A Correlation of

SCOTT FORESMAN

Investigations

IN NUMBER, DATA, AND SPACE®

for the Common Core State Standards

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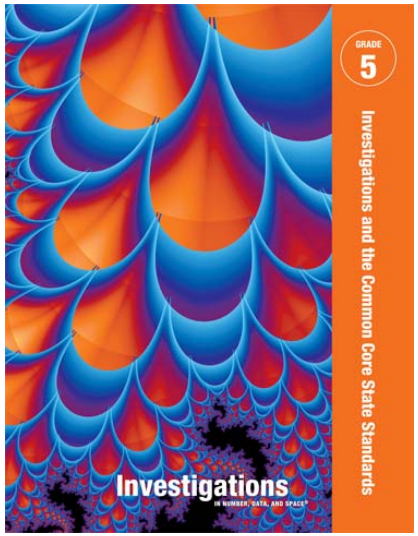

to the

West Virginia Mathematics Criteria

Grade 5

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GENERIC EVALUATION CRITERIA
20013-2016 – Off Cycle Year Adoption
Grade 5 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 5 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.

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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	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.										

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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: 1.3, 1.4, 1.5, 1.6, 1.7, 2.7, 3.8** **U2: 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7** **U2 ICCG: 1.5A, 2.4A** **U3: 3.2, 3.3, 3.4, 3.5** **U4: 2.4, 2.5, 2.6, 3.10** **U4 ICCG: 4A.1, 4A.3, 4A.6, 4A.7, 4A.10** **U5 ICCG: 2.7A** **U6: 2.8** **U6 ICCG: 2.5A** **U7: 4.1, 4.2, 4.3, 4.4, 4.5** **U8: 2.1, 2.2, 2.3, 2.4** **U9 ICCG: 1.6A**	• 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. • 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: 2.2, 3.1, 3.3, 3.6, 3.7, 3.7** **U1 ICCG: 2.4A** **U2 ICCG: 2.4A** **U3: 3.5** **U4: 1.1, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10** **U4 ICCG: 4A.1, 4A.9** **U5 ICCG: 2.7A** **U6: 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.8** **U6 ICCG: 3A.2** **U7: 4.5** **U8: 2.1, 2.2, 2.3** **U9 ICCG: 1.6A** **U1, 7: Ten-Minute Math: *Number Puzzles*** 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: 2.3, 2.6** **U3: 2.1, 2.2, 2.3** **U4: 2.3** **U5: 1.6, 1.7, 2.1, 2.2, 2.3, 2.4** **U6: 2.2** **U7: 1.3, 3.3, 3.4, 3.5, 3.6** **U9: 1.1, 1.2, 1.3, 1.4**	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. **U2: 1.4, 1.5** **U2 ICCG: 1.5A** **U3: 3.2, 3.3, 3.4** **U4: 3.13.23.3** **U4 ICCG: 4A.1, 4A.2, 4A.4, 4A.6, 4A.8** **U5: 2.5, 2.6** **U6: 1.1, 1.2, 1.3, 1.4, 2.1** **U6 ICCG: 1.5A** **U8: 1.1, 1.2, 1.3, 1.4, 1.5**	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. **U2: 2.1, 2.2, 2.3** **U2 ICCG: 2.4A** **U3: 1.3, 1.4, 1.5** **U5: 1.2, 1.3, 1.4, 1.5, 1.6, 1.7** **U6: 1.7, 1.8, 1.9, 1.10** **U7: 3.1**	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. **U1: 2.1, 2.6, 3.4** **U5: 1.1, 1.2, 1.3, 1.4** **U6: 2.3, 2.4, 2.5, 2.6, 2.7, 2.8** **U6 ICCG: 3A.3, 3A.43A.6, 3A.7** **U7: 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7** **U9: 1.1, 1.2, 1.3, 1.4**	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: 1.1, 2.4, 2.5, 3.2, 3.5** **U3: 1.1, 1.2** **U4: 1.2, 1.3, 1.4, 1.5, 2.1, 2.2** **U4 ICCG: 4A.4, 4A.5** **U6 ICCG: 3A.1, 3A.5, 3A.8, 3A.9** **U8: 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8** **U9: 1.2, 1.3, 1.4** **U9 ICCG: 1.5A, 1.6A** **U1, 2, 5: Ten-Minute Math: *Quick Images*** **U3, 6: 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. **U1 ICCG: 2.4A** **U2: 1.1, 1.2, 1.3** **U3: 2.1, 2.2, 2.3, 3.1** **U4 ICCG: 4A.5** **U6: 2.3, 2.4** **U7: 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4**	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 5 Mathematics

In Grade 5, instructional time should focus on three critical areas: (1) developing fluency with addition and subtraction of fractions and developing understanding of the multiplication of fractions and of division of fractions in limited cases (unit fractions divided by whole numbers and whole numbers divided by unit fractions); (2) extending division to 2-digit divisors, integrating decimal fractions into the place value system and developing understanding of operations with decimals to hundredths and developing fluency with whole number and decimal operations; and (3) developing understanding of volume.

1. Students apply their understanding of fractions and fraction models to represent the addition and subtraction of fractions with unlike denominators as equivalent calculations with like denominators. They develop fluency in calculating sums and differences of fractions, and make reasonable estimates of them. Students also use the meaning of fractions, of multiplication and division, and the relationship between multiplication and division to understand and explain why the procedures for multiplying and dividing fractions make sense. (Note: this is limited to the case of dividing unit fractions by whole numbers and whole numbers by unit fractions.)

2. Students develop understanding of why division procedures work based on the meaning of base-ten numerals and properties of operations. They finalize fluency with multi-digit addition, subtraction, multiplication and division. They apply their understandings of models for decimals, decimal notation and properties of operations to add and subtract decimals to hundredths. They develop fluency in these computations and make reasonable estimates of their results. Students use the relationship between decimals and fractions, as well as the relationship between finite decimals and whole numbers (i.e., a finite decimal multiplied by an appropriate power of 10 is a whole number), to understand and explain why the procedures for multiplying and dividing finite decimals make sense. They compute products and quotients of decimals to hundredths efficiently and accurately.

3. Students recognize volume as an attribute of three-dimensional space. They understand that volume can be measured by finding the total number of same-size units of volume required to fill the space without gaps or overlaps. They understand that a 1-unit by 1-unit by 1-unit cube is the standard unit for measuring volume. They select appropriate units, strategies, and tools for solving problems that involve estimating and measuring volume. They decompose three-dimensional shapes and find volumes of right rectangular prisms by viewing them as decomposed into layers of arrays of cubes. They measure necessary attributes of shapes in order to determine volumes to solve real world and mathematical problems.

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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										
	Write and interpret numerical expressions.										
U1 Sessions 1.1, 1.4, 1.7, 2.1 **U1 ICCG:** 2.4A **U2 ICCG:** 1.5A, 2.4A **U6 ICCG:** 3A.8, 3A.9 **U8 Sessions** 2.2, 2.3	1. use parentheses, brackets or braces in numerical expressions and evaluate expressions with these symbols.										
U1 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7 **U1 ICCG:** 2.4A **U7 Sessions** 1.1, 1.2, 1.3, 1.4 **U8 Sessions** 2.1, 2.2, 2.3, 2.5, 2.6	2. Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. For example, express the calculation “add 8 and 7, then multiply by 2” as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.										

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	Analyze patterns and relationships.										
U8 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8	**3.** generate two numerical patterns using two given rules, identify apparent relationships between corresponding terms, form ordered pairs consisting of corresponding terms from the two patterns and graph the ordered pairs on a coordinate plane. For example, given the rule "Add 3" and the starting number 0 and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.										
	B. Number & Operations in Base Ten **Understand the place value system.**										
U3 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 3.1, 3.2, 3.5 **U6 Sessions** 1.1, 1.2 **U6 ICCG:** 3A.8, 3A.9	1. recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.										
U1 Sessions 2.3, 2.4, 2.5, 3.2, 3.3 **U6 ICCG:** 3A.1, 3A.5	2. explain patterns in the number of zeros of the product when multiplying a number by powers of 10, explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10 and use whole-number exponents to denote powers of 10.										

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U6 Session 2.5 **U6 ICCG** 1.5A **a. U6 Sessions** 1.1, 1.2, 1.3, 1.4, 1.5, 1.10, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8 **U6 ICCG:** 3A.1, 3A.2, 3A.3, 3A.4 **U8 Sessions** 1.3, 1.4, 2.1, 2.2, 2.5, 2.6 **b. U6 Sessions** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.9, 1.10, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8 **U8 Sessions** 1.3, 1.4, 2.1, 2.2, 2.5, 2.6	3. read, write and compare decimals to thousandths a. read and write decimals to thousandths using base-ten numerals, number names and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000), b. compare two decimals to thousandths based on meanings of the digits in each place, using >, = and < symbols to record the results of comparisons.											
U6 ICCG: 1.5A, 3A.1, 3A.2, 3A.3, 3A.4	4. use place value understanding to round decimals to any place.											
	Perform operations with multi-digit whole numbers and with decimals to hundredths.											
U1 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.8 **U2 Sessions** 1.4, 1.5, 2.1, 2.2 **U3 Sessions** 1.5, 2.1, 2.2, 2.3, 3.1, 3.3, 3.4 **U6 Sessions** 1.5, 1.6, 1.9 **U7 Sessions** 2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.1, 4.2, 4.3, 4.4, 4.5 **U9 Sessions** 1.3, 1.4 **U9 ICCG:** 1.5A, 1.6A	5 fluently multiply multi-digit whole numbers using the standard algorithm.											

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U1 Sessions 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 **U2 Session** 2.3 **U3 Sessions** 1.5, 2.1, 2.2, 3.1, 3.3, 3.4 **U6 Sessions** 1.7, 1.8 **U7 Sessions** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2, 4.3, 4.4, 4.5 **U9 Sessions** 1.3, 1.4 **U9 ICCG:** 1.5A, 1.6A	6. find whole-number quotients of whole numbers with up to four-digit dividends and two-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.											
U6 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8 **U6 ICCG:** 2.5A, 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7	7. add, subtract, multiply and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations and/or the relationship between addition and subtraction, relate the strategy to a written method and explain the reasoning used.											
	C. Number & Operations - Fractions **Use equivalent fractions as a strategy to add and subtract fractions.**											
U6 Sessions 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8 **U6 ICCG:** 2.5A, 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7	1. add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)											

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U4 Sessions 3.3, 3.6, 3.7, 3.8, 3.9, 3.10 **U7 Sessions** 1.1, 1.3	2. solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem and use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.										
	Apply and extend previous understandings of multiplication and division to multiply and divide fractions.										
U6 Sessions 1.7, 1.8, 1.9, 1.10	3. interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b) and solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?										

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U4 ICCG 4A.1, 4A.2, 4A.3, 4A.4, 4A.5, 4A.6, 4A.7, 4A.8, 4A.9, 4A.10 **U6 ICCG** 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7 **a. U4 ICCG:** 4A.1, 4A.2, 4A.3, 4A.4, 4A.5, 4A.6, 4A.7 **b. U4 ICCG:** 4A.6, 4A.7, 4A.9, 4A.10	4. apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction a. interpret the product (a/b) × q as a parts of a partition of q into b equal parts; equivalently, as the result of a sequence of operations a × q ÷ b. For example, use a visual fraction model to show (2/3) × 4 = 8/3 and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.) b. find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths and show that the area is the same as would be found by multiplying the side lengths, multiply fractional side lengths to find areas of rectangles and represent fraction products as rectangular areas.										
U4 ICCG 4A.1, 4A.2, 4A.3, 4A.6 **a. U4 ICCG:** 4A.2, 4A.6 **b. U4 ICCG:** 4A.1, 4A.2, 4A.3	5 interpret multiplication as scaling (resizing) by: a. comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication, b. explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case), explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number and relating the principle of fraction equivalence a/b = (n×a)/(n×b) to the effect of multiplying a/b by 1.										

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U4 ICCG: 4A.1, 4A.2, 4A.3, 4A.7 **U9 ICCG:** 1.5A, 1.6A	6 solve real-world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.										
U4 ICCG 4A.1, 4A.2, 4A.3, 4A.4, 4A.5, 4A.6, 4A.7, 4A.8, 4A.9, 4A.10 **U6 ICCG** 3A.1, 3A.2, 3A.3, 3A.4, 3A.5, 3A.6, 3A.7 **a. U4 ICCG:** 4A.8, 4A.10 **b. U4 ICCG:** 4A.9, 4A.10 **c. U4 ICCG:** 4A.8, 4A.9, 4A.10	7 apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.) a. interpret division of a unit fraction by a non-zero whole number and compute such quotients. For example, create a story context for (1/3) ÷ 4 and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3. b. interpret division of a whole number by a unit fraction and compute such quotients. For example, create a story context for 4 ÷ (1/5) and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4. c. solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many1/3-cup servings are in 2 cups of raisins?									

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	D. Measurement & Data **Convert like measurement units within a given measurement system.**										
U6 ICCG: 3A.8, 3A.9 **U8 Session** 1.1	1. convert among different-sized standard measurement units within a given measurement system (e.g., convert 5 cm to 0.05 m) and use these conversions in solving multi-step, real-world problems.										
	Represent and Interpret Data										
U9 Sessions 1.1, 1.2, 1.3, 1.4 **U9 ICCG:** 1.5A, 1.6A	2. Make a line plot to display a data set of measurements in fractions of a unit (1/2, ¼, 1/8) and use operations on fractions for this grade to solve problems involving information presented in line plots. For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.										
	Geometric measurement: understand concepts of volume and relate volume to multiplication and to addition.										
U2 Sessions 1.2, 1.5 **U2 ICCG** 1.5A **a. U2 Sessions** 1.1, 1.2, 2.1 **U2 ICCG:** 1.5A, 2.4A **b. U2 Sessions** 1.1, 1.2, 2.1 **U2 ICCG:** 1.5A, 2.4A	3. recognize volume as an attribute of solid figures and understand concepts of volume measurement a. a cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume and can be used to measure volume, b. a solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.										
U2 Sessions 1.1, 2.1, 2.2, 2.3 **U2 ICCG:** 2.4A	4. measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft and improvised units.										

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U2 Sessions 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3 **U2 ICCG:** 1.5A, 2.4A **a. U2 Sessions** 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3 **U2 ICCG:** 2.4A **b. U2 Sessions** 1.2, 2.1, 2.3 **U2 ICCG:** 1.5A, 2.4A **c. U2 ICCG:** 1.5A	5. relate volume to the operations of multiplication and addition and solve real-world and mathematical problems involving volume a. find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base and represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication. b. apply the formulas V = l × w × h and V = b × h for rectangular prisms to find volumes of right rectangular prisms with whole number edge lengths in the context of solving real-world and mathematical problems. c. recognize volume as additive and find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real-world problems.											

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	E. Geometry **Concrete Geometric Representation (Physical Modeling)**										
U8 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8	1. use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates and understand that the first number indicates how far to travel from the origin in the direction of one axis and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).										
U8 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8	2. represent real-world and mathematical problems by graphing points in the first quadrant of the coordinate plane and interpret coordinate values of points in the context of the situation.										
	Abstract Geometric Representation (Matrix Modeling)										
U5 Sessions 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7	3. understand that attributes belonging to a category of two dimensional figures also belong to all subcategories of that category. For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.										
U5 Sessions 1.1, 1.2, 1.3, 1.4, 1.7	4. classify two-dimensional figures in a hierarchy based on properties.										