

Learning Progression

Grade 3

# Math Trailblazers<sup>®</sup>

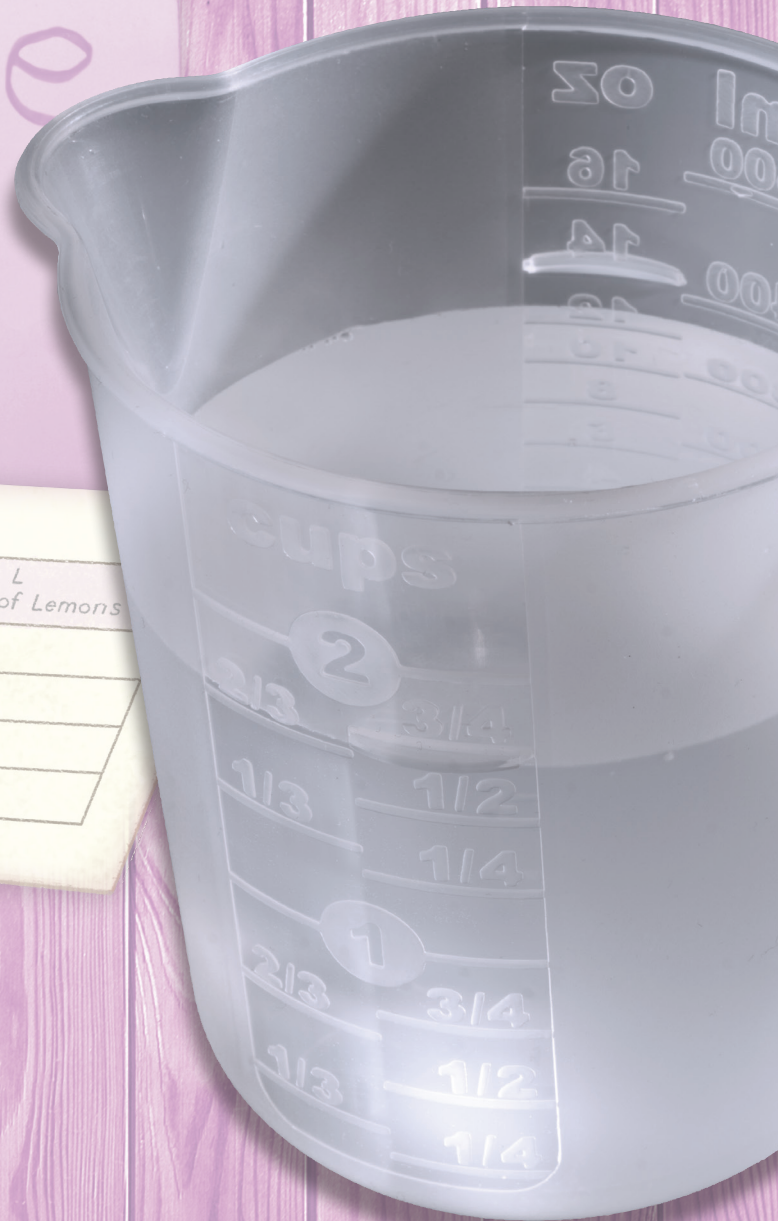
Fourth Edition

Lemonade  
50¢



Lemonade Stand

P Number of Pitchers	L Number of Lemons
1	8
2	16
4	32
8	64



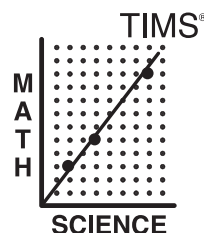
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# Math Trailblazers<sup>®</sup>

Common Core State Standards

## Math Trailblazers Grade 3 Learning Progression Program Scope and Sequence

**Kendall Hunt**



**A TIMS<sup>®</sup> 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 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
3.1.E3. Read a table or scaled graph to find information about a data set. [3.MD.3] [MP1, MP2, MP4] (D3, A4)	3.2.E1. Make predictions and generalizations using tables and graphs. [MP2, MP4, MP5] (D4, A4)	3.3.E5. Represent solution strategies for problems involving the multiplication facts using number sentences and drawings. [3.OA.3, 3.OA.7] [MP1, MP5] (N3, A4)	3.4.E8. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 5 and 6. [3.NBT.2] [MP2, MP6] (N3, A4)
3.1.E4. Make predictions and generalizations about a population from a sample using data tables and graphs. [MP2, MP4, MP5, MP7] (D4, A4)	3.2.E3. Identify patterns in sums and differences. [3.OA.9] [MP2, MP5, MP8] (N1, A4)	3.3.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 3 and 4. [3.NBT.2] [MP2, MP6] (N3, A4)	3.4.E9. Use fact strategies, drawings, and number sentences to solve problems involving multiplication facts for the 2s, and 3s. [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)
	3.2.E5. Use strategies that apply the properties of addition to solve addition and subtraction problems (e.g., making tens, using tens, thinking addition, using doubles). [3.NBT.2] [MP2, MP3, MP5, MP6, MP9] (N2, A4)	3.3.E8. Represent solution strategies for problems involving multiplication facts for the 5s and 10s using number sentences and drawings. [3.OA.3, 3.OA.7] [MP1, MP5] (N3, A4)	
	3.2.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 1 and 2. [3.NBT.2] [MP2, MP6] (N3, A4)		

- 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.

3.5.E11. Use fact strategies, drawings, and number sentences to solve word problems involving multiplication facts for the square numbers. [3.OA3, 3.OA.7]  
 [MP1, MP2, MP5]  
 (N3, A4)

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

# GRADE 3

Students apply place value concepts to continue developing fluency and competency with multistep, multidigit addition and subtraction problems. Students use mental math strategies, conceptual models, and paper-and-pencil procedures to solve multiplication and division problems. They make connections using drawings, number lines, rectangular arrays, tables, and graphs to reason about multiplication and division and the relationship between them. They also develop efficient strategies for the multiplication facts. Students develop models for comparing and finding equivalent fractions. They describe, analyze, and classify polygons and polyhedra using their properties.

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<b>Unit 1</b>	Sampling and Classifying
<b>Unit 2</b>	Strategies
<b>Unit 3</b>	Exploring Multiplication
<b>Unit 4</b>	Place Value Concepts
<b>Unit 5</b>	Area of Different Shapes
<b>Unit 6</b>	Adding Larger Numbers
<b>Unit 7</b>	Subtracting Larger Numbers
<b>Unit 8</b>	Multiplication Patterns
<b>Unit 9</b>	Parts and Wholes
<b>Unit 10</b>	Exporing Multiplication and Division
<b>Unit 11</b>	Analyzing Shapes
<b>Unit 12</b>	Measurement and Patterns
<b>Unit 13</b>	Multiplication, Division, and Volume

**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 1	UNIT 2	UNIT 4	UNIT 6
<p>3.1.E6. Represent whole number sums on number lines. [2.MD.6, 3.NBT.2] [MP1, MP2, MP3, MP4, MP6, MP7] (N1)</p>	<p>3.2.E2. Represent strategies for solving addition and subtraction problems using number lines, diagrams, and number sentences. [MP1, MP2, MP3, MP6, MP8] (N1)</p>	<p>3.4.E1. Represent numbers (to the thousands) using base-ten pieces, words, and symbols. [3.NBT.2] [MP1, MP2] (N1)</p>	<p>3.6.E1. Use and apply place value concepts to make connections among representations of numbers to the thousands using base-ten pieces, number lines, expanded form, and standard form. [MP1, MP2, MP4, MP5, MP7] (N1, A4)</p>
	<p>3.2.E3. Identify patterns in sums and differences. [3.OA.9] [MP2, MP5, MP8] (N1, A4)</p>	<p>3.4.E2. Compose and decompose numbers using ones, tens, hundreds, and thousands. [3.NBT.2] [MP1, MP2, MP6] (N1)</p>	
	<p>3.2.E4. Recognize that the equal sign represents the relationship between two equal quantities. [MP2, MP3, MP6] (N1, A3)</p>	<p>3.4.E3. Show different partitions of numbers using base-ten pieces, number lines, and number sentences. [3.NBT.2] [MP1, MP2, MP6] (N1)</p>	
		<p>3.4.E4. Recognize that different partitions of a number have the same total (e.g., <math>100 + 20 + 3 = 100 + 10 + 13</math>). [3.NBT.2] [MP2, MP6] (N1, A3)</p>	
		<p>3.4.E5. Read and write large numbers (to the thousands). [4.NBT.2] [MP2, MP5, MP6, MP7] (N1)</p>	
		<p>3.4.E6. Compare large numbers (to the thousands). [4.NBT.2] [MP2, MP3, MP7] (N1)</p>	

## Key Idea Number 1: Number Sense *continued*

### Expectations

UNIT 7	UNIT 8	UNIT 9	UNIT 10
3.7.E1. Apply place value concepts to make connections among representations of numbers to the thousands using base-ten pieces, number lines, expanded form, and standard form. [3.NBT.2] [MP2, MP3, MP4, MP5, MP6] (N1, A4)	3.8.E1. Represent multiplication and division problems with number lines, drawings, rectangular arrays, and number sentences. [3.OA.1, 3.OA.2, 3.OA.3, 3.OA.5, 3.OA.7] [MP1, MP2, MP5, MP6] (N1)	3.9.E1. Represent fractions using objects, area models (e.g., circle pieces, fraction strips, drawings) and number lines. [3.NF.2] [MP1, MP2, MP4, MP7] (N1)	3.10.E1. Identify and extend multiplicative patterns represented in graphs, tables, and number lines. [3.OA.9] [MP1, MP2, MP5, MP7, MP8] (N1, A1)
		3.9.E2. Use words and numbers to name fractions. [3.NF.1] [MP1, MP2, MP6] (N1)	
		3.9.E3. Recognize that fractional parts of a unit whole may be different shapes but must be the same size. [3.NF.1] [MP1, MP2, MP3, MP6, MP7] (N1)	
		3.9.E4. Recognize that the same fractional parts of different-size unit wholes are not equal. [4.NF.2] [MP1, MP2, MP3, MP4, MP7] (N1)	
		3.9.E5. Identify a fractional part of a set. [4.OA.4] [MP1, MP2] (N1)	
		3.9.E6. Partition shapes by a given unit fraction. [3.G.2, 3.NF.1] [MP1, MP2, MP4, MP5] (N1)	
		3.9.E7. Identify the unit whole when given a fractional part of a whole. [4.NF.2, 4.NF.3] [MP2, MP5, MP7] (N1)	
		3.9.E8. Make connections among representations of fractions including symbols, words, area models, and number lines. [3.NF.2] [MP1, MP2, MP4, MP5, MP6] (N1)	
		3.9.E9. Find equivalent fractions using models (e.g., circle pieces, fraction strips, number lines, drawings). [3.NF.2] (N1)	
		3.9.E10. Compare and order fractions using area models, number lines, and one-half as a benchmark. [2.NF.2, 3.NF.3] [MP1, MP2, MP3] (N1)	

## Key Idea Number 1: Number Sense *continued*

### Expectations

#### UNIT 12

3.12.E1. Identify and extend multiplicative patterns represented in a table or graph. [3.OA.3, 3.OA.9] [MP1, MP2, MP3, MP4, MP7] (N1, A1)

3.12.E2. Write number sentences to represent comparisons using the less than (<), greater than (>), or equal sign. [3.OA.5] [MP1, MP2, MP6] (N1, A3)

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

#### UNIT 2

3.2.E5. Use strategies that apply the properties of addition to solve addition and subtraction problems (e.g., making tens, using tens, thinking addition, using doubles). [3.NBT.2] [MP2, MP3, MP5, MP6, MP8] (N2, A4)

#### UNIT 3

3.3.E1. Complete open number sentences involving multiplication (e.g.,  $\square \times 4 = 4 + 4 + 4$  and  $\square \times 4 = 4 \times 3$ ;  $\square \times 4 + 1 = 13$ ). [3.OA.4, 3.OA.5] [MP2, MP6, MP8] (N2, A3)

3.3.E2. Represent multiplication and division problems in stories, drawings, and number sentences. [3.OA.1] [MP1, MP2, MP3, MP4, MP5, MP8] (N2)

#### UNIT 6

3.6.E2. Represent and solve addition problems using base-ten pieces and number lines. [3.NBT.2] [MP1, MP2, MP4] (N2)

3.6.E3. Add multidigit numbers using mental math strategies (e.g., composing and decomposing numbers and counting on). [3.NBT.2] [MP1, MP2, MP3, MP7] (N2)

3.6.E4. Add multidigit numbers using paper-and-pencil methods (e.g., expanded form, all-partials, and compact). [3.NBT.2] [MP1, MP2, MP8] (N2)

#### UNIT 7

3.7.E2. Represent and solve subtraction problems using base-ten pieces and number lines. [3.NBT.2] [MP2, MP3, MP5] (N2)

3.7.E3. Subtract multidigit numbers using mental math strategies (e.g., composing and decomposing numbers and counting up). [3.NBT.2] [MP1, MP2, MP3, MP6] (N2)

3.7.E4. Subtract multidigit numbers using paper-and-pencil methods (e.g., expanded form and compact). [3.NBT.2] [MP1, MP2, MP6] (N2)

## Key Idea Number 2: Operations *continued*

### Expectations

UNIT 8	UNIT 10	UNIT 12	UNIT 13
3.8.E2. Use strategies to solve multiplication and division problems (e.g., skip counting, repeated addition, repeated subtraction, reasoning from known facts, and invented). [3.OA.1, 3.OA.2, 3.OA.3, 3.OA.5, 3.OA.7] [MP1, MP2, MP3, MP6, MP8] (N2)	3.10.E3. Multiply and divide using mental math strategies (e.g., reasoning from known facts, repeated addition and subtraction). [3.OA.5, 3.OA.7] [MP1, MP2, MP6, MP7] (N2)	3.12.E3. Solve multiplication and division problems involving measurement (e.g., mass and length). [3.OA.3, 3.MD.2, 3.MD.4, 2.MD.3, 4.MD.4] [MP1, MP2, MP5, MP6] (N2)	3.13.E1. Represent 2-digit by 1-digit multiplication and multidigit division problems using counters, tiles, rectangular arrays, drawings, stories, and number sentences. [3.OA.3, 3.OA.7, 4.NBT.5, 4.NBT.6] [MP1, MP2, MP4, MP5, MP7] (N2, A3)
3.8.E3. Use the multiplication properties of 0 and 1 to solve multiplication problems. [3.OA.5] [MP1, MP2, MP3, MP7] (N2, A4)	3.10.E4. Represent solution strategies for problems involving multiplication (e.g., models, drawings, number lines, tables, number sentences, and graphs). [3.OA.1, 3.OA.3] [MP1, MP2, MP3, MP4, MP5] (N2, A2)		3.13.E2. Show connections between models and strategies for multiplication (e.g., demonstrate partial products using a rectangle model for multiplication). [3.OA.3, 3.OA.5, 3.OA.7, 4.NBT.5] [MP1, MP2, MP3, MP7] (N2, A3)
3.8.E4. Use turn-around facts to solve multiplication problems (applying the commutative property of multiplication). [3.OA.5] [MP1, MP2, MP7] (N2, A4)	3.10.E5. Represent solution strategies for problems involving division including interpreting remainders (e.g., models, drawings, number lines, tables, number sentences, and graphs). [3.OA.2, 3.OA.3, 4.OA.3] [MP1, MP2, MP3, MP4, MP5] (N2)		3.13.E3. Solve multidigit multiplication problems using mental math strategies (e.g., composing and decomposing numbers, and doubling and halving). [3.OA.3, 3.OA.7, 4.NBT.5] [MP1, MP2, MP3, MP7] (N2, A4)
3.8.E5. Identify and use patterns to solve the multiplication facts for the 2s, 3s, 5s, 10s, 9s, and square numbers. [3.OA.9] [MP1, MP2, MP7, MP8] (N2, A1, A4)			3.13.E4. Solve multidigit division problems using mental math strategies (e.g., thinking multiplication, repeated subtraction, using turn-around facts). [3.OA.3, 3.OA.7, 4.NBT.6] [MP1, MP2, MP6, MP7] (N2, A4)
3.8.E6. Break products into the sum of simpler products to solve multiplication problems (applying the distributive property of multiplication over addition). [3.OA.5] [MP1, MP2, MP7, MP8] (N2, A1, A4)			3.13.E5. Multiply one-digit whole numbers by multiples of ten. [3.NBT.3] [MP2, MP7] (N2)
3.8.E7. Multiply numbers that are multiples of 10. [3.NBT.3] [MP1, MP2, MP7] (N2, A4)			3.13.E6. Interpret remainders of multidigit division problems. [3.OA.7, 4.OA.4] [MP1, MP2, MP3, MP5] (N2)



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

**Expectations**

UNIT 1	UNIT 2	UNIT 3	UNIT 4
3.1.E7. Demonstrate fluency with the addition facts. [2.OA.2] (N3)	3.2.E6. Use mental math strategies including using tens and thinking addition to solve the subtraction facts in Groups 1 and 2. [3.NBT.2] (N3)	3.3.E3. Multiply and divide using mental math strategies (e.g., reasoning, repeated addition). [3.OA.3] [MP2, MP6] (N3)	3.4.E7. Use mental math strategies including counting strategies and thinking addition to solve subtraction facts in Groups 5 and 6. [3.NBT.2] [MP2] (N3)
	3.2.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 1 and 2. [3.NBT.2] [MP2, MP6] (N3, A4)	3.3.E4. Solve two-step word problems involving multiplication and division. [3.OA.8] [MP2, MP6, MP8] (N3)	3.4.E8. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 5 and 6. [3.NBT.2] [MP2, MP6] (N3, A4)
		3.3.E5. Represent solution strategies for problems involving the multiplication facts using number sentences and drawings. [3.OA.3, 3.OA.7] [MP1, MP5] (N3, A4)	3.4.E9. Use fact strategies, drawings, and number sentences to solve problems involving multiplication facts for the 2s, and 3s. [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)
		3.3.E6. Use mental math strategies including making tens to solve the subtraction facts in Groups 3 and 4. [3.NBT.2] [MP2] (N3)	
		3.3.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 3 and 4. [3.NBT.2] [MP2, MP6] (N3, A4)	
		3.3.E8. Represent solution strategies for problems involving multiplication facts for the 5s and 10s using number sentences and drawings. [3.OA.3, 3.OA.7] [MP1, MP5] (N3, A4)	

## Key Idea Number 3: Computation and Estimation *continued*

### Expectations

UNIT 5	UNIT 6	UNIT 7	UNIT 8
3.5.E9. Use mental math strategies to subtract, including using doubles and thinking addition, for the facts in Groups 7 and 8. [3.NBT.2] [MP2] (N3)	3.6.E5. Estimate sums using mental math strategies (e.g., rounding using benchmarks, using convenient numbers, composing and decomposing numbers, counting on). [3.NBT.1, 3.NBT.2] [MP1, MP2, MP3, MP6] (N3)	3.7.E5. Estimate differences using mental math strategies (e.g., rounding using benchmarks, using convenient numbers, composing and decomposing numbers, counting up and counting back). [3.NBT.1, 3.NBT.2] [MP1, MP2, MP3, MP6] (N3)	3.8.E10. Use mental strategies to subtract for the facts in Groups 5–8. [3.NBT.2] [MP2] (N3)
3.5.E10. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 7 and 8. [3.NBT.2] [MP2, MP6] (N3, A4)	3.6.E6. Use mental math strategies to subtract for the facts in all groups. [3.NBT.2] [MP2] (N3)	3.7.E8. Use mental math strategies to subtract for the facts in Groups 1–4. [3.NBT.2] [MP2] (N3)	3.8.E11. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 5–8. [3.NBT.2] [MP2, MP6] (N3, A4)
3.5.E11. Use fact strategies, drawings, and number sentences to solve word problems involving multiplication facts for the square numbers. [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)	3.6.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in all groups. [3.NBT.2] [MP2, MP6] (N3, A4)	3.7.E9. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 1–4. [3.NBT.2] [MP2, MP6] (N3, A4)	3.8.E12. Demonstrate fluency with the multiplication facts for the 5s and 10s. [3.OA.7] (N3)
	3.6.E8. Use fact strategies, drawings, and number sentences to solve word problems involving multiplication facts for the 9s. [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)	3.7.E10. Use fact strategies, drawings, and number sentences to solve word problems involving multiplication facts for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)	3.8.E13. Determine the unknown number in multiplication and division sentences relating three whole numbers for the 5s and 10s. [3.OA.4, 3.OA.6] [MP2, MP6] (N3, A4)

## Key Idea Number 3: Computation and Estimation *continued*

### Expectations

UNIT 9	UNIT 10	UNIT 11	UNIT 12
3.9.E11. Demonstrate fluency with the multiplication facts for the 2s and 3s. [3.OA.7] (N3)	3.10.E9. Demonstrate fluency with the multiplication facts for the square numbers. [3.OA.7] (N3)	3.11.E11. Demonstrate fluency with the multiplication facts for the nines. [3.OA.3, 3.OA.7] (N3)	3.12.E12. Demonstrate fluency with the multiplication facts for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.3, 3.OA.7] (N3)
3.9.E12. Determine the unknown number in multiplication and division sentences relating three whole numbers for the 2s and 3s. [3.OA.4] [MP2, MP6] (N3, A4)	3.10.E10. Determine the unknown number in a multiplication and division sentence relating three whole numbers for the square numbers. [3.OA.4, 3.OA.7] [MP2, MP6] (N3, A4)	3.11.E12. Determine the unknown number in a multiplication or division sentence relating three whole numbers for the nines. [3.OA.5, 3.OA.7] [MP2, MP6] (N3, A4)	3.12.E13. Determine the unknown number in a multiplication or division sentence relating three whole numbers for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.5, 3.OA.7] [MP2, MP6] (N3, A4)
UNIT 13			
3.13.E7. Solve multiplication problems by breaking products into the sum of simpler products (applying the distributive property of multiplication over addition) using a rectangle model and paper-and-pencil methods (e.g., all partials). [3.OA.3, 3.OA.7, 3.NBT.3, 4.NBT.5] [MP1, MP2, MP7] (N3, A3)			
3.13.E8. Solve multistep word problems involving the four operations. [3.OA.8] [MP1, MP2, MP4, MP6] (N3)			
3.13.E14. Demonstrate fluency with the multiplication facts for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.1, 3.OA.7] (N3)			
3.13.E15. Determine the unknown number in a multiplication or division sentence relating three whole numbers for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.7] [MP2, MP6] (N3, A4)			
3.13.E16. Demonstrate fluency with all the multiplication facts. [3.OA.7] (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 8	UNIT 10	UNIT 12
3.1.E1. Represent the variables and procedures of an investigation in a drawing. [6.SP.1] [MP1, MP4] (D1, A1)	3.8.E5. Identify and use patterns to solve the multiplication facts for the 2s, 3s, 5s, 10s, 9s, and square numbers. [3.OA.9] [MP1, MP2, MP7, MP8] (N2, A1, A4)	3.10.E1. Identify and extend multiplicative patterns represented in graphs, tables, and number lines. [3.OA.9] [MP1, MP2, MP5, MP7, MP8] (N1, A1)	3.12.E1. Identify and extend multiplicative patterns represented in a table or graph. [3.OA.3, 3.OA.9] [MP1, MP2, MP3, MP4, MP7] (N1, A1)
	3.8.E6. Break products into the sum of simpler products to solve multiplication problems (applying the distribute property of multiplication over addition). [3.OA.5] [MP1, MP2, MP7, MP8] (N2, A1, A4)		3.12.E8. Represent the variables and procedures of an investigation in a drawing. [MP1, MP2, MP4] (D2, A1)

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

UNIT 1	UNIT 5	UNIT 10	UNIT 12
3.1.E2. Draw scaled bar and picture graphs from a table. [3.MD.3] [MP1, MP2, MP4] (D2, A2)	3.5.E5. Make a scaled bar graph using numerical data. [3.MD.3] [MP1, MP2, MP4, MP5] (D2, A2)	3.10.E2. Represent multiplicative patterns in tables, graphs, and number lines. [3.OA.9] [MP1, MP2, MP5, MP7, MP8] (N1, A2)	3.12.E9. Make a point graph using ordered pairs and draw a best-fit line. [5.G.1, 5.G.2] [MP4, MP5, MP6] (D2, A2)
		3.10.E4. Represent solution strategies for problems involving multiplication (e.g., models, drawings, number lines, tables, number sentences, and graphs). [3.OA.1, 3.OA.3] [MP1, MP2, MP3, MP4, MP5] (N2, A2)	
		3.10.E6. Make a point graph to model real-world situations. [5.G.2] [MP1, MP4, MP8] (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 4	UNIT 12
3.2.E4. Recognize that the equal sign represents the relationship between two equal quantities. [MP2, MP3, MP6] (N1, A3)	3.3.E1. Complete open number sentences involving multiplication (e.g., $\square \times 4 = 4 + 4 + 4$ and $\square \times 4 = 4 \times 3$ ; $\square \times 4 + 1 = 13$ ). [3.OA.4, 3.OA.5] [MP2, MP6, MP8] (N2, A3)	3.4.E4. Recognize that different partitions of a number have the same total (e.g., $100 + 20 + 3 = 100 + 10 + 13$ ). [3.NBT.2] [MP2, MP6] (N1, A3)	3.12.E2. Write number sentences to represent comparisons using the less than (<), greater than (>), or equal sign. [3.OA.5] [MP1, MP2, MP6] (N1, A3)
UNIT 13			
3.13.E1. Represent 2-digit by 1-digit multiplication and multidigit division problems using counters, tiles, rectangular arrays, drawings, stories, and number sentences. [3.OA.3, 3.OA.7, 4.NBT.5, 4.NBT.6] [MP1, MP2, MP4, MP5, MP7] (N2, A3)			
3.13.E2. Show connections between models and strategies for multiplication (e.g., demonstrate partial products using a rectangle model for multiplication). [3.OA.3, 3.OA.5, 3.OA.7, 4.NBT.5] [MP1, MP2, MP3, MP7] (N2, A3)			
3.13.E7. Solve multiplication problems by breaking products into the sum of simpler products (applying the distributive property of multiplication over addition) using a rectangle model and paper-and-pencil methods (e.g., all partials). [3.OA.3, 3.OA.7, 3.NBT.3, 4.NBT.5] [MP1, MP2, MP7] (N3, A3)			

ALGEBRA

**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
3.1.E3. Read a table or scaled graph to find information about a data set. [3.MD.3] [MP1, MP2, MP4] (D3, A4)	3.2.E1. Make predications and generalizations using tables and graphs. [MP2, MP4, MP5] (D4, A4)	3.3.E5. Represent solution strategies for problems involving the multiplication facts using number sentences and drawings. [3.OA.3, 3.OA.7] [MP1, MP5] (N3, A4)	3.4.E8. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 5 and 6. [3.NBT.2] [MP2, MP6] (N3, A4)
3.1.E4. Make predictions and generalizations about a population from a sample using data tables and graphs. [MP2, MP4, MP5, MP7] (D4, A4)	3.2.E3. Identify patterns in sums and differences. [3.OA.9] [MP2, MP5, MP8] (N1, A4)	3.3.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 3 and 4. [3.NBT.2] [MP2, MP6] (N3, A4)	3.4.E9. Use fact strategies, drawings, and number sentences to solve problems involving multiplication facts for the 2s, and 3s. [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)
	3.2.E5. Use strategies that apply the properties of addition to solve addition and subtraction problems (e.g., making tens, using tens, thinking addition, using doubles). [3.NBT.2] [MP2, MP3, MP5, MP6, MP8] (N2, A4)	3.3.E8. Represent solution strategies for problems involving multiplication facts for the 5s and 10s using number sentences and drawings. [3.OA.3, 3.OA.7] [MP1, MP5] (N3, A4)	
	3.2.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 1 and 2. [3.NBT.2] [MP2, MP6] (N3, A4)		

## Key Idea Algebra 4: Using Patterns *continued*

### Expectations

UNIT 5	UNIT 6	UNIT 7	UNIT 8
3.5.E6. Read a table and graph to find information about a data set. [MP1, MP3, MP4] (D3, A4)	3.6.E1. Use and apply place value concepts to make connections among representations of numbers to the thousands using base-ten pieces, number lines, expanded form, and standard form. [MP1, MP2, MP4, MP5, MP7] (N1, A4)	3.7.E1. Apply place value concepts to make connections among representations of numbers to the thousands using base-ten pieces, number lines, expanded form, and standard form. [3.NBT.2] [MP2, MP3, MP4, MP5, MP6] (N1, A4)	3.8.E3. Use the multiplication properties of 0 and 1 to solve multiplication problems. [3.OA.5] [MP1, MP2, MP3, MP7] (N2, A4)
3.5.E8. Make predictions and generalizations about a data set using data tables, graphs, and diagrams. [MP1, MP2, MP4, MP5] (D4, A4)	3.6.E7. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in all groups. [3.NBT.2] [MP2, MP6] (N3, A4)	3.7.E9. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 1–4. [3.NBT.2] [MP2, MP6] (N3, A4)	3.8.E4. Use turn-around facts to solve multiplication problems (applying the commutative property of multiplication). [3.OA.5] [MP1, MP2, MP7] (N2, A4)
3.5.E10. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 7 and 8. [3.NBT.2] [MP2, MP6] (N3, A4)	3.6.E8. Use fact strategies, drawings, and number sentences to solve word problems involving multiplication facts for the 9s. [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)	3.7.E10. Use fact strategies, drawings, and number sentences to solve word problems involving multiplication facts for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)	3.8.E5. Identify and use patterns to solve the multiplication facts for the 2s, 3s, 5s, 10s, 9s, and square numbers. [3.OA.9] [MP1, MP2, MP7, MP8] (N2, A1, A4)
3.5.E11. Use fact strategies, drawings, and number sentences to solve word problems involving multiplication facts for the square numbers. [3.OA.3, 3.OA.7] [MP1, MP2, MP5] (N3, A4)			3.8.E6. Break products into the sum of simpler products to solve multiplication problems (applying the distributive property of multiplication over addition). [3.OA.5] [MP1, MP2, MP7, MP8] (N2, A1, A4)
			3.8.E7. Multiply numbers that are multiples of 10. [3.NBT.3] [MP1, MP2, MP7] (N2, A4)
			3.8.E8. Use patterns in data tables to make predictions and solve problems. [MP1, MP4, MP6, MP7] (D4, A4)
			3.8.E11. Determine the unknown number in an addition or subtraction sentence relating three whole numbers for the facts in Groups 5–8. [3.NBT.2] [MP2, MP6] (N3, A4)
			3.8.E13. Determine the unknown number in multiplication and division sentences relating three whole numbers for the 5s and 10s. [3.OA.4, 3.OA.6] [MP2, MP6] (N3, A4)

## Key Idea Algebra 4: Using Patterns *continued*

### Expectations

UNIT 9	UNIT 10	UNIT 11	UNIT 12
3.9.E12. Determine the unknown number in multiplication and division sentences relating three whole numbers for the 2s and 3s. [3.OA.4] [MP2, MP6] (N3, A4)	3.10.E7. Read a table or point graph to find information about a data set. [5.G.2] [MP1, MP2, MP4] (D3, A4) 3.10.E10. Determine the unknown number in a multiplication and division sentence relating three whole numbers for the square numbers. [3.OA.4, 3.OA.7] [MP2, MP6] (N3, A4)	3.11.E12. Determine the unknown number in a multiplication or division sentence relating three whole numbers for the nines. [3.OA.5, 3.OA.7] [MP2, MP6] (N3, A4)	3.12.E11. Make predications about a data set using a data table or point graph with a best-fit line. [MP1, MP2, MP3, MP4, MP7] (D4, A4) 3.12.E13. Determine the unknown number in a multiplication or division sentence relating three whole numbers for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.5, 3.OA.7] [MP2, MP6] (N3, A4)
UNIT 13			
3.13.E3. Solve multidigit multiplication problems using mental math strategies (e.g., composing and decomposing numbers, and doubling and halving). [3.OA.3, 3.OA.7, 4.NBT.5] [MP1, MP2, MP3, MP7] (N2, A4)			
3.13.E4. Solve multidigit division problems using mental math strategies (e.g., thinking multiplication, repeated subtraction, using turn-around facts). [3.OA.3, 3.OA.7, 4.NBT.6] [MP1, MP2, MP6, MP7] (N2, A4)			
3.13.E13. Make predictions and solve problems using patterns in data represented in data tables and bar graphs. [MP1, MP3, MP4, MP5, MP7] (D4, A4)			
3.13.E15. Determine the unknown number in a multiplication or division sentence relating three whole numbers for the last six facts ( $4 \times 6$ , $4 \times 7$ , $4 \times 8$ , $6 \times 7$ , $6 \times 8$ , $7 \times 8$ ). [3.OA.7] [MP2, MP6] (N3, A4)			



**Key Idea Geometry 1: Shapes** Identify, describe, classify, and analyze 2- and 3-dimensional shapes based on their properties.

**Expectations**

**UNIT 11**

3.11.E1. Describe and analyze two-dimensional shapes using their properties (e.g., number of sides, length of sides, vertices, number and size of angles, number of right angles, and relationships between sides). [3.G.1] [MP1, MP3, MP5, MP6, MP7] (G1)

3.11.E2. Describe and analyze three-dimensional shapes using their properties (e.g., number and shape of sides, number of edges, and number of corners). [3.G.1] [MP1, MP3, MP5, MP6, MP7] (G1)

3.11.E3. Identify and construct two- and three-dimensional shapes using their properties. [3.G.1] [MP1, MP2, MP5, MP6] (G1)

3.11.E4. Classify 2- and 3-dimensional shapes using their properties. [3.G.1] [MP1, MP3, MP5, MP6, MP7] (G1)

**Key Idea Geometry 2: Orientation and Location** Use coordinate systems to specify locations and describe spatial relationships.

**UNIT 12**

3.12.E4. Plot points and find locations or objects on a map using coordinates. [5.G.1, 5.G.2] [MP1, MP4, MP5, MP6, MP7] (G2)

**Key Idea Geometry 3: Motion** Apply transformations (slides, flips, and turns) and use symmetry to analyze mathematical situations.

**Expectations**

**UNIT 11**

3.11.E5. Identify congruent shapes.  
[3.G.1] [MP1, MP5] (G3)

3.11.E6. Identify lines of symmetry.  
[MP1, MP5, MP6] (G3)

**Key Idea Geometry 4: Geometric Reasoning** Use visualization, spatial reasoning, and geometric modeling to solve problems.

**UNIT 11**

3.11.E7. Justify conclusions using geometric properties. [3.G.1] [MP1, MP3, MP7] (G4)

**Key Idea Measurement 1: Measurement Concepts** Understand measurable attributes of objects or situations (length, area, mass, volume, size, time) and the units, systems, and processes of measurement.

**Expectations**

UNIT 5	UNIT 7	UNIT 11	UNIT 13
3.5.E1. Recognize that different shapes can have the same area. [3.MD.5, 3.MD.6] [MP1, MP3, MP5] (M1)	3.7.E6. Solve problems involving time measurements to the nearest minute. [3.MD.1] [MP2, MP5, MP6] (M1)	3.11.E8. Recognize that shapes can have the same area but different perimeters. [3.MD.5, 3.MD.6, 3.MD.8] [MP1, MP2, MP4, MP5, MP6] (M1)	3.13.E9. Use the relationship between larger and smaller units of measure to solve problems. [4.MD.1] [MP1, MP5, MP6, MP7] (M1)
3.5.E2. Solve problems involving time measurements to the nearest five minutes. [3.MD.1] [MP1, MP2, MP4, MP5, MP6] (M1)		3.11.E9. Solve elapsed-time problems involving time measurements to the nearest minute. [3.MD.1] [MP1, MP2, MP4, MP5, MP6] (M1)	

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

UNIT 5	UNIT 7	UNIT 8	UNIT 10
3.5.E3. Find the area of shapes with straight or curved sides by counting square units. [3.MD.6] [MP1, MP2, MP3, MP4, MP5, MP6] (M2)	3.7.E7. Write and tell time to the nearest minute. [3.MD.1] [MP2, MP5, MP6] (M2)	3.8.E9. Measure length to the nearest inch. [3.MD.4] [MP5, MP6] (M2)	3.10.E8. Measure to the nearest centimeter. [4.MD.1] [MP5, MP6] (M2)
3.5.E4. Write and tell time to the nearest five minutes. [3.MD.1] [MP1, MP2, MP5] (M2)			
UNIT 11	UNIT 12	UNIT 13	
3.11.E10. Measure the area and perimeter of two-dimensional shapes. [3.MD.6, 3.MD.7, 3.MD.8, 3.G.2] [MP1, MP5, MP6, MP7] (M2)	3.12.E5. Measure length in centimeters. [3.MD.4, 4.MD.1] [MP4, MP5, MP6] (M2)	3.13.E10. Measure volume to the nearest cubic centimeter using a graduated cylinder (e.g., through displacement, by filling container). [3.MD.2] [MP1, MP2, MP4, MP5, MP6] (M2)	
	3.12.E6. Measure mass in grams. [3.MD.2] [MP4, MP5, MP6] (M2)		
		3.13.E11. Estimate volume by counting cubic centimeters. [3.MD.2] [MP1, MP4, MP5, 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 12		
3.1.E1. Represent the variables and procedures of an investigation in a drawing. [6.SP.1] [MP1, MP4] (D1, A1)	3.12.E7. Collect and organize data in a table. [MP1, MP4, 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 10	UNIT 12
3.1.E2. Draw scaled bar and picture graphs from a table. [3.MD.3] [MP1, MP2, MP4] (D2, A2)	3.5.E5. Make a scaled bar graph using numerical data. [3.MD.3] [MP1, MP2, MP4, MP5] (D2, A2)	3.10.E6. Make a point graph to model real-world situations. [5.G.2] [MP1, MP4, MP8] (D2, A2)	3.12.E8. Represent the variables and procedures of an investigation in a drawing. [MP1, MP2, MP4] (D2, A1)
			3.12.E9. Make a point graph using ordered pairs and draw a best-fit line. [5.G.1, 5.G.2] [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.

UNIT 1	UNIT 5	UNIT 10	UNIT 12
3.1.E3. Read a table or scaled graph to find information about a data set. [3.MD.3] [MP1, MP2, MP4] (D3, A4)	3.5.E6. Read a table and graph to find information about a data set. [MP1, MP3, MP4] (D3, A4)	3.10.E7. Read a table or point graph to find information about a data set. [5.G.2] [MP1, MP2, MP4] (D3, A4)	3.12.E10. Read a table or point graph to find information about a data set. [MP1, MP2, MP4, MP6, MP7] (D3)
	3.5.E7. Find the median of a data set. [6.SP.5] [MP2, MP4] (D3)		
UNIT 13			
3.13.E12. Find the median of a data set. [6.SP.5] [MP1, MP2, MP4] (D3)			

**Key Idea Data 4: Using Data** Apply relationships and patterns in data to solve problems, develop generalizations, and make predictions.

**Expectations**

UNIT 1	UNIT 2	UNIT 5	UNIT 8
3.1.E4. Make predictions and generalizations about a population from a sample using data tables and graphs. [MP2, MP4, MP5, MP7] (D4, A4)	3.2.E1. Make predications and generalizations using tables and graphs. [MP2, MP4, MP5] (D4, A4)	3.5.E8. Make predictions and generalizations about a data set using data tables, graphs, and diagrams. [MP1, MP2, MP4, MP5] (D4, A4)	3.8.E8. Use patterns in data tables to make predictions and solve problems. [MP1, MP4, MP6, MP7] (D4, A4)
3.1.E5. Solve one- and two-step problems using data in scaled bar and picture graphs. [3.MD.3] [MP1, MP2, MP3, MP5, MP6, MP8] (D4)			
UNIT 12	UNIT 13		
3.12.E11. Make predications about a data set using a data table or point graph with a best-fit line. [MP1, MP2, MP3, MP4, MP7] (D4, A4)	3.13.E13. Make predictions and solve problems using patterns in data represented in data tables and bar graphs. [MP1, MP3, MP4, MP5, MP7] (D4, A4)		

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