Understanding by Design

Designer Name(s): Young and Cowsert Date: 6/9/14

Subject Area: Math Grade Level(s):3rd

Unit Title/Focus: Section 12 (Lessons 111-120)

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.

Target F. (3.NF.A) - Develop understanding of fractions as numbers. (DOK 1, 2)

Gr. 3 Standards: 3.NF.1,3.NF.2a, 3.NF.2b, 3.NF.3d

3.NF.1 Understand a fraction 1/*b* as the quantity formed by 1 part when a whole is partitioned into *b* equal parts; understand a fraction *a*/*b* as the quantity formed by a parts of size 1/*b*.

3.NF.2 Understand a fraction as a number on the number line; represent fractions on a number line diagram.

a. Represent a fraction 1/*b* on a number line diagram by defining the interval from 0 to 1 as the whole and partitioning it into *b* equal parts. Recognize that each part has size 1/*b* and that the endpoint of the part based at 0 locates the number 1/*b* on the number line.

b. Represent a fraction *a*/*b* on a number line diagram by marking off *a* lengths 1/*b* from 0. Recognize that the resulting interval has size *a*/*b* and that its endpoint locates the number *a*/*b* on the number line.

3.NF.3 Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.

d. Compare two fractions with the same numerator or the same denominator by reasoning about their size. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with the symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.

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)*	*Essential Questions:* *(what questions will foster inquiry, understanding, and transfer of learning)*
Students will understand that…	• What are some objects I would measure using millimeters?

• Length can be measured using millimeters • Triangles are named by their angle size • Function rules can be used to fill in missing numbers in a pattern	• How can I identify different kinds of triangles using their angle size? • How can I identify a function rule? Extend and Challenge Questions • Activity 12- What patterns to do you see on the charts of the multiples of six? • How could you color the charts quickly without counting by sixes?

Big Idea(s)/ Real World Application

Students will be able recognize and name triangles by their angle size.

Students will be able to identify attributes of geometric solids.

Students will be able to identify the rule and solve function problems.

What Students will know: (what knowledge will they acquire)	*What Students will be able to do: (what will they eventually be able to do as a result of their skills learned/knowledge)*
Math Vocabulary: acute angle, associative property of multiplication, cube, cylinder, decimal fractions, edges, face, function rule, millimeter, multiplication algorithm, obtuse angle, prime number, pyramid, rectangular prism, sphere, triangular prism, vertex, vertices • Age is found by subtracting birth year from current year • In a fraction, the numerator represents the identified set and the denominator is the total number in the set • Basic multiplication facts • 10 millimeters = 1 centimeter • Identify faces, vertices, and edges of a geometric solid • Create a net for a given geometric shape • How to identify patterns to complete the function table • Parenthesis are solved first in an equation • Factors are the numbers multiplied together to create the product • Prime number has only 2 factors- 1 and itself • How to apply place value using tenths	(Saxon Lesson Objectives) Students will be able to • Identify Fractional Part of a Set • Determine Age • Multiply Basic Facts 1- 2 Digits • Measure Using Millimeters • Identify Attributes of Geometric Solids • Construct Geometric Solids • Identify Function Rule in a Pattern • Apply Order of Operations in the Associative Property of Multiplication • Identify Factors of a Number • Identify Prime Numbers Less than 20 • Write Tenths Using Fractions and Decimals

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?)	*Other Evidence: (quizzes, tasks, academic prompts, homework, observations)*
• Create Geometric Solids Given The Attributes or Net • Identify Triangles based on their Angles • Shade in a Circle to Show Given Fractional Part of a Set • Create and Solve Function Chart • Measure and Draw Line Segments Using Millimeters • Work Backwards and Check and Guess to Solve a Word Problem • Create a Chart Listing Factors and Prime Numbers for 1-20	• Cumulative Written Assessments 115-1, 115-2, 120-1, 120-2 • Oral Assessment 12 • Teacher Observations • Guided Practice • Homework Practice • Fact Practice

- Making and Using a Multiplication Table

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 12

Lesson 111- Identify Fractional Part of a Set and Determine Age
Literature Connection: Jump Kangaroo Jump by Stuart J. Murphy
Lesson 112- Multiply 1 Digit and 2 Digit Number Using Mental Computation
Lesson 113- Identifying Right, Obtuse, and Acute Angles and Naming Triangle by Angle Size
Lesson 114- Measuring Line Segments Using Millimeters
Lesson 115-1- Multiplying by 6
Lesson 115-2- Identifying Geometric Solids and Constructing a Cube
Lesson 116- Multiplying 1 Digit Number and a Multi-digit Number Using Multiplication Algorithm
Lesson 117- Identifying a Function Rule
Literature Connection: The 512 Ants on Sullivan Street by Carol A. Losi
Lesson 118- Simplifying expressions Containing Parenthesis, Multiplying 3 or More Factors, and Using Associative Property of Multiplication
Lesson 119- Writing Tenths Using Decimals and Fractions, Measuring to Nearest Tenth of a Centimeter
Lesson 120-1- Making and Using a Multiplication Table, Working Backwards to Solve a Problem
Lesson 120-2- Identifying Factors of a Number and Prime Numbers Less than 20

Journal Writing:

- Write about the oldest person in your family. In what year do you think he or she was born? (Lesson 111)
- Design a class banner that includes an acute, obtuse, or right triangle. (Lesson 113)
- Choose 2 geometric solids. Explain how they are the same and how they are different. (Lesson 115-2)
- Explain how to find out about how many hours you will sleep this month. (Lesson 116)
- Explain how to find out how many days old you were on your last birthday (Lesson 116)
- The gumball machine went wild! You put in a penny and 5 gumballs came out. What do you think will happen if you put in 2 pennies? 5 pennies? 8 pennies? (Lesson 117)

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	**Saxon Math**