A Correlation of

INVESTIGATIONS 3
IN NUMBER, DATA, AND SPACE®

©2017

to the

Florida MAFS
Mathematics Standards
Grades K-5

SAVVAS

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To the Florida MAFS: Mathematics Standards

Introduction

This document demonstrates how ***Investigations 3*** in Number, Data, and Space**,** ©2017, aligns to Florida MAFS: Mathematics Standards, Grades K-5. Correlation references are to the Sessions of Investigations 3.

Investigations in Number, Data, and Space® 3*rd* Edition, known as Investigations 3, maintains the standard of excellence as a focused and coherent program that supports students to make sense of mathematical ideas and supports their teachers to make sense of both mathematics content and student thinking.

The guiding principles from ***Investigations 2*****nd** Edition are maintained in ***Investigations 3***. These guiding principles follow:

> 1) Students have mathematical ideas and are given the opportunity to learn in an environment that focuses on making sense of mathematics. Students build on the ideas they already have and learn about new mathematics they have never encountered.
> 2) Teachers are engaged in ongoing learning about mathematics content, pedagogy, and student learning.
> 3) Teachers collaborate with the students and use the curriculum to maintain a clear, focused, and coherent agenda for mathematics teaching.

Investigations 3 ensures that its instructional approach works in a wide variety of classrooms. It maintains full availability for classrooms that use print materials and provides access to digital enhancements for both teachers and students in classrooms with regular or periodic access to those technologies.

Investigations 3 offers digital tools and technologies to enhance its research-based, field tested, and proven instructional model. These tools provide teachers with easy access to the professional development materials that are a hallmark of the program, support classroom management tasks, and help students capture and share their work.

Core program resources for teaching and learning will be made available on Savvas' latest learning management system, Savvas Realize™.

A Correlation of Investigations 3 in Number, Data, and Space ©2017
To the Florida MAFS: Mathematics Standards

Table of Contents

A Correlation of Investigations 3 in Number, Data, and Space ©2017
To the Florida MAFS: Mathematics Standards

Kindergarten Units

Unit 1 - Counting People, Sorting Buttons

Unit 2 - Counting Quantities, Comparing Lengths

Unit 3 - Make a Shape, Fill a Hexagon

Unit 4 - Collect, Count and Measure

Unit 5 - Build a Block, Build a Wall

Unit 6 - How Many Now?

Unit 7 - How Many Noses? How Many Eyes?

Unit 8 - Ten Frames and Teen Numbers

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To the Florida MAFS: Mathematics Standards

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MAFS.K.CC.1.1: Count to 100 by ones and by tens.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 2:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.8, 1.10, 2.1, 2.2, 2.4, 2.6, 2.8, 2.10, 2.12 **Unit 3:** 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.1, 1.4, 1.7, 1.9, 1.10, 2.2, 2.3, 2.5, 2.7, 3.2, 3.4, 3.5 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.5, 3.2, 3.4, 3.5 **Unit 7:** 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 **Unit 8:** 1.5, 1.6, 1.7, 2.2, 2.3, 2.4, 2.6, 2.7, 2.8, 2.10, 3.1, 3.3, 3.5
MAFS.K.CC.1.2: Count forward beginning from a given number within the known sequence (instead of having to begin at 1).	**Unit 4:** 2.3, 2.4, 2.5, 2.6, 2.7, 3.2, 3.3, 3.4, 3.5 **Unit 5:** 1.5 **Unit 6:** 1.2, 1.3, 1.4, 1.5, 1.6 **Unit 7:** 3.7 **Unit 8:** 2.6, 2.7, 2.8, 2.10, 3.1, 3.2, 3.3, 3.4, 3.5
MAFS.K.CC.1.3: Read and write numerals from 0 to 20. Represent a number of objects with a written numeral 0–20 (with 0 representing a count of no objects).	**Unit 1:** 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 2:** 1.2, 1.4, 1.6, 1.8, 1.9, 1.10, 2.2, 2.3, 2.4, 2.6, 2.8, 2.9, 2.10 **Unit 3:** 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10, 2.2, 2.3, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10 **Unit 6:** 1.1, 1.2, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.2, 1.3, 2.2, 2.3, 3.1, 3.2, 3.4, 3.5, 3.6, 3.8 **Unit 8:** 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8, 2.10, 3.1, 3.2, 3.3, 3.4, 3.5

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To the Florida MAFS: Mathematics Standards

Florida MAFS: Mathematics Standards Kindergarten	**Investigations 3 in Number, Data, and Space ©2017 Kindergarten**
MAFS.K.CC.2.4: Understand the relationship between numbers and quantities; connect counting to cardinality.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.5 **Unit 2:** 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.10, 2.1, 2.3, 2.5, 2.7, 2.8, 2.9, 2.10, 2.12 **Unit 3:** 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.1, 1.4, 1.6, 1.8, 1.10, 2.1, 2.2, 2.4, 2.6, 2.7, 3.1, 3.3, 3.4, 3.5, 3.6 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4, 2.6, 2.8, 3.1, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 **Unit 8:** 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 2.2, 2.3, 2.4, 2.6, 2.7, 2.8, 2.10, 3.1, 3.3, 3.4, 3.5
a. When counting objects, say the number names in the standard order, pairing each object with one and only one number name and each number name with one and only one object.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.5 **Unit 2:** 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.10, 2.1, 2.3, 2.5, 2.7, 2.8, 2.9, 2.10, 2.12 **Unit 3:** 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.1, 1.4, 1.6, 1.8, 1.10, 2.1, 2.2, 2.4, 2.6, 2.7, 3.1, 3.3, 3.4, 3.5, 3.6 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4, 2.6, 2.8, 3.1, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 **Unit 8:** 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 2.2, 2.3, 2.4, 2.6, 2.7, 2.8, 2.10, 3.1, 3.3, 3.4, 3.5
b. Understand that the last number name said tells the number of objects counted. The number of objects is the same regardless of their arrangement or the order in which they were counted.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.5 **Unit 2:** 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.10, 2.1, 2.3, 2.5, 2.7, 2.8, 2.9, 2.10, 2.12 **Unit 3:** 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.1, 1.4, 1.6, 1.8, 1.10, 2.1, 2.2, 2.4, 2.6, 2.7, 3.1, 3.3, 3.4, 3.5, 3.6 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4, 2.6, 2.8, 3.1, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 **Unit 8:** 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 2.2, 2.3, 2.4, 2.6, 2.7, 2.8, 2.10, 3.1, 3.3, 3.4, 3.5

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To the Florida MAFS: Mathematics Standards

Florida MAFS: Mathematics Standards Kindergarten	**Investigations 3 in Number, Data, and Space ©2017 Kindergarten**
c. Understand that each successive number name refers to a quantity that is one larger.	**Unit 1:** 1.1, 1.2, 1.3, 1.5, 2.1, 2.5 **Unit 2:** 1.1 **Unit 4:** 1.6, 1.7, 1.8, 1.10, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 6:** 1.3, 1.4, 1.5, 1.6 **Unit 7:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
MAFS.K.CC.2.5: Count to answer "how many?" questions about as many as 20 things arranged in a line, a rectangular array, or a circle, or as many as 10 things in a scattered configuration; given a number from 1–20, count out that many objects.	**Unit 1:** 1.1, 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 3.1, 3.3, 3.5, 3.6 **Unit 2:** 1.1, 1.3, 1.4, 1.6, 1.8, 1.9, 1.10, 2.1, 2.2, 2.3, 2.5, 2.7, 2.9, 2.11, 2.12 **Unit 3:** 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.1, 1.5, 1.7, 1.10, 2.2, 2.4, 2.6, 2.7, 3.1, 3.4, 3.6 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10 **Unit 6:** 1.1, 1.3, 1.5, 1.6, 2.1, 2.3, 2.5, 2.6, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 8:** 1.1, 1.2, 1.3, 1.5, 1.6, 1.7, 2.1, 2.2, 2.4, 2.6, 2.8, 2.10, 3.1, 3.2, 3.3, 3.4, 3.5
MAFS.K.CC.3.6: Identify whether the number of objects in one group is greater than, less than, or equal to the number of objects in another group, e.g., by using matching and counting strategies.	**Unit 1:** 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 2:** 1.2, 1.3, 1.5, 1.6, 1.7, 1.9, 1.10, 2.1, 2.2, 2.5, 2.7, 2.8, 2.11, 2.12 **Unit 3:** 1.2, 1.4, 1.5, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.10, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.2, 3.3 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.9, 1.10 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.7, 2.8, 3.2, 3.4, 3.5 **Unit 7:** 1.4, 2.1, 2.2, 2.3, 3.2, 3.4, 3.5, 3.6, 3.8 **Unit 8:** 1.5, 1.6, 1.7, 2.2, 2.3, 2.4, 2.7, 2.8, 2.10, 3.1, 3.2, 3.3, 3.4, 3.5
MAFS.K.CC.3.7: Compare two numbers between 1 and 10 presented as written numerals.	**Unit 2:** 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12 **Unit 4:** 3.2, 3.3 **Unit 6:** 1.1, 1.2, 1.3
MAFS.K.G.1.1: Describe objects in the environment using names of shapes, and describe the relative positions of these objects using terms such as *above, below, beside, in front of, behind, and next to.*	**Unit 3:** 1.1, 1.2, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 2.6, 2.7 **Unit 4:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10

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To the Florida MAFS: Mathematics Standards

Florida MAFS: Mathematics Standards Kindergarten	**Investigations 3 in Number, Data, and Space ©2017 Kindergarten**
MAFS.K.G.1.2: Correctly name shapes regardless of their orientations or overall size.	**Unit 3:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 **Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10 **Unit 7:** 1.1, 1.2, 1.3, 2.2, 2.3, 3.2
MAFS.K.G.1.3: Identify shapes as two-dimensional (lying in a plane, "flat") or three-dimensional ("solid").	**Unit 3:** 1.1, 1.4, 1.5, 2.1, 2.2, 2.4, 2.6, 2.7 **Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10
MAFS.K.G.2.4: Analyze and compare two- and three-dimensional shapes, in different sizes and orientations, using informal language to describe their similarities, differences, parts (e.g., number of sides and vertices/"corners") and other attributes (e.g., having sides of equal length).	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 3:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 **Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10 **Unit 7:** 1.1, 1.2, 1.3, 2.2, 2.3, 3.2
MAFS.K.G.2.5: Model shapes in the world by building shapes from components (e.g., sticks and clay balls) and drawing shapes.	**Unit 3:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 2.6, 2.7 **Unit 5:** 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10
MAFS.K.G.2.6: Compose simple shapes to form larger shapes. *For example, "Can you join these two triangles with full sides touching to make a rectangle?"*	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 3:** 1.2, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 **Unit 4:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 5:** 1.6, 1.7, 1.8, 1.9, 1.10
MAFS.K.MD.1.1: Describe measurable attributes of objects, such as length or weight. Describe several measurable attributes of a single object.	**Unit 2:** 2.1, 2.2, 2.3, 2.4 **Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7. 1.8 **Unit 6:** 1.1, 1.2, 1.3 **Unit 8:** 2.3, 2.4, 2.6, 3.1
MAFS.K.MD.1.2: Directly compare two objects with a measurable attribute in common, to see which object has "more of"/"less of" the attribute, and describe the difference. *For example, directly compare the heights of two children and describe one child as taller/shorter.*	**Unit 2:** 2.1, 2.2, 2.3, 2.4, 2.6, 2.7, 2.8, 2.9, 2.10, 2.11, 2.12 **Unit 4:** 1.1, 1.2, 1.4 **Unit 6:** 1.1, 1.2, 1.3 **Unit 8:** 2.3, 2.4, 2.6, 3.1, 3.2, 3.3, 3.5

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To the Florida MAFS: Mathematics Standards

Florida MAFS: Mathematics Standards Kindergarten	**Investigations 3 in Number, Data, and Space ©2017 Kindergarten**
MAFS.K.MD.1.a: Express the length of an object as a whole number of length units, by laying multiple copies of a shorter object (the length unit) end to end; understand that the length measurement of an object is the number of same-size length units that span it with no gaps or overlaps. *Limit to contexts where the object being measured is spanned by a whole number of length units with no gaps or overlaps.*	**Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5
MAFS.K.MD.2.3: Classify objects into given categories; count the numbers of objects in each category and sort the categories by count.	**Unit 1:** 3.1, 3.3, 3.4, 3.5, 3.6 **Unit 2:** 2.1, 2.2, 2.3, 2.4 **Unit 3:**1.2, 1.3 **Unit 5:** 1.1, 1.2, 1.3 **Unit 6:** 1.5, 1.6 **Unit 7:**1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.7, 3.2, 3.4, 3.5, 3.6
MAFS.K.NBT.1.1: Compose and decompose numbers from 11 to 19 into ten ones and some further ones, e.g., by using objects or drawings, and record each composition or decomposition by a drawing or equation (e.g., 18 = 10 + 8); understand that these numbers are composed of ten ones and one, two, three, four, five, six, seven, eight, or nine ones.	**Unit 6:** 3.5 **Unit 8:** 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 3.1, 3.2, 3.3, 3.4, 3.5
MAFS.K.OA.1.1: Represent addition and subtraction with objects, fingers, mental images, drawings, sounds (e.g., claps), acting out situations, verbal explanations, expressions, or equations.	**Unit 4:** 1.6, 1.7, 1.8, 1.9, 1.10, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 6:** 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.2, 1.3, 2.1, 2.2, 2.3, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 **Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 3.1, 3.2, 3.3, 3.4, 3.5
MAFS.K.OA.1.2: Solve addition and subtraction word problems[1], and add and subtract within 10, e.g., by using objects or drawings to represent the problem ([1]Students are not required to independently read the word problems.)	**Unit 4:** 1.6, 1.7, 1.8, 1.9, 1.10, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7 **Unit 6:** 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.2, 1.3, 2.2, 2.3, 3.2, 3.3, 3.4, 3.5, 3.6, 3.8 **Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5

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To the Florida MAFS: Mathematics Standards

Florida MAFS: Mathematics Standards Kindergarten	**Investigations 3 in Number, Data, and Space ©2017 Kindergarten**
MAFS.K.OA.1.4: For any number from 1 to 9, find the number that makes 10 when added to the given number, e.g., by using objects or drawings, and record the answer with a drawing or equation.	**Unit 4:** 2.3, 2.4, 2.5, 2.6, 2.7, 3.5 **Unit 6:** 2.1, 2.2, 2.5, 2.6, 2.7, 2.8, 3.1 **Unit 8:** 1.2, 1.3, 1.4, 1.5, 1.6, 1.7
MAFS.K.OA.1.5: Fluently add and subtract within 5.	**Unit 4:** 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 6:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 8:** 2.1, 2.2, 2.3, 2.4
MAFS.K.OA.1.a: Use addition and subtraction within 10 to solve word problems involving both addends unknown, e.g., by using objects, drawings, and equations with symbols for the unknown numbers to represent the problem. (Students are not required to independently read the word problems.)	**Unit 6:** 2.3, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.4, 3.6 **Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7

A Correlation of Investigations 3 in Number, Data, and Space ©2017
To the Florida MAFS: Mathematics Standards

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MAFS.K12.MP.1.1: **Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	**Unit 1:** 1.1, 1.2, 1.5, 2.1, 2.3, 3.1, 3.2, 3.4 **Unit 7:** 1.1, 1.2, 2.1, 2.2, 2.3, 3.1, 3.2, 3.4, 3.8

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MAFS.K12.MP.2.1: **Reason abstractly and quantitatively**. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects	**Unit 4:** 1.2, 1.3, 1.5, 1.6, 2.2, 2.3, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.1, 1.2, 1.4, 2.2, 3.3, 3.4, 3.5, 3.7, 3.8

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MAFS.K12.MP.3.1: **Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	**Unit 5:** 1.2, 1.3, 1.4, 1.6, 1.7, 1.9, 1.10 **Unit 6:** 1.1, 1.4, 1.5, 1.6, 2.2, 2.6, 3.2, 3.5, 3.6

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MAFS.K12.MP.4.1: **Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	**Unit 2:** 1.1, 1.3, 1.4, 1.9, 2.1, 2.6, 2.11, 2.12 **Unit 5:** 1.1, 1.2, 1.7, 1.9, 1.10

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MAFS.K12.MP.5.1: **Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	**Unit 1:** 1.1, 1.4, 1.5, 2.1, 2.4 **Unit 6:** 1.1, 1.2, 1.3, 1.6, 2.3, 2.4, 2.6, 2.7, 2.8, 3.1, 3.3, 3.5, 3.6

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MAFS.K12.MP.6.1: **Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	**Unit 3:** 1.1, 1.2, 1.3, 1.4, 2.2, 2.3, 2.5, 2.6, 2.7 **Unit 4:** 1.1, 1.2, 1.3, 1.5, 1.6, 1.8, 2.1, 2.4, 3.2, 3.3, 3.5, 3.6

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MAFS.K12.MP.7.1: **Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.	**Unit 3:** 1.2, 2.1, 2.2, 2.3, 2.5, 2.6, 2.7 **Unit 8:** 1.1, 1.2, 1.4, 1.5, 2.2, 2.5, 2.6, 2.7, 2.8, 2.9, 2.10, 3.1, 3.4, 3.5

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MAFS.K12.MP.8.1: **Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	**Unit 2:** 1.1, 1.3, 1.6, 2.1, 2.11, 2.12 **Unit 8:** 2.1, 2.3, 2.5, 2.9, 2.10, 3.4, 3.5
LAFS.K.SL.1.1: Participate in collaborative conversations with diverse partners about *kindergarten topics* and texts with peers and adults in small and larger groups.	Kindergarten students are led through collaborative conversations in each session as they learn to apply new concepts. They answer open-ended questions in a large group context as well as discuss with their peers during hands-on activities.
a. Follow agreed-upon rules for discussions (e.g., listening to others and taking turns speaking about the topics and texts under discussion).	Teachers guide students in taking turns, listening, and responding appropriately when others are sharing their understanding of the topic.
b. Continue a conversation through multiple exchanges.	During group discussions and activities, students are encouraged to answer questions, state their opinions, respond to the answers of other students. Each lesson is designed so that learning happens through interaction.

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Florida MAFS: Mathematics Standards Kindergarten	**Investigations 3 in Number, Data, and Space ©2017 Kindergarten**
LAFS.K.SL.1.2: Confirm understanding of a text read aloud or information presented orally or through other media by asking and answering questions about key details and requesting clarification if something is not understood.	As each new concept is presented, Investigations gives multiple opportunities for teachers to check for understanding. Casual conversation, direct questioning, and ongoing assessments are just a few of the ways students are assessed for understanding of the topic. "Differentiation" and "Checking-In" are two specific sections in each session that are focused on asking questions.
LAFS.K.SL.1.3: Ask and answer questions in order to seek help, get information, or clarify something that is not understood.	The "Checking-In" and "Discussion" sections of each session are designed to allow both teachers and students to ask and answer questions about specific issues.
LAFS.K.W.1.2: Use a combination of drawing, dictating, and writing to compose informative/explanatory texts in which they name what they are writing about and supply some information about the topic.	Investigations includes multiple activities for students to learn about the process of communicating mathematical ideas through drawing, writing, and verbalizing their own thoughts. Students also use manipulatives to express their understanding of addition and subtraction.
ELD.K12.ELL.MA.1: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.	"Differentiation" sections within each session include support for English Language Learners. ELL students receive extra support in vocabulary, visual, kinesthetic, and auditory examples and activities.
ELD.K12.ELL.SI.1: English language learners communicate for social and instructional purposes within the school setting.	ELL students learn to interact and communicate with other students as they engage in regular session activities, as well as the "Differentiation" options included in each session.

Grade 1 Units

Unit 1 - Building Numbers and Solving Story Problems

Unit 2 - Comparing and Combining Shapes

Unit 3 - How Many of Each? How Many in All

Unit 4 - Fish Lengths and Fraction Rugs

Unit 5 - Number Games and Crayon Problems

Unit 6 - Would You Rather Be an Eagle or a Whale?

Unit 7 - How Many Tens? How Many Ones?

Unit 8 - Blocks and Buildings

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To the Florida MAFS: Mathematics Standards

Florida MAFS: Mathematics Standards Grade 1	**Investigations 3 in Number, Data, and Space ©2017 Grade 1**
MAFS.1.G.1.1: Distinguish between defining attributes (e.g., triangles are closed and three-sided) versus non-defining attributes (e.g., color, orientation, overall size); build and draw shapes to possess defining attributes.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5 **Unit 2:** 1.1, 1.2, 1.3, 1.4, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5 **Unit 4:** 2.2, 2.3 **Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9
MAFS.1.G.1.2: Compose two-dimensional shapes (rectangles, squares, trapezoids, triangles, half-circles, and quarter-circles) or three-dimensional shapes (cubes, right rectangular prisms, right circular cones, and right circular cylinders) to create a composite shape, and compose new shapes from the composite shape.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5 **Unit 2:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7 **Unit 4:** 2.2, 2.3, 2.4, 2.5 **Unit 8:** 1.3, 1.5, 1.6, 1.7, 1.8, 1.9
MAFS.1.G.1.3: Partition circles and rectangles into two and four equal shares, describe the shares using the words *halves*, *fourths*, and *quarters*, and use the phrases *half of*, *fourth of*, and *quarter of*. Describe the whole as two of, or four of the shares. Understand for these examples that decomposing into more equal shares creates smaller shares.	**Unit 4:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6
MAFS.1.MD.1.1: Order three objects by length; compare the lengths of two objects indirectly by using a third object.	**Unit 4:** 1.1, 1.2, 1.3
MAFS.1.MD.1.a: Understand how to use a ruler to measure length to the nearest inch.	For related content, please see: **Unit 4:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8
a. Recognize that the ruler is a tool that can be used to measure the attribute of length.	For related content, please see: **Unit 4:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8
b. Understand the importance of the zero point and end point and that the length measure is the span between two points.	For related content, please see: **Unit 4:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8

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c. Recognize that the units marked on a ruler have equal length intervals and fit together with no gaps or overlaps. These equal interval distances can be counted to determine the overall length of an object.	For related content, please see: **Unit 4:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8
MAFS.1.MD.2.3: Tell and write time in hours and half-hours using analog and digital clocks.	**Unit 1:** 1.4 **Unit 4:** 1.2, 2.1, 2.5 **Unit 8:** 1.6
MAFS.1.MD.2.a: Identify and combine values of money in cents up to one dollar working with a single unit of currency.	**Unit 1:** 1.2, 1.3, 1.5, 2.1, 2.6, 3.5, 3.6 **Unit 5:** 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 6:** 1.3, 1.5, 2.2, 2.3 **Unit 7:** 1.1, 1.2, 1.3, 3.4
a. Identify the value of coins (pennies, nickels, dimes, quarters).	For related content, please see: **Unit 1:** 1.2, 1.3, 1.5, 2.1, 2.6, 3.5, 3.6 **Unit 5:** 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 6:** 1.3, 1.5, 2.2, 2.3 **Unit 7:** 1.1, 1.2, 1.3, 3.4
b. Compute the value of combinations of coins (pennies and/or dimes).	**Unit 1:** 1.2, 1.3, 1.5, 2.1, 2.6, 3.5, 3.6 **Unit 5:** 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 6:** 1.3, 1.5, 2.2, 2.3 **Unit 7:** 1.1, 1.2, 1.3, 3.4
c. Relate the value of pennies, dimes, and quarters to the dollar (e.g., There are 100 pennies *or* ten dimes *or* four quarters in one dollar.) ([1]Students are not expected to understand the decimal notation for combinations of dollars and cents.)	For related content, please see: **Unit 1:** 1.2, 1.3, 1.5, 2.1, 2.6, 3.5, 3.6 **Unit 5:** 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 6:** 1.3, 1.5, 2.2, 2.3 **Unit 7:** 1.1, 1.2, 1.3, 3.4
MAFS.1.MD.3.4: Organize, represent, and interpret data with up to three categories; ask and answer questions about the total number of data points, how many in each category, and how many more or less are in one category than in another.	**Unit 1:** 1.5 **Unit 2:** 2.1, 2.2, 2.3, 2.4 **Unit 3:** 4.1 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.1, 2.2, 2.3
MAFS.1.NBT.1.1: Count to 120, starting at any number less than 120. In this range, read and write numerals and represent a number of objects with a written numeral.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 3.6 **Unit 2:** 2.3 **Unit 3:** 4.1, 4.2, 4.3, 4.4, 4.5, 4.6, 4.7, 4.8 **Unit 7:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8

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Florida MAFS: Mathematics Standards Grade 1	**Investigations 3 in Number, Data, and Space ©2017 Grade 1**
MAFS.1.NBT.2.2: Understand that the two digits of a two-digit number represent amounts of tens and ones.	**Unit 1:** 1.3, 1.4, 1.5 **Unit 3:** 1.2, 1.4, 2.4, 4.4 **Unit 5:** 2.1, 2.3 **Unit 6:** 1.1 **Unit 7:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
a. 10 can be thought of as a bundle of ten ones — called a "ten."	**Unit 1:** 1.3, 1.4, 1.5 **Unit 3:** 1.2, 1.4
b. The numbers from 11 to 19 are composed of a ten and one, two, three, four, five, six, seven, eight, or nine ones.	**Unit 1:** 1.5 **Unit 3:** 1.2, 1.4, 2.4 **Unit 5:** 2.1
c. The numbers 10, 20, 30, 40, 50, 60, 70, 80, 90 refer to one, two, three, four, five, six, seven, eight, or nine tens (and 0 ones).	**Unit 6:** 1.1 **Unit 7:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 3.1, 3.3
d. Decompose two-digit numbers in multiple ways (e.g., 64 can be decomposed into 6 tens and 4 ones or into 5 tens and 14 ones).	**Unit 5:** 2.3 **Unit 7:** 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.5, 3.1, 3.2, 3.3, 3.4, 3.6
MAFS.1.NBT.2.3: Compare two two-digit numbers based on meanings of the tens and ones digits, recording the results of comparisons with the symbols >, =, and <.	**Unit 1:** 2.5, 3.6 **Unit 3:** 3.3, 3.4 **Unit 7:** 1.6, 2.2, 2.4, 2.5, 2.6, 2.7, 2.8
MAFS.1.NBT.3.4: Add within 100, including adding a two-digit number and a one-digit number, and adding a two-digit number and a multiple of 10, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used. Understand that in adding two-digit numbers, one adds tens and tens, ones and ones; and sometimes it is necessary to compose a ten.	**Unit 7:** 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8

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Florida MAFS: Mathematics Standards Grade 1	Investigations 3 in Number, Data, and Space ©2017 Grade 1
MAFS.1.NBT.3.5: Given a two-digit number, mentally find 10 more or 10 less than the number, without having to count; explain the reasoning used.	**Unit 7:** 1.3, 1.4, 1.5, 1.6, 1.8, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
MAFS.1.NBT.3.6: Subtract multiples of 10 in the range 10-90 from multiples of 10 in the range 10-90 (positive or zero differences), using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	**Unit 7:** 1.6, 1.7, 1.8
MAFS.1.OA.1.1: Use addition and subtraction within 20 to solve word problems[1] involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem ([1]Students are not required to independently read the word problems.)	**Unit 1:** 2.3, 2.4, 2.6, 2.7, 2.8, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7 **Unit 3:** 2.1, 2.4, 2.6, 2.7, 2.8, 3.1, 3.2, 3.6 **Unit 4:** 1.5, 1.6, 1.7, 1.8, 2.6 **Unit 5:** 1.1, 1.5, 1.6, 1.7, 1.8, 2.3, 2.4, 2.6, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.3
MAFS.1.OA.1.2: Solve word problems that call for addition of three whole numbers whose sum is less than or equal to 20, e.g., by using objects, drawings, and equations with a symbol for the unknown number to represent the problem.	**Unit 2:** 1.3 **Unit 3:** 3.1, 3.6 **Unit 6:** 2.1, 2.2, 2.3 **Unit 7:** 1.1, 1.2
MAFS.1.OA.2.3: Apply properties of operations as strategies to add and subtract. *Examples: If 8 + 3 = 11 is known, then 3 + 8 = 11 is also known. (Commutative property of addition.) To add 2 + 6 + 4, the second two numbers can be added to make a ten, so 2 + 6 + 4 = 2 + 10 = 12. (Associative property of addition.)*	**Unit 1:** 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7 **Unit 2:** 1.3 **Unit 3:** 1.1, 2.1, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.6, 4.8 **Unit 4:** 1.5, 1.6, 1.7, 1.8, 2.6 **Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7
MAFS.1.OA.2.4: Understand subtraction as an unknown-addend problem. *For example, subtract 10 – 8 by finding the number that makes 10 when added to 8.*	**Unit 1:** 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 3:** 1.3, 2.2, 2.3, 2.7 **Unit 4:** 1.5, 1.6, 1.7, 1.8, 2.6 **Unit 5:** 1.1, 1.5, 1.6, 1.7, 1.8, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7

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Florida MAFS: Mathematics Standards Grade 1	**Investigations 3 in Number, Data, and Space ©2017 Grade 1**
MAFS.1.OA.3.5: Relate counting to addition and subtraction (e.g., by counting on 2 to add 2).	**Unit 1:** 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 3:** 1.1, 1.3, 1.4, 2.5, 3.1, 3.2 **Unit 5:** 2.4, 2.6 **Unit 7:** 1.1, 1.2, 1.3
MAFS.1.OA.3.6: Add and subtract within 20, demonstrating fluency for addition and subtraction within 10. Use strategies such as counting on; making ten (e.g., 8 + 6 = 8 + 2 + 4 = 10 + 4 = 14); decomposing a number leading to a ten (e.g., 13 – 4 = 13 – 3 – 1 = 10 – 1 = 9); using the relationship between addition and subtraction (e.g., knowing that 8 + 4 = 12, one knows 12 – 8 = 4); and creating equivalent but easier or known sums (e.g., adding 6 + 7 by creating the known equivalent 6 + 6 + 1 = 12 + 1 = 13).	**Unit 1:** 2.1, 2.2, 2.4, 2.6, 2.8, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 2:** 1.1, 1.2, 1.3, 1.4 **Unit 3:** 1.1, 1.3, 1.4, 2.1, 2.4, 2.6, 3.1, 3.2, 3.3, 3.5, 4.8 **Unit 4:** 1.5, 1.6, 1.7, 1.8, 2.6 **Unit 5:** 1.2, 1.4, 1.6, 1.8, 2.2, 2.5, 2.7, 2.8, 3.3, 3.5, 3.7 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.3 **Unit 7:** 1.1, 1.2, 1.3, 2.1, 2.2, 2.4, 2.5
MAFS.1.OA.4.7: Understand the meaning of the equal sign, and determine if equations involving addition and subtraction are true or false. *For example, which of the following equations are true and which are false? 6 = 6, 7 = 8 – 1, 5 + 2 = 2 + 5, 4 + 1 = 5 + 2.*	**Unit 1:** 2.2, 2.4, 2.5, 2.6, 3.2, 3.4 **Unit 3:** 1.2, 2.5, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 4.8 **Unit 5:** 2.1, 2.3, 2.5, 2.7, 2.8, 3.1, 3.6
MAFS.1.OA.4.8: Determine the unknown whole number in an addition or subtraction equation relating to three whole numbers. *For example, determine the unknown number that makes the equation true in each of the equations 8 + ? = 11, 5 = [] – 3, 6 + 6 = [].*	**Unit 1:** 2.3, 2.5, 2.6, 2.7, 2.8, 3.2, 3.3, 3.4, 3.6, 3.7 **Unit 3:** 1.1, 1.3, 1.4 **Unit 4:** 1.6 **Unit 5:** 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.6, 1.7, 1.8

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MAFS.K12.MP.1.1: **Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	**Unit 1:** 1.1, 1.2, 2.3, 2.4, 2.7, 2.8, 3.1, 3.2, 3.4, 3.6, 3.7 **Unit 6:** 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2

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MAFS.K12.MP.2.1: **Reason abstractly and quantitatively**. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	**Unit 3:** 1.1, 1.2, 2.1, 2.2, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.5 **Unit 7:** 1.1, 1.3, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8, 3.1, 3.2, 3.6

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MAFS.K12.MP.3.1: **Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	**Unit 2:** 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4 **Unit 5:** 1.1, 1.4, 2.1, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 3.1, 3.5

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MAFS.K12.MP.4.1: **Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	**Unit 4:** 1.1, 1.2, 1.3, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2

Florida MAFS: Mathematics Standards Grade 1	**Investigations 3 in Number, Data, and Space ©2017 Grade 1**
MAFS.K12.MP.5.1: **Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	**Unit 2:** 1.1, 1.6, 1.7, 2.2, 2.3, 2.4 **Unit 4:** 1.2, 1.3, 1.4, 1.5, 1.6, 1.7

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MAFS.K12.MP.6.1: **Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	**Unit 3:** 1.2, 2.2, 2.4, 2.5, 2.8, 3.1, 3.2, 3.4, 4.1 **Unit 8:** 1.1, 1.2, 1.3, 1.5, 1.6

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MAFS.K12.MP.7.1: **Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.	**Unit 5:** 1.2, 1.4, 2.1, 2.2, 2.3, 2.4, 2.5, 2.7, 2.8, 3.1, 3.3 **Unit 8:** 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8

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Florida MAFS: Mathematics Standards Grade 1	**Investigations 3 in Number, Data, and Space ©2017 Grade 1**
MAFS.K12.MP.8.1: **Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	**Unit 1:** 1.2, 1.4, 2.2, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5 **Unit 7:** 1.2, 1.4, 2.2, 2.3, 2.5, 2.6, 2.7, 3.1, 3.3, 3.4, 3.5, 3.6, 3.7
LAFS.1.SL.1.1: Participate in collaborative conversations with diverse partners about grade 1 topics and texts with peers and adults in small and larger groups.	Grade 1 students are led through collaborative conversations in each session as they learn to apply new concepts. They answer open-ended questions in a large group context as well as discuss with their peers during hands-on activities.
a. Follow agreed-upon rules for discussions (e.g., listening to others with care, speaking one at a time about the topics and texts under discussion).	Teachers guide students in taking turns, listening, and responding appropriately when others are sharing their understanding of the topic.
b. Build on others' talk in conversations by responding to the comments of others through multiple exchanges.	During group discussions and activities, students are encouraged to answer questions, state their opinions, respond to the answers of other students. Each lesson is designed so that learning happens through interaction.

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c. Ask questions to clear up any confusion about the topics and texts under discussion.	The teacher's edition includes guided discussion questions, as well as possible questions that may come from students during specific activities. Students are encouraged to ask questions and to verbalize the challenges they face with each topic.
LAFS.1.SL.1.2: Ask and answer questions about key details in a text read aloud or information presented orally or through other media.	As each new concept is presented, Investigations gives multiple opportunities for teachers to check for understanding. Casual conversation, direct questioning, and ongoing assessments are just a few of the ways students are assessed for understanding of the topic. "Intervention" and "Discussion" are two specific sections in each session that are focused on both students and teachers asking questions.
LAFS.1.SL.1.3: Ask and answer questions about what a speaker says in order to gather additional information or clarify something that is not understood.	The "Discussion" section of each session is designed to allow both teachers and students to ask and answer questions about specific issues.
LAFS.K12.W.1.2: Write informative/explanatory texts to examine and convey complex ideas and information clearly and accurately through the effective selection, organization, and analysis of content.	Investigations includes multiple activities for students to learn about the process of communicating mathematical ideas through drawing, writing, and verbalizing their own thoughts.
ELD.K12.ELL.MA.1: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.	"Differentiation" sections within each session include support for English Language Learners. ELL students receive extra support in vocabulary, visual, kinesthetic, and auditory examples and activities.
ELD.K12.ELL.SI.1: English language learners communicate for social and instructional purposes within the school setting.	ELL students learn to interact and communicate with other students as they engage in regular session activities, as well as the "Differentiation" options included in each session.

Grade 2 Units

Unit 1 – Coins, Numbers Strings, and Story Problem

Unit 2 – Attributes of Shapes and Parts of a Whole

Unit 3 – How Many Stickers? How Many Cents?

Unit 4 – Pockets, Teeth, and Guess My Rule

Unit 5 – How Many Tens? How Many Hundreds?

Unit 6 - How Far Can You Jump?

Unit 7 – Partners, Teams, and Other Groups

Unit 8 – Enough for the Class? Enough for the Grade?

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Florida MAFS: Mathematics Standards Grade 2	**Investigations 3 in Number, Data, and Space ©2017 Grade 2**
MAFS.2.G.1.1: Recognize and draw shapes having specified attributes, such as a given number of angles or a given number of equal faces. Identify triangles, quadrilaterals, pentagons, hexagons, and cubes.	**Unit 1:** 1.2, 1.3, 1.4, 1.5 **Unit 2:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1
MAFS.2.G.1.2: Partition a rectangle into rows and columns of same-size squares and count to find the total number of them.	**Unit 2:** 2.3, 2.4, 2.5, 2.6 **Unit 7:** 2.2, 2.4, 2.6
MAFS.2.G.1.3: Partition circles and rectangles into two, three, or four equal shares, describe the shares using the words *halves, thirds, half of, a third of,* etc., and describe the whole as two halves, three thirds, four fourths. Recognize that equal shares of identical wholes need not have the same shape.	**Unit 2:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8
MAFS.2.MD.1.1: Measure the length of an object to the nearest inch, foot, centimeter, or meter by selecting and using appropriate tools such as rulers, yardsticks, meter sticks, and measuring tapes.	**Unit 6:** 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6
MAFS.2.MD.1.2: Describe the inverse relationship between the size of a unit and number of units needed to measure a given object. *Example: Suppose the perimeter of a room is lined with one-foot rulers. Now, suppose we want to line it with yardsticks instead of rulers. Will we need more or fewer yardsticks than rulers to do the job? Explain your answer.*	**Unit 6:** 2.3, 2.4, 2.5, 2.6
MAFS.2.MD.1.3: Estimate lengths using units of inches, feet, yards, centimeters, and meters.	**Unit 6:** 2.1, 2.2, 2.3, 2.4, 2.6
MAFS.2.MD.1.4: Measure to determine how much longer one object is than another, expressing the length difference in terms of a standard length unit.	**Unit 6:** 1.3, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5

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MAFS.2.MD.2.5: Use addition and subtraction within 100 to solve word problems involving lengths that are given in the same units, e.g., by using drawings (such as drawings of rulers) and equations with a symbol for the unknown number to represent the problem.	**Unit 6:** 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6
MAFS.2.MD.2.6: Represent whole numbers as lengths from 0 on a number line diagram with equally spaced points corresponding to the numbers 0, 1, 2, ..., and represent whole-number sums and differences within 100 on a number line diagram.	**Unit 1:** 1.1, 1.2, 1.3, 1.6, 2.2, 2.6, 3.3, 3.5, 3.7, 4.1, 4.2, 4.4, 4.5 **Unit 2:** 2.1, 3.4 **Unit 3:** 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.7, 2.8, 3.1, 3.3, 3.4, 3.6, 3.7 **Unit 5:** 1.1, 1.5, 3.1, 3.2, 3.5, 3.6 **Unit 6:** 2.1, 2.4 **Unit 8:** 1.1, 1.2, 1.3, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11
MAFS.2.MD.3.7: Tell and write time from analog and digital clocks to the nearest five minutes.	**Unit 2:** 1.3, 2.2, 3.7, 3.8 **Unit 3:** 2.4, 2.9, 3.4, 3.6 **Unit 4:** 1.3, 1.6, 2.3 **Unit 5:** 1.1, 1.6, 3.1 **Unit 6:** 1.1, 1.3, 2.5 **Unit 7:** 1.2, 1.4, 2.3, 2.4, 2.5 **Unit 8:** 1.1, 1.4, 1.7, 1.8, 1.9
MAFS.2.MD.3.8: Solve one- and two-step word problems involving dollar bills (singles, fives, tens, twenties, and hundreds) or coins (quarters, dimes, nickels, and pennies) using $ and ¢ symbols appropriately. Word problems may involve addition, subtraction, and equal groups situations. *Example: The cash register shows that the total for your purchase is 59¢. You gave the cashier three quarters. How much change should you receive from the cashier?*	**Unit 1:** 1.4, 1.5, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 2:** 1.1 **Unit 3:** 1.3, 1.4, 1.5, 2.5, 2.7, 2.8, 2.9, 3.1, 3.2 **Unit 4:** 2.6 **Unit 5:** 1.4, 1.5, 1.6, 2.2 **Unit 8:** 1.4, 1.5, 1.6, 1.7, 1.9, 1.10, 1.11, 2.6, 2.9
a. Identify the value of coins and paper currency.	**Unit 1:** 1.4, 1.5, 3.3, 3.4, 3.5, 3.6 **Unit 2:** 1.1 **Unit 3:** 1.3, 2.5, 2.7, 2.8, 3.1 **Unit 4:** 2.6 **Unit 5:** 1.4

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b. Compute the value of any combination of coins within one dollar	**Unit 1:** 1.5, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 2:** 1.1 **Unit 3:** 1.3, 1.4, 1.5, 2.5, 2.7, 2.8, 3.1, 3.2 **Unit 4:** 2.6 **Unit 5:** 1.4, 1.5, 1.6, 2.2 **Unit 8:** 1.4, 1.5, 1.6, 1.7, 1.9, 1.10, 1.11, 2.6, 2.9
c. Compute the value of any combinations of dollars (e.g., If you have three ten-dollar bills, one five-dollar bill, and two one-dollar bills, how much money do you have?).	For related content, please see: **Unit 1:** 1.3 **Unit 8:** 2.9
d. Relate the value of pennies, nickels, dimes, and quarters to other coins and to the dollar (e.g., There are five nickels in one quarter. There are two nickels in one dime. There are two and a half dimes in one quarter. There are twenty nickels in one dollar).	**Unit 1:** 1.4, 1.5, 3.3, 3.6 **Unit 2:** 1.1 **Unit 3:** 1.3, 2.5, 2.7, 2.8, 3.1, 3.2 **Unit 5:** 1.4 **Unit 8:** 1.4
MAFS.2.MD.4.9: Generate measurement data by measuring lengths of several objects to the nearest whole unit, or by making repeated measurements of the same object. Show the measurements by making a line plot, where the horizontal scale is marked off in whole-number units.	**Unit 4:** 2.1, 2.4, 2.5, 2.6 **Unit 6:** 1.4, 1.6, 2.4, 2.5
MAFS.2.MD.4.10: Draw a picture graph and a bar graph (with single-unit scale) to represent a data set with up to four categories. Solve simple put-together, take-apart, and compare problems using information presented in a bar graph.	**Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4
MAFS.2.NBT.1.1: Understand that the three digits of a three-digit number represent amounts of hundreds, tens, and ones; e.g., 706 equals 7 hundreds, 0 tens, and 6 ones. Understand the following as special cases:	**Unit 5:** 2.3, 2.4, 2.5, 2.6, 3.2, 3.6, 3.7 **Unit 6:** 1.1, 1.2, 1.4, 1.5, 2.2 **Unit 7:** 1.1, 2.1 **Unit 8:** 1.11, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9
a. 100 can be thought of as a bundle of ten tens — called a “hundred.”	**Unit 3:** 1.5, 1.6, 1.7, 1.8, 3.2, 3.3, 3.5, 3.6 **Unit 5:** 2.6

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b. The numbers 100, 200, 300, 400, 500, 600, 700, 800, 900 refer to one, two, three, four, five, six, seven, eight, or nine hundreds (and 0 tens and 0 ones).	**Unit 3:** 3.2, 3.3, 3.5, 3.6 **Unit 5:** 2.2, 2.3, 2.4, 2.6, 3.6, 3.8 **Unit 7:** 2.3
MAFS.2.NBT.1.2: Count within 1000; skip-count by 5s, 10s, and 100s.	**Unit 1:** 1.2, 1.3, 1.4, 1.5, 2.4, 3.1, 3.4, 3.5, 3.6, 3.7 **Unit 3:** 2.4, 3.4, 3.6, 3.7 **Unit 4:** 1.5, 2.2 **Unit 5:** 2.1, 2.6, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8 **Unit 7:** 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4
MAFS.2.NBT.1.3: Read and write numbers to 1000 using base-ten numerals, number names, and expanded form.	**Unit 1:** 1.4, 1.5, 1.6, 2.6, 3.2 **Unit 2:** 2.3 **Unit 3:** 1.5, 1.6, 1.7, 1.8, 3.3, 3.5 **Unit 5:** 1.2, 2.2, 2.3, 2.4, 2.5, 2.6, 3.2, 3.5, 3.6, 3.7, 3.8 **Unit 6:** 1.1, 1.2, 1.4, 1.5, 2.2 **Unit 7:** 1.1, 2.1 **Unit 8:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.9
MAFS.2.NBT.1.4: Compare two three-digit numbers based on meanings of the hundreds, tens, and ones digits, using >, =, and < symbols to record the results of comparisons.	**Unit 3:** 3.3, 3.5 **Unit 5:** 1.5, 1.6, 2.2, 2.3, 2.4, 2.5, 2.6, 3.5, 3.8 **Unit 6:** 1.1, 1.4 **Unit 7:** 1.1, 2.1 **Unit 8:** 2.1
MAFS.2.NBT.2.5: Fluently add and subtract within 100 using strategies based on place value, properties of operations, and/or the relationship between addition and subtraction.	**Unit 1:** 2.7, 3.6 **Unit 2:** 3.4 **Unit 3:** 1.4, 1.5, 1.8, 2.3, 2.6, 2.9, 3.1, 3.3, 3.5, 3.7 **Unit 4:** 1.1, 2.5 **Unit 5:** 1.1, 1.4, 1.5, 1.6, 2.1, 2.4, 2.6, 3.1, 3.3, 3.5 **Unit 6:** 1.1, 1.3, 1.4, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6 **Unit 7:** 1.1, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6 **Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 2.6

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MAFS.2.NBT.2.6: Add up to four two-digit numbers using strategies based on place value and properties of operations.	**Unit 3:** 1.5, 2.5, 2.6, 2.7, 2.8, 2.9, 3.6 **Unit 4:** 1.1, 2.5 **Unit 5:** 1.2, 1.3, 2.3, 3.1, 3.2, 3.3, 3.6, 3.7 **Unit 6:** 2.6 **Unit 7:** 2.2, 2.6 **Unit 8:** 1.7, 2.6, 2.9
MAFS.2.NBT.2.7: Add and subtract within 1000, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method. Understand that in adding or subtracting three digit numbers, one adds or subtracts hundreds and hundreds, tens and tens, ones and ones; and sometimes it is necessary to compose or decompose tens or hundreds.	**Unit 8:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9
MAFS.2.NBT.2.8: Mentally add 10 or 100 to a given number 100–900, and mentally subtract 10 or 100 from a given number 100–900.	**Unit 3:** 3.5, 3.6 **Unit 5:** 1.6, 2.3, 2.4, 2.5, 2.6, 3.3, 3.5, 3.6, 3.7
MAFS.2.NBT.2.9: Explain why addition and subtraction strategies work, using place value and the properties of operations.	**Unit 1:** 2.2, 2.3, 2.5, 2.8, 3.1, 3.2, 3.7, 4.1, 4.3, 4.5 **Unit 3:** 1.4, 1.5, 1.6, 1.7, 1.8, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9, 3.4, 3.7 **Unit 5:** 1.3, 1.5, 1.6, 2.2, 2.4, 3.1, 3.2, 3.4, 3.6, 3.8 **Unit 8:** 1.1, 1.3, 1.7, 1.10, 1.11, 2.1, 2.3, 2.6, 2.8, 2.9
MAFS.2.OA.1.1: Use addition and subtraction within 100 to solve one- and two-step word problems involving situations of adding to, taking from, putting together, taking apart, and comparing, with unknowns in all positions, e.g., by using drawings and equations with a symbol for the unknown number to represent the problem.	**Unit 1:** 2.3, 2.4, 3.1, 3.3, 3.6, 3.7, 4.1, 4.2, 4.4, 4.5 **Unit 2:** 1.3, 1.4, 2.1, 3.1, 3.3 **Unit 3:** 1.2, 1.3, 1.5, 1.7, 1.8, 2.4, 2.6, 2.8, 2.9, 3.1, 3.4, 3.5, 3.7 **Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.6 **Unit 5:** 1.3, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 6:** 1.2, 1.3, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6 **Unit 7:** 1.1, 1.3, 1.4, 2.3, 2.5 **Unit 8:** 1.1, 1.2, 1.4, 1.7, 1.9, 1.10, 1.11, 2.1, 2.3, 2.5, 2.6, 2.7

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MAFS.2.OA.1.a: Determine the unknown whole number in an equation relating four or more whole numbers. For example, determine the unknown number that makes the equation true in the equations 37 + 10 + 10 = _____ + 18, ? – 6 = 13 – 4, and 15 – 9 = 6 + ☐.	**Unit 3:** 3.1, 3.4, 3.6, 3.7 **Unit 5:** 2.1
MAFS.2.OA.2.2: Fluently add and subtract within 20 using mental strategies. By end of Grade 2, know from memory all sums of two one-digit numbers.	**Unit 1:** 1.1, 1.4, 1.6, 2.2, 2.4, 2.6, 2.8, 3.2, 3.3, 3.7, 4.2, 4.4, 4.5 **Unit 2:** 1.1, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1 **Unit 3:** 1.1, 1.3, 1.6, 1.7, 2.2, 2.6, 2.8, 3.2, 3.5, 3.7 **Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4, 2.5 **Unit 5:** 1.1, 1.3, 1.5, 1.6, 2.1, 2.3, 3.3, 3.7 **Unit 6:** 1.6, 2.3, 2.6 **Unit 7:** 1.1, 1.3, 2.1, 2.3, 2.5, 2.6 **Unit 8:** 1.2, 1.3, 1.5, 1.9, 2.1, 2.3, 2.5, 2.7, 2.8
MAFS.2.OA.3.3: Determine whether a group of objects (up to 20) has an odd or even number of members, e.g., by pairing objects or counting them by 2s; write an equation to express an even number as a sum of two equal addends.	**Unit 7:** 1.1, 1.2, 1.3, 1.4, 1.5
MAFS.2.OA.3.4: Use addition to find the total number of objects arranged in rectangular arrays with up to 5 rows and up to 5 columns; write an equation to express the total as a sum of equal addends.	**Unit 7:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6

Florida MAFS: Mathematics Standards Grade 2	**Investigations 3 in Number, Data, and Space ©2017 Grade 2**
MAFS.K12.MP.1.1: **Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, "Does this make sense?" They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	**Unit 1:** 1.1, 1.2, 1.4, 2.1, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 4.1, 4.2 **Unit 8:** 1.1, 1.3, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8

Florida MAFS: Mathematics Standards Grade 2	Investigations 3 in Number, Data, and Space ©2017 Grade 2
MAFS.K12.MP.2.1: **Reason abstractly and quantitatively**. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	**Unit 3:** 1.2, 1.5, 1.6, 1.7, 1.8, 2.3, 2.4, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.7 **Unit 7:** 1.1, 1.2, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6

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MAFS.K12.MP.3.1: **Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	**Unit 2:** 1.1, 1.2, 1.3, 2.2, 3.1, 3.2, 3.3, 3.4, 3.5 **Unit 7:** 1.2, 1.3, 1.4, 2.1, 2.3, 2.6

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MAFS.K12.MP.4.1: **Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	**Unit 4:** 1.1, 1.4, 1.5, 1.6, 2.3, 2.4, 2.5, 2.6 **Unit 5:** 1.3, 1.5, 1.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7

Florida MAFS: Mathematics Standards Grade 2	Investigations 3 in Number, Data, and Space ©2017 Grade 2
MAFS.K12.MP.5.1: **Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	**Unit 3:** 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 2.3, 2.4, 2.6, 2.7, 2.8, 3.1, 3.2, 3.3, 3.4, 3.7 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5

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MAFS.K12.MP.6.1: **Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	**Unit 4:** 1.1, 1.4, 1.5, 1.6, 2.4, 2.6 **Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.4

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MAFS.K12.MP.7.1: **Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7 × 8 equals the well remembered 7 × 5 + 7 × 3, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2 × 7 and the 9 as 2 + 7. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.	**Unit 2:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.1, 2.3, 2.5, 3.5 **Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.5, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7

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Florida MAFS: Mathematics Standards Grade 2	Investigations 3 in Number, Data, and Space ©2017 Grade 2
MAFS.K12.MP.8.1: **Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	**Unit 1:** 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.6, 2.7, 2.8, 3.2, 3.5, 4.2 **Unit 8:** 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 2.4, 2.5, 2.7, 2.8
LAFS.2.SL.1.1: Participate in collaborative conversations with diverse partners about grade 2 topics and texts with peers and adults in small and larger groups.	Grade 2 students are led through collaborative conversations in each session as they learn to apply new concepts. They answer open-ended questions in a large group context as well as discuss with their peers during hands-on activities.
a. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).	Teachers guide students in taking turns, listening, and responding appropriately when others are sharing their understanding of the topic.
b. Build on others' talk in conversations by linking their comments to the remarks of others.	During group discussions and activities, students are encouraged to answer questions, state their opinions, respond to the answers of other students. Each lesson is designed so that learning happens through interaction.

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c. Ask for clarification and further explanation as needed about the topics and texts under discussion.	The teacher's edition includes guided discussion questions, as well as possible questions that may come from students during specific activities. Students are encouraged to ask questions and to verbalize the challenges they face with each topic.
LAFS.2.SL.1.2: Recount or describe key ideas or details from a text read aloud or information presented orally or through other media.	As each new concept is presented, Investigations gives multiple opportunities for teachers to check for understanding. Casual conversation, direct questioning, and ongoing assessments are just a few of the ways students are assessed for understanding of the topic. "Intervention" and "Discussion" are two specific sections in each session that are focused on both students and teachers asking questions.
LAFS.2.SL.1.3: Ask and answer questions about what a speaker says in order to clarify comprehension, gather additional information, or deepen understanding of a topic or issue.	The "Discussion" section of each session is designed to allow both teachers and students to ask and answer questions about specific issues and topics.
LAFS.2.W.1.2: Write informative/explanatory texts in which they introduce a topic, use facts and definitions to develop points, and provide a concluding statement or section.	Investigations includes multiple activities for students to learn about the process of communicating mathematical ideas through drawing, writing, and verbalizing their own thoughts.
ELD.K12.ELL.MA.1: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.	"Differentiation" sections within each session include support for English Language Learners. ELL students receive extra support in vocabulary, visual, kinesthetic, and auditory examples and activities.
ELD.K12.ELL.SI.1: English language learners communicate for social and instructional purposes within the school setting.	ELL students learn to interact and communicate with other students as they engage in regular session activities, as well as the "Differentiation" options included in each session.

Grade 3 Units

Unit 1 - Understanding Equal Groups

Unit 2 Graphs and Line Plots

Unit 3 - Travel Stories and Collections

Unit 4 - Perimeter, Area, and Polygons

Unit 5 - Cube Patterns, Arrays, and Multiples of 10

Unit 6 - Fair Shares and Fractions on Number Lines

Unit 7 - How Many Miles?

Unit 8 Larger Numbers and Multi-Step Problems

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Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.3.G.1.1: 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.	**Unit 4:** 3.1, 3.2, 3.3, 3.4, 3.5
MAFS.3.G.1.2: Partition shapes into parts with equal areas. Express the area of each part as a unit fraction of the whole. *For example, partition a shape into 4 parts with equal area, and describe the area of each part as 1/4 of the area of the shape.*	**Unit 6:** 1.1, 1.2, 1.4, 1.7, 1.8, 2.5
MAFS.3.MD.1.1: Tell and write time to the nearest minute and measure time intervals in minutes. Solve word problems involving addition and subtraction of time intervals in minutes, e.g., by representing the problem on a number line diagram.	**Unit 3:** 4.1, 4.2, 4.3, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 **Unit 6:** 2.4, 2.5 **Unit 8:** 1.4, 1.5, 1.6, 3.4, 3.5
MAFS.3.MD.1.2: 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.	**Unit 3:** 1.3, 3.1 **Unit 7:** 1.5, 2.1, 3.3, 3.5, 3.6
MAFS.3.MD.2.3: Draw a scaled picture graph and a scaled bar graph to represent a data set with several categories. Solve one- and two-step "how many more" and "how many less" problems using information presented in scaled bar graphs. *For example, draw a bar graph in which each square in the bar graph might represent 5 pets.*	**Unit 2:** 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 2.6

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Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.3.MD.2.4: Generate measurement data by measuring lengths using rulers marked with halves and fourths of an inch. Show the data by making a line plot, where the horizontal scale is marked off in appropriate units— whole numbers, halves, or quarters.	**Unit 2:** 2.2, 2.4, 2.5, 2.6 **Unit 6:** 1.6
MAFS.3.MD.3.5: Recognize area as an attribute of plane figures and understand concepts of area measurement.	**Unit 4:** 2.2, 2.3, 2.4, 2.5, 2.6, 2.7
a. A square with side length 1 unit, called "a unit square," is said to have "one square unit" of area, and can be used to measure area.	**Unit 4:** 2.2, 2.3, 2.5, 2.6, 2.7
b. A plane figure which can be covered without gaps or overlaps by *n* unit squares is said to have an area of *n* square units.	**Unit 4:** 2.2, 2.3, 2.4, 2.5, 2.6, 2.7
MAFS.3.MD.3.6: Measure areas by counting unit squares (square cm, square m, square in, square ft, and improvised units).	**Unit 4:** 2.2, 2.3, 2.4, 2.5, 2.6, 2.7
MAFS.3.MD.3.7: Relate area to the operations of multiplication and addition.	**Unit 1:** 3.1, 3.3, 3.4, 3.5 **Unit 4:** 2.4, 2.5, 2.6, 2.7, 3.5 **Unit 5:** 2.1, 2.2, 2.6 **Unit 8:** 2.2
a. Find the area of a rectangle with whole-number side lengths by tiling it, and show that the area is the same as would be found by multiplying the side lengths.	**Unit 1:** 3.1, 3.3, 3.4 **Unit 4:** 2.4, 2.5, 2.6, 2.7
b. Multiply side lengths to find areas of rectangles with whole-number side lengths in the context of solving real world and mathematical problems, and represent whole-number products as rectangular areas in mathematical reasoning.	**Unit 1:** 3.3, 3.4, 3.5 **Unit 5:** 2.1

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c. Use tiling to show in a concrete case that the area of a rectangle with whole-number side lengths a and b + c is the sum of a × b and a × c. Use area models to represent the distributive property in mathematical reasoning.	**Unit 1:** 3.5 **Unit 4:** 2.5, 2.6, 2.7, 3.5 **Unit 5:** 2.1, 2.2, 2.6 **Unit 8:** 2.2
d. Recognize area as additive. Find areas of rectilinear figures by decomposing them into non-overlapping rectangles and adding the areas of the non-overlapping parts, applying this technique to solve real world problems.	**Unit 4:** 2.1, 2.2, 2.3, 2.5, 2.6, 2.7
MAFS.3.MD.4.8: 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.	**Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.4, 3.4, 3.5 **Unit 7:** 1.7
MAFS.3.NBT.1.1: Use place value understanding to round whole numbers to the nearest 10 or 100.	**Unit 3:** 2.4, 3.2, 3.3, 3.4, 3.5 **Unit 5:** 1.3
MAFS.3.NBT.1.2: 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.	**Unit 3:** 1.2, 1.5, 2.3, 2.4, 3.2, 3.3, 3.4, 3.5, 4.1, 4.2, 4.3, 4.4, 4.5, 5.1, 5.2, 5.3, 5.4, 5.5, 5.6 **Unit 5:** 1.3 **Unit 7:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6
MAFS.3.NBT.1.3: 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.	**Unit 5:** 3.1, 3.2, 3.4, 3.5
MAFS.3.NF.1.1: 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.	**Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.7, 1.8, 2.1, 2.3, 2.4, 2.5

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MAFS.3.NF.1.2: Understand a fraction as a number on the number line; represent fractions on a number line diagram.	**Unit 6:** 1.5, 1.6, 1.7, 2.2, 2.5
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.	**Unit 6:** 1.5, 2.2
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.	**Unit 6:** 1.5, 1.6, 1.7, 2.2, 2.5
MAFS.3.NF.1.3: Explain equivalence of fractions in special cases, and compare fractions by reasoning about their size.	**Unit 6:** 1.2, 1.3, 1.4, 1.5, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5
a. Understand two fractions as equivalent (equal) if they are the same size, or the same point on a number line.	**Unit 6:** 1.4, 1.5, 1.7, 2.1, 2.3, 2.4
b. Recognize and generate simple equivalent fractions, e.g., 1/2 = 2/4, 4/6 = 2/3). Explain why the fractions are equivalent, e.g., by using a visual fraction model.	**Unit 6:** 1.4, 1.5, 1.7, 2.1, 2.3, 2.4
c. Express whole numbers as fractions, and recognize fractions that are equivalent to whole numbers. *Examples: Express 3 in the form 3 = 3/1; recognize that 6/1 = 6; locate 4/4 and 1 at the same point of a number line diagram.*	**Unit 6:** 1.3, 1.5, 1.7, 2.2

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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.	**Unit 6:** 1.2, 2.2, 2.3, 2.4, 2.5
MAFS.3.OA.1.1: 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.*	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 2.1, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.3, 4.2, 4.3, 4.5, 4.6 **Unit 5:** 1.1, 1.2, 1.3
MAFS.3.OA.1.2: Interpret whole-number quotients of whole numbers, e.g., interpret 56 ÷ 8 as the number of objects in each share when 56 objects are partitioned equally into 8 shares, or as a number of shares when 56 objects are partitioned into equal shares of 8 objects each. *For example, describe a context in which a number of shares or a number of groups can be expressed as 56 ÷ 8.*	**Unit 1:** 4.1, 4.2, 4.3, 4.5, 4.6 **Unit 5:** 1.2, 1.3, 1.4, 1.5, 3.6 **Unit 8:** 1.1, 1.3
MAFS.3.OA.1.3: 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.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 2.3, 2.4, 2.5, 2.6, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6 **Unit 5:** 1.4, 1.5, 2.5, 2.6, 3.1, 3.2, 3.3, 3.5, 3.6 **Unit 8:** 1.1, 1.3, 1.4, 1.5, 1.6, 2.1, 2.3, 2.4, 2.5
MAFS.3.OA.1.4: 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 × ? = 48, 5 = [] ÷ 3, 6 × 6 = ?.	**Unit 1:** 1.3, 1.4, 2.6, 4.3, 4.4, 4.5, 4.6 **Unit 5:** 2.4, 3.4 **Unit 8:** 1.1

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Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.3.OA.2.5: Apply properties of operations as strategies to multiply and divide. *Examples: If 6 × 4 = 24 is known, then 4 × 6 = 24 is also known. (Commutative property of multiplication.) 3 × 5 × 2 can be found by 3 × 5 = 15, then 15 × 2 = 30, or by 5 × 2 = 10, then 3 × 10 = 30. (Associative property of multiplication.) Knowing that 8 × 5 = 40 and 8 × 2 = 16, one can find 8 × 7 as 8 × (5 + 2) = (8 × 5) + (8 × 2) = 40 + 16 = 56. (Distributive property.)*	**Unit 1:** 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 3.6, 3.7 **Unit 5:** 2.1, 2.2, 2.3, 2.4 2.5, 2.6, 3.3, 3.4 **Unit 8:** 1.3, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 3.4
MAFS.3.OA.2.6: Understand division as an unknown-factor problem. *For example, find 32 ÷ 8 by finding the number that makes 32 when multiplied by 8*	**Unit 1:** 4.1, 4.2, 4.4, 4.5, 4.6 **Unit 5:** 1.4, 1.5, 2.4 **Unit 8:** 1.1, 1.2, 1.6, 2.3
MAFS.3.OA.3.7: Fluently multiply and divide within 100, using strategies such as the relationship between multiplication and division (e.g., knowing that 8 × 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.	**Unit 1:** 3.3, 3.4, 3.5, 3.6, 3.7, 4.5, 4.6 **Unit 5:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 3.1, 3.2, 3.4, 3.5, 3.6 **Unit 8:** 1.1, 1.2, 1.3, 1.4 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5
MAFS.3.OA.4.8: 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.	**Unit 2:** 1.5 **Unit 4:** 1.3, 1.4, 1.5 **Unit 5:** 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.3, 1.4, 1.5, 1.6, 1.7, 2.4, 2.5, 3.5, 3.6 **Unit 8:** 2.4, 2.5, 3.1, 3.2, 3.3, 3.4, 3.5
MAFS.3.OA.4.9: 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.*	**Unit 1:** 1.3, 2.1, 2.2, 2.5, 2.6, 3.5, 3.6, 3.7 **Unit 3:** 1.4, 2.1 **Unit 5:** 1.1, 1.2, 1.3, 3.1, 3.2 **Unit 8:** 1.2, 3.1, 3.2, 3.3, 3.4, 3.5

Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.K12.MP.1.1: **Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	**Unit 1:** 1.1, 1.3, 1.4, 2.3, 2.4, 2.5, 4.6 **Unit 7:** 1.4, 1.5, 1.6, 1.7, 3.1, 3.4, 3.5

Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.K12.MP.2.1: **Reason abstractly and quantitatively**. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	**Unit 3:** 1.2, 1.3, 1.4, 3.1, 4.2, 5.3, 5.5 **Unit 5:** 1.2, 2.1, 2.3, 3.4, 3.5

Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.K12.MP.3.1: **Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	**Unit 4:** 2.2, 2.3, 2.5, 2.6, 2.7, 3.2, 3.3 **Unit 7:** 1.5, 1.6, 1.7, 2.1, 2.5, 3.3, 3.4

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MAFS.K12.MP.4.1: **Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	**Unit 2:** 1.1, 1.5, 1.6, 1.9, 2.1, 2.2, 2.5 **Unit 6:** 1.1, 1.3, 1.4, 1.8, 2.2, 2.3, 2.4

Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.K12.MP.5.1: **Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	**Unit 2:** 1.2, 1.4, 1.5, 1.7, 2.1, 2.2, 2.5 **Unit 6:** 1.2, 1.4, 1.5, 2.3, 2.4

Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.K12.MP.6.1: **Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	**Unit 4:** 1.2, 1.3, 2.6, 2.7 **Unit 8:** 1.2, 1.5, 1.6, 2.5, 3.2, 3.3

Florida MAFS: Mathematics Standards Grade 3	**Investigations 3 in Number, Data, and Space ©2017 Grade 3**
MAFS.K12.MP.7.1: **Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 – 3(x – y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.	**Unit 3:** 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.3, 3.2, 3.3, 3.4, 4.2, 5.2, 5.4, 5.5 **Unit 5:** 1.1, 1.5, 2.1, 2.2, 2.5, 2.6, 3.2, 3.5

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MAFS.K12.MP.8.1: **Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	**Unit 1:** 2.2, 3.2, 3.3, 3.4 **Unit 8:** 1.2, 3.1, 3.2, 3.3, 3.5
LAFS.3.SL.1.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade 3 *topics and texts*, building on others' ideas and expressing their own clearly.	Grade 3 students are led through collaborative discussions in each session as they learn to apply new concepts. They answer open-ended questions in a large group context as well as discuss with their peers during hands-on activities.
a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.	Investigations provides daily practice and homework as follow-up to each session. Students are expected to work through problems in the student activity book, and be prepared to share and discuss their work the following day.

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b. Follow agreed-upon rules for discussions (e.g., gaining the floor in respectful ways, listening to others with care, speaking one at a time about the topics and texts under discussion).	Teachers guide students in taking turns, listening, and responding appropriately when others are sharing their understanding of the topic.
c. Ask questions to check understanding of information presented, stay on topic, and link their comments to the remarks of others.	The teacher's edition includes guided discussion questions, as well as possible questions that may come from students during specific activities. Students are encouraged to ask questions and to verbalize the challenges they face with each topic.
d. Explain their own ideas and understanding in light of the discussion.	Each session in Investigations includes opportunities for students to explain their work and mathematical processing as they learn new topics.
LAFS.3.SL.1.2: Determine the main ideas and supporting details of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	As each new concept is presented, Investigations gives multiple opportunities for teachers to check for understanding. Casual conversation, direct questioning, and ongoing assessments are just a few of the ways students are assessed for understanding of the topic. "Intervention" and "Discussion" are two specific sections in each session that are focused on both students and teachers asking questions.
LAFS.3.SL.1.3: Ask and answer questions about information from a speaker, offering appropriate elaboration and detail.	The "Discussion" section of each session is designed to allow both teachers and students to ask and answer questions about specific issues and topics.
LAFS.3.W.1.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	Students are given opportunities to communicate their understanding of each topic. Grade 3 includes both interactive and written activities where students describe their processes in using mathematical operations.
a. Introduce a topic and group related information together; include illustrations when useful to aiding comprehension.	As students discuss mathematical topics, they are encouraged to use drawings, mathematical models, and other illustrations to aid in comprehension.

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b. Develop the topic with facts, definitions, and details.	Students use precise mathematical vocabulary to clearly communicate information during discussions.
c. Use linking words and phrases (e.g., also, another, and, more, but) to connect ideas within categories of information.	Communicating clearly with linking words is part of the experience for students as they participate in mathematical discussions.
d. Provide a concluding statement or section.	Students learn to wrap up their own arguments and ideas as they prepare to hear the arguments and ideas of their classmates.
ELD.K12.ELL.MA.1: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.	"Differentiation" sections within each session include support for English Language Learners. ELL students receive extra support in vocabulary, visual, kinesthetic, and auditory examples and activities.
ELD.K12.ELL.SI.1: English language learners communicate for social and instructional purposes within the school setting.	ELL students learn to interact and communicate with other students as they engage in regular session activities, as well as the "Differentiation" options included in each session.

Grade 4 Units

Unit 1 - Arrays, Factors, and Multiplicative Comparison

Unit 2 - Generating and Representing Measurement Data

Unit 3 - Multiple Towers and Cluster Problems

Unit 4 – Measuring and Classifying Shapes

Unit 5 - Large Numbers and Landmarks

Unit 6 - Fraction Cards and Decimal Grids

Unit 7 - How Many Packages and Groups?

Unit 8 - Penny Jars and Towers

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MAFS.4.G.1.1: Draw points, lines, line segments, rays, angles (right, acute, obtuse), and perpendicular and parallel lines. Identify these in two-dimensional figures.	**Unit 4:** 2.1, 2.2, 2.5, 3.2
MAFS.4.G.1.2: 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.	**Unit 4:** 2.1, 2.2, 2.3, 2.4, 2.5
MAFS.4.G.1.3: 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.	**Unit 4:** 4.1, 4.2, 4.3
MAFS.4.MD.1.1: 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. *For example, know that 1 ft is 12 times as long as 1 in. Express the length of a 4 ft snake as 48 in. Generate a conversion table for feet and inches listing the number pairs (1, 12), (2, 24), (3, 36), …*	**Unit 2:** 1.2, 2.1, 2.2, 2.3 **Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5 **Unit 7:** 1.1, 1.2
MAFS.4.MD.1.2: Use the four operations to solve word problems involving distances, intervals of time, and money, including problems involving simple fractions or decimals. Represent fractional quantities of distance and intervals of time using linear models.	**Unit 2:** 1.2, 1.3, 1.4, 1.5, 2.1, 2.2, 2.4, 2.5, 2.6 **Unit 4:** 1.3, 1.4, 1.5 **Unit 5:** 1.1, 1.2, 1.3, 2.1, 2.6, 2.7, 3.4, 3.5, 3.6 **Unit 6:** 3.5, 3.6, 4.2, 4.3, 4.4 **Unit 7:** 1.1, 1.2, 1.3, 1.6, 1.7, 2.1 **Unit 8:** 1.7, 1.8
MAFS.4.MD.1.3: Apply the area and perimeter formulas for rectangles in real world and mathematical problems. *For example, find the width of a rectangular room given the area of the flooring and the length, by viewing the area formula as a multiplication equation with an unknown factor.*	**Unit 4:** 1.3, 1.4, 1.5, 4.1, 4.2, 4.3, 4.4, 4.5, 4.6

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MAFS.4.MD.2.4: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Solve problems involving addition and subtraction of fractions by using information presented in line plots. *For example, from a line plot find and interpret the difference in length between the longest and shortest specimens in an insect collection.*	**Unit 2:** 1.4, 2.2, 2.5
MAFS.4.MD.3.5: Recognize angles as geometric shapes that are formed wherever two rays share a common endpoint, and understand concepts of angle measurement:	**Unit 4:** 3.1, 3.2, 3.3, 3.4
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.	**Unit 4:** 3.2, 3.3, 3.4
b. An angle that turns through *n* one-degree angles is said to have an angle measure of *n* degrees.	**Unit 4:** 3.1, 3.2, 3.3, 3.4
MAFS.4.MD.3.6: Measure angles in whole-number degrees using a protractor. Sketch angles of specified measure.	**Unit 4:** 3.2, 3.3, 3.4, 4.6
MAFS.4.MD.3.7: Recognize angle measure as additive. When an angle is decomposed into non-overlapping parts, the angle measure of the whole is the sum of the angle measures of the parts. Solve addition and subtraction problems to find unknown angles on a diagram in real world and mathematical problems, e.g., by using an equation with a symbol for the unknown angle measure.	**Unit 4:** 3.1, 3.2, 3.4

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MAFS.4.NBT.1.1: 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. *For example, recognize that 700 ÷ 70 = 10 by applying concepts of place value and division.*	**Unit 5:** 3.1, 3.2 **Unit 6:** 1.4
MAFS.4.NBT.1.2: Read and write multi-digit whole numbers using base-ten numerals, number names, and expanded form. Compare two multi-digit numbers based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	**Unit 5:** 1.1, 2.4, 3.2, 3.3, 3.4, 3.5, 3.6
MAFS.4.NBT.1.3: Use place value understanding to round multi-digit whole numbers to any place.	**Unit 5:** 1.1, 3.3, 3.5, 3.6
MAFS.4.NBT.2.4: Fluently add and subtract multi-digit whole numbers using the standard algorithm.	**Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.4, 3.5, 3.6
MAFS.4.NBT.2.5: 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.	**Unit 1:** 1.1, 1.4, 1.6 **Unit 3:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.4, 2.6, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 4:** 1.2, 4.5, 4.6 **Unit 7:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.1, 2.2, 2.3, 2.4, 2.5, 3.2, 3.4, 3.5, 3.6
MAFS.4.NBT.2.6: 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.	**Unit 3:** 2.1, 2.2, 2.3, 2.4, 2.5, 3.3, 3.4, 3.7 **Unit 4:** 4.5, 4.6 **Unit 7:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6

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MAFS.4.NF.1.1: Explain why a fraction a/b is equivalent to a fraction (n × a)/(n × b) by using visual fraction models, with attention to how the number and size of the parts differ even though the two fractions themselves are the same size. Use this principle to recognize and generate equivalent fractions.	**Unit 6:** 1.1, 1.2, 1.3, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8
MAFS.4.NF.1.2: Compare two fractions with different numerators and different denominators, e.g., by creating common denominators or numerators, or by comparing to a benchmark fraction such as 1/2. Recognize that comparisons are valid only when the two fractions refer to the same whole. Record the results of comparisons with symbols >, =, or <, and justify the conclusions, e.g., by using a visual fraction model.	**Unit 6:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6
MAFS.4.NF.2.3: Understand a fraction a/b with a > 1 as a sum of fractions 1/b.	**Unit 6:** 1.1, 1.2, 3.1, 3.2, 3.3, 3.4, 4.2, 4.3, 4.4
a. Understand addition and subtraction of fractions as joining and separating parts referring to the same whole.	**Unit 6:** 1.1, 1.2, 3.1, 3.2, 3.4
b. Decompose a fraction into a sum of fractions with the same denominator in more than one way, recording each decomposition by an equation. Justify decompositions, e.g., by using a visual fraction model. *Examples: 3/8 = 1/8 + 1/8 + 1/8 ; 3/8 = 1/8 + 2/8 ; 2 1/8 = 1 + 1 + 1/8 = 8/8 + 8/8 + 1/8.*	**Unit 6:** 1.1, 1.2, 3.1
c. Add and subtract mixed numbers with like denominators, e.g., by replacing each mixed number with an equivalent fraction, and/or by using properties of operations and the relationship between addition and subtraction.	**Unit 6:** 3.3, 3.4, 4.2, 4.3, 4.4

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d. Solve word problems involving addition and subtraction of fractions referring to the same whole and having like denominators, e.g., by using visual fraction models and equations to represent the problem.	**Unit 6:** 3.1, 3.2, 3.4, 4.2, 4.3, 4.4
MAFS.4.NF.2.4: Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.	**Unit 6:** 2.1, 4.1, 4.2, 4.3, 4.4
a. Understand a fraction a/b as a multiple of 1/b. *For example, use a visual fraction model to represent 5/4 as the product 5 × (1/4), recording the conclusion by the equation 5/4 = 5 × (1/4).*	**Unit 6:** 2.1, 4.1, 4.2, 4.3, 4.4
b. Understand a multiple of a/b as a multiple of 1/b, and use this understanding to multiply a fraction by a whole number. *For example, use a visual fraction model to express 3 × (2/5) as 6 × (1/5), recognizing this product as 6/5. (In general, n × (a/b) = (n × a)/b.)*	**Unit 6:** 4.1, 4.2, 4.3, 4.4
c. Solve word problems involving multiplication of a fraction by a whole number, e.g., by using visual fraction models and equations to represent the problem. *For example, if each person at a party will eat 3/8 of a pound of roast beef, and there will be 5 people at the party, how many pounds of roast beef will be needed? Between what two whole numbers does your answer lie?*	**Unit 6:** 4.1, 4.2, 4.3, 4.4
MAFS.4.NF.3.5: 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. *For example, express 3/10 as 30/100, and add 3/10 + 4/100 = 34/100.*	**Unit 6:** 1.4, 1.5, 3.5, 3.6, 4.2, 4.3, 4.4
MAFS.4.NF.3.6: Use decimal notation for fractions with denominators 10 or 100. *For example, rewrite 0.62 as 62/100; describe a length as 0.62 meters; locate 0.62 on a number line diagram.*	**Unit 6:** 1.3, 1.4, 1.5, 1.6, 2.7, 2.8, 3.5

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MAFS.4.NF.3.7: 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.	**Unit 6:** 2.7, 2.8
MAFS.4.OA.1.1: Interpret a multiplication equation as a comparison, e.g., interpret 35 = 5 × 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.	**Unit 1:** 1.5, 1.6, 1.8 **Unit 3:** 2.5
MAFS.4.OA.1.2: 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.	**Unit 1:** 1.5, 1.6, 1.8 **Unit 3:** 1.4, 2.5, 3.6 **Unit 7:** 2.4, 2.5
MAFS.4.OA.1.3: 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.	**Unit 3:** 1.1 **Unit 4:** 1.4, 1.5 **Unit 5:** 2.6, 2.7, 3.3, 3.4, 3.5, 3.6 **Unit 7:** 1.2, 3.4, 3.5, 3.6 **Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10
MAFS.4.OA.1.a: Determine whether an equation is true or false by using comparative relational thinking. *For example, without adding 60 and 24, determine whether the equation 60 + 24 = 57 + 27 is true or false.*	For related content, please see: **Unit 7:** 3.4, 3.6

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MAFS.4.OA.1.b: Determine the unknown whole number in an equation relating four whole numbers using comparative relational thinking. *For example, solve 76 + 9 = n + 5 for n by arguing that nine is four more than five, so the unknown number must be four greater than 76.*	For related content, please see: **Unit 7:** 3.4, 3.6
MAFS.4.OA.2.4: Investigate factors and multiples.	**Unit 1:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4 **Unit 3:** 3.1, 3.2 **Unit 7:** 1.6, 1.7, 2.2, 2.3
a. Find all factor pairs for a whole number in the range 1–100.	**Unit 1:** 1.4, 1.5, 2.1, 2.2, 2.3, 2.4
b. Recognize that a whole number is a multiple of each of its factors. Determine whether a given whole number in the range 1–100 is a multiple of a given one-digit number.	**Unit 1:** 1.4, 1.5, 1.7, 2.1, 2.2, 2.3, 2.4
c. Determine whether a given whole number in the range 1–100 is prime or composite.	**Unit 1:** 1.6, 1.8
MAFS.4.OA.3.5: 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. *For example, given the rule "Add 3" and the starting number 1, generate terms in the resulting sequence and observe that the terms appear to alternate between odd and even numbers. Explain informally why the numbers will continue to alternate in this way.*	**Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10

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MAFS.K12.MP.1.1: **Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	**Unit 1:** 1.1, 1.5 1.6 ,1.8, 2.1 **Unit 7:** 1.1, 1.3, 1.6, 1.7, 2.1, 2.2, 3.3, 3.4

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MAFS.K12.MP.2.1: **Reason abstractly and quantitatively**. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	**Unit 3:** 1.1, 1.4, 2.1, 2.2, 2.3, 3.3 **Unit 7:** 1.2, 1.4, 1.5, 2.1, 2.4, 2.5, 3.1, 3.5

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MAFS.K12.MP.3.1: **Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	**Unit 2:** 1.2, 1.4, 1.5, 2.4, 2.5 **Unit 6:** 1.1, 1.2, 1.5, 1.6, 2.2, 2.4, 2.5, 2.6, 3.3, 3.6, 4.1, 4.3

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MAFS.K12.MP.4.1: **Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	**Unit 2:** 1.1, 1.5, 2.1, 2.4 **Unit 8:** 1.2, 1.3, 1.5, 1.6, 1.7, 1.9

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MAFS.K12.MP.5.1: **Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	**Unit 4:** 1.1, 1.3, 1.4, 1.5, 2.2, 3.1, 3.2, 3.3, 3.4, 4.1, 4.4 **Unit 5:** 1.2, 1.3, 1.4, 1.6, 2.1, 2.2, 2.4, 2.5, 3.1, 3.6

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MAFS.K12.MP.6.1: **Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	**Unit 4:** 1.2, 1.3, 1.4, 1.5, 2.3, 3.1, 3.3, 4.1, 4.3, 4.4, 4.5 **Unit 6:** 1.1, 1.4, 1.6, 2.1, 2.3, 2.5, 2.8, 3.1, 4.1, 4.2, 4.3

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MAFS.K12.MP.7.1: **Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.	**Unit 3:** 1.1, 1.3, 2.1, 2.5, 3.1, 3.2, 3.4, 3.5, 3.6 **Unit 5:** 1.1, 1.2, 1.4, 1.5, 1.6, 2.2, 2.3, 2.4, 3.1, 3.2, 3.4

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MAFS.K12.MP.8.1: **Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	**Unit 1:** 1.2, 1.3, 1.6, 2.1, 2.2 **Unit 8:** 1.1, 1.2, 1.5, 1.6, 1.7, 1.8
LAFS.4.SL.1.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grade *4 topics and texts*, building on others' ideas and expressing their own clearly.	Grade 4 students are led through collaborative discussions in each session as they learn to apply new concepts. They answer open-ended questions in a large group context as well as discuss with their peers during hands-on activities.
a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.	Investigations provides daily practice and homework as follow-up to each session. Students are expected to work through problems in the student activity book, and be prepared to share and discuss their work the following day.
b. Follow agreed-upon rules for discussions and carry out assigned roles.	Teachers guide students in taking turns, listening, and responding appropriately when others are sharing their understanding of the topic.
c. Pose and respond to specific questions to clarify or follow up on information, and make comments that contribute to the discussion and link to the remarks of others.	The teacher's edition includes guided discussion questions, as well as possible questions that may come from students during specific activities. Students are encouraged to ask questions and to verbalize the challenges they face with each topic.

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d. Review the key ideas expressed and explain their own ideas and understanding in light of the discussion.	Each session in Investigations includes opportunities for students to explain their work and mathematical processing as they learn new topics.
LAFS.4.SL.1.2: Paraphrase portions of a text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	As each new concept is presented, Investigations gives multiple opportunities for teachers to check for understanding. Casual conversation, direct questioning, and ongoing assessments are just a few of the ways students are assessed for understanding of the topic. "Intervention" and "Discussion" are two specific sections in each session that are focused on both students and teachers asking questions.
LAFS.4.SL.1.3: Identify the reasons and evidence a speaker provides to support particular points.	The "Discussion" section of each session is designed to allow both teachers and students to ask and answer questions about specific issues and topics.
LAFS.4.W.1.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	Students are given opportunities to communicate their understanding of each topic. Grade 4 includes both interactive and written activities where students describe their processes in using mathematical operations.
a. Introduce a topic clearly and group related information in paragraphs and sections; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.	As students discuss mathematical topics, they are encouraged to use drawings, mathematical models, and other illustrations to aid in comprehension.
b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.	Students use precise mathematical vocabulary to clearly communicate information during discussions.
c. Link ideas within categories of information using words and phrases (e.g., *another, for example, also, because*).	Communicating clearly with linking words is part of the experience for students as they participate in mathematical discussions.
d. Use precise language and domain-specific vocabulary to inform about or explain the topic.	Students use precise mathematical vocabulary to clearly communicate information during discussions.
e. Provide a concluding statement or section related to the information or explanation presented.	Students learn to wrap up their own arguments and ideas as they prepare to hear the arguments and ideas of their classmates.

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ELD.K12.ELL.MA.1: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.	"Differentiation" sections within each session include support for English Language Learners. ELL students receive extra support in vocabulary, visual, kinesthetic, and auditory examples and activities.
ELD.K12.ELL.SI.1: English language learners communicate for social and instructional purposes within the school setting.	ELL students learn to interact and communicate with other students as they engage in regular session activities, as well as the "Differentiation" options included in each session.

Grade 5 Units

Unit 1 – Puzzles, Clusters, and Towers

Unit 2 – Prisms and Solids

Unit 3 – Rectangles, Clocks, and Tracks

Unit 4 – How Many People and Teams?

Unit 5 – Temperature, Height, and Growth

Unit 6 – Between 0 and 1

Unit 7 – Races, Arrays, and Grids

Unit 8 – Properties of Polygons

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Florida MAFS: Mathematics Standards Grade 5	Investigations 3 in Number, Data, and Space ©2017 Grade 5
MAFS.5.G.1.1: Use a pair of perpendicular number lines, called axes, to define a coordinate system, with the intersection of the lines (the origin) arranged to coincide with the 0 on each line and a given point in the plane located by using an ordered pair of numbers, called its coordinates. Understand that the first number indicates how far to travel from the origin in the direction of one axis, and the second number indicates how far to travel in the direction of the second axis, with the convention that the names of the two axes and the coordinates correspond (e.g., x-axis and x-coordinate, y-axis and y-coordinate).	**Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.3, 2.4, 2.5, 2.6, 2.7
MAFS.5.G.1.2: Represent real world and mathematical problems by graphing points in the first quadrant of the coordinate plane, and interpret coordinate values of points in the context of the situation.	**Unit 5:** 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 2.3, 2.4, 2.5, 2.6, 2.7
MAFS.5.G.2.3: Understand that attributes belonging to a category of two-dimensional figures also belong to all subcategories of that category. *For example, all rectangles have four right angles and squares are rectangles, so all squares have four right angles.*	**Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5
MAFS.5.G.2.4: Classify and organize two-dimensional figures into Venn diagrams based on the attributes of the figures.	For related content, please see: **Unit 8:** 1.1, 1.2, 1.3, 1.4, 1.5
MAFS.5.MD.1.1: Convert among different-sized standard measurement units (i.e., km, m, cm; kg, g; lb, oz.; l, ml; hr, min, sec) within a given measurement system (e.g., convert 5 cm to 0.05 m), and use these conversions in solving multi-step, real world problems.	**Unit 7:** 3.8, 3.9, 3.10, 3.11 **Unit 8:** 1.1, 1.3, 2.1, 2.3

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MAFS.5.MD.2.2: Make a line plot to display a data set of measurements in fractions of a unit (1/2, 1/4, 1/8). Use operations on fractions for this grade to solve problems involving information presented in line plots. *For example, given different measurements of liquid in identical beakers, find the amount of liquid each beaker would contain if the total amount in all the beakers were redistributed equally.*	**Unit 3:** 3.4, 3.5, 3.6
MAFS.5.MD.3.3: Recognize volume as an attribute of solid figures and understand concepts of volume measurement.	**Unit 2:** 1.1, 1.2, 1.5, 2.1, 2.4
a. A cube with side length 1 unit, called a "unit cube," is said to have "one cubic unit" of volume, and can be used to measure volume.	**Unit 2:** 1.1, 1.2, 1.5, 2.1, 2.4
b. A solid figure which can be packed without gaps or overlaps using n unit cubes is said to have a volume of n cubic units.	**Unit 2:** 1.1, 1.2, 1.5, 2.1, 2.4
MAFS.5.MD.3.4: Measure volumes by counting unit cubes, using cubic cm, cubic in, cubic ft, and improvised units.	**Unit 2:** 1.1, 1.2, 1.4, 2.1, 2.2, 2.3, 2.4
MAFS.5.MD.3.5: Relate volume to the operations of multiplication and addition and solve real world and mathematical problems involving volume.	**Unit 2:** 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4
a. Find the volume of a right rectangular prism with whole-number side lengths by packing it with unit cubes, and show that the volume is the same as would be found by multiplying the edge lengths, equivalently by multiplying the height by the area of the base. Represent threefold whole-number products as volumes, e.g., to represent the associative property of multiplication.	**Unit 2:** 1.2, 1.3, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4

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b. Apply the formulas V = l × w × h and V = B × h for rectangular prisms to find volumes of right rectangular prisms with whole-number edge lengths in the context of solving real world and mathematical problems.	**Unit 2:** 1.2, 1.5, 1.6, 2.1, 2.3, 2.4
c. Recognize volume as additive. Find volumes of solid figures composed of two non-overlapping right rectangular prisms by adding the volumes of the non-overlapping parts, applying this technique to solve real world problems.	**Unit 2:** 1.6, 1.7, 1.8, 2.4
MAFS.5.NBT.1.1: Recognize that in a multi-digit number, a digit in one place represents 10 times as much as it represents in the place to its right and 1/10 of what it represents in the place to its left.	**Unit 6:** 1.2, 1.6, 1.7 **Unit 7:** 3.1, 3.2, 3.4, 3.5, 3.6, 3.7
MAFS.5.NBT.1.2: Explain patterns in the number of zeros of the product when multiplying a number by powers of 10, and explain patterns in the placement of the decimal point when a decimal is multiplied or divided by a power of 10. Use whole-number exponents to denote powers of 10.	**Unit 1:** 2.3, 2.4, 2.5, 3.2, 3.4, 3.6, 3.7 **Unit 4:** 1.4, 1.5, 2.1, 2.2, 2.6, 2.7, 3.1, 3.4, 3.5 **Unit 5:** 1.5, 1.6 **Unit 7:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11
MAFS.5.NBT.1.3: Read, write, and compare decimals to thousandths.	**Unit 6:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9 **Unit 7:** 1.1, 1.2, 1.3, 1.4, 1.9, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4
a. Read and write decimals to thousandths using base-ten numerals, number names, and expanded form, e.g., 347.392 = 3 × 100 + 4 × 10 + 7 × 1 + 3 × (1/10) + 9 × (1/100) + 2 × (1/1000).	**Unit 6:** 1.1, 1.2, 1.4, 1.5, 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.8, 2.9 **Unit 7:** 1.1, 1.2, 1.3, 1.4, 1.9, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4
b. Compare two decimals to thousandths based on meanings of the digits in each place, using >, =, and < symbols to record the results of comparisons.	**Unit 6:** 1.1, 1.3, 1.4, 1.5, 1.7, 1.8, 2.3, 2.5, 2.6, 2.7, 2.8, 2.9 **Unit 7:** 1.2, 1.3, 1.4

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MAFS.5.NBT.1.4: Use place value understanding to round decimals to any place.	**Unit 6:** 1.6, 1.7, 1.8, 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9 **Unit 7:** 1.1, 1.2, 1.3, 1.4, 2.1, 2.2, 2.3, 2.4, 3.1, 3.2, 3.3, 3.4
MAFS.5.NBT.2.5: Fluently multiply multi-digit whole numbers using the standard algorithm.	**Unit 1:** 1.1, 1.2 **Unit 2:** 1.3, 1.6, 1.7, 2.2, 2.3 **Unit 3:** 1.1, 2.1, 2.2, 2.3, 2.4, 2.5 **Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5 **Unit 5:** 1.1, 1.4, 2.1, 2.2, 2.3, 2.5, 2.6 **Unit 6:** 1.3, 1.4, 2.1, 2.2, 2.3 **Unit 7:** 2.2 **Unit 8:** 2.3, 2.4, 2.5
MAFS.5.NBT.2.6: Find whole-number quotients of whole numbers with up to four-digit dividends and two-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.	**Unit 1:** 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7 **Unit 2:** 1.2, 1.4, 1.5, 1.6, 2.1, 2.2, 2.3, 2.4 **Unit 3:** 1.1, 1.2, 2.1, 2.2 **Unit 4:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5 **Unit 5:** 1.3, 2.1, 2.2, 2.3, 2.5 **Unit 6:** 1.3, 1.4, 1.5, 1.6, 2.1, 2.3 **Unit 8:** 2.2, 2.3
MAFS.5.NBT.2.7: Add, subtract, multiply, and divide decimals to hundredths, using concrete models or drawings and strategies based on place value, properties of operations, and/or the relationship between addition and subtraction; relate the strategy to a written method and explain the reasoning used.	**Unit 6:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 2.8, 2.9 **Unit 7:** 3.1, 3.2, 3.3, 3.4, 3.5, 3.6, 3.7, 3.8, 3.9, 3.10, 3.11
MAFS.5.NF.1.1: Add and subtract fractions with unlike denominators (including mixed numbers) by replacing given fractions with equivalent fractions in such a way as to produce an equivalent sum or difference of fractions with like denominators. *For example, 2/3 + 5/4 = 8/12 + 15/12 = 23/12. (In general, a/b + c/d = (ad + bc)/bd.)*	**Unit 3:** 2.1, 2.2, 2.3, 2.4, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 4:** 1.1, 1.5 **Unit 5:** 1.1, 1.2, 1.3, 1.4 **Unit 8:** 2.3, 2.4, 2.5

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Florida MAFS: Mathematics Standards Grade 5	**Investigations 3 in Number, Data, and Space ©2017 Grade 5**
MAFS.5.NF.1.2: Solve word problems involving addition and subtraction of fractions referring to the same whole, including cases of unlike denominators, e.g., by using visual fraction models or equations to represent the problem. Use benchmark fractions and number sense of fractions to estimate mentally and assess the reasonableness of answers. *For example, recognize an incorrect result 2/5 + 1/2 = 3/7, by observing that 3/7 < 1/2.*	**Unit 3:** 2.3, 2.5, 2.6, 2.7, 3.1, 3.2, 3.3, 3.4, 3.5, 3.6 **Unit 4:** 1.1, 1.2, 1.3, 1.4, 1.5 **Unit 6:** 1.1, 1.2, 1.3
MAFS.5.NF.2.3: Interpret a fraction as division of the numerator by the denominator (a/b = a ÷ b). Solve word problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers, e.g., by using visual fraction models or equations to represent the problem. *For example, interpret 3/4 as the result of dividing 3 by 4, noting that 3/4 multiplied by 4 equals 3, and that when 3 wholes are shared equally among 4 people each person has a share of size 3/4. If 9 people want to share a 50-pound sack of rice equally by weight, how many pounds of rice should each person get? Between what two whole numbers does your answer lie?*	**Unit 7:** 2.1, 2.2, 2.3, 2.4
MAFS.5.NF.2.4: Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.	**Unit 7:** 1.1, 1.2, 1.3. 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 3.9, 3.10, 3.11 **Unit 8:** 1.4, 2.5
a. Interpret the product *(a/b) × q* as a parts of a partition of *q* into *b* equal parts; equivalently, as the result of a sequence of operations *a × q ÷ b*. *For example, use a visual fraction model to show (2/3) × 4 = 8/3, and create a story context for this equation. Do the same with (2/3) × (4/5) = 8/15. (In general, (a/b) × (c/d) = ac/bd.)*	**Unit 7:** 1.1, 1.2, 1.3. 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11, 3.9, 3.10, 3.11 **Unit 8:** 1.4, 2.5
b. Find the area of a rectangle with fractional side lengths by tiling it with unit squares of the appropriate unit fraction side lengths, and show that the area is the same as would be found by multiplying the side lengths. Multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.	**Unit 7:** 1.7, 1.8

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Florida MAFS: Mathematics Standards Grade 5	**Investigations 3 in Number, Data, and Space ©2017 Grade 5**
MAFS.5.NF.2.5: Interpret multiplication as scaling (resizing), by:	**Unit 7:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11
a. Comparing the size of a product to the size of one factor on the basis of the size of the other factor, without performing the indicated multiplication.	**Unit 7:** 1.3, 1.4, 1.5, 1.6, 1.7, 1.8, 1.9, 1.10, 1.11
b. Explaining why multiplying a given number by a fraction greater than 1 results in a product greater than the given number (recognizing multiplication by whole numbers greater than 1 as a familiar case); explaining why multiplying a given number by a fraction less than 1 results in a product smaller than the given number; and relating the principle of fraction equivalence $a/b = (n \times a)/(n \times b)$ to the effect of multiplying a/b by 1.	**Unit 7:** 1.3, 1.4, 1.5
MAFS.5.NF.2.6: Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.	**Unit 7:** 1.1, 1.2, 1.3, 1.4, 1.5, 1.7, 1.8, 1.10, 1.11 **Unit 8:** 2.3, 2.4, 2.5
MAFS.5.NF.2.7: Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions.	**Unit 7:** 1.9, 1.10, 1.11, 2.1, 2.4, 3.9, 3.10, 3.11
a. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. *For example, create a story context for (1/3) ÷ 4, and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that (1/3) ÷ 4 = 1/12 because (1/12) × 4 = 1/3.*	**Unit 7:** 1.10, 1.11, 2.1, 2.4
b. Interpret division of a whole number by a unit fraction, and compute such quotients. *For example, create a story context for 4 ÷ (1/5), and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ (1/5) = 20 because 20 × (1/5) = 4.*	**Unit 7:** 1.9, 1.11, 2.1, 2.4

Florida MAFS: Mathematics Standards Grade 5	**Investigations 3 in Number, Data, and Space ©2017 Grade 5**
c. Solve real world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions, e.g., by using visual fraction models and equations to represent the problem. *For example, how much chocolate will each person get if 3 people share 1/2 lb of chocolate equally? How many 1/3-cup servings are in 2 cups of raisins?*	**Unit 7:** 1.9, 1.10, 1.11, 3.9, 3.10, 3.11
MAFS.5.OA.1.1: Use parentheses, brackets, or braces in numerical expressions, and evaluate expressions with these symbols.	**Unit 1:** 1.1, 1.4, 1.5, 2.1, 2.2, 2.3, 2.4, 2.5, 3.4, 3.5, 3.6, 3.7 **Unit 3:** 2.3, 2.4, 2.5, 3.1, 3.2 **Unit 4:** 2.1 **Unit 5:** 1.5, 1.6, 1.7, 2.4, 2.5, 2.6, 2.7 **Unit 8:** 2.1, 2.2, 2.3, 2.4, 2.5
MAFS.5.OA.1.2: Write simple expressions that record calculations with numbers, and interpret numerical expressions without evaluating them. *For example, express the calculation "add 8 and 7, then multiply by 2" as 2 × (8 + 7). Recognize that 3 × (18932 + 921) is three times as large as 18932 + 921, without having to calculate the indicated sum or product.*	**Unit 1:** 1.2, 2.3, 2.4, 2.5, 2.7, 3.6, 3.7 **Unit 3:** 3.3, 3.4 **Unit 5:** 2.5
MAFS.5.OA.2.3: Generate two numerical patterns using two given rules. Identify apparent relationships between corresponding terms. Form ordered pairs consisting of corresponding terms from the two patterns, and graph the ordered pairs on a coordinate plane. *For example, given the rule "Add 3" and the starting number 0, and given the rule "Add 6" and the starting number 0, generate terms in the resulting sequences, and observe that the terms in one sequence are twice the corresponding terms in the other sequence. Explain informally why this is so.*	**Unit 5:** 1.6, 1.7, 2.3, 2.4, 2.6, 2.7 **Unit 8:** 2.2, 2.3, 2.4, 2.5

Florida MAFS: Mathematics Standards Grade 5	**Investigations 3 in Number, Data, and Space ©2017 Grade 5**
MAFS.K12.MP.1.1: **Make sense of problems and persevere in solving them.** Mathematically proficient students start by explaining to themselves the meaning of a problem and looking for entry points to its solution. They analyze givens, constraints, relationships, and goals. They make conjectures about the form and meaning of the solution and plan a solution pathway rather than simply jumping into a solution attempt. They consider analogous problems, and try special cases and simpler forms of the original problem in order to gain insight into its solution. They monitor and evaluate their progress and change course if necessary. Older students might, depending on the context of the problem, transform algebraic expressions or change the viewing window on their graphing calculator to get the information they need. Mathematically proficient students can explain correspondences between equations, verbal descriptions, tables, and graphs or draw diagrams of important features and relationships, graph data, and search for regularity or trends. Younger students might rely on using concrete objects or pictures to help conceptualize and solve a problem. Mathematically proficient students check their answers to problems using a different method, and they continually ask themselves, “Does this make sense?” They can understand the approaches of others to solving complex problems and identify correspondences between different approaches.	**Unit 1:** 1.1, 1.3, 2.2, 2.4, 2.5, 3.2, 3.5 **Unit 7:** 1.1, 1.4, 1.7, 1.11, 2.1, 2.3, 3.2, 3.4, 3.5, 3.6, 3.8, 3.10

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MAFS.K12.MP.2.1: **Reason abstractly and quantitatively**. Mathematically proficient students make sense of quantities and their relationships in problem situations. They bring two complementary abilities to bear on problems involving quantitative relationships: the ability to decontextualize—to abstract a given situation and represent it symbolically and manipulate the representing symbols as if they have a life of their own, without necessarily attending to their referents—and the ability to contextualize, to pause as needed during the manipulation process in order to probe into the referents for the symbols involved. Quantitative reasoning entails habits of creating a coherent representation of the problem at hand; considering the units involved; attending to the meaning of quantities, not just how to compute them; and knowing and flexibly using different properties of operations and objects.	**Unit 4:** 1.2, 2.1, 2.4, 2.5, 3.1, 3.3, 3.4 **Unit 8:** 2.1, 2.2, 2.4, 2.5

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MAFS.K12.MP.3.1: **Construct viable arguments and critique the reasoning of others.** Mathematically proficient students understand and use stated assumptions, definitions, and previously established results in constructing arguments. They make conjectures and build a logical progression of statements to explore the truth of their conjectures. They are able to analyze situations by breaking them into cases, and can recognize and use counterexamples. They justify their conclusions, communicate them to others, and respond to the arguments of others. They reason inductively about data, making plausible arguments that take into account the context from which the data arose. Mathematically proficient students are also able to compare the effectiveness of two plausible arguments, distinguish correct logic or reasoning from that which is flawed, and—if there is a flaw in an argument—explain what it is. Elementary students can construct arguments using concrete referents such as objects, drawings, diagrams, and actions. Such arguments can make sense and be correct, even though they are not generalized or made formal until later grades. Later, students learn to determine domains to which an argument applies. Students at all grades can listen or read the arguments of others, decide whether they make sense, and ask useful questions to clarify or improve the arguments.	**Unit 3:** 1.1, 1.2, 1.5, 2.1, 2.2, 2.3, 2.6, 3.2, 3.3, 3.5 **Unit 8:** 1.1, 1.3, 1.5, 2.1, 2.3, 2.4, 2.5

Florida MAFS: Mathematics Standards Grade 5	**Investigations 3 in Number, Data, and Space ©2017 Grade 5**
MAFS.K12.MP.4.1: **Model with mathematics.** Mathematically proficient students can apply the mathematics they know to solve problems arising in everyday life, society, and the workplace. In early grades, this might be as simple as writing an addition equation to describe a situation. In middle grades, a student might apply proportional reasoning to plan a school event or analyze a problem in the community. By high school, a student might use geometry to solve a design problem or use a function to describe how one quantity of interest depends on another. Mathematically proficient students who can apply what they know are comfortable making assumptions and approximations to simplify a complicated situation, realizing that these may need revision later. They are able to identify important quantities in a practical situation and map their relationships using such tools as diagrams, two-way tables, graphs, flowcharts and formulas. They can analyze those relationships mathematically to draw conclusions. They routinely interpret their mathematical results in the context of the situation and reflect on whether the results make sense, possibly improving the model if it has not served its purpose.	**Unit 2:** 1.1, 1.4, 1.6, 1.7, 1.8, 2.2 **Unit 5:** 1.1, 1.2, 1.3, 1.4, 1.7, 2.1, 2.3, 2.5

Florida MAFS: Mathematics Standards Grade 5	**Investigations 3 in Number, Data, and Space ©2017 Grade 5**
MAFS.K12.MP.5.1: **Use appropriate tools strategically.** Mathematically proficient students consider the available tools when solving a mathematical problem. These tools might include pencil and paper, concrete models, a ruler, a protractor, a calculator, a spreadsheet, a computer algebra system, a statistical package, or dynamic geometry software. Proficient students are sufficiently familiar with tools appropriate for their grade or course to make sound decisions about when each of these tools might be helpful, recognizing both the insight to be gained and their limitations. For example, mathematically proficient high school students analyze graphs of functions and solutions generated using a graphing calculator. They detect possible errors by strategically using estimation and other mathematical knowledge. When making mathematical models, they know that technology can enable them to visualize the results of varying assumptions, explore consequences, and compare predictions with data. Mathematically proficient students at various grade levels are able to identify relevant external mathematical resources, such as digital content located on a website, and use them to pose or solve problems. They are able to use technological tools to explore and deepen their understanding of concepts.	**Unit 2:** 1.2, 1.5, 1.7, 2.1, 2.2, 2.3 **Unit 5:** 1.1, 1.2, 1.3, 1.6, 2.1, 2.5

Florida MAFS: Mathematics Standards Grade 5	**Investigations 3 in Number, Data, and Space ©2017 Grade 5**
MAFS.K12.MP.6.1: **Attend to precision.** Mathematically proficient students try to communicate precisely to others. They try to use clear definitions in discussion with others and in their own reasoning. They state the meaning of the symbols they choose, including using the equal sign consistently and appropriately. They are careful about specifying units of measure, and labeling axes to clarify the correspondence with quantities in a problem. They calculate accurately and efficiently, express numerical answers with a degree of precision appropriate for the problem context. In the elementary grades, students give carefully formulated explanations to each other. By the time they reach high school they have learned to examine claims and make explicit use of definitions.	**Unit 4:** 1.1, 1.3, 2.1, 2.2, 2.4, 2.5, 2.7, 3.2 **Unit 6:** 1.1, 1.3, 1.4, 1.5, 1.6, 2.2, 2.4, 2.6, 2.7
MAFS.K12.MP.7.1: **Look for and make use of structure.** Mathematically proficient students look closely to discern a pattern or structure. Young students, for example, might notice that three and seven more is the same amount as seven and three more, or they may sort a collection of shapes according to how many sides the shapes have. Later, students will see 7×8 equals the well remembered $7 \times 5 + 7 \times 3$, in preparation for learning about the distributive property. In the expression $x^2 + 9x + 14$, older students can see the 14 as 2×7 and the 9 as $2 + 7$. They recognize the significance of an existing line in a geometric figure and can use the strategy of drawing an auxiliary line for solving problems. They also can step back for an overview and shift perspective. They can see complicated things, such as some algebraic expressions, as single objects or as being composed of several objects. For example, they can see $5 - 3(x - y)^2$ as 5 minus a positive number times a square and use that to realize that its value cannot be more than 5 for any real numbers x and y.	**Unit 1:** 1.1, 1.2, 2.2, 2.4, 3.1, 3.4, 3.5, 3.6 **Unit 6:** 1.1, 1.3, 1.7, 1.8, 2.1, 2.4, 2.5, 2.8

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MAFS.K12.MP.8.1: **Look for and express regularity in repeated reasoning.** Mathematically proficient students notice if calculations are repeated, and look both for general methods and for shortcuts. Upper elementary students might notice when dividing 25 by 11 that they are repeating the same calculations over and over again, and conclude they have a repeating decimal. By paying attention to the calculation of slope as they repeatedly check whether points are on the line through (1, 2) with slope 3, middle school students might abstract the equation $(y – 2)/(x – 1) = 3$. Noticing the regularity in the way terms cancel when expanding $(x – 1)(x + 1)$, $(x – 1)(x^2 + x + 1)$, and $(x – 1)(x^3 + x^2 + x + 1)$ might lead them to the general formula for the sum of a geometric series. As they work to solve a problem, mathematically proficient students maintain oversight of the process, while attending to the details. They continually evaluate the reasonableness of their intermediate results.	**Unit 3:** 1.1, 1.3, 1.4, 1.6, 2.1, 2.5, 2.7, 3.2, 3.3, 3.6 **Unit 7:** 1.3, 1.6, 1.8, 1.9, 1.10, 2.2, 2.3, 2.4, 3.3, 3.4, 3.8
LAFS.5.SL.1.1: Engage effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on *grade 5 topics and texts*, building on others' ideas and expressing their own clearly.	Grade 5 students are led through collaborative discussions in each session as they learn to apply new concepts. They answer open-ended questions in a large group context as well as discuss with their peers during hands-on activities.
a. Come to discussions prepared, having read or studied required material; explicitly draw on that preparation and other information known about the topic to explore ideas under discussion.	Investigations provides daily practice and homework as follow-up to each session. Students are expected to work through problems in the student activity book, and be prepared to share and discuss their work the following day.
b. Follow agreed-upon rules for discussions and carry out assigned roles.	Teachers guide students in taking turns, listening, and responding appropriately when others are sharing their understanding of the topic.

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c. Pose and respond to specific questions by making comments that contribute to the discussion and elaborate on the remarks of others.	The teacher's edition includes guided discussion questions, as well as possible questions that may come from students during specific activities. Students are encouraged to ask questions and to verbalize the challenges they face with each topic.
d. Review the key ideas expressed and draw conclusions in light of information and knowledge gained from the discussions.	Each session in Investigations includes opportunities for students to explain their work and mathematical processing as they learn new topics.
LAFS.5.SL.1.2: Summarize a written text read aloud or information presented in diverse media and formats, including visually, quantitatively, and orally.	As each new concept is presented, Investigations gives multiple opportunities for teachers to check for understanding. Casual conversation, direct questioning, and ongoing assessments are just a few of the ways students are assessed for understanding of the topic. "Intervention" and "Discussion" are two specific sections in each session that are focused on both students and teachers asking questions.
LAFS.5.SL.1.3: Summarize the points a speaker makes and explain how each claim is supported by reasons and evidence.	The "Discussion" section of each session is designed to allow both teachers and students to ask and answer questions about specific issues and topics.
LAFS.5.W.1.2: Write informative/explanatory texts to examine a topic and convey ideas and information clearly.	Students are given opportunities to communicate their understanding of each topic. Grade 5 includes both interactive and written activities where students describe their processes in using mathematical operations.
a. Introduce a topic clearly, provide a general observation and focus, and group related information logically; include formatting (e.g., headings), illustrations, and multimedia when useful to aiding comprehension.	As students discuss mathematical topics, they organize their thoughts logically. They are encouraged to use drawings, mathematical models, and other illustrations to aid in comprehension.
b. Develop the topic with facts, definitions, concrete details, quotations, or other information and examples related to the topic.	Students use precise mathematical vocabulary to clearly communicate information during discussions.

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c. Link ideas within and across categories of information using words, phrases, and clauses (e.g., in contrast, especially).	Communicating clearly with linking words is part of the experience for students as they participate in mathematical discussions.
d. Use precise language and domain-specific vocabulary to inform about or explain the topic.	Students use precise mathematical vocabulary to clearly communicate information during discussions.
e. Provide a concluding statement or section related to the information or explanation presented.	Students learn to wrap up their own arguments and ideas as they prepare to hear the arguments and ideas of their classmates.
ELD.K12.ELL.MA.1: English language learners communicate information, ideas and concepts necessary for academic success in the content area of Mathematics.	"Differentiation" sections within each session include support for English Language Learners. ELL students receive extra support in vocabulary, visual, kinesthetic, and auditory examples and activities.
ELD.K12.ELL.SI.1: English language learners communicate for social and instructional purposes within the school setting.	ELL students learn to interact and communicate with other students as they engage in regular session activities, as well as the "Differentiation" options included in each session.