

Understanding by Design

Designer Name(s): Young and Cowser

Date: 6/5/14

Subject Area: Math

Grade Level(s):3rd

Unit Title/Focus: Section 5 (Lessons 41-50)

Estimated Amount of Instructional Time: ~ 14 days

Stage 1 – (Desired Results)

State Content and Skill Standards: **CCSS and section overview card**

Mathematic Claim #1: Students can explain and apply mathematical concepts and carry out mathematical procedures with precision and fluency.

Domain: Operation and Algebraic Thinking

Target A. (3.OA.A) Represent and solve problems involving multiplication and division. (DOK 1)

Gr. 3 Standards:3.OA.1, 3.OA.4,

3.OA.1: Interpret products of whole numbers, e.g., interpret 5×7 as the total number of objects in 5 groups of 7 objects each. For example, describe a context in which a total number of objects can be expressed as 5×7 .

3.OA.4: Determine the unknown whole number in a multiplication or division equation relating three whole numbers. For example, determine the unknown number that makes the equation true in each of the equations $8 \times ? = 48$, $5 = \square \div 3$, and $6 \times 6 = ?$.

Target C.(3.OA.C) **Multiply and divide within 100. (DOK 2)**

Gr. 3 Standards:3.OA.7

3.OA.7 Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that $8 \times 5 = 40$, one knows $40 \div 5 = 8$) or properties of operations. By the end of Grade 3 know from memory all products of two one-digit numbers.

Target D.(3.OA.D) Solve problems involving the four operations, and identify and explain patterns in arithmetic. (DOK 2)

Gr. 3 Standards: 3.OA.8, 3.OA.9

3.OA.8 Solve two-step word problems using the four operations. 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.

3.OA.9 Identify arithmetic patterns (including patterns in the addition table or multiplication table), and explain them using properties of operations. For example, observe that 4 times a number is always even, and explain why 4 times a number can be decomposed into two equal addends.

Domain: Numbers and Operations in Base Ten

Target E. (3.NBT.E) - Use place value understanding and properties of operations to perform multi-digit arithmetic. (DOK 1)

Gr. 3 Standards: 3.NBT.2, 3.NBT.3

3.NBT.2 Fluently add and subtract within 1000 using strategies and algorithms based on place value, properties of operations, and/or the relationship between addition and subtraction.

3.NBT.3 Multiply one-digit whole numbers by multiples of 10 in the range 10–90 (e.g., 9×80 , 5×60) using strategies based on place value and properties of operations.

Domain: Measurement and Data

Target G. (3.MD.A)- **Solve problems involving measurement and estimation of intervals of time, liquid volumes, and masses of objects. (DOK 1, 2)**

Gr. 3 Standards: 3.MD.2

3.MD.2 Measure and estimate liquid volumes and masses of objects using standard units of grams (g), kilograms (kg), and liters (L). Add, subtract, multiply, or divide to solve one-step word problems involving masses or volumes that are given in the same units, e.g., by using drawings (such as a beaker with a measurement scale) to represent the problem.

Target J. (3.MD.D)- **Geometric measurement: recognize perimeter as an attribute of plane figures and distinguish between linear and area measures. (DOK 1)**

Gr. 3 Standards: 3.MD.8

3.MD.8 Solve real-world and mathematical problems involving perimeters of polygons, including finding the perimeter given the side lengths, finding an unknown side length, and exhibiting rectangles with the same perimeter and different areas or with the same area and different perimeters.

Domain: Geometry

Target K.(3.G.A) **Reason with shapes and their attributes. (DOK 1, 2)**

Gr. 3 Standards: 3.G.1

3.G.1 Understand that shapes in different categories (e.g., rhombuses, rectangles, and others) may share attributes (e.g., having four sides), and that the shared attributes can define a larger category (e.g., quadrilaterals). Recognize rhombuses, rectangles, and squares as examples of quadrilaterals, and draw examples of quadrilaterals that do not belong to any of these subcategories.

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

Students will understand that...

- Multiplication is a faster way to write an addition problem when the same numbers are added together
- The distance around a shape is called its perimeter
- A formula can be used to find the perimeter of a rectangle
- There are different types of triangles
- We can find the sum of 2-Digit numbers using mental computation

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

- When I multiply a number by 10, what will the tens digit be in the answer? What will the ones digit in the answer be?
- How do I find the perimeter of a shape?
- What do the letters in the formula for finding perimeter represent?
- How do I know the difference between a scalene and isosceles triangle?
- When I add 2-Digit numbers using mental computation, what process do I use?

Extend and Challenge Question

- If you spend \$0.36 for one item, and \$0.24 for another item, how could you use mental computation to find out how much money you spent in all?

Big Idea(s)/ Real World Application

Students will be able recognize that multiplication is groups of a number.

Students will be able to understand perimeter represents the outside measurement of a given shape.

Students will be able to recognize that triangles have different attributes and are named for those.

Students will be able to add numbers to find the sum.

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

Math Vocabulary- boiling point, capacity, comparison symbols, equilateral triangle, expanded form, factor, freezing point, groups of, horizontal line, isosceles triangle, most, multiplication symbol, multiply, normal body temperature, oblique line, perimeter, product, scalene triangle, vertical line

- Numbers have value based on the placement of their digits
- Expanded form represents the value of each digit in a number
- Placement of a line determines its given name
- Triangles are classified based on their attributes
- Capacity is the amount a container holds
- Capacity is measured in cups, pints, quarts, and gallons
- Temperature is measured using a thermometer using the Fahrenheit scale and notable reference temperatures
- Symbols are used for greater than, less than, and equal to.
- Perimeter is the distance around an object.
- Addition and Subtraction Facts

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

(Saxon Lesson Objectives)

Students will be able to

- Identify Place Value to the Hundreds
- Write a 3-Digit Number in Expanded Form
- Add 2-Digit Numbers using Mental Computation
- Name Line Segments
- Name and Make Triangles
- Find a Missing Digit in an Addition Problem
- Multiply by 1 and 10
- Name the Numbers in a Multiplication Problem
- Estimate the Capacity of a Container
- Order Containers by Capacity
- Measure Capacity Using a 1-Cup Measure
- Name the Different Sizes of Containers
- Read a Thermometer to the Nearest Degree
- Know Freezing and Boiling Points of Water and Normal Body Temperature on a Fahrenheit Scale
- Know the Symbols We Use to Compare Numbers
- Identify Horizontal, Oblique, and Vertical Lines and Line Segments
- Find Perimeter
- Subtracting a Number from 10 Facts
- Make a Shape for a Given Perimeter

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?)

- Making an Organized List to Solve a Problem
- Making a Shape for a Given Perimeter
- Estimating and Finding the Capacity of Containers
- Ordering Containers by Capacity

Other Evidence: (quizzes, tasks, academic prompts, homework, observations)

- Cumulative Written Assessments 45-1, 45-2, 50-1, 50-2
- Oral Assessment 5
- Teacher Observations
- Guided Practice
- Homework Practice
- Fact Practice

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 Table of Contents Section 5

- Lesson 41- Identifying Place Value of 3-Digit Numbers and Writing in Expanded Form
- Lesson 42- Adding 2-Digit Numbers- Grade 2 Review
- Lesson 43- Naming Line Segments and Identifying and Making Scalene, Isosceles, and Equilateral Triangles
- Lesson 44- Identifying a Missing Digit in an Addition Problem
- Lesson 45-1- Multiplying by 1 and 10
- Lesson 45-2- Estimating and Finding the Capacity of Containers, Ordering Containers by Capacity, and Identifying those Containers
- Lesson 46- Reading a Thermometer to the Nearest Degree Fahrenheit and Reference Temperatures
- Lesson 47- Using Comparison Symbols (<, >, =)- Grade 2 Review
- Lesson 48- Identifying Horizontal, Oblique, and Vertical Lines
- Lesson 49- Finding Perimeter
- Lesson 50-1- Subtraction Facts- Subtracting a Number from 10 –Making an Organized List to Solve a Problem – Grade 2 Review
- Lesson 50-2- Making a Shape for a Given Perimeter

** Per conversation with Mrs. Ybarra, if you feel this review is not necessary for your class, skip lessons as needed.**

Journal Writing:

- Describe how equilateral, scalene, and obtuse triangles are the same and how they are different. (Lesson 43)
- You invented a new drink. Describe your new drink. What size container would you put it in to sell? Explain why you would use this size container. (Lesson 45-2)
- Write about a time when your body temperature was not normal. (Lesson 46)
- How can you remember how to read the comparison symbols- (<, >, =)? (Lesson 47)

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	<input type="checkbox"/> Claim #1/DOK 1, 2, 3, 4 (circle one):
	<input type="checkbox"/> Claim #2/DOK 1, 2, 3, 4 (circle one):
	<input type="checkbox"/> Claim #3/DOK 1, 2, 3, 4 (circle one):
	<input type="checkbox"/> Claim #4/DOK 1, 2, 3, 4 (circle one):
Achievement Level Descriptors	ALD #1: ALD #2: ALD #3: ALD #4: (circle one):
Materials/Resources	Saxon Math