

**Understanding by Design: School: Mountain Home School District**

**Designer Name(s):** 4<sup>th</sup> Grade Team

**Date:**

**Subject Area:** Math

**Grade Level(s):** 4<sup>th</sup>

**Unit Title/Focus:** Lessons 41-50, Investigation 5

**Estimated Amount of Instructional Time:** 13 days (1 day per lesson/investigation, 1 day for testing, 1 day for Performance Task Activity)

**Stage 1 – (Desired Results)**

***State Content and Skill Standards:***

**4.OA (Operations and Algebraic Thinking)**

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.
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.
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.
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.NBT (Numbers and Operations in Base Ten)**

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.
2. Use place value understanding to round multi-digit whole numbers to any place.
3. Fluently add and subtract multi-digit whole numbers using the standard algorithm.
4. 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.
5. 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.NF (Numbers and Operations-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.
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.MD (Measurement and Data)**

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.
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.G (Geometry)**

1. Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.
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.

**Enduring Understandings:** (what are the big ideas, what are the specific understandings desired)

Students will understand that...

- In multiplication, if the quantity is more than nine, you must carry the first digit above the next column.
- Division undoes multiplication.
- In an expression, operations with parenthesis are always done first.
- The Associative Property also applies to multiplication.

**Essential Questions:** (what questions will foster inquiry, understanding, and transfer of learning)

- How and why do you "carry" when multiplying?
- How are multiplication and division opposites?
- How do parentheses affect the order you perform tasks in an expression?
- How does the Associative Property apply to multiplication?

### Big Idea(s)

**Understand decimal notation for fractions, and compare decimal fractions.**

**Use the four operations with whole numbers to solve problems.**

**What Students will know:** (what knowledge will they acquire)

Math Vocabulary – difference, estimate, equals, exchange, expression, factor, product, regroup, multiples, number line, round, decimal point, hundredths, place value, tenths, multiplication, sum, Associative Property of Addition, Associative Property of Multiplication, order of operations, parentheses, endpoints, line, multiplication, perpendicular, opposite, division, multiplication table, digit, division, equation, formula, decimal number, difference, tax, percent, fourth, fraction, half, chance

- Understand that sometimes you may have to regroup more than once when subtracting if you do not have enough.
- Understand that if you know 1 factor and the product you can find the other factor.
- Understand when multiplying by multiples of 10 and 100, we focus our attention on multiplying the first digit of the multiples then add the number of zeroes accordingly.
- Understand that when adding or subtracting numbers with decimal points the decimal points must always be aligned.
- Understand when multiplying two-digit numbers you always multiply the ones first and then the tens. If the answer is a two-digit number you will need to "carry" the number in the tens place over and "drop" the number in the ones place.
- Understand that parentheses show us which operation to perform first.
- Understand that the associative property of addition and multiplication tell us that the operations can be performed in any order and you get the same answer.
- Understand that a line has no end, one way to identify the line is to put two points on it and name it accordingly.
- Understand that multiplication and division are related and that division "undoes" multiplication.
- Understand how the division box, sign, and bar are used.

**What Students will be able to do:** (what will they eventually be able to do as a result of their skills learned/knowledge)

- Figure out change form a \$20 bill
- Demonstrate that 4 chickens in 6 cages is the same number as 6 chickens in 4 cages
- Figure out how many M&Ms you will each get when you know how many friends and how many M&Ms
- Know the difference between \$7.06 and \$706
- Check division answers in your head using multiplication

<ul style="list-style-type: none"> <li>• Understand how to “translate” a word problem into a formula.</li> <li>• Understand that percent means per hundred.</li> <li>• Understand that parts of a whole can be names with a fraction, decimal, or percent.</li> </ul>	
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<b>Stage 2 - Assessment Evidence (acceptable assessment evidence that students understand)</b>	
<p><i>Performance Tasks: (what authentic performance task (s) will students demonstrate understanding; by what criteria will it be judged?)</i></p> <ul style="list-style-type: none"> <li>• Performance Task 5</li> <li>• Activities from pages 278, 297, 319, and 325</li> <li>• Reinforcing the Content Standards activity on insert page SOV5</li> <li>• Any idea from “What will students be able to do section</li> </ul>	<p><i>Other Evidence: (quizzes, tasks, academic prompts, homework, observations)</i></p> <ul style="list-style-type: none"> <li>• Daily homework</li> <li>• Power-up tests</li> <li>• Cumulative tests</li> <li>• Performance on daily Power-up activities</li> </ul>

**Stage 3 - Learning Plan (sequence of teaching and learning activities that will produce desired understandings, engagement and development) Use WHERETO elements to help you:**

<p><i>Learning Activities:</i></p> <p>Saxon Table of Contents:</p> <p>Lesson 41 – Subtracting Across Zero and Missing Factors 4OA2, 4OA5, 4NBT2, 4NBT4, 4NF6, 4NF7, 4MD1, 4MD2, 4MD3, 4G1</p> <p>Lesson 42 – Rounding Numbers to Estimate 4OA2, 4OA5, 4NBT1, 4NBT2, 4NBT3, 4NBT4, 4NBT5, 4NF6, 4NF7, 4MD1, 4MD2, 4G1</p> <p>Lesson 43 – Adding and Subtracting Decimal Numbers 4OA2, 4NBT2, 4NBT3, 4NBT5, 4NF6, 4NF7, 4MD1, 4MD2, 4MD3, 4G1</p> <p>Lesson 44 – Multiplying Two-Digit Numbers 4OA2, 4NBT1, 4NBT2, 4NBT3, 4NBT5, 4MD1,</p> <p>Lesson 45 – Parentheses and the Associative Property and Lines and Segments 4OA2, 4NBT1, 4NBT2, 4NBT5, 4MD1, 4MD2, 4MD3, 4G1, 4G2</p> <p>Lesson 46 – Relating Multiplication and Division 4OA1, 4OA2, 4NBT3, 4NBT5, 4NBT6, 4MD1, 4MD2, 4MD3, 4G1</p> <p>Lesson 47 – Relating Multiplication and Division 4OA1, 4OA2, 4NBT1, 4NBT2, 4NBT3, 4NBT5, 4NBT6, 4NF6, 4NF7, 4G1</p> <p>Lesson 48 – Multiplying Two-Digit Numbers 4OA1, 4NBT1, 4NBT2, 4NBT5, 4MD1, 4MD2, 4MD3, 4G2</p> <p>Lesson 49 – Word Problems About Equal Groups 4OA1, 4OA2, 4OA3, 4NBT1, 4NBT2, 4NBT4, 4NBT5, 4MD1, 4MD2, 4G1, 4G2</p> <p>Lesson 50 - Adding and Subtraction Decimal Numbers 4OA1, 4NBT1, 4NBT2, 4NBT4, 4NBT5, 4NF5, 4MD1, 4MD2, 4G2</p> <p>Investigation 5 – Percents 4NF7</p> <p> </p> <p>*It was discussed that the “fact” section of the daily Power-Ups be done on Tuesday/Thursday and the “mental math” section be done on Monday, Wednesday, and Friday. Teacher may also want to cut back on “Written Practice”, possibly only 15 problems each day or having 1 assignment every 2 lessons. This will free up some time for higher level discussion of concepts and Performance Tasks.*</p>
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W=help the students know WHERE the unit is going and WHAT is expected/Help teacher to know where the students are coming from (prior knowledge, interests)

H=HOOK all students and hold their interest

E=EQUIP students, help them EXPERIENCE the key ideas and EXPLORE the issue

R=Provide opportunities to RETHINK and REVISE their understanding/work

E (2)=Allow students to EVALUATE their work

T=Be TAILORED (personalized) to different needs, interests, and abilities of learners

O=Be ORGANIZED to maximize initial and sustained engagement as well as effective learning

<b>Assessment Tasks that Provide Evidence for Claims including DOK</b>	<input type="checkbox"/> <b>Claim #1/DOK 1, 2, 3, 4 (circle one):</b>
	<input type="checkbox"/> <b>Claim #2/DOK 1, 2, 3, 4 (circle one):</b>
	<input type="checkbox"/> <b>Claim #3/DOK 1, 2, 3, 4 (circle one):</b>
	<input type="checkbox"/> <b>Claim #4/DOK 1, 2, 3, 4 (circle one):</b>
<b>Achievement Level Descriptors</b>	<b>ALD #1:    ALD #2:    ALD #3:    ALD #4:    (circle one):</b>
<b>Materials/Resources</b>	