Understanding by Design: School: Mountain Home School District

Designer Name(s): 4th Grade Team Date:

Subject Area: Math Grade Level(s): 4th

Unit Title/Focus: Lessons 71-80, Investigation 8

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)

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.NBT (Numbers and Operations in Base Ten)

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.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.

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. 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.

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.

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.

Enduring Understandings: (what are the big ideas, what are the specific understandings desired)	*Essential Questions: (what questions will foster inquiry, understanding, and transfer of learning)*
Students will understand that… • The units of weight in the U.S. Customary System are ounces, pounds, and tons. • 180 degrees is a half turn and 360 degrees is a full turn. • Triangles can be classified by their angles and side measurements. • Points on a graph show the relationship between x and the y axis.	• What are the divisibility rules? • What are the units of weight in the U.S. Customary System? • How many degrees are in a half turn and full turn? • What are two ways we classify triangles? • On a graph, what shows the relationship between the x-axis and the y-axis?

Big Idea(s)

Use place value understanding and properties of operations to perform multi-digit arithmetic.
Draw and identify lines and angles, and classify shapes by properties of the lines and angles.

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

Math Vocabulary – compatible numbers, dividend, division, divisor, estimate, quotient, first, second, third, geometry, orientation, reflection, rotation, transformation, translation, angle, circle, congruent, line, polygon, solid, triangle, denominator, fraction, numerator, clockwise, counterclockwise, degree, full turn, half turn, quarter turn, rotate, triangle, decimal point, digit, division, whole numbers, mass, ounce, pound, ton, weight, metric system, U.S. Customary System, mass, acute triangle, equiangular, isosceles, obtuse triangle, right triangle, scalene, angle, degree, equilateral, right angle, line of symmetry, reflective symmetry, rotational symmetry, symmetry, rectangle, reflection square, remainder, coordinate(s), data, equation, formula, horizontal, parentheses, percent, point, scale, vertical

- Understand that the division process must be continued until all the digits inside the division box have been used to prevent mistakes.
- Understand that place value is important when solving division problems in order to get an accurate answer.
- Understand that you can check your answer to a division problem my using multiplication.
- Understand how to utilize the necessary information needed to solve a problem and how to weed out the information that is not necessary.
- Understand that congruent figures may have different orientations but they are still congruent, these orientations are called transformations and are called a rotation (turn), reflection (flip), and a translation (slide).
- Understand that the denominator is the total number of members and the numerator is the number of members named.
- Understand that when measuring a turn the direction is either clockwise or counterclockwise and the amount of turn is label in degrees (full turn being 360, half turn being 180, and a quarter turn being 90).
- Understand fully the steps of the division process in order to solve division with three-digit answers.
- Understand the difference between weight and mass.
- Understand that weight is measured in the customary system using ounces, pounds, or tons.
- Understand that weight is measured in the metric unit using grams and kilograms.
- Understand how to use the angles of a triangle to classify it (acute, right, and obtuse).
- Understand how to use the sides of a triangle to classify it (equilateral, isosceles, and scalene).
- Understand symmetry and where to place the line of symmetry to show that a figure has symmetry.
- Understand how to write an equation to represent the relationship seen in a table.

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

- Divide dollar amounts to see how much you and your friend each made mowing lawns
- Use only congruent figures to make a picture labeling how it was transformed
- Construct a house using only triangles for windows labeling each based on sides and angles, draw a line to show where the line of symmetry would be
- Write quiz questions based on information found in a table and switch with a partner
- Measure the weight of various items in ounces, pounds, tons, grams, and kilograms

Stage 2 - Assessment Evidence (acceptable assessment evidence that students understand)	
Performance Tasks: (what authentic performance task (s) will students demonstrate understanding; by what criteria will it be judged?) • Performance Task 8 • Activities from pages 468, 478, 480, 491, 492, 498, 503, 517 and 518 • Reinforcing the Content Standards activity on insert page SOV8 • Any idea from "What will students be able to do" section	*Other Evidence: (quizzes, tasks, academic prompts, homework, observations)* • Daily homework • Power-up tests • Cumulative tests • Performance on daily Power-up activities
Stage 3 - Learning Plan (sequence of teaching and learning activities that will produce desired understandings, engagement and development) Use WHERETO elements to help you:	
Learning Activities: Saxon of Contents: Lesson 71 – Division Answers Ending with Zero 4.OA.3 – 4; 4.NBT.4 – 6; 4.nf.4c; 4.MD.1; 4.G.2 Lesson 72 – Finding Information to Solve Problems 4.OA.2 – 4; 4.NBT.5 – 6; 4.NF.4c; 4.MD.1 – 3; 4.G.1 - 2 Lesson 73 – Geometric Transformation 4.OA.2 – 4; 4.NBT.4 – 6; 4.NF.4c; 4.MD.2; 4.G.2 Lesson 74 – Fraction of a Set 4.OA.2 & 4; 4.NBT.4 – 6; 4.MD.1 – 3; 4.G.2 Lesson 75 – Measuring Turns (Rotations, Degrees, Congruence) 4.OA.3; 4.NBT.4 – 6; 4.MD.1 – 3; 4.G.1 Lesson 76 – Division with Three-Digit Answers 4.OA.2 – 3; 4.NBT.6; 4.MD.1 - 2 Lesson 77 – Mass and Weight (Customary and Metric) 4.OA.2 – 3; 4.NBT.4 – 6; 4.MD.1 - 3 Lesson 78 – Classifying Triangles 4.OA.2 & 4; 4.NBT.5 – 6; 4.MD.1 – 2, 5a & b; 4.G.1 - 2 Lesson 79 – Symmetry 4.OA.2 & 4; 4.NBT.4 – 5; 4.MD.1 – 2; 4.G.2 - 3 Lesson 80 – Division with Zeros in Three-Digit Answers 4.OA.2 – 3; 4.NBT.4 – 6; 4.MD.1 – 2; 4.G.2 - 3 Investigation 8 – Analyzing and Graphing Relationships *Not a 4th Grade Standard* *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.*	

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

Assessment Tasks that Provide Evidence for Claims including DOK	☐ **Claim #1/DOK 1, 2, 3, 4 (circle one):** ☐ **Claim #2/DOK 1, 2, 3, 4 (circle one):** ☐ **Claim #3/DOK 1, 2, 3, 4 (circle one):** ☐ **Claim #4/DOK 1, 2, 3, 4 (circle one):**
Achievement Level Descriptors	**ALD #1: ALD #2: ALD #3: ALD #4: (circle one):**

Materials/Resources	