A Correlation of

SCOTT FORESMAN

Investigations

IN NUMBER, DATA, AND SPACE®

for the Common Core State Standards

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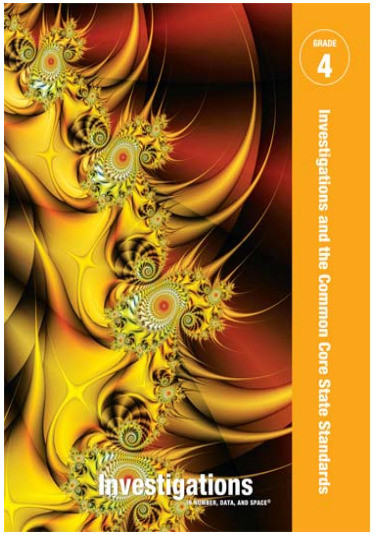

to the

West Virginia Mathematics Criteria

Grade 4

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GENERIC EVALUATION CRITERIA
20013-2016 – Off Cycle Year Adoption
Grade 4 Mathematics

R-E-S-P-O-N-S-E			CRITERIA	NOTES
Yes	No	N/A		
X			**I. INTER-ETHNIC** The instructional material meets the requirements of inter-ethnic: concepts, content and illustrations, as set by West Virginia Board of Education Policy (Adopted December 1970).	
X			**II. EQUAL OPPORTUNITY** The instructional material meets the requirements of equal opportunity: concept, content, illustration, heritage, roles contributions, experiences and achievements of males and females in American and other cultures, as set by West Virginia Board of Education Policy (Adopted May 1975).	
X			**III. FORMAT** The resource is available as an option for adoption in an interactive electronic format.	

INSTRUCTIONAL MATERIALS ADOPTION: 21st CENTURY LEARNING EVALUATION CRITERIA
GENERAL EVALUATION CRITERIA
2013-2016 – Off Cycle Year Adoption
Grade 4 Mathematics

INSTRUCTIONAL MATERIALS ADOPTION: GENERAL EVALUATION CRITERIA

The general evaluation criteria apply to each grade level and are to be evaluated for each grade level unless otherwise specified. These criteria consist of information critical to the development of all grade levels. In reading the general evaluation criteria and subsequent specific grade level criteria, **e.g. means "examples of" and i.e. means that "each of" those items must be addressed.** Eighty percent of the general criteria must be met with I (In-depth) or A (Adequate) in order to be recommended.

(Vendor/Publisher) SPECIFIC LOCATION OF CONTENT WITHIN PRODUCT	(IMR Committee) Responses										
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For student mastery of content standards and objectives, the instructional materials will provide students with the opportunity to apply:											
	A. **MATHEMATICAL PRACTICES**										
A major goal of *Investigations in Number, Data, and Space* is to support students to make sense of mathematics and learn that they can become mathematical thinkers. To this end, students create, use, and share contexts and representations to make sense of problems. Classroom discussions highlight different ways of interpreting a problem, solving it, and using representations to communicate the pertinent mathematical ideas. Students persevere in solving problems, by investigating and practicing problem-solving strategies. **U1: 3.1, 3.2, 3.3, 3.4**	1. **Make sense of problems and persevere in solving them.** • Explain to themselves the meaning of a problem and looking for entry points to its solution. • Analyze givens, constraints, relationships, and goals • Make conjectures about the form and meaning of the solution attempt. • Plan a solution pathway rather than simply jumping into a solution. • Consider analogous problems and try special cases and simpler forms of insight into its solution. • Monitor and evaluate their progress and change course if necessary.										

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U ICCG: 1.6A **U2: 1.1, 2.1,** **U3: 2.1, 2.2, 2.4, 2.5, 2.6, 3.1, 4.3, 4.4** **U4: 4.7** **U5: 3.1, 3.2, 3.4, 3.5, 4.4, 4.5, 4.6, 4.7** **U5 ICCG: 3.6A** **U6: 1.1, 1.2, 1.5, 3.7,** **U6 ICCG: 1.8A** **U7: 3.1, 3.2, 3.3, 3.4, 3.5** **U8: 1.1, 1.2, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6** **U8 ICCG: 3.5A**	• Transform algebraic expressions or change the viewing window on their graphing calculator to get information. • Explain correspondences between equations, verbal descriptions, tables, and graphs. • Draw diagrams of important features and relationships, graph data, and search for regularity or trends. • Use concrete objects or pictures to help conceptualize and solve a problem. • Check their answers to problems using a different method**.** • Ask themselves, "Does this make sense?" • Understand the approaches of others to solving complex problems and identify correspondences between approaches.										

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Another major goal of *Investigations* is to provide a curriculum that emphasizes reasoning about mathematical ideas. Students move between concrete examples with specific quantities, objects, or data and generalizations about what works in similar situations. They express these generalizations in words, with variables, and with various representations including contexts, diagrams, and manipulatives. Abstract and quantitative reasoning are reinforced in strategically challenging games as well as Classroom Routines (Grades K–2) and Ten-Minute Math (Grades 3–5). Students flexibly use different properties of operations to solve problems. **U1: 2.3, 2.4, 2.5, 3.1, 3.2, 3.3** **U1 ICCG: 1.6A** **U3: 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 4.5** **U4: 4.7** **U5: 2.5, 2.6, 4.7** **U6: 1.1, 1.2, 1.5, 1.6, 1.7, 3.7** **U9: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8** **U1, 2, 4, 5: Ten-Minute Math: *Today's Number***	2. **Reason abstractly and quantitatively.** • Make sense of quantities and their relationships in problem situations. • Bring two complementary abilities to bear on problems involving quantitative relationships: o Decontextualize (abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents and o Contextualize (pause as needed during the manipulation process in order to probe into the referents for the symbols involved). • Use quantitative reasoning that entails creating a coherent representation of the problem at hand, considering the units involved, and attending to the meaning of quantities, not just how to compute them • Know and flexibly use different properties of operations and objects.											

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The program provides ongoing opportunities for students to express and defend mathematical arguments. Students use a variety of representations, contexts, and examples to "prove" their conclusions and provide feedback about the arguments made by their classmates. The program emphasizes that there is often more than one strategy for solving a problem. Students defend their strategies as they listen to and evaluate the choices made by others. Students' strategies are often recorded on a chart and posted so that all students can analyze, review, and use their classmates' ideas. **U1: 3.3** **U2: 1.4, 1.5, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.5** **U3: 2.3, 2.4** **U4: 2.4, 2.5** **U5: 2.1, 2.2, 2.3** **U6: 2.1, 2.2, 2.3** **U8: 2.1, 2.2, 2.3, 2.4** **U8 ICCG: 2.4A**	3. **Construct viable arguments and critique the reasoning of others.** • Understand and use stated assumptions, definitions, and previously established results in constructing arguments. • Make conjectures and build a logical progression of statements to explore the truth of their conjectures. • Analyze situations by breaking them into cases • Recognize and use counterexamples. • Justify their conclusions, communicate them to others, and respond to the arguments of others. • Reason inductively about data, making plausible arguments that take into account the context from which the data arose. • Compare the effectiveness of plausible arguments. • Distinguish correct logic or reasoning from that which is flawed and, if there is a flaw, explain what it is o Elementary students construct arguments using concrete referents such as objects, drawings, diagrams, and actions. o Later students learn to determine domains to which an argument applies. • Listen or read the arguments of others, decide whether they make sense, and ask useful question to clarify or improve arguments.										

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Throughout the curriculum, students use representations and contexts to visualize, describe, and analyze mathematical relationships. Using these models allows students to express and further develop their ideas, and to engage in the ideas of others. They develop a repertoire of models they know well and can apply when faced with unfamiliar problem situations. Students use representations and contexts judiciously and with purpose. **U1: 1.1, 1.2, 1.3** **U3: 1.1, 1.2, 1.3, 1.4, 1.5, 3.2, 3.3** **U5: 4.1, 4.2, 4.3** **U6: 1.3, 1.4, 1.5, 3.4, 3.5, 3.6** **U6 ICCG: 1.8A, 3A.1, 3A.2, 3A.3** **U7: 3.1, 3.2, 3.3, 3.4, 3.5** **U9: 2.1, 2.2, 2.3, 2.4**	4. **Model with mathematics.** • Apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. o In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. o By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. • Make assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. • Identify important quantities in a practical situation • Map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. • Analyze those relationships mathematically to draw conclusions. • Interpret their mathematical results in the context of the situation. • Reflect on whether the results make sense, possibly improving the model if it has not served its purpose.											

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Students have access to an array of tools, such as connecting cubes, pattern blocks, 100 charts, and technology. Students use other tools, such as drawings, the number line, or a rectangular array. Mathematical tools are introduced that are useful for a whole class of problems and can be extended to accommodate more complex problems and/or students' expanding repertoire of numbers. Analysis of the solution to a problem includes consideration of the effectiveness and choice of the tools. During Math Workshops, students continue to use tools to foster mathematical understanding and to practice skills. **U1: 1.1, 1.2, 1.3** **U2: 1.4, 1.5** **U3: 1.1, 2.1, 3.1** **U4: 1.1, 1.2, 1.3, 1.4. 1.5, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7** **U4 ICCG: 2.3A, 3.4A** **U5: 1.2, 1.3, 1.4, 1.5, 1.6** **U5 ICCG: 1.5A** **U6: 2.5, 2.6, 3.1, 3.2, 3.3, 3.4** **U6 ICCG: 1.8A, 2.7A** **U8: 3.2, 3.3, 3.4** **U9: 3.1, 3.2, 3.3, 3.4, 3.5**	5. **Use appropriate tools strategically.** • Consider available tools when solving a mathematical problem. (these tools might include pencil and paper, concrete models, a ruler, protractor, calculator, spreadsheet, computer algebra system, a statistical package, or dynamic geometry software. • Are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. o High school students analyze graphs of functions and solutions generated using a graphing calculator • Detect possible errors by using estimations and other mathematical knowledge. • Know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. • Identify relevant mathematical resources and use them to pose or solve problems. • Use technological tools to explore and deepen their understanding of concepts.											

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Every session requires students to communicate with precision. The *Student Math Handbook* provides support in this endeavor. Strategies that students use are often named by the mathematics used in order to foster precise communication. Many of the sessions' focal points stress the use of "clear and concise" notation. Students are expected to solve problems efficiently and accurately. **U2: 1.1, 1.2, 1.3, 1.4, 1.5, 2.2, 2.3, 2.5, 2.6, 2.7, 3.5** **U3: 4.3, 4.4** **U4: 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 4.7** **U4 ICCG: 2.3A** **U5: 2.1, 2.2, 2.3, 2.4, 2.6** **U6: 3.1, 3.2**	6. **Attend to precision.** • Try to communicate precisely to others. • Try to use clear definitions in discussion with others and in their own reasoning. • State the meaning of the symbols they choose, including using the equal sign consistently and appropriately. • Specify units of measure and label axes to clarify the correspondence with quantities in a problem. • Calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. o In the elementary grades, students give carefully formulated explanations to each other. o In high school, students have learned to examine claims and make explicit use of definitions.										

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In each unit, students work between the concrete to the abstract, from numerical and geometrical patterns to general representations. Students are given opportunities and support to investigate, discover, conjecture, and make use of commonalities among related problems. Students use the structure of carefully chosen contexts and representations that embody important characteristics of mathematical relationships. Classroom Routines (Grades K–2) and Ten-Minute Math (Grades 3–5) afford more situations in which students discover and use the various structures of mathematics. **U1: 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: 2.5, 2.6** **U3: 1.1, 1.2, 2.4, 2.5, 2.6, 3.1, 3.2, 3.4, 4.1, 4.2, 4.3** **U5: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 3.1** **U5 ICCG: 1.5A** **U6: 2.4, 3.3** **U8: 1.3, 1.4, 1.5** **U9: 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8** **U1, 4, 7: Ten-Minute Math: *Quick Images*** **U5–7: Ten-Minute Math: *Practicing Place Value***	7. **Look for and make use of structure.** • Look closely to discern a pattern or structure. o Young students might notice that three and seven more is the same amount as seven and three more or they may sort a collection of shapes according to how many sides the shapes have. o Later, students will see 7 x 8 equals the well remembered 7 x 5 + 7 x 3, in preparation for the distributive property. o In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 x 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. • Step back for an overview and can shift perspective. • See complicated things, such as some algebraic expressions, as single objects or composed of several objects.										

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A hallmark of the *Investigations* program is its emphasis on helping students become mathematical thinkers as they explore and practice strategies for solving problems. Through repeated application and comparison of various strategies and algorithms, students develop an understanding of which method is efficient for a particular type of problem. Each *Investigations* unit on numbers and operations includes a focus on reasoning and generalizing about number and operations and highlights what students already notice in regularities about numbers and operations. **U3: 3.3, 3.4, 4.1, 4.2, 4.3, 4.4** **U5: 2.1, 2.2, 2.3, 2.4, 4.7** **U5 ICCG: 4.4A** **U7: 3.1, 3.2, 3.3, 3.4, 3.5** **U7 ICCG: 3.5A, 3.5B** **U8: 2.2, 2.3, 2.4, 2.5, 3.4** **U8 ICCG: 2.4A**	8. **Look for and express regularity in repeated reasoning.** • Notice if calculations are repeated. • Look both for general methods and for shortcuts. o Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeated decimal. o Middle school students might abstract the equation (y-2)/((x-1)=3 by paying attention to the calculation of slope as they repeatedly check whether the points are on the line through (1,2) with a slope 3. o Noticing the regularity in the way terms cancel when expanding $(x-1)(x+1)(x^2+1)$ and $(x-1)(x^3+x^2+x+1)$ might lead high school students to the general formula for the sum of a geometric series. • Maintain oversight of the process of solving a problem, while attending to the details. • Continually evaluate the reasonableness of intermediate results.											

SPECIFIC EVALUATION CRITERIA

2013-2016 – Off Cycle Year Adoption

Grade 4 Mathematics

In Grade 4, instructional time should focus on three critical areas: (1) developing understanding and fluency with multi-digit multiplication and developing understanding of dividing to find quotients involving multi-digit dividends; (2) developing an understanding of fraction equivalence, addition and subtraction of fractions with like denominators and multiplication of fractions by whole numbers; (3) understanding that geometric figures can be analyzed and classified based on their properties, such as having parallel sides, perpendicular sides, particular angle measures and symmetry.

1. Students generalize their understanding of place value to 1,000,000, understanding the relative sizes of numbers in each place. They apply their understanding of models for multiplication (equal-sized groups, arrays, area models), place value and properties of operations, in particular the distributive property, as they develop, discuss and use efficient, accurate and generalizable methods to compute products of multi-digit whole numbers. Depending on the numbers and the context, they select and accurately apply appropriate methods to estimate or mentally calculate products. They develop fluency with efficient procedures for multiplying whole numbers; understand and explain why the procedures work based on place value and properties of operations and use them to solve problems. Students apply their understanding of models for division, place value, properties of operations and the relationship of division to multiplication as they develop, discuss and use efficient, accurate and generalizable procedures to find quotients involving multi-digit dividends. They select and accurately apply appropriate methods to estimate and mentally calculate quotients and interpret remainders based upon the context.

2. Students develop understanding of fraction equivalence and operations with fractions. They recognize that two different fractions can be equal (e.g., 15/9 = 5/3), and they develop methods for generating and recognizing equivalent fractions. Students extend previous understandings about how fractions are built from unit fractions, composing fractions from unit fractions, decomposing fractions into unit fractions and using the meaning of fractions and the meaning of multiplication to multiply a fraction by a whole number.

3. Students describe, analyze, compare and classify two-dimensional shapes. Through building, drawing and analyzing two-dimensional shapes, students deepen their understanding of properties of two-dimensional objects and the use of them to solve problems involving symmetry.

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For student mastery of content standards and objectives, the instructional materials will provide students with the opportunity to											
	A. Operations & Algebraic Thinking										
	Use the four operations with whole numbers to solve problems.										
U1 Sessions 3.2, 3.3 **U1 ICCG:** 1.6A **U3 Sessions** 3.1, 3.2, 3.3, 4.1, 4.3	1. interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 7 as a statement that 35 is 5 times as many as 7 and 7 times as many as 5 and represent verbal statements of multiplicative comparisons as multiplication equations.										
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 and distinguishing multiplicative comparison from additive comparison.										
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	3. solve multi-step 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 and assess the reasonableness of answers using mental computation and estimation strategies including rounding.										

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	Gain familiarity with factors and multiples.										
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	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 and determine whether a given whole number in the range 1–100 is prime or composite.										
	Generate and analyze patterns.										
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	5. generate a number or shape pattern that follows a given rule and 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.										
	B. Number & Operations in Base Ten **Generalize place value understanding for multi-digit whole numbers.**										
U5 Sessions 1.1, 3.1, 3.2 **U5 ICCG:** 3.6A	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. For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.										

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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, 3.6A, 4.1, 4.2, 4.3, 4.4A, 4.4, 4.5, 4.6 **U5 ICCG:** 1.5A, 3.6A **U6 Sessions** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7 **U7 ICCG:** 3.5A, 3.5B	2. read and write multi-digit whole numbers using base-ten numerals, number names and expanded form and compare two multi-digit numbers based on meanings of the digits in each place, using >, = and < symbols to record the results of comparisons.										
U5 ICCG: 1.5A, 3.6A	3. use place value understanding to round multi-digit whole numbers to any place.										
	Use place value understanding and properties of operations to perform multi-digit arithmetic.										
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	4. fluently add and subtract multi-digit whole numbers using the standard algorithm.										

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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 **U8 ICCG:** 2.4A **U9 Sessions** 2.1, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4	5 multiply a whole number of up to four digits by a one-digit whole number, multiply two two-digit numbers, using strategies based on place value and the properties of operations and illustrate and explain the calculation by using equations, rectangular arrays and/or area models.											
U3 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 4.1 **U8 Sessions** 3.1, 3.2, 3.3, 3.4, 3.6 **U8 ICCG:** 3.5A **U9 Sessions** 2.1, 2.2, 2.4, 2.5, 2.6, 2.8, 3.3, 3.4	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 and illustrate and explain the calculation by using equations, rectangular arrays and/or area models.											
	C. Number & Operations - Fractions **Extend understanding of fraction equivalence and ordering.**											
U6 Sessions 1.1, 1.5, 2.1, 2.3, 2.5, 2.6	1. explain why a fraction a/b is equivalent to a fraction (n × a)/(n × 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 and use this principle to recognize and generate equivalent fractions.											

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U6 Sessions 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.7	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 ½, recognize that comparisons are valid only when the two fractions refer to the same whole and record the results of comparisons with symbols >, = or <, and justify the conclusions, e.g., by using a visual fraction model.										
	Build fractions from unit fractions by applying and extending previous understandings of operations on whole numbers.										
U6 Sessions 1.5, 2.2, 2.3, 2.4, 2.5, 3.2, 3.5, 3.6, 3.7 **a. U6 Sessions** 1.1, 1.2, 1.5, 1.6, 1.7, 2.5 **U6 ICCG:** 1.8A **b. U6 Sessions** 1.1, 1.2, 1.6 **c. U6 ICCG:** 2.7A **d. U6 Sessions** 1.3, 1.4 **U6 ICCG:** 1.8A	3. understand a fraction a/b with a > 1 as a sum of fractions 1/b a. understand addition and subtraction of fractions as joining and separating parts referring to the same whole, b. decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation and justify decompositions, e.g., by using a visual fraction model. Examples: 3/8 = 1/8 + 1/8 + 1/8; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8, 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, 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.										

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U6 Sessions 1.6, 1.7, 3.5, 3.6 **U6 ICCG** 1.8A, 2.7A, 3A.1, 3A.2, 3A.3 **a**. **U6 ICCG:** 3A.1, 3A.2, 3A.3 **b. U6 ICCG:** 3A.1, 3A.2, 3A.3 **c. U6 ICCG:** 3A.1, 3A.2, 3A.3	4. apply and extend previous understandings of multiplication to multiply a fraction by a whole number a. 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 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).) 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, (For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. In general, n × (a/b) = (n × a)/b.) 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. (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?)										
	Understand decimal notation for fractions, and compare decimal fractions.											
U6 Sessions 3.1, 3.3	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 100.4 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.)											

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U6 Sessions 3.1, 3.2, 3.3	6 use decimal notation for fractions with denominators 10 or 100. For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.											
U6 Sessions 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **U7 Sessions** 3.1, 3.2	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 and record the results of comparisons with the symbols >, = or < and justify the conclusions, e.g., by using a visual model.											
	D. Measurement & Data **Solve problems involving measurement and conversion of measurements from a larger unit to a smaller unit.**											
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	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, (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.) and generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36).											
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	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 and represent measurement quantities using diagrams such as number line diagrams that feature a measurement scale.											

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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	3. 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.)											
	Represent and interpret data.											
U6 ICCG: 2.7A **U9 Sessions** 3.1, 3.2	4. make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8) and 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).											

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	Geometric measurement: understand concepts of angle and measure angles.											
U4 ICCG 2.3A, 3.4A **a. U4 ICCG:** 2.3A, 3.4A **b. U4 ICCG:** 3.4A	5. recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement: 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 and an angle that turns through 1/360 of a circle is called a "one-degree angle," and can be used to measure angles, b. an angle that turns through n one-degree angles is said to have an angle measure of n degrees.											
U4 Sessions 3.1, 3.2, 3.3 **U4 ICCG:** 3.4A	6. measure angles in whole-number degrees using a protractor and sketch angles of specified measure.											
U4 Sessions 3.1, 3.2, 3.3	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 and 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.											

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	E. Geometry **Draw and Identify Lines and Angles and Classify Shapes by Properties of Their Lines and Angles**										
U4 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 4.7 **U4 ICCG:** 2.3A, 3.4A	1. draw points, lines, line segments, rays, angles (right , acute , obtuse) and perpendicular and parallel lines and identify these in two-dimensional figures.										
U4 Sessions 2.1, 2.3, 2.4, 2.5, 4.1, 4.2, 4.3, 4.4, 4.7 **U4 ICCG:** 2.3A	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.										
U4 Sessions 4.1, 4.2, 4.3, 4.4, 4.6	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.										