2015-2016 Curriculum Blueprint **Grade: 3** **Course: Mathematics**

Topic 5 – Fluently Multiply and Divide Within 100

Flexible Time Line

5 days

Topic Overview

Students will apply strategies to achieve fluency with multiplication and division facts within 100. Developing fluency requires a strong focus on selecting and using appropriate strategies. Please review Table 2: Common Multiplication and Division Situations (Page 89) for examples of the various meanings of multiplication and division, and to ensure students opportunities with all types of multiplication and division problems.

Vertical Progression

2nd Grade

- Students work with equal groups of objects arranged in arrays.
- Students find the total number of objects by writing equations using rows or columns.

4th grade

- Students will use strategies and properties to multiply a whole number with up to 4 digits by a 1-digit whole number, and to multiply two 2-digit numbers.
- Students will use strategies and properties to divide dividends with up to 4 digits by 1-digit divisors.

Learning Goal

Students will use various strategies to fluently multiply and divide.

Topic 5 Scale

Essential Question

What are strategies to fluently multiply and divide?

Textbook Correlation

**Be selective in choosing problems aligned to the standards within the topic. Lessons and problems used for instruction and assessment should be determined through collaborative unit planning.*

Topic 5: Fluently Multiply and Divide Within 100
Lesson 5-1: Patterns for Multiplication Facts
Lesson 5-2: Use a Multiplication Table
Lesson 5-3: Find Missing Numbers in a Multiplication Table
Lesson 5-4: Use Strategies to Multiply
Lesson 5-5: Solve Word Problems: Multiplication and Division Facts
Lesson 5-6: Write Math Stories: Multiplication
Lesson 5-7: Write Math Stories: Division
Lesson 5-8: Math Practices and Problem Solving: Look for and use Structure

**Use lessons at your discretion. Fluency is an end of year goal and will also be readdressed in the 4th nine weeks.

Recommended Instructional Sequence

Step 1: Problem-Based Learning *"Solve and Share"*

Problem-Based Learning Lesson Flow Map

Conceptual understanding is developed when mathematics is introduced in the context of solving a real problem in which ideas related to the new content are embedded. Conceptual understanding results because the process of solving a problem requires students to connect their prior knowledge with the new concept or procedure (Charles, R., Bay-Williams, J., et al., 2016).

Each lesson in the book begins with a *Solve and Share.* See the links below for additional tasks to be used as needed:

Math Formative Assessment System (MFAS) Tasks by Standard
Illustrative Mathematics Tasks by Standard

Step 2: "Visual Learning Bridge"

Enhance student learning by connecting student thinking and solutions from the *Solve and Share* to the new ideas of the lesson through the use of the worked-out problem in the textbook.

Essential Vocabulary

- equation
- odd number
- even number
- fact family
- column
- row

Deconstructed Standards

MAFS.3.OA.1.3 (DOK 2) Use multiplication and division within 100 to solve word problems in situations involving equal groups, arrays, and measurement quantities, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.

- Multiply and divide within 100.
- Solve word problems in situations involving equal groups, arrays, and measurement quantities.
- Represent a word problem using a picture, an equation with a symbol for the unknown number, or in other ways.

MAFS.3.OA.3.7 (DOK 1) Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 x 5 = 40, one knows 40 ÷ 5 = 8) or properties of operations. By the end of Grade 3, know from memory all products of two one-digit numbers.

- Know from memory all products of two one-digit numbers.
- Fluently multiply and divide within 100.
- Analyze a multiplication or division problem in order to choose an appropriate strategy to fluently multiply or divide within 100.

MAFS.3.OA.4.9 (DOK 3) 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.*

- Identify arithmetic patterns such as even and odd numbers, patterns in an addition table, patterns in a multiplication table, and patterns regarding multiples and sums.
- Explain rules for a pattern using properties of operations.
- Explain relationships between the numbers in a pattern.

Math Practice Standard(s)

Link to Mathematical Practice Standards Rubric

MAFS.K12.MP.3.1 Construct viable arguments and critique the reasoning of others.
MAFS.K12.MP.7.1 Look for and make use of structure.

Additional Resources & Links

Georgia Units
Unit 2:

- Array-nging Our Fact Families
- Finding Factors
- Multiplication Chart Mastery

(Many other lessons in this Georgia unit also pertain to this topic)

EngageNY - Module 1
Topic B: Lesson 4, 5, & 6
Topic E: Lessons 14 - 17

EngageNY Math Studio Talk: Common Core Instruction for 3.OA
This video addresses representing and solving problems involving multiplication and division, the properties of multiplication, and the relationship between multiplication and division to help students multiply and divide within 100.
** YouTube must already be opened on your browser before clicking the link.*

Higher Order Questions & Writing Connections

Link to Webb's DOK Guide

** Higher order questions should be utilized to foster a deep, conceptual understanding of the topic. Encouraging students to express their mathematical thinking in writing helps them solidify their learning.*

- How would you explain that strategy to someone who didn't understand?
- How do you determine which strategy is the most efficient in a given problem?
- What strategies can be used to solve multiplication problems?
- What strategies can be used to solve division problems?
- Explain and illustrate two strategies to solve the problem.
- Describe a strategy you would use to solve _____.
- Create a situation equation to match the given word problem.

Common Multiplication and Division Situations Table 2 (page 89) – Common Core State Standards for Mathematics www.pearsonrealize.com Home-School Connection Page Reteaching Pages Marzano Proficiency Scales Bank Math Formative Assessment System (MFAS) Tasks by Standard CPALMS – MFAS includes tasks that teachers can implement with their students, and rubrics that help the teacher interpret students' responses. Illustrative Mathematics Tasks by Standard The site illustrates standards with impeccably crafted tasks, videos, lesson plans, and curriculum modules. Common Core Flip Books Provides additional information and sample problems for every standard. FSA Test Item Specifications	• Write a word problem to match the given equation.

Spiral Review

**Consistent review of previously learned standards allows students multiple opportunities to master and build fluency with mathematical concepts and procedures.*

www.pearsonrealize.com
Daily Review 5-1 through 5-8