

ARKANSAS DEPARTMENT OF EDUCATION
MATHEMATICS ADOPTION

SCOTT FORESMAN
Investigations
IN NUMBER, DATA, AND SPACE®

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Common Core State Standards Correlation

and

**Common Core State Standards Comparison with
Arkansas Student Learning Expectations for Mathematics
Correlation**

Grade 4

**ARKANSAS DEPARTMENT OF EDUCATION
MATHEMATICS ADOPTION**

Two *Investigations in Number, Data and Space* Grade 4 correlations have been provided within this document.

- **Part 1** A Correlation of *Investigations in Number, Data and Space* Grade 4 to the Common Core State Standards for Mathematics (CCSS) **Part 1** pages 1-8

- **Part 2** A Correlation of *Investigations in Number, Data and Space* Grade 4 to the Common Core State Standards Comparison with Arkansas Student Learning Expectations for Mathematics. **Part 2** pages 9-65

The correlation in Part 2 is included at the request of the Arkansas Department of Education and shows how both sets of criteria intersect and align to common content. Please note the CCSS introduces some content at different grade levels, as a result, several grade levels of the Arkansas Curriculum Framework were aligned to and were included at a single grade level. Consequently, the correlation reflects this shift to other levels.

Thank you in advance for your time and consideration of *Investigations* for Arkansas elementary students.

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A Correlation of *Investigations In Number, Data, and Space* © 2012
to the Common Core State Standards for Mathematics

Common Core State Standards for Mathematics Grade 4	Investigations in Number, Data, and Space ©2012 Grade 4
Operations and Algebraic Thinking 4.OA	
Use the four operations with whole numbers to solve problems.	
1. Interpret a multiplication equation as a comparison, e.g., interpret $35 = 5 \times 7$ as a statement that 35 is 5 times as many as 7 and 7 times as many as 5. Represent verbal statements of multiplicative comparisons as multiplication equations. [4.OA.1.]	U1 Sessions: 3.2, 3.3 U1 ICCG: 1.6A U3 Sessions: 3.1, 3.2, 3.3, 4.1, 4.3
2. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison. [4.OA.2.]	U1 Sessions: 3.2, 3.3 U1 ICCG: 1.6A U3 Sessions: 3.1, 3.2, 3.3, 4.1, 4.3
3. 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. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding. [4.OA.3.]	U1 Sessions: 1.1, 1.2, 1.3, 1.4, 1.5, 3.2 U1 ICCG: 1.6A U3 Sessions: 1.1, 2.2, 2.3, 2.4 U8 Sessions: 1.5, 2.1, 2.2, 3.3, 3.5 U8 ICCG: 2.4A
Gain familiarity with factors and multiples.	
4. Find all factor pairs for a whole number in the range 1–100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1–100 is prime or composite. [4.OA.4.]	U1 Sessions: 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U3 Sessions: 1.4, 1.5, 2.1, 2.2, 3.1, 3.2, 3.3, 3.4

Grade 4 Curriculum Units**U1** Factors, Multiples, and Arrays**U2** Describing the Shape of the Data**U3** Multiple Towers and Division Stories**U4** Size, Shape, and Symmetry**U5** Landmarks and Large Numbers**U6** Fraction Cards and Decimal Squares**U7** Moving Between Solids and Silhouettes**U8** How Many Packages? How Many Groups?**U9** Penny Jars and Plant Growth**ICCG** Investigations and the Common Core State Standards Guide

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Part 1

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Generate and analyze patterns.	
5. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. [4.OA.5.]	U8 Sessions: 1.4, 1.5, 2.4, 2.5, 3.2, 3.3, 3.4, 3.5, 3.6 U9 Sessions: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.5
Number and Operations in Base Ten** 4.NBT	
Generalize place value understanding for multi-digit whole numbers.	
1. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. [4.NBT.1.]	U5 Sessions: 1.1, 3.1, 3.2 U5 ICCG: 3.6A
2. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons. [4.NBT.2.]	U5 Sessions: 1.1, 1.2, 1.3, 1.4, 1.5A, 1.5, 1.6, 2.1, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6A, 4.1, 4.2, 4.3, 4.4A, 4.4, 4.5, 4.6 U5 ICCG: 3.6A U6 Sessions: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7 U7 ICCG: 3.5A, 3.5B
3. Use place value understanding to round multi-digit whole numbers to any place. [4.NBT.3.]	U5 ICCG: 1.5A, 3.6A
Use place value understanding and properties of operations to perform multi-digit arithmetic.	
4. Fluently add and subtract multi-digit whole numbers using the standard algorithm. [4.NBT.4.]	U2 Sessions: 1.1, 1.2, 1.3, 2.1, 2.2, 2.4, 2.5, 2.6, 3.5 U4 Sessions: 1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 4.5, 4.6, 4.7 U4 ICCG: 2.3A, 3.4A U5 Sessions: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 ICCG: 4.4A

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U1 Factors, Multiples, and Arrays

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U7 Moving Between Solids and Silhouettes

U8 How Many Packages? How Many Groups?

U9 Penny Jars and Plant Growth

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5. Multiply a whole number of up to four digits by a one-digit whole number and multiply two two-digit numbers using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations rectangular arrays and/or area models. [4.NBT.5.]	<p>U3 Sessions: 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5</p> <p>U8 Sessions: 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6</p> <p>U8 ICCG: 2.4A</p> <p>U9 Sessions: 2.1, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4</p>
6. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors using strategies based on place value the properties of operations and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations rectangular arrays and/or area models. [4.NBT.6.]	<p>U3 Sessions: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 4.1</p> <p>U8 Sessions: 3.1, 3.2, 3.3, 3.4, 3.6</p> <p>U8 ICCG: 3.5A</p> <p>U9 Sessions: 2.1, 2.2, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4</p>
Number and Operations—Fractions ⁺ 4.NF	
Extend understanding of fraction equivalence and ordering.	
1. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. [4.NF.1.]	<p>U6 Sessions: 1.1, 1.5, 2.1, 2.3, 2.5, 2.6</p>
2. Compare two fractions with different numerators and different denominators e.g. by creating common denominators or numerators or by comparing to a benchmark fraction such as $1/2$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$ $=$ or $<$ and justify the conclusions e.g. by using a visual fraction model. [4.NF.2.]	<p>U6 Sessions: 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.7</p>

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Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.	
3. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. [4.NF.3.]	
a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole. [4.NF.3.a.]	U6 Sessions: 1.1, 1.2, 1.5, 1.6, 1.7, 2.5 U6 ICCG: 1.8A
b. Decompose a fraction into a sum of fractions with the same denominator in more than one way recording each decomposition by an equation. Justify decompositions e.g. by using a visual fraction model. [4.NF.3.b.]	U6 Sessions: 1.1, 1.2, 1.6
c. Add and subtract mixed numbers with like denominators e.g. by replacing each mixed number with an equivalent fraction and/or by using properties of operations and the relationship between addition and subtraction. [4.NF.3.c.]	U6 ICCG: 2.7A
d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators e.g. by using visual fraction models and equations to represent the problem. [4.NF.3.d.]	U6 Sessions: 1.3, 1.4 U6 ICCG: 1.8A
4. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. [4.NF.4.]	
a. Understand a fraction a/b as a multiple of $1/b$. [4.NF.4.a.]	U6 ICCG: 3A.1, 3A.2, 3A.3
b. Understand a multiple of a/b as a multiple of $1/b$ and use this understanding to multiply a fraction by a whole number. [4.NF.4.b.]	U6 ICCG: 3A.1, 3A.2, 3A.3

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c. Solve word problems involving multiplication of a fraction by a whole number e.g. by using visual fraction models and equations to represent the problem. [4.NF.4.c.]	U6 ICCG: 3A.1, 3A.2, 3A.3
Understand decimal notation for fractions and compare decimal fractions.	
5. Express a fraction with denominator 10 as an equivalent fraction with denominator 100 and use this technique to add two fractions with respective denominators 10 and 100. <i>(Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.)</i> [4.NF.5.]	U6 Sessions: 3.1, 3.3
6. Use decimal notation for fractions with denominators 10 or 100. [4.NF.6.]	U6 Sessions: 3.1, 3.2, 3.3
7. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when the two decimals refer to the same whole. Record the results of comparisons with the symbols $>$ $=$ or $<$ and justify the conclusions e.g. by using a visual model. [4.NF.7.]	U6 Sessions: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 U7 Sessions: 3.1, 3.2
Measurement and Data 4.MD	
Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.	
1. Know relative sizes of measurement units within one system of units including km m cm; kg g; lb oz.; l ml; hr min sec. 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. <i>For example know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a</i>	U4 Sessions: 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG: 3.5A, 3.5B U9 Sessions: 3.1, 3.2, 3.3, 3.5

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<i>conversion table for feet and inches listing the number pairs (1 12) (2 24) (3 36) ... [4.MD.1.]</i>	
2. Use the four operations to solve word problems involving distances intervals of time liquid volumes masses of objects and money including problems involving simple fractions or decimals and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale. [4.MD.2.]	U2 Sessions: 1.2, 1.3, 1.4, 1.5, 2.4, 2.5 U4 Sessions: 1.3, 1.5 U5 Sessions: 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 3.4, 3.5, 4.5, 4.6 U6 Sessions: 3.1, 3.4, 3.5, 3.6 U7 ICCG: 3.5B U8 Sessions: 2.1, 3.1, 3.5 U8 ICCG: 2.4A
3. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. [4.MD.3.]	U4 Sessions: 1.1, 1.3, 1.4, 1.5, 2.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7
Represent and interpret data.	
4. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$ $\frac{1}{4}$ $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. [4.MD.4.]	U6 ICCG: 2.7A U9 Sessions: 3.1, 3.2
Geometric measurement: understand concepts of angle and measure angles.	
5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint and understand concepts of angle measurement: [4.MD.5.]	
a. An angle is measured with reference to a circle with its center at the common endpoint of the rays by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle" and can be used to measure angles. [4.MD.5.a.]	U4 ICCG: 2.3A, 3.4A
b. An angle that turns through n one-degree angles is said to have an angle measure of n degrees. [4.MD.5.b.]	U4 ICCG: 3.4A

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6. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure. [4.MD.6.]	U4 Sessions: 3.1, 3.2, 3.3 U4 ICCG: 3.4A
7. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems e.g. by using an equation with a symbol for the unknown angle measure. [4.MD.7.]	U4 Sessions: 3.1, 3.2, 3.3
Geometry 4.G	
Draw and identify lines and angles and classify shapes by properties of their lines and angles.	
1. Draw points lines line segments rays angles (right acute obtuse) and perpendicular and parallel lines. Identify these in two-dimensional figures. [4.G.1.]	U4 Sessions: 2.1, 2.2, 2.3, 2.4, 2.5, 4.7 U4 ICCG: 2.3A, 3.4A
2. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines or the presence or absence of angles of a specified size. Recognize right triangles as a category and identify right triangles. [4.G.2.]	U4 Sessions: 2.1, 2.3, 2.4, 2.5, 4.1, 4.2, 4.3, 4.4, 4.7 U4 ICCG: 2.3A
3. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry. [4.G.3.]	U4 Sessions: 4.1, 4.2, 4.3, 4.4, 4.6

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	AR.3.NO.2.1 (NO.2.3.1) Number Theory: Develop an understanding of the commutative and identity properties of multiplication using objects	U1 Sessions 1.1, 1.2, 1.3, 1.4, 2.2 U3 Sessions 1.1, 1.2
	AR.4.NO.3.4 (NO.3.4.4) Application of Computation: Solve simple problems using operations involving addition, subtraction, and multiplication using a variety of methods and tools (e.g., objects, mental computation, paper and pencil and with and without appropriate technology)	U1 Sessions 2.2, 2.3, 2.4, 2.5 U1 ICCG 1.6A U2 Sessions 1.1, 1.2, 1.3, 2.1, 2.2, 2.4, 2.5, 2.6, 3.5 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 4.5, 4.6, 4.7 U1 ICCG 3.4A U5 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U1 ICCG 4.4A U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6 U9 Sessions 2.1, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4

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CC.4.OA.2 Use the four operations with whole numbers to solve problems. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.	AR.3.NO.2.3 (NO.2.3.3) Whole Number Operations: Use conventional mathematical symbols to write equations for contextual problems involving multiplication	U1 Sessions 3.2, 3.3 U3 Sessions 3.1, 3.2, 3.3, 4.1, 4.3
	AR.4.NO.2.3 (NO.2.4.3) Whole Number Operations: Use conventional mathematical symbols to write equations for contextual problems involving multiplication	U1 Sessions 3.2, 3.3 U1 ICCG 1.6A U3 Sessions 3.1, 3.2, 3.3, 4.1, 4.3
	AR.4.NO.2.4 (NO.2.4.4) Whole Number Operations: Represent and explain division as measurement and partitive division including equal groups, related rates, price, rectangular arrays (area model), combinations and multiplicative comparison	U3 Sessions 2.1, 2.4, 2.5 U8 Sessions 3.2, 3.3, 3.4, 3.5 U8 ICCG 2.4A, 3.5A
	AR.3.A.5.3 (A.5.3.3) Expressions, Equations and Inequalities: Use a symbol to represent an unknown quantity in a number sentence involving contextual situations and find the value	U9 Sessions 2.4, 2.7, 2.8

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<p>(Continued) CC.4.OA.2 Use the four operations with whole numbers to solve problems. Multiply or divide to solve word problems involving multiplicative comparison, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem, distinguishing multiplicative comparison from additive comparison.</p>	<p>AR.3.NO.2.4 (NO.2.3.4) Whole Number Operations: Model, represent and explain division as measurement and partitive division including equal groups, related rates, price, rectangular arrays (area model), combinations and multiplicative comparison</p>	<p>U3 Sessions 2.1, 2.4, 2.5 U8 Sessions 3.2, 3.3, 3.4, 3.5 U8 ICCG 2.4A, 3.5A</p>
	<p>AR.4.A.5.3 (A.5.4.3) Expressions, Equations and Inequalities: Use a variable to represent an unknown quantity in a number sentence involving contextual situations and find the value</p>	<p>U9 Sessions 2.4, 2.7, 2.8</p>

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<p>CC.4.OA.3 Use the four operations with whole numbers to solve problems. 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. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	<p>AR.4.NO.2.4 (NO.2.4.4) Whole Number Operations: Represent and explain division as measurement and partitive division including equal groups, related rates, price, rectangular arrays (area model), combinations and multiplicative comparison</p>	<p>U3 Sessions 2.1, 2.4, 2.5 U8 Sessions 3.2, 3.3, 3.4, 3.5 U8 ICCG 2.4A, 3.5A</p>
	<p>AR.3.A.5.1 (A.5.3.1) Expressions, Equations and Inequalities: Select and/or write number sentences (equations) to find the unknown in problem-solving contexts involving two-digit times one-digit multiplication using appropriate labels</p>	<p>U3 Sessions 1.1, 3.3</p>
	<p>AR.4.A.5.1 (A.5.4.1) Expressions, Equations and Inequalities: Select and/or write number sentences (equations) to find the unknown in problem-solving contexts involving two-digit by one-digit division using appropriate labels</p>	<p>U3 Sessions 1.1, 3.3</p>
	<p>AR.3.A.5.3 (A.5.3.3) Expressions, Equations and Inequalities: Use a symbol to represent an unknown quantity in a number sentence involving contextual situations and find the value</p>	<p>U9 Sessions 2.4, 2.7, 2.8</p>

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<p>(Continued) CC.4.OA.3 Use the four operations with whole numbers to solve problems. 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. Represent these problems using equations with a letter standing for the unknown quantity. Assess the reasonableness of answers using mental computation and estimation strategies including rounding.</p>	<p>AR.4.A.5.3 (A.5.4.3) Expressions, Equations and Inequalities: Use a variable to represent an unknown quantity in a number sentence involving contextual situations and find the value</p>	<p>U9 Sessions 2.4, 2.7, 2.8</p>
	<p>AR.1.NO.1.7 (NO.1.1.7) Whole Numbers: Estimate the results of whole number addition and subtraction problems and judge the reasonableness</p>	<p>U4 Session 1.3 U5 Sessions 1.3, 4.1</p>
	<p>AR.3.NO.2.4 (NO.2.3.4) Whole Number Operations: Model, represent and explain division as measurement and partitive division including equal groups, related rates, price, rectangular arrays (area model), combinations and multiplicative comparison</p>	<p>U3 Sessions 2.1, 2.4, 2.5 U8 Sessions 3.2, 3.3, 3.4, 3.5, U8 ICCG 2.4A, 3.5A</p>
<p>CC.4.OA.4 Gain familiarity with factors and multiples. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.</p>	<p>AR.4.NO.2.2 (NO.2.4.2) Number Theory: Apply number theory: -- determine if any number is even or odd, -- use the terms 'multiple,' 'factor,' and 'divisible by' in an appropriate context, -- generate and use divisibility rules for 2, 5, and 10, -- demonstrate various multiplication & division relationships</p>	<p>U1 Sessions 1.1, 1.2, 1.3, 2.3, 2.4, 2.5, 3.1, 3.2 U3 Sessions 2.1, 2.4, 2.5, 2.6 U8 Sessions 3.1, 3.2 Even/Odd Grade 3: U5 Session 2.1</p>

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<p>(Continued) CC.4.OA.4 Gain familiarity with factors and multiples. Find all factor pairs for a whole number in the range 1-100. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1-100 is a multiple of a given one-digit number. Determine whether a given whole number in the range 1-100 is prime or composite.</p>	<p>AR.6.NO.3.5 (NO.3.6.5) Application of Computation: Find and use factorization (tree diagram) including prime factorization of composite numbers (expanded and exponential notation) to determine the greatest common factor (GCF) and least common multiple (LCM)</p>	<p>U1 Sessions 1.3, 2.3, 3.1, 3.2</p>
	<p>AR.5.NO.2.1 (NO.2.5.1) Number theory: Use divisibility rules to determine if a number is a factor of another number (2, 3, 5, 10)</p>	<p>Opportunities to address this topic may be found on the following pages: U1 Sessions 1.3, 2.3, 3.1, 3.2</p>
	<p>AR.6.NO.2.1 (NO.2.6.1) Number theory: Use divisibility rules to determine if a number is a factor of another number (4, 6, 9)</p>	<p>Opportunities to address this topic may be found on the following pages: U1 Sessions 1.3, 2.3, 3.1, 3.2</p>
	<p>AR.3.NO.2.2 (NO.2.3.2) Number Theory: Apply number theory: -- determine if a three-digit number is even or odd, -- use the terms multiple, factor, product and quotient in an appropriate context</p>	<p>U1 Sessions 1.1, 1.2, 1.3, 2.3, 2.4, 2.5, 3.1, 3.2 U3 Sessions 2.1, 2.4, 2.5, 2.6 U8 Sessions 3.1, 3.2 Even/Odd Grade 3: U5 Session 2.1</p>

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CC.4.OA.5 Generate and analyze patterns. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.	AR.3.A.4.4 (A.4.3.4) Recognize, describe and develop patterns: Use repeating and growing numeric or geometric patterns to solve problems	U1 Session 1.4 U5 Session 1.4 U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8
	AR.4.A.4.2 (A.4.4.2) Recognize, describe and develop patterns: Use repeating and growing numeric and geometric patterns to make predictions and solve problems	U1 Session 1.4 U5 Session 1.4 U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.5
	AR.4.A.4.3 (A.4.4.3) Patterns, Relations and Functions: Determine the relationship between sets of numbers by selecting the rule	U9 Session 2.8
	AR.2.A.4.6 (A.4.2.6) Recognize, describe and develop patterns: Recognize, describe, extend, and create repeating and growing patterns using a wide variety of materials to solve problems	U1 Session 1.4 U5 Session 1.4 U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.5
	AR.3.NO.2.2 (NO.2.3.2) Number Theory: Apply number theory: -- determine if a three-digit number is even or odd, -- use the terms multiple, factor, product and quotient in an appropriate context	U1 Sessions 1.1, 1.2, 1.3, 2.3, 2.4, 2.5, 3.1, 3.2 U3 Sessions 2.1, 2.4, 2.5, 2.6 U8 Sessions 3.1, 3.2 Even/Odd Grade 3: U5 Session 2.1

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<p>(Continued) CC.4.OA.5 Generate and analyze patterns. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</p>	<p>AR.4.NO.2.2 (NO.2.4.2) Number Theory: Apply number theory: -- determine if any number is even or odd, -- use the terms 'multiple,' 'factor,' and 'divisible by' in an appropriate context, -- generate and use divisibility rules for 2, 5, and 10, -- demonstrate various multiplication & division relationships</p>	<p>U1 Sessions 1.1, 1.2, 1.3, 2.3, 2.4, 2.5, 3.1, 3.2 U3 Sessions 2.1, 2.4, 2.5, 2.6 U8 Sessions 3.1, 3.2 Even/Odd Grade 3: U5 Session 2.1</p>
	<p>AR.3.A.6.1 (A.6.3.1) Algebraic Models and Relationships: Complete a chart or table to organize given information and to understand relationships and explain the results</p>	<p>U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 3.4</p>
	<p>AR.4.A.6.1 (A.6.4.1) Algebraic Models and Relationships: Create a chart or table to organize given information and to understand relationships and explain the results</p>	<p>U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 3.4</p>
	<p>AR.5.A.4.2 (A.4.5.2) Patterns, Relations and Functions: Interpret and write a rule for a one operation function table</p>	<p>U9 Sessions 2.1, 2.4, 2.7, 2.8</p>
	<p>AR.3.A.4.5 (A.4.3.5) Patterns, Relations and Functions: Determine the relationship between sets of numbers by selecting the rule (1 step rule in words)</p>	<p>U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.7, 2.8</p>

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<p>(Continued) CC.4.OA.5 Generate and analyze patterns. Generate a number or shape pattern that follows a given rule. Identify apparent features of the pattern that were not explicit in the rule itself. For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.</p>	<p>AR.5.A.4.1 (A.4.5.1) Patterns, Relations and Functions: Solve problems by finding the next term or missing term in a pattern or function table using real world situations</p>	<p>U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 3.4</p>
	<p>AR.6.A.4.1 (A.4.6.1) Patterns, Relations and Functions: Solve problems by finding the next term or missing term in a pattern or function table using real world situations</p>	<p>U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 3.4</p>
	<p>AR.2.A.4.2 (A.4.2.2) Recognize, describe and develop patterns: Describe repeating and growing patterns in the environment</p>	<p>U9 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.8, 3.4</p>

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Number and Operations in Base Ten		
CC.4.NBT.1 Generalize place value understanding for multi-digit whole numbers. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)	AR.3.NO.1.2 (NO.1.3.2) Whole Numbers: Use the place value structure of the base ten number system and be able to represent and compare whole numbers including thousands (using models, illustrations, symbols, expanded notation and problem solving)	U5 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.4.NO.1.2 (NO.1.4.2) Whole Numbers: Use the place value structure of the base ten number system and be able to represent and compare whole numbers to millions (using models, illustrations, symbols, expanded notation and problem solving)	U5 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.2.A.4.5 (A.4.2.5) Recognize, describe and develop patterns: Identify a number that is more or less than any whole number less than 100 using multiples of ten	U5 Sessions 1.3, 1.5, 1.5, 3.4, 3.5
	AR.3.A.4.3 (A.4.3.3) Recognize, describe and develop patterns: Identify a number that is more or less than any whole number up to 1000 using multiples of ten and/or 100	U5 Sessions 1.3, 1.5, 1.5, 3.4, 3.5

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<p>(Continued) CC.4.NBT.1 Generalize place value understanding for multi-digit whole numbers. Recognize that in a multi-digit whole number, a digit in one place represents ten times what it represents in the place to its right. For example, recognize that $700 \div 70 = 10$ by applying concepts of place value and division. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)</p>	<p>AR.4.A.4.1 (A.4.4.1) Recognize, describe and develop patterns: Identify a number that is more or less than any whole number using multiples of 10, 100 and/or 1000</p>	<p>U5 Sessions 1.3, 1.5, 1.5, 3.4, 3.5</p>
	<p>AR.3.NO.1.3 (NO.1.3.3) Whole Numbers: Use mathematical language and symbols to compare and order four-digit numbers with and without appropriate technology</p>	<p>U5 Sessions 1.1, 1.2, 1.3</p>
	<p>AR.1.A.4.5 (A.4.1.5) Recognize, describe and develop patterns: Identify a number that is one more or one less than any whole number less than 100</p>	<p>U5 Sessions 1.1, 1.2, 4.5</p>

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CC.4.NBT.2 Generalize place value understanding for multi-digit whole numbers. Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using $>$, $=$, and $<$ symbols to record the results of comparisons. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)	AR.3.NO.1.2 (NO.1.3.2) Whole Numbers: Use the place value structure of the base ten number system and be able to represent and compare whole numbers including thousands (using models, illustrations, symbols, expanded notation and problem solving)	U5 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.4.NO.1.2 (NO.1.4.2) Whole Numbers: Use the place value structure of the base ten number system and be able to represent and compare whole numbers to millions (using models, illustrations, symbols, expanded notation and problem solving)	U5 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.3.NO.1.3 (NO.1.3.3) Whole Numbers: Use mathematical language and symbols to compare and order four-digit numbers with and without appropriate technology	U5 Sessions 1.1, 1.2, 1.3

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(Continued)	AR.4.NO.1.3 (NO.1.4.3) Whole Numbers: Use mathematical language and symbols to compare and order any whole numbers with and without appropriate technology (<, >, =)	U3 Session 2.3 U6 Session 2.5
CC.4.NBT.3 Generalize place value understanding for multi-digit whole numbers. Use place value understanding to round multi-digit whole numbers to any place. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000.)	AR.4.NO.3.5 (NO.3.4.5) Estimation: Use estimation strategies to solve problems and judge the reasonableness of the answer	U4 Session 1.3 U5 Sessions 1.3, 4.1 U6 Session 3.4
	AR.3.NO.3.5 (NO.3.3.5) Estimation: Use estimation strategies to solve problems and judge the reasonableness of the answer	U4 Session 1.3 U5 Sessions 1.3, 4.1 U6 Session 3.4
CC.4.NBT.4 Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract multi-digit whole numbers using the standard algorithm. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)	AR.1.NO.3.1 (NO.3.1.1) Computational Fluency- Addition and Subtraction: Develop strategies for basic addition facts: -- counting all, -- counting on, -- one more, two more, -- doubles, -- doubles plus one or minus one, -- make ten, -- using ten frames, -- Identity Property (add zero)	U5 Sessions 1.4, 2.1, 3.5 U9 Session 2.2

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<p>(Continued) CC.4.NBT.4 Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract multi-digit whole numbers using the standard algorithm. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.2.NO.3.1 (NO.3.2.1) Computational Fluency-Addition and Subtraction: Develop strategies for basic addition facts: -- counting all -- counting on, -- one more, two more, -- doubles, -- doubles plus one or minus one, -- make ten, -- using ten frames, -- Identity Property (add zero)</p>	<p>U5 Sessions 1.4, 1.6, 2.1, 2.2, 2.3, 2.4, 2.6, 3.5 U9 Session 2.2</p>
	<p>AR.2.NO.3.2 (NO.3.2.2) Computational Fluency-Addition and Subtraction: Demonstrate multiple strategies for adding or subtracting two-digit whole numbers: -- Compatible Numbers, -- compensatory numbers, -- informal use of commutative and associative properties of addition</p>	<p>U5 Sessions 1.4, 1.6, 2.1, 2.2, 2.3, 2.4, 2.6, 3.5, 4.1, 4.2, 4.4, 4.5, 4.6, 4.7</p>
	<p>AR.3.NO.3.1 (NO.3.3.1) Computational Fluency-Addition and Subtraction: Develop, with and without appropriate technology, computational fluency, in multi-digit addition and subtraction through 999 using contextual problems: -- strategies for adding and subtracting numbers, -- estimation of sums and differences in appropriate situations, -- relationships between operations</p>	<p>U5 Sessions 1.4, 1.6, 2.1, 2.2, 2.3, 2.4, 2.6, 3.5, 4.1, 4.2, 4.4, 4.5, 4.6, 4.7</p>

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(Continued)	AR.4.NO.3.1 (NO.3.4.1) Computational Fluency-Addition and Subtraction: Demonstrate, with and without appropriate technology, computational fluency in multi-digit addition and subtraction in contextual problems	U5 Sessions 1.4, 1.6, 2.1, 2.2, 2.3, 2.4, 2.6, 3.5, 4.1, 4.2, 4.4, 4.5, 4.6, 4.7
CC.4.NBT.4 Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract multi-digit whole numbers using the standard algorithm. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)	AR.5.NO.3.1 (NO.3.5.1) Computational Fluency: Develop and use a variety of algorithms with computational fluency to perform whole number operations using addition and subtraction (up to five-digit numbers), multiplication (up to three-digit x two-digit), division (up to two-digit divisor) interpreting remainders, including real world problems	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4</p> <p>U2 Session 1.1</p> <p>U2 Sessions Ten Minute Math 1.2, 1.3, 2.2, 2.4, 2.5, 2.6, 3.5</p> <p>U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5</p> <p>U4 Sessions Ten Minute Math 1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 4.5, 4.6, 4.7</p> <p>U5 Sessions 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7</p> <p>U5 Sessions Ten Minute Math 1.1, 1.2, 1.3</p> <p>U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6</p> <p>U9 Sessions 2.1, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4</p>

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U1 Factors, Multiples, and Arrays

U2 Describing the Shape of the Data

U3 Multiple Towers and Division Stories

U4 Size, Shape, and Symmetry

U5 Landmarks and Large Numbers

U6 Fraction Cards and Decimal Squares

U7 Moving Between Solids and Silhouettes

U8 How Many Packages? How Many Groups?

U9 Penny Jars and Plant Growth

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<p>(Continued) CC.4.NBT.4 Use place value understanding and properties of operations to perform multi-digit arithmetic. Fluently add and subtract multi-digit whole numbers using the standard algorithm. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.6.NO.3.1 (NO.3.6.1) Computational Fluency: Apply, with and without appropriate technology, algorithms with computational fluency to perform whole number operations (+, -, x, /)</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U2 Session 1.1 U2 Sessions Ten Minute Math 1.2, 1.3, 2.2, 2.4, 2.5, 2.6, 3.5 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U4 Sessions Ten Minute Math 1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 4.5, 4.6, 4.7 U5 Sessions 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 Sessions Ten Minute Math 1.1, 1.2, 1.3 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6 U9 Sessions 2.1, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4</p>

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<p>CC.4.NBT.5 Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.5.NO.3.1 (NO.3.5.1) Computational Fluency: Develop and use a variety of algorithms with computational fluency to perform whole number operations using addition and subtraction (up to five-digit numbers), multiplication (up to three-digit x two-digit), division (up to two-digit divisor) interpreting remainders, including real world problems</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U2 Session 1.1 U2 Sessions Ten Minute Math 1.2, 1.3, 2.2, 2.4, 2.5, 2.6, 3.5 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U4 Sessions Ten Minute Math 1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 4.5, 4.6, 4.7 U5 Sessions 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 Sessions Ten Minute Math 1.1, 1.2, 1.3 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6 U9 Sessions 2.1, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4</p>

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<p>(Continued) CC.4.NBT.5 Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.6.NO.3.1 (NO.3.6.1) Computational Fluency: Apply, with and without appropriate technology, algorithms with computational fluency to perform whole number operations (+, -, x, /)</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U2 Session 1.1 U2 Sessions Ten Minute Math 1.2, 1.3, 2.2, 2.4, 2.5, 2.6, 3.5 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U4 Sessions Ten Minute Math 1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 4.5, 4.6, 4.7 U5 Sessions 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 Sessions Ten Minute Math 1.1, 1.2, 1.3 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6 U9 Sessions 2.1, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4</p>

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<p>(Continued) CC.4.NBT.5 Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.3.NO.3.3 (NO.3.3.3) Computational Fluency-Multiplication and Division: Develop, with and without appropriate technology, computational fluency in multiplication and division up to two-digit by one-digit numbers using two-digit by one-digit number contextual problems using: -- strategies for multiplying and dividing numbers, -- performance of operations in more than one way, -- estimation of products and quotients in appropriate situations, and -- relationships between operations</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6</p>

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<p>(Continued) CC.4.NBT.5 Use place value understanding and properties of operations to perform multi-digit arithmetic. Multiply a whole number of up to four digits by a one-digit whole number, and multiply two two-digit numbers, using strategies based on place value and the properties of operations. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.4.NO.3.3 (NO.3.4.3) Computational Fluency-Multiplication and Division: Attain, with and without appropriate technology, computational fluency in multiplication and division using contextual problems using: -- two-digit by two-digit multiplication (larger numbers with technology), -- up to three-digit by two-digit division (larger numbers with technology), -- strategies for multiplication and dividing numbers, -- performance of operations in more than one way, -- estimation of products and quotients in appropriate situations, and -relationships between operations</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6</p>

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<p>CC.4.NBT.6 Use place value understanding and properties of operations to perform multi-digit arithmetic. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.4.NO.2.1 (NO.2.4.1) Number Theory: Develop an understanding of the associative and zero properties of multiplication using objects</p>	<p>U1 Sessions 1.1, 1.2, 1.3, 1.4, 2.2 U3 Sessions 1.1, 1.2</p>
	<p>AR.5.NO.2.2 (NO.2.5.2) Number theory: Identify commutative and associative properties</p>	<p>U1 Sessions 1.1, 1.2, 1.3, 1.4, 2.2 U3 Sessions 1.1, 1.2 U5 Sessions 2.1, 2.6</p>
	<p>AR.5.NO.2.3 (NO.2.5.3) Number theory: Identify the distributive property by using physical models to solve computation and real world problems</p>	<p>U1 Sessions 1.4, 1.5 U3 Session 1.1 U8 Session 2.1</p>
	<p>AR.6.NO.2.2 (NO.2.6.2) Number theory: Apply the distributive property of multiplication over addition to simplify computations with whole numbers</p>	<p>U1 Sessions 1.4, 1.5 U3 Session 1.1 U8 Session 2.1</p>
	<p>AR.4.NO.2.2 (NO.2.4.2) Number Theory: Apply number theory: -- determine if any number is even or odd, -- use the terms 'multiple,' 'factor,' and 'divisible by' in an appropriate context, -- generate and use divisibility rules for 2, 5, and 10, -- demonstrate various multiplication & division relationships</p>	<p>U1 Sessions 1.1, 1.2, 1.3, 2.3, 2.4, 2.5, 3.1, 3.2 U3 Sessions 2.1, 2.4, 2.5, 2.6 U8 Sessions 3.1, 3.2 Even/Odd Grade 3: U5 Session 2.1</p>

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<p>(Continued) CC.4.NBT.6 Use place value understanding and properties of operations to perform multi-digit arithmetic. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.4.NO.2.4 (NO.2.4.4) Whole Number Operations: Represent and explain division as measurement and partitive division including equal groups, related rates, price, rectangular arrays (area model), combinations and multiplicative comparison</p>	<p>U3 Sessions 2.1, 2.4, 2.5 U8 Sessions 3.2, 3.3, 3.4, 3.5</p>
	<p>AR.4.NO.3.3 (NO.3.4.3) Computational Fluency-Multiplication and Division: Attain, with and without appropriate technology, computational fluency in multiplication and division using contextual problems using: -- two-digit by two-digit multiplication (larger numbers with technology), -- up to three-digit by two-digit division (larger numbers with technology), -- strategies for multiplication and dividing numbers, -- performance of operations in more than one way, -- estimation of products and quotients in appropriate situations, and -- relationships between operations</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6</p>

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<p>(Continued) CC.4.NBT.6 Use place value understanding and properties of operations to perform multi-digit arithmetic. Find whole-number quotients and remainders with up to four-digit dividends and one-digit divisors, using strategies based on place value, the properties of operations, and/or the relationship between multiplication and division. Illustrate and explain the calculation by using equations, rectangular arrays, and/or area models. (Grade 4 expectations in this domain are limited to whole numbers less than or equal to 1,000,000. A range of algorithms may be used.)</p>	<p>AR.3.NO.3.2 (NO.3.3.2) Computational Fluency-Multiplication and Division: Develop, with and without appropriate technology, fluency with basic number combinations for multiplication and division facts (10 x 10)</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6</p>
	<p>AR.4.NO.3.2 (NO.3.4.2) Computational Fluency-Multiplication and Division: Demonstrate fluency with combinations for multiplication and division facts (12 x 12) and use these combinations to mentally compute related problems (30 x 50)</p>	<p>U1 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4 U3 Sessions 1.1, 1.3, 1.4, 1.5, 3.1, 3.2, 3.3, 3.4, 4.1, 4.2, 4.3, 4.4, 4.5 U8 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.4, 3.5, 3.6</p>

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Number and Operations—Fractions		
CC.4.NF.1 Extend understanding of fraction equivalence and ordering. Explain why a fraction a/b is equivalent to a fraction $(n \times a)/(n \times b)$ by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	AR.5.NO.1.5 (NO.1.5.5) Rational Numbers: Use models of benchmark fractions and their equivalent forms: -- to analyze the size of fractions, -- to determine that simplification does not change the value of the fraction, -- to convert between mixed numbers and improper fractions	U6 Sessions 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5
	AR.3.NO.1.7 (NO.1.3.7) Rational Numbers: Write a fraction that is equivalent to a given fraction with the use of models	U6 Sessions 1.2, 2.3, 2.4
	AR.4.NO.1.8 (NO.1.4.8) Rational Numbers: Write a fraction that is equivalent to a given fraction with the use of models	U6 Sessions 1.2, 2.3
	AR.5.NO.1.1 (NO.1.5.1) Rational Numbers: Use models and visual representations to develop the concepts of the following: ---Fractions: parts of unit wholes, parts of a collection, locations on number lines, locations on ruler (benchmark fractions), divisions of whole numbers; ---Ratios: part-to-part (2 boys to 3 girls), part-to-whole (2 boys to 5 people)	U6 Sessions 1.1, 1.2, 1.3, 2.5, 2.6 U9 Session 2.3 Percents Grade 5: U4 Sessions 1.1, 1.2, 1.4, 2.1, 2.4, 2.5, 2.6 U6 Sessions 1.8, 1.9

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<p>CC.4.NF.2 Extend understanding of fraction equivalence and ordering. Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as $\frac{1}{2}$. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual fraction model. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>	<p>AR.4.A.5.2 (A.5.4.2) Expressions, Equations and Inequalities: Express mathematical relationships using simple equations and inequalities ($>$, $<$, $=$, \neq)</p>	<p>U6 Sessions 1.2, 1.3, 1.5, 1.6, 2.1, 2.5</p>
	<p>AR.6.NO.1.4 (NO.1.6.4) Rational Numbers: Convert, compare and order fractions (mixed numbers and improper fractions) decimals and percents and find their approximate locations on a number line</p>	<p>U6 Sessions 1.5, 2.2, 2.3, 2.4, 2.5, 3.2, 3.5, 3.6, 3.7, U6 ICCG 3A.1 Percents Grade 5: U4 Sessions 2.2, 2.3 U6 Sessions 1.3, 1.4, 1.6, 1.10</p>
	<p>AR.3.NO.1.7 (NO.1.3.7) Rational Numbers: Write a fraction that is equivalent to a given fraction with the use of models</p>	<p>U6 Sessions 1.2, 2.3</p>
	<p>AR.4.NO.1.8 (NO.1.4.8) Rational Numbers: Write a fraction that is equivalent to a given fraction with the use of models</p>	<p>U6 Sessions 1.2, 2.3</p>

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- U5** Landmarks and Large Numbers

- U6** Fraction Cards and Decimal Squares
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Common Core State Standards for Mathematics Grade 4	Arkansas Student Learning Expectations for Mathematics Grade 4	Investigations in Number, Data, and Space Grade 4
CC.4.NF.3 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Understand a fraction a/b with $a > 1$ as a sum of fractions $1/b$. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	AR.6.NO.1.4 (NO.1.6.4) Rational Numbers: Convert, compare and order fractions (mixed numbers and improper fractions) decimals and percents and find their approximate locations on a number line	U6 Sessions 1.5, 2.2, 2.3, 2.4, 2.5, 3.2, 3.5, 3.6, 3.7 Percents Grade 5: U4 Sessions 2.2, 2.3 U6 Sessions 1.3, 1.4, 1.6, 1.10
	AR.5.NO.1.5 (NO.1.5.5) Rational Numbers: Use models of benchmark fractions and their equivalent forms: -- to analyze the size of fractions, -- to determine that simplification does not change the value of the fraction, -- to convert between mixed numbers and improper fractions	U6 Sessions 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5
	AR.3.NO.1.5 (NO.1.3.5) Rational Numbers: Utilize models to recognize that the size of the whole determines the size of the fraction depending on the original quantity	U6 Session 1.4
	AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals	U6 Sessions 1.6, 1.7, 3.5, 3.6, U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3

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Common Core State Standards for Mathematics Grade 4	Arkansas Student Learning Expectations for Mathematics Grade 4	Investigations in Number, Data, and Space Grade 4
(Continued)	AR.5.NO.3.2 (NO.3.5.2) Computational Fluency: Develop and use algorithms: -- to add and subtract numbers containing decimals (up to thousandths place), -- to multiply decimals (hundredths x tenths), -- to divide decimals by whole number divisors, -- to add and subtract fractions with like denominators	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 See also Grade 5: U6 ICCG 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7
CC.4.NF.3a Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 See also Grade 5: U6 ICCG 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7
CC.4.NF.3b Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. Examples: $\frac{3}{8} = \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$; $\frac{3}{8} = \frac{1}{8} + \frac{2}{8}$; $2\frac{1}{8} = 1 + 1 + \frac{1}{8} = \frac{8}{8} + \frac{8}{8} + \frac{1}{8}$.	AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 See also Grade 5: U6 ICCG 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7

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CC.4.NF.3c Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	AR.6.NO.1.4 (NO.1.6.4) Rational Numbers: Convert, compare and order fractions (mixed numbers and improper fractions) decimals and percents and find their approximate locations on a number line	U6 Sessions 1.5, 2.2, 2.3, 2.4, 2.5, 3.2, 3.5 U6 ICCG 3.6, 3.7, 3A.1, 3A.2 Percents Grade 5: U4 Sessions 2.2, 2.3 U6 Sessions 1.3, 1.4, 1.6, 1.10
	AR.5.NO.1.5 (NO.1.5.5) Rational Numbers: Use models of benchmark fractions and their equivalent forms: -- to analyze the size of fractions, -- to determine that simplification does not change the value of the fraction, -- to convert between mixed numbers and improper fractions	U6 Sessions 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5
	AR.5.NO.3.2 (NO.3.5.2) Computational Fluency: Develop and use algorithms: -- to add and subtract numbers containing decimals (up to thousandths place), -- to multiply decimals (hundredths x tenths), -- to divide decimals by whole number divisors, -- to add and subtract fractions with like denominators	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 See also Grade 5: U6 ICCG 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7

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(Continued)	AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 See also Grade 5: U6 ICCG 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7
CC.4.NF.3d Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 See also Grade 5: U6 ICCG 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7
	AR.5.NO.3.2 (NO.3.5.2) Computational Fluency: Develop and use algorithms: -- to add and subtract numbers containing decimals (up to thousandths place), -- to multiply decimals (hundredths x tenths), -- to divide decimals by whole number divisors, -- to add and subtract fractions with like denominators	U6 Sessions 1.6, 1.7, 3.5, 3.6, U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 See also Grade 5: U6 ICCG 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7

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CC.4.NF.4 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	AR.6.NO.3.2 (NO.3.6.2) Computational Fluency: Develop and analyze algorithms for computing with fractions (including mixed numbers) and decimals and demonstrate, with and without technology, computational fluency in their use and justify the solution	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3
	AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals	U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3
	AR.5.NO.1.1 (NO.1.5.1) Rational Numbers: Use models and visual representations to develop the concepts of the following: ---Fractions: parts of unit wholes, parts of a collection, locations on number lines, locations on ruler (benchmark fractions), divisions of whole numbers; ---Ratios: part-to-part (2 boys to 3 girls), part-to-whole (2 boys to 5 people); --- Percents: part-to-100	U6 Sessions 1.1, 1.2, 1.3, 2.5, 2.6, U6 ICCG 3A.1, 3A.2 U9 Sessions 2.3 Percents Grade 5: U4 Sessions 1.1, 1.2, 1.4, 2.1, 2.4, 2.5, 2.6 U6 Sessions 1.8, 1.9

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<p>(Continued) CC.4.NF.4 Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers. Apply and extend previous understandings of multiplication to multiply a fraction by a whole number. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>	<p>AR.5.NO.1.5 (NO.1.5.5) Rational Numbers: Use models of benchmark fractions and their equivalent forms: -- to analyze the size of fractions, -- to determine that simplification does not change the value of the fraction, -- to convert between mixed numbers and improper fractions</p>	<p>U6 Sessions 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5</p>
	<p>AR.4.NO.1.4 (NO.1.4.4) Rational Numbers: Write a fraction to name part of a whole, part of a set, a location on a number line, and the division of whole numbers, using models</p>	<p>U6 Sessions 1.1, 1.2, 1.3, 1.4, 2.5, 2.6 U6 ICCG 3A.1, 3A.2</p>
<p>CC.4.NF.4a Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.</p>	<p>AR.5.NO.1.1 (NO.1.5.1) Rational Numbers: Use models and visual representations to develop the concepts of the following: ---Fractions: parts of unit wholes, parts of a collection, locations on number lines, locations on ruler (benchmark fractions), divisions of whole numbers; ---Ratios: part-to-part (2 boys to 3 girls), part-to-whole (2 boys to 5 people); --- Percents: part-to-100</p>	<p>U6 Sessions 1.1, 1.2, 1.3, 2.5, 2.6 U6 ICCG 3A.2, 3A.3 U9 Sessions 2.3 Percents Grade 5: U4 Sessions 1.1, 1.2, 1.4, 2.1, 2.4, 2.5, 2.6 U6 Sessions 1.8, 1.9</p>
	<p>AR.5.NO.1.3 (NO.1.5.3) Rational Numbers: Identify decimal and percent equivalents for benchmark fractions</p>	<p>U6 Session 3.3 Percent Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9</p>

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<p>(Continued) CC.4.NF.4a Understand a fraction a/b as a multiple of $1/b$. For example, use a visual fraction model to represent $5/4$ as the product $5 \times (1/4)$, recording the conclusion by the equation $5/4 = 5 \times (1/4)$.</p>	<p>AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals</p>	<p>U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3</p>
	<p>AR.5.NO.1.5 (NO.1.5.5) Rational Numbers: Use models of benchmark fractions and their equivalent forms: -- to analyze the size of fractions, -- to determine that simplification does not change the value of the fraction, -- to convert between mixed numbers and improper fractions</p>	<p>U6 Sessions 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5</p>
<p>CC.4.NF.4b Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)</p>	<p>AR.6.NO.3.2 (NO.3.6.2) Computational Fluency: Develop and analyze algorithms for computing with fractions (including mixed numbers) and decimals and demonstrate, with and without technology, computational fluency in their use and justify the solution</p>	<p>U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3</p>
	<p>AR.5.NO.2.5 (NO.2.5.5) Understand Operations: Model addition, subtraction, and multiplication of fractions with like and unlike denominators and decimals</p>	<p>U6 Sessions 1.6, 1.7, 3.5, 3.6 U6 ICCG 1.8A, 2.7A, 3A.1, 3A.2, 3A.3</p>

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<p>CC.4.NF.4b Understand a multiple of a/b as a multiple of $1/b$, and use this understanding to multiply a fraction by a whole number. For example, use a visual fraction model to express $3 \times (2/5)$ as $6 \times (1/5)$, recognizing this product as $6/5$. (In general, $n \times (a/b) = (n \times a)/b$.)</p>	<p>AR.5.NO.1.1 (NO.1.5.1) Rational Numbers: Use models and visual representations to develop the concepts of the following: ---Fractions: parts of unit wholes, parts of a collection, locations on number lines, locations on ruler (benchmark fractions), divisions of whole numbers; ---Ratios: part-to-part (2 boys to 3 girls), part-to-whole (2 boys to 5 people); --- Percents: part-to-100</p>	<p>U6 Sessions 1.1, 1.2, 1.3, 2.5, 2.6 U6 ICCG 3A.1, 3A.2 U9 Session 2.3 Percents Grade 5: U4 Sessions 1.1, 1.2, 1.4, 2.1, 2.4, 2.5, 2.6 U6 Sessions 1.8, 1.9</p>
<p>CC.4.NF.4c Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. For example, if each person at a party will eat $3/8$ of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?</p>	<p>AR.5.NO.1.5 (NO.1.5.5) Rational Numbers: Use models of benchmark fractions and their equivalent forms: -- to analyze the size of fractions, -- to determine that simplification does not change the value of the fraction, -- to convert between mixed numbers and improper fractions</p>	<p>U6 Sessions 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5</p>
	<p>AR.4.NO.1.4 (NO.1.4.4) Rational Numbers: Write a fraction to name part of a whole, part of a set, a location on a number line, and the division of whole numbers, using mode</p>	<p>U6 Sessions 1.1, 1.2, 1.3, 1.4, 2.5, 2.6 U6 ICCG 3A.1, 3A.2</p>

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U2 Describing the Shape of the Data

U3 Multiple Towers and Division Stories

U4 Size, Shape, and Symmetry

U5 Landmarks and Large Numbers

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Common Core State Standards for Mathematics Grade 4	Arkansas Student Learning Expectations for Mathematics Grade 4	Investigations in Number, Data, and Space Grade 4
<p>CC.4.NF.5 Understand decimal notation for fractions, and compare decimal fractions. Express a fraction with denominator 10 as an equivalent fraction with denominator 100, and use this technique to add two fractions with respective denominators 10 and 100. For example, express $3/10$ as $30/100$ and add $3/10 + 4/100 = 34/100$. (Students who can generate equivalent fractions can develop strategies for adding fractions with unlike denominators in general. But addition and subtraction with unlike denominators in general is not a requirement at this grade.) (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>	<p>AR.4.NO.1.4 (NO.1.4.4) Rational Numbers: Write a fraction to name part of a whole, part of a set, a location on a number line, and the division of whole numbers, using models</p>	<p>U6 Sessions 1.1, 1.2, 1.3, 1.4, 2.5, 2.6 U6 ICCG 3A.1, 3A.2</p>
	<p>AR.4.NO.1.5 (NO.1.4.5) Rational Numbers: Utilize models, benchmarks, and equivalent forms to recognize that the size of the whole determines the size of the fraction</p>	<p>U6 Session 1.4</p>
	<p>AR.4.NO.1.8 (NO.1.4.8) Rational Numbers: Write a fraction that is equivalent to a given fraction with the use of models</p>	<p>U6 Sessions 1.2, 2.3</p>
	<p>AR.4.NO.1.6 (NO.1.4.6) Rational Numbers: Use the place value structure of the base ten number system and be able to represent and compare decimals to hundredths (using models, illustrations, symbols, expanded notation and problem solving</p>	<p>U5 ICCG 1.5A, 3.6A, 4.4A U6 Sessions 3.1, 3.2, 3.3, 3.4</p>
	<p>AR.5.NO.1.3 (NO.1.5.3) Rational Numbers: Identify decimal and percent equivalents for benchmark fractions</p>	<p>U6 Session 3.3 Percent Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9</p>
	<p>AR.6.NO.1.2 (NO.1.6.2) Rational Numbers: Find decimal and percent equivalents for proper fractions and explain why they represent the same value</p>	<p>U6 Session 3.3 Percent Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9</p>

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CC.4.NF.6 Understand decimal notation for fractions, and compare decimal fractions. Use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as $\frac{62}{100}$; describe a length as 0.62 meters; locate 0.62 on a number line diagram. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	AR.6.NO.1.4 (NO.1.6.4) Rational Numbers: Convert, compare and order fractions (mixed numbers and improper fractions) decimals and percents and find their approximate locations on a number line	U6 Sessions 1.5, 2.2, 2.3, 2.4, 2.5, 3.2, 3.5, 3.6, 3.7 U6 ICCG 3A.1, 3A.2 Percents Grade 5: U4 Sessions 2.2, 2.3 U6 Sessions 1.3, 1.4, 1.6, 1.10
	AR.5.NO.1.3 (NO.1.5.3) Rational Numbers: Identify decimal and percent equivalents for benchmark fractions	U6 Session 3.3 Percent Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9
	AR.7.NO.1.4 (NO.1.7.4) Rational Numbers: Find decimal and percent equivalents for mixed numbers and explain why they represent the same value	U6 Session 3.3 Percent Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9
	AR.6.NO.1.2 (NO.1.6.2) Rational Numbers: Find decimal and percent equivalents for proper fractions and explain why they represent the same value	U6 Session 3.3 Percent Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9

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CC.4.NF.7 Understand decimal notation for fractions, and compare decimal fractions. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)	AR.4.A.5.2 (A.5.4.2) Expressions, Equations and Inequalities: Express mathematical relationships using simple equations and inequalities ($>$, $<$, $=$, \neq)	U5 ICCG 1.5A, 3.6A U6 ICCG 3A.1, 3A.2, 3A.3
	AR.6.NO.1.4 (NO.1.6.4) Rational Numbers: Convert, compare and order fractions (mixed numbers and improper fractions) decimals and percents and find their approximate locations on a number line	U6 Sessions 1.5, 2.2, 2.3, 2.4, 2.5, 3.2, 3.5, 3.6, 3.7 See also Grade 5: U4 Sessions 2.2, 2.3 U6 Sessions 1.3, 1.4, 1.6, 1.10
	AR.5.NO.1.3 (NO.1.5.3) Rational Numbers: Identify decimal and percent equivalents for benchmark fractions	U6 Session 3.3 See also Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9
	AR.6.NO.1.2 (NO.1.6.2) Rational Numbers: Find decimal and percent equivalents for proper fractions and explain why they represent the same value	U6 Session 3.3 See also Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9
	AR.7.NO.1.4 (NO.1.7.4) Rational Numbers: Find decimal and percent equivalents for mixed numbers and explain why they represent the same value	U6 Session 3.3 See also Grade 5: U4 Session 1.4 U6 Sessions 1.7, 1.8, 1.9

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<p>(Continued) CC.4.NF.7 Understand decimal notation for fractions, and compare decimal fractions. Compare two decimals to hundredths by reasoning about their size. Recognize that comparisons are valid only when two decimals refer to the same whole. Record the results of comparisons with the symbols $>$, $=$, or $<$, and justify the conclusions, e.g., by using a visual model. (Grade 4 expectations in this domain are limited to fractions with denominators 2, 3, 4, 5, 6, 8, 10, 12, and 100.)</p>	<p>AR.7.NO.1.5 (NO.1.7.5) Rational Numbers: Compare and represent integers, fractions, decimals and mixed numbers and find their approximate location on a number line</p>	<p>U5 Session 1.2 U6 Sessions 1.5, 2.2, 2.3, 2.4, 2.5, 3.2, 3.5, 3.6, 3.7 U6 ICCG 3A.1, 3A.2 See also Grade 5: U4 Sessions 2.2, 2.3 U6 Sessions 1.3, 1.4, 1.6, 1.10</p>

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Measurement and Data		
CC.4.MD.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. 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. For example: Know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),	AR.3.M.12.5 (M.12.3.5) Tools and Attributes: Create and complete a conversion table (from larger unit to smaller unit) to show relationships between units of measurement in the same system	U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B
	AR.3.M.12.4 (M.12.3.4) Tools and Attributes: Demonstrate the relationship among different standard units: -- Length: 12 in = 1 ft, 3 ft = 1 yd, 36 in = 1 yd, -- Capacity: 2 cups = 1 pint, 2 pints = 1 quart, 4 quarts = 1 gallon, -- Weight: 16 ounces = 1 lb.	U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B
	AR.5.M.12.3 (M.12.5.3) Attributes and Tools: Establish through experience benchmark prefixes of milli-, centi-, and kilo-	U4 Sessions 1.1, 1.2 U7 ICCG 3.5A
	AR.4.M.12.1 (M.12.4.1) Time: Clock: Recognize that 60 seconds equals 1 minute	Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6

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CC.4.MD.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. 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. For example: Know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),	AR.4.M.12.3 (M.12.4.3) Tools and Attributes: Use the relationship among units of measurement: -- Length: 12 in = 1 ft, 3 ft = 1 yd, 36 in = 1 yd, 100 cm = 1 m; --Capacity: 2 cups = 1 pint, 2 pints = 1 quart, 4 quarts = 1 gallon; --Weight: 16 ounces = 1 lb	U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B
	AR.4.M.12.4 (M.12.4.4) Tools and Attributes: Create and complete a conversion table to show relationships between units of measurement in the same system	U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5
	AR.3.M.13.3 (M.13.3.3) Clock: Express time to the half hour and quarter hour using the terms half- past, quarter after, quarter-until	Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.3.M.13.8 (M.13.3.8) Applications: Use appropriate customary measurement tools for length, capacity and mass	U2 Sessions 1.2, 1.3 U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B U9 Sessions 3.1, 3.2, 3.3, 3.5
	AR.4.M.13.7 (M.13.4.7) Applications: Use appropriate customary and metric measurement tools for length, capacity and mass	U2 Sessions 1.2, 1.3 U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B U9 Sessions 3.1, 3.2, 3.3, 3.5

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<p>(Continued) CC.4.MD.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. 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. For example: Know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),</p>	<p>AR.4.M.13.8 (M.13.4.8) Applications: Estimate and measure length, capacity/volume and mass using appropriate customary and metric units: -- Length: 1/2 inch, 1 cm; -- Perimeter: inches, feet, centimeters, meters; -- Area: square inches, square feet, square centimeters, square meters; -- Weight: pounds/ounces; -- Mass: kilograms/grams; -- Capacity: cups, pints, quarts, gallons; -- Volume: liters</p>	<p>U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B</p>

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<p>(Continued) CC.4.MD.1 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Know relative sizes of measurement units within one system of units including km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec. 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. For example: Know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36),</p>	<p>AR.5.M.12.2 (M.12.5.2) Attributes and Tools: Make conversions within the customary measurement system in real world problems.</p>	<p>U2 Sessions 1.2, 1.3 U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B U9 Sessions 3.1, 3.2, 3.3, 3.5</p>
	<p>AR.3.M.12.2 (M.12.3.2) Time: Clock: Recognize that 60 minutes equals 1 hour and that a day is divided into A.M. and P.M.</p>	<p>Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6</p>
	<p>AR.6.M.12.2 (M.12.6.2) Attributes and Tools: Make conversions within the same measurement system in real world problems</p>	<p>U2 Sessions 1.2, 1.3 U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B U9 Sessions 3.1, 3.2, 3.3, 3.5</p>

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CC.4.MD.2 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.	AR.5.M.13.3 (M.13.5.3) Attributes and Tools: Draw and measure distance to the nearest cm and $\frac{1}{4}$ inch accurately	U4 Sessions 1.3, 1.4
	AR.2.M.13.2 (M.13.2.2) Clock: Tell time to the nearest five-minute interval	Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.3.M.13.2 (M.13.3.2) Clock: Tell time to the nearest one-minute intervals	Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.3.M.13.3 (M.13.3.3) Clock: Express time to the half hour and quarter hour using the terms half- past, quarter after, quarter-until	Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6
	AR.4.M.13.2 (M.13.4.2) Clock: Solve problems involving conversions between minutes and hours	Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6

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<p>(Continued) CC.4.MD.2 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>	<p>AR.4.M.13.3 (M.13.4.3) Clock: Restate the time in multiple ways given an analog clock to the nearest one-minute</p>	<p>Grade 3: U3 Session 3.1 Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6</p>
	<p>AR.1.M.13.3 (M.13.1.3) Elapsed Time: Determine elapsed time (to the hour) in contextual situations</p>	<p>Grade 3: Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 4.2, 4.3, 4.4, 4.5, 4.6 U5 Sessions 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 ICCG 3.1A U7 Sessions 1.4, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4</p>

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<p>CC.4.MD.2 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>	<p>AR.2.M.13.3 (M.13.2.3) Elapsed Time: Determine elapsed time in contextual situations in hour increments regardless of starting time</p>	<p>Grade 3: Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 4.2, 4.3, 4.4, 4.5, 4.6 U5 Sessions 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 ICCG 3.1A U7 Sessions 1.4, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4</p>
	<p>AR.3.M.13.4 (M.13.3.4) Elapsed Time: Determine elapsed time in contextual situations to five-minute intervals</p>	<p>Grade 3: Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 4.2, 4.3, 4.4, 4.5, 4.6 U5 Sessions 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 ICCG 3.1A U7 Sessions 1.4, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4</p>
	<p>AR.4.M.13.4 (M.13.4.4) Elapsed Time: Determine elapsed time in contextual situations to five-minute intervals with beginning time unknown</p>	<p>Grade 3: Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 4.2, 4.3, 4.4, 4.5, 4.6 U5 Sessions 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 ICCG 3.1A U7 Sessions 1.4, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4</p>

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<p>(Continued) CC.4.MD.2 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Use the four operations to solve word problems involving distances, intervals of time, liquid volumes, masses of objects, and money, including problems involving simple fractions or decimals, and problems that require expressing measurements given in a larger unit in terms of a smaller unit. Represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.</p>	<p>AR.3.M.13.12 (M.13.3.12) Volume: Develop strategies for finding the volume (cubic units) of rectangular prisms and cubes using models</p>	<p>U4 Session 1.1 U7 Sessions 2.1, 3.1, 3.3, 3.4</p>
	<p>AR.5.M.13.2 (M.13.5.2) Attributes and Tools: Determine which unit of measure or measurement tool matches the context for a problem situation</p>	<p>U4 Session 1.1 U7 Sessions 2.1, 3.1, 3.3, 3.4</p>
	<p>AR.4.M.13.7 (M.13.4.7) Applications: Use appropriate customary and metric measurement tools for length, capacity and mass</p>	<p>U2 Sessions 1.2, 1.3 U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B U9 Sessions 3.1, 3.2, 3.3, 3.5</p>

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	<p>AR.5.M.13.1 (M.13.5.1) Attributes and Tools: Solve real world problems involving one elapsed time, counting forward (calendar and clock)</p>	<p>Grade 3: Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 4.2, 4.3, 4.4, 4.5, 4.6 U5 Sessions 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7 U5 ICCG 3.1A U7 Sessions 1.4, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4</p>
	<p>AR.4.M.13.11 (M.13.4.11) Volume: Use strategies to find the volume (cubic units) of rectangular prisms and cubes</p>	<p>U4 Session 1.1 U7 Sessions 2.1, 3.1, 3.3, 3.4</p>
	<p>AR.7.M.13.1 (M.13.7.1) Attributes and Tools: Solve real world problems involving two or more elapsed times, counting forward and backward (calendar and clock)</p>	<p>Grade 3: Ten-Minute Math: U3 Sessions 3.2, 3.3, 3.4, 3.6, 4.2, 4.3, 4.4, 4.5, 4.6 U5 Sessions 1.1, 1.2, 1.3, 1.4, 3.1, 3.2, 3.3, 4.1, 4.2, 4.4, 4.5, 4.6, 4.7 U5 ICCG 3.1A U7 Sessions 1.4, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4</p>

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CC.4.MD.3 Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit. Apply the area and perimeter formulas for rectangles in real world and mathematical problems. For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.	AR.5.M.13.4 (M.13.5.4) Attributes and Tools: Develop and use strategies to solve real world problems involving perimeter and area of rectangle	U4 Sessions 1.2, 1.3, 1.4, 1.5, 4.1, 4.2, 4.5, 4.6, 4.7
	AR.4.M.13.8 (M.13.4.8) Applications: Estimate and measure length, capacity/volume and mass using appropriate customary and metric units: -- Length: 1/2 inch, 1 cm; -- Perimeter: inches, feet, centimeters, meters; -- Area: square inches, square feet, square centimeters, square meters; -- Weight: pounds/ounces; -- Mass: kilograms/grams; -- Capacity: cups, pints, quarts, gallons; -- Volume: liters.	U4 Sessions 1.1, 1.2, 1.3, 1.4, 1.5 U7 ICCG 3.5A, 3.5B
	AR.7.M.12.3 (M.12.7.3) Attributes and Tools: Find different areas for a given perimeter and find a different perimeter for a given area	U4 Sessions 1.2, 1.3, 1.4, 1.5, 4.1, 4.2, 4.5, 4.6, 4.7
	AR.4.M.13.9 (M.13.4.9) Perimeter: Use strategies for finding the perimeter of a rectangle	U4 Sessions 1.2, 1.3, 1.4, 1.5,
	AR.4.M.13.10 (M.13.4.10) Area: Use strategies for finding the area of a rectangle	U4 Sessions 4.1, 4.2, 4.5, 4.6, 4.7

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U2 Describing the Shape of the Data

U3 Multiple Towers and Division Stories

U4 Size, Shape, and Symmetry

U5 Landmarks and Large Numbers

U6 Fraction Cards and Decimal Squares

U7 Moving Between Solids and Silhouettes

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U9 Penny Jars and Plant Growth

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CC.4.MD.4 Represent and interpret data. Make a line plot to display a data set of measurements in fractions of a unit ($\frac{1}{2}$, $\frac{1}{4}$, $\frac{1}{8}$). Solve problems involving addition and subtraction of fractions by using information presented in line plots. For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.	AR.3.DAP.14.1 (DAP.14.3.1) Collect, Organize and display data: Design a survey question after being given a topic and collect, organize, display and describe simple data using frequency tables or line plots, pictographs, and bar graphs	U2 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.3, 3.4, 3.5 U9 Sessions 1.1, 1.2, 2.4, 3.1, 3.2, 3.4
	AR.4.DAP.14.1 (DAP.14.4.1) Collect, Organize and display data: Create a data collection plan after being given a topic and collect, organize, display, describe and interpret simple data using frequency tables or line plots, pictographs and bar graphs	U2 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.3, 3.4, 3.5 U9 Sessions 1.1, 1.2, 2.4, 3.1, 3.2, 3.4
	AR.5.DAP.17.2 (DAP.17.5.2) Probability: List and explain all possible outcomes in a given situation	U2 Sessions 3.1, 3.2, 3.3, 3.4, 3.5
	AR.5.DAP.14.3 (DAP.14.5.3) Collect, organize and display data: Construct and interpret frequency tables, charts, line plots, stem-and-leaf plots and bar graphs	U2 Sessions 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.3, 3.4, 3.5 U9 Sessions 1.1.1, 1.2, 2.4, 3.1, 3.2, 3.4

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CC.4.MD.5. Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:	No Matches to AR Framework	U4 ICCG 2.3A, 3.4A
CC.4.MD.5a An angle is measured with reference to a circle with its center at the common endpoint of the rays, by considering the fraction of the circular arc between the points where the two rays intersect the circle. An angle that turns through $\frac{1}{360}$ of a circle is called a "one-degree angle," and can be used to measure angles.	No Matches to AR Framework	U4 ICCG 2.3A, 3.4A
CC.4.MD.5b An angle that turns through n one-degree angles is said to have an angle measure of n degrees	no Matches to AR Framework	U4 ICCG 3.4A

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CC.4.MD.6 Geometric measurement: understand concepts of angle and measure angles. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	AR.5.G.8.3 (G.8.5.3) Characteristics of Geometric Shapes: Model and identify circle, radius, diameter, center, circumference and chord	U4 Session 2.1
	AR.6.G.8.4 (G.8.6.4) Characteristics of Geometric Shapes: Draw, label and determine relationships among the radius, diameter, center and circumference (e.g. radius is half the diameter) of a circle	U4 Session 2.1
	AR.5.M.13.6 (M.13.5.6) Applications: Use benchmark angles to estimate the measure of angles	U4 Sessions 3.1, 3.2, 3.3
	AR.5.M.12.1 (M.12.5.1) Attributes and Tools: Identify and select appropriate units and tools to measure	U4 Sessions 3.1, 3.2, 3.3
	AR.5.G.9.1 (G.9.5.1) Symmetry and Transformations: Predict and describe the results of translation (slide), reflection (flip), rotation (turn), showing that the transformed shape remains unchanged	U4 Sessions 4.1, 4.2

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<p>(Continued) CC.4.MD.6 Geometric measurement: understand concepts of angle and measure angles. Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.</p>	<p>AR.6.G.9.2 (G.9.6.2) Symmetry and Transformations: Describe positions and orientations of shapes under transformation (translation, reflection and rotation) recognizing the size and shape do not change</p>	<p>U4 Sessions 4.1, 4.2</p>
	<p>AR.5.G.8.2 (G.8.5.2) Characteristics of Geometric Shapes: Identify and draw congruent, adjacent, obtuse, acute, right and straight angles (Label parts of an angle: vertex, rays, interior and exterior)</p>	<p>U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 3.4A See also: U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 2.3A, 3.4A</p>
	<p>AR.5.M.12.1 (M.12.5.1) Attributes and Tools: Identify and select appropriate units and tools to measure</p>	<p>U4 ICCG 3.4A</p>

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<p>CC.4.MD.7 Geometric measurement: understand concepts of angle and measure angles. Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.</p>	<p>AR.7.G.8.3 (G.8.7.3) Characteristics of Geometric Shapes: Recognize the pairs of angles formed and the relationship between the angles including two intersecting lines and parallel lines cut by a transversal (vertical, supplementary, complementary, corresponding, alternate interior, alternate exterior angles and linear pair)</p>	<p>U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 2.3A, 3.4A</p>
	<p>AR.7.G.8.4 (G.8.7.4) Characteristics of Geometric Shapes: Use paper or physical models to determine the sum of the measures of interior angles of triangles and quadrilaterals</p>	<p>U4 Sessions 2.4, 2.5, 3.1, 3.2</p>

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Geometry		
CC.4.G.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	AR.4.G.8.3 (G.8.4.3) Characteristics and Properties-One Dimensional: Identify, draw, and describe a line, line segment, a ray, an angle, intersecting, perpendicular, and parallel lines	U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 2.3A, 3.4A
	AR.4.G.8.4 (G.8.4.4) Geometrical Relationships: Identify and describe intersecting, perpendicular and parallel lines in problem solving context	U4 ICCG 2.3A
CC.4.G.1 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	AR.4.G.8.5 (G.8.4.5) Geometrical Relationships: Classify angles relative to 90° as more than, less than or equal to	U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 3.4A
	AR.5.G.8.2 (G.8.5.2) Characteristics of Geometric Shapes: Identify and draw congruent, adjacent, obtuse, acute, right and straight angles (Label parts of an angle: vertex, rays, interior and exterior)	U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 3.4A See also: U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 2.3A, 3.4A
	AR.3.G.8.4 (G.8.3.4) Geometrical Relationships: Identify and draw intersecting and parallel lines	U4 ICCG 2.3A
	AR.3.G.8.3 (G.8.3.3) Characteristics and Properties-One Dimensional: Identify and draw line, line segment and ray using appropriate labels	U4 Sessions 3.1, 3.2, 3.3 U4 ICCG 2.3A, 3.4A

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CC.4.G.2 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Classify two-dimensional figures based on the presence or absence of parallel or perpendicular lines, or the presence or absence of angles of a specified size. Recognize right triangles as a category, and identify right triangles.	AR.2.G.8.3 (G.8.2.3) Characteristics and Properties-Two Dimensional: Identify, classify and describe two-dimensional geometric figures (rectangle [including square], triangle and circle) using concrete objects drawings, and computer graphics	U7 Sessions 1.1, 1.2, 1.3, 1.4
	AR.6.G.8.3 (G.8.6.3) Characteristics of Geometric Shapes: Identify, describe, draw, and classify triangles as equilateral, isosceles, scalene, right, acute, obtuse, and equiangular	Grade 5: U5 Sessions 1.1, 1.4, 1.5
	AR.5.G.8.1 (G.8.5.1) Characteristics of Geometric Shapes: Identify and model regular and irregular polygons including decagon	U7 Sessions 1.1, 1.2, 1.3, 1.4
	AR.9-12.R.G.4.1 (R.4.G.1) Explore and verify the properties of quadrilaterals	Grade 5: U5 Sessions 1.2, 1.3

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CC.4.G.3 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.	AR.2.G.9.1 (G.9.2.1) Symmetry and Transformations: Use lines of symmetry to demonstrate and describe congruent figures within a two-dimensional figure	U4 Sessions 4.1, 4.2, 4.3
	AR.3.G.9.1 (G.9.3.1) Symmetry and Transformations: Draw one or more lines of symmetry in a polygon	U4 Sessions 4.1, 4.2, 4.3
	AR.6.G.9.1 (G.9.6.1) Symmetry and Transformations: Identify and describe line and rotational symmetry in two-dimensional shapes, patterns and designs	U4 Sessions 4.1, 4.2, 4.3
	AR.K.G.9.1 (G.9.K.1) Symmetry and Transformations: Identify figures with a line of symmetry as they appear in the environment	U4 Session 4.2

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<p>(Continued) CC.4.G.3 Draw and identify lines and angles, and classify shapes by properties of their lines and angles. Recognize a line of symmetry for a two-dimensional figure as a line across the figure such that the figure can be folded along the line into matching parts. Identify line-symmetric figures and draw lines of symmetry.</p>	<p>AR.1.G.9.1 (G.9.1.1) Symmetry and Transformations: Identify a line or lines of symmetry in two -dimensional figures and justify by folding</p>	<p>U4 Sessions 4.1, 4.2, 4.3</p>
	<p>AR.8.G.9.1 (G.9.8.1) Symmetry and Transformations: Determine a transformation's line of symmetry and compare the properties of the figure and its transformation</p>	<p>U4 Session 4.3</p>
	<p>AR.7.G.9.1 (G.9.7.1) Symmetry and Transformations: Examine the congruence, similarity, and line or rotational symmetry of objects using transformations</p>	<p>U4 Session 4.3</p>
	<p>AR.7.G.9.1 (G.9.7.1) Symmetry and Transformations: Examine the congruence, similarity, and line or rotational symmetry of objects using transformations</p>	<p>U4 Session 4.3</p>

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