and pencil. [5.NBT.6] [MP1, MP2, MP4, MP6] (N3)		5.9.E6. Find the prime factorization of a number. [4.OA.4, 6.NS.4] [MP2, MP6, MP7, MP8] (N3)
	5.7.E8. Use ratios to solve problems. [5.NF.5] [MP1, MP2, MP5, MP6] (N3, A1)		5.9.E7. Use order of operations to make calculations that involve exponents and the use of parentheses. [5.OA.1, 5.OA.2] [MP1, MP2, MP6] (N3, A3)
	5.7.E15. Demonstrate fluency with the multiplication and division facts for the last six facts (4 x 6, 4 x 7, 4 x 8, 6 x 7, 6 x 8, 7 x 8). [5.NBT.5, 5.NBT.6] (N3)		

Key Idea Number 3: Computation and Estimation *continued*

Expectations

UNIT 10	UNIT 11	
5.10.E8. Add and subtract fractions including those with unlike denominators using area models and paper-and-pencil methods. [5.NF.1, 5.NF.2] [MP1, MP2, MP4, MP5, MP7] (N3, A1)	5.11.E3. Find equivalent fractions and ratios using a variety of strategies (e.g., using models, using multiplication and division, using graphs and tables). [5.NF.1, 6.RP.3] [MP2, MP3, MP4, MP5, MP6, MP7, MP8] (N3, A2)	
5.10.E9. Estimate sums and differences of fractions using benchmarks and mental math strategies. [5.NF.2] [MP1, MP2, MP4, MP5, MP6] (N3, A4)	5.11.E4. Use ratios and proportions to solve problems. [5.OA.3, 6.RP.3] [MP1, MP2, MP3, MP5, MP7, MP8] (N3, A4)	
5.10.E10. Find common denominators and use them to add, subtract, and compare fractions. [5.NF.1] [MP2, MP4, MP5, MP6, MP7, MP8] (N3)		

Key Idea Algebra 1: Identifying Patterns

Identify and describe patterns and relationships, including how a change in one variable relates to a change in a second variable.

Expectations

UNIT 1	UNIT 5	UNIT 7	UNIT 9
5.1.E1. Name variables in an investigation and list appropriate values for each. [6.SP.1] [MP1, MP2, MP3, 3.MD.3] (D1, A1)	5.5.E9. Describe how the change in one variable in an investigation relates to a change in a second variable. [5.OA.3] [MP1, MP3, MP5, MP7] (D4, A1)	5.7.E8. Use ratios to solve problems. [5.NF.5] [MP1, MP2, MP5, MP6] (N3, A1) 5.7.E10. Choose appropriate units to measure variables (e.g., length, area, volume, mass). [6.G.1, 6.G.2] [MP1, MP5] (M2, A1) 5.7.E11. Represent variables and procedures. [5.OA.3] [MP2, MP4] (D1, A1)	5.9.E3. Identify and describe number patterns. [5.OA.3] [MP2, MP7, MP8] (N1, A1)

UNIT 10	UNIT 11
5.10.E6. Explain the effects of factors less than and greater than 1 on the product of fractions (e.g., is the product of $\frac{1}{2} \times 3$ larger or smaller than 3). [5.NF.5] [MP1, MP4, MP7, MP8] (N2, A1) 5.10.E8. Add and subtract fractions including those with unlike denominators using area models and paper-and-pencil methods. [5.NF.1, 5.NF.2] [MP1, MP2, MP4, MP5, MP7] (N3, A1)	5.11.E2. Represent the relationship between variables as a ratio. [5.OA.3, 6.RP.1, 6.RP.3] [MP1, MP4, MP6, MP7, MP8] (N1, A1) 5.11.E9. Represent the variables and procedures of an investigation in a drawing. [6.SP.1, 6.EE.9] [MP1, MP2, MP3, MP5, MP6] (D2, A1)

Key Idea Algebra 2: Tables and Graphs Represent patterns and relationships with graphs, tables, and diagrams.

Expectations

UNIT 1	UNIT 5	UNIT 7	UNIT 8
5.1.E3. Make a bar graph using categorical data. [MP4] (D2, A2)	5.5.E7. Make a point graph and draw a best-fit line. [5.G.2, 5.OA.3] [MP1, MP4, MP7] (D2, A2)	5.7.E12. Make a point graph and draw a best-fit line. [5.G.2] [MP4, MP7] (D2, A2)	5.8.E10. Use data tables and graphs to organize and display data involving decimal values. [5.G.2] [MP4, MP5, MP6] (D2, A2)
5.1.E4. Make a line plot or bar graph using numerical data. [5.MD.1] [MP4] (D2, A2)			

UNIT 9	UNIT 11
5.9.E8. Represent number patterns using words, tables, and graphs. [5.OA.3] [MP1, MP4, MP5, MP6] (D2, A2)	5.11.E3. Find equivalent fractions and ratios using a variety of strategies (e.g., using models, using multiplication and division, using graphs and tables). [5.NF.1, 6.RP.3] [MP2, MP3, MP4, MP5, MP6, MP7, MP8] (N3, A2)
	5.11.E10. Collect and organize data into a table and line graph to represent the relationship between variables. [5.OA.3] [MP4, MP5, MP6] (D2, A2)
	5.11.E11. Make point graphs and draw best-fit lines to represent ratios and proportional relationships. [6.RP.3] [MP4, MP5, MP6] (D2, A2)

Key Idea Algebra 3: Symbols Represent patterns and relationships with symbols (includes using variables in formulas and as unknowns in equations).

Expectations

UNIT 2	UNIT 3	UNIT 5	UNIT 8
5.2.E1. Represent and identify fractions (e.g., proper, improper, mixed number) using area models, drawings, number lines, words, symbols, and number sentences. [5.NF.3] [MP1, MP2, MP4, MP5] (N1, A3)	5.3.E4. Show different partitions of large numbers using a place value chart, number lines and number sentences (e.g., 10,705 = 10,000 + 700 + 5; 40,879 = 4 x 10,000 + 8 x 100 + 7 x 10 + 9). [5.NBT.2] [MP1, MP2, MP3, MP5, MP6] (N1, A3)	5.5.E1. Represent and identify fractions and ratios (e.g., proper, improper, mixed number) using area models, number lines, tables, graphs, words, and symbols. [5.NF.3] [MP1, MP2, MP3, MP5] (N1, A3)	5.8.E3. Compare and order decimals to the thousandths using place value understanding and benchmarks. [5.NBT.3] [MP2, MP3, MP4, MP5, MP6] (N1, A3)
5.2.E7. Add and subtract fractions including those with unlike denominators. [5.NF.1] [MP1, MP2, MP5] (N2, A3, A4)			
5.2.E8. Represent the solution for word problems involving addition and subtraction of fractions using visual models and number sentences. [5.NF.2] [MP1, MP2, MP5] (N2, A3)			

UNIT 9	UNIT 10	UNIT 11	
5.9.E7. Use order of operations to make calculations that involve exponents and the use of parentheses. [5.OA.1, 5.OA.2] [MP1, MP2, MP6] (N3, A3)	5.10.E1. Identify and find equivalent fractions using tools (e.g., area models, number lines) and multiplication and division strategies. [5.NF.1] [MP4, MP5, MP7] (N1, A3)	5.11.E1. Represent ratios with words and as fractions. [6.RP.1, 6.RP.3] [MP1, MP4, MP6, MP7, MP8] (N1, A3)	
	5.10.E3. Represent addition, subtraction, multiplication, and division of fractions with area models, number lines, number sentences, drawings, and stories. [5.NF.2, 5.NF.4, 5.NF.7] [MP1, MP3, MP4, MP5, MP7] (N2, A3)		
	5.10.E4. Multiply and divide fractions using area models, drawings, and number lines. [5.NF.4, 5.NF.7] [MP1, MP2, MP3, MP4, MP5, MP8] (N2, A3)		

Key Idea Algebra 4: Using Patterns

Apply relationships, properties, and patterns to solve problems, develop generalizations, or make predictions.

Expectations

UNIT 1	UNIT 2	UNIT 3	UNIT 4
5.1.E7. Read a table, line plot, or bar graph to find information about a data set. [5.MD.1] [MP4, MP7] (D3, A4)	5.2.E4. Find equivalent fractions using tools (e.g., area models, number lines) and multiplication and division strategies. [5.NF.1] [MP2, MP3, MP5, MP6] (N1, N3, A4)	5.3.E6. Determine the unknown in an equation involving multiple addends. [MP1, MP2] (N2, A4)	5.4.E1. Demonstrate understanding of the place-value concepts and mathematical properties involved in operations with multidigit numbers (e.g., making trades in addition and subtraction, and using the distributive property to multiply). [MP1, MP2, MP7] (N1, A4)
5.1.E8. Model real-world situations with tables, line plots, and bar graphs. [MP1, MP2, MP4, MP5] (D4, A4)	5.2.E5. Decompose fractions into the sums of smaller fractions (e.g., $\frac{3}{4} = \frac{1}{2} + \frac{1}{4}$). [5.NF.1] [MP1, MP2, MP6] (N1, A4)		5.4.E2. Show connections between models and strategies for multiplication (e.g., demonstrate partial products using a rectangle model for multiplication). [5.NBT.5] [MP2, MP7] (N2, A4)
5.1.E9. Make predictions and generalizations about a data set using a median and mode. [MP1, MP2, MP4, MP5] (D4, A4)	5.2.E7. Add and subtract fractions including those with unlike denominators. [5.NF.1] [MP1, MP2, MP5] (N2, A3, A4)		5.4.E7. Solve multistep problems using addition, subtraction, multiplication and division. [5.NBT.5, 5.NBT.6] [MP1, MP2, MP3, MP4] (N3, A4)
5.1.E10. Make predictions and generalizations about a data set using a data table and graph. [MP2, MP4, MP5] (D4, A4)			5.4.E8. Use multiplication and division strategies to find the area of rectangles or shapes based on rectangles. [5.MD.3, 5.MD.4, 5.MD.5] [MP1, MP2, MP3, MP4] (M2, A4)
			5.4.E9. Use multiplication and division strategies to find the volume of boxes. [5.MD.3, 5.MD.4, 5.MD.5] [MP1, MP2, MP3, MP4] (M2, A4)

Key Idea Algebra 4: Using Patterns *continued*

Expectations

UNIT 5	UNIT 6	UNIT 7	UNIT 8
5.5.E3. Find equivalent fractions and ratios using tools (e.g., area models, number lines, tables, graphs) and multiplication and division strategies. [5.NF.1] [MP1, MP2, MP3, MP5, MP6] (N3, A4)	5.6.E3. Use ratios to solve scale and distance problems. [5.NF.5] [MP1, MP2, MP3, MP4, MP5, MP7] (N3, A4)	5.7.E2. Show connections between models and strategies for multidigit division. [5.NBT.6] [MP1, MP2, MP4] (N2, A4)	5.8.E6. Explain the patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of ten. [5.NBT.2] [MP2, MP4, MP6, MP7, MP8] (N1, A4)
5.5.E6. Convert among different-sized standard measurement units within a given measurement system (e.g., seconds to hours and feet to yards). [5.MD.1] [MP1, MP2, MP5] (M2, A4)		5.7.E4. Follow the order of operations (e.g., using parentheses). [5.OA.1] [MP1, MP2, MP6] (N2, A4)	5.8.E12. Use relationships and patterns in a data set to make claims and predictions. [5.OA.3] [MP1, MP4, MP5, MP6, MP7, MP8] (D3, A4)
5.5.E8. Make predictions and generalizations using tables and graphs. [5.G.2] [MP1, MP2, MP3, MP5, MP7] (D4, A4)		5.7.E14. Make predictions and generalizations using data tables, graphs, and averages. [5.G.2] [MP2, MP4, MP5] (D4, A4)	

UNIT 9	UNIT 10	UNIT 11
5.9.E9. Make predictions and generalizations using data tables and graphs. [5.OA.3] [MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8] (D3, A4)	5.10.E2. Represent and identify the simplest form of a fraction using tools (e.g., area models) and multiplication and division strategies. [5.NF.1] [MP4, MP5, MP7, MP8] (N1, A4)	5.11.E4. Use ratios and proportions to solve problems. [5.OA.3, 6.RP.3] [MP1, MP2, MP3, MP5, MP7, MP8] (N3, A4)
	5.10.E9. Estimate sums and differences of fractions using benchmarks and mental math strategies. [5.NF.2] [MP1, MP2, MP4, MP5, MP6] (N3, A4)	5.11.E12. Use patterns in tables and line graphs to make predictions and solve problems. [5.OA.3, 6.RP.3, 6.NS.8] [MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8] (D4, A4)

Key Idea Geometry 1: Shapes

Identify, describe, classify, and analyze 2- and 3-dimensional shapes based on their properties.

Expectations

UNIT 6	UNIT 11	
5.6.E4. Identify and describe two-dimensional shapes. [5.G.3, 5.G.4] [MP1, MP3, MP4] (G1)	5.11.E5. Identify the parts of a circle. [7.G.4] [MP6] (G1)	
5.6.E5. Classify two-dimensional shapes in a hierarchy based on properties. [5.G.3, 5.G.4] [MP1, MP2, MP3, MP4] (G1)		

Key Idea Geometry 2: Orientation and Location

Use coordinate systems to specify locations and describe spatial relationships.

UNIT 6	
5.6.E6. Identify and describe locations in all four quadrants using ordered pairs. [5.G.1, 5.G.2] [MP3, MP4, MP5] (G2)	

Key Idea Geometry 4: Geometric Reasoning

Use visualization, spatial reasoning, and geometric modeling to solve problems.

UNIT 6	
5.6.E7. Justify conclusions using geometric properties. [5.G.1, 5.G.2, 5.G.3, 5.G.4] [MP1, MP2, MP3, MP4] (G4)	

Key Idea Measurement 2: Measurement Skills Use measurement tools, appropriate techniques, and formulas to determine measurements.

Expectations

UNIT 4	UNIT 5	UNIT 7	UNIT 11
5.4.E8. Use multiplication and division strategies to find the area of rectangles or shapes based on rectangles. [5.MD.3, 5.MD.4, 5.MD.5] [MP1, MP2, MP3, MP4] (M2, A4)	5.5.E5. Measure length in inches and yards. [5.MD.2] [MP5] (M2)	5.7.E9. Estimate the area of shapes with curved sides. [6.G.1] [MP1, MP2, MP7] (M2)	5.11.E6. Measure mass to the nearest tenth of a gram. [5.NBT.1] [MP2, MP6] (M2)
5.4.E9. Use multiplication and division strategies to find the volume of boxes. [5.MD.3, 5.MD.4, 5.MD.5] [MP1, MP2, MP3, MP4] (M2, A4)	5.5.E6. Convert among different-sized standard measurement units within a given measurement system (e.g., seconds to hours and feet to yards). [5.MD.1] [MP1, MP2, MP5] (M2, A4)	5.7.E10. Choose appropriate units to measure variables (e.g., length, area, volume, mass). [6.G.1, 6.G.2] [MP1, MP5] (M2, A1)	5.11.E7. Measure volume by displacement to the nearest tenth of a cc. [5.NBT.1, 5.MD.4] [MP2, MP6] (M2)
			5.11.E8. Measure the circumference of a circle to the nearest tenth of a centimeter. [5.NBT.1] [MP2, MP6] (M2)

Key Idea Data 1: Data Collection

Select, collect, and organize data to answer questions, solve problems, and make predictions.

Expectations

UNIT 1	UNIT 7
5.1.E1. Name variables in an investigation and list appropriate values for each. [3.MD.3, 6.SP.1] [MP1, MP2, MP3] (D1, A1)	5.7.E11. Represent variables and procedures. [5.OA.3] [MP2, MP4] (D1, A1)
5.1.E2. Represent the variables and the procedures of an investigation with a drawing. [6.SP.1] [MP1, MP2, MP3, MP5, MP6] (D1)	

Key Idea Data 2: Data Representation

Select and create appropriate representations, including tables and graphs, for organizing, displaying, and analyzing data.

UNIT 1	UNIT 5	UNIT 7	UNIT 8
5.1.E3. Make a bar graph using categorical data. [MP4] (D2, A2)	5.5.E7. Make a point graph and draw a best-fit line. [5.G.2, 5.OA.3] [MP1, MP4, MP7] (D2, A2)	5.7.E12. Make a point graph and draw a best-fit line. [5.G.2] [MP4, MP7] (D2, A2)	5.8.E10. Use data tables and graphs to organize and display data involving decimal values. [5.G.2] [MP4, MP5, MP6] (D2, A2)
5.1.E4. Make a line plot or bar graph using numerical data. [5.MD.1] [MP4] (D2, A2)			

UNIT 9	UNIT 11
5.9.E8. Represent number patterns using words, tables, and graphs. [5.OA.3] [MP1, MP4, MP5, MP6] (D2, A2)	5.11.E9. Represent the variables and procedures of an investigation in a drawing. [6.SP.1, 6.EE.9] [MP1, MP2, MP3, MP5, MP6] (D2, A1)
	5.11.E10. Collect and organize data into a table and line graph to represent the relationship between variables. [5.OA.3] [MP4, MP5, MP6] (D2, A2)
	5.11.E11. Make point graphs and draw best-fit lines to represent ratios and proportional relationships. [6.RP.3] [MP4, MP5, MP6] (D2, A2)

Key Idea Data 3: Data Description

Describe a data set by interpreting graphs, identifying patterns, and using statistical measures; e.g., average and range.

Expectations

UNIT 1	UNIT 7	UNIT 8	UNIT 9
5.1.E5. Find the median of a data set. [6.SP.5] [MP4] (D3)	5.7.E13. Find the mean and median of a data set. [6.SP.5] [MP2, MP4, MP7, MP8] (D3)	5.8.E11. Describe a data set by interpreting graphs and data tables, identifying patterns, and using the median. [5.G.2, 6.SP.5] [MP2, MP3, MP4, MP5, MP6] (D3)	5.9.E9. Make predictions and generalizations using data tables and graphs. [5.OA.3] [MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8] (D3, A4)
5.1.E6. Find the mode of a data set. [6.SP.5] [MP4] (D3)			
5.1.E7. Read a table, line plot, or bar graph to find information about a data set. [5.MD.1] [MP4, MP7] (D3, A4)			

Key Idea Data 4: Using Data

Apply relationships and patterns in data to solve problems, develop generalizations, and make predictions.

UNIT 1	UNIT 5	UNIT 7	UNIT 8
5.1.E8. Model real-world situations with tables, line plots, and bar graphs. [MP1, MP2, MP4, MP5] (D4, A4)	5.5.E8. Make predictions and generalizations using tables and graphs. [5.G.2] [MP1, MP2, MP3, MP5, MP7] (D4, A4)	5.7.E14. Make predictions and generalizations using data tables, graphs, and averages. [5.G.2] [MP2, MP4, MP5] (D4, A4)	5.8.E12. Use relationships and patterns in a data set to make claims and predictions. [5.OA.3] [MP1, MP4, MP5, MP6, MP7, MP8] (D3, A4)
5.1.E9. Make predictions and generalizations about a data set using a median and mode. [MP1, MP2, MP4, MP5] (D4, A4)	5.5.E9. Describe how the change in one variable in an investigation relates to a change in a second variable. [5.OA.3] [MP1, MP3, MP5, MP7] (D4, A1)		
5.1.E10. Make predictions and generalizations about a data set using a data table and graph. [MP2, MP4, MP5] (D4, A4)			

UNIT 11
5.11.E12. Use patterns in tables and line graphs to make predictions and solve problems. [5.OA.3, 6.RP.3, 6.NS.8] [MP1, MP2, MP3, MP4, MP5, MP6, MP7, MP8] (D4, A4)

Notes

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