



Marietta City Schools
District Unit Planner

Second Grade

Unit Name Reasoning with Equal Groups

Unit duration (Days)

3-4 Weeks

GA K-12 Standards

In this unit, students will understand and model multiplication as equal groups and as rectangular arrays. Determine whether a group (up to 20) has an odd or even number of objects. Explore the concept that if a number can be decomposed (broken apart) into two equal addends (e.g., $10 = 5 + 5$), then that number (10 in this case) is an even number. Students should explore this concept with concrete objects (e.g., counters, place value cubes, etc.) before moving toward pictorial representations such as circles or arrays. Use rectangular arrays and equal groups to gain a deeper understanding of multiplication and work with repeated addition. This is a building block for multiplication in 3rd Grade. Students should explore this concept with concrete objects (e.g., counters, bears, square tiles, etc.) as well as pictorial representations on grid paper or other drawings. Based on the commutative property of addition, students can add either the rows or the columns and still arrive at the same solution.

2.NR.2: Apply multiple part-whole strategies, properties of operations and place value understanding to solve real-life, mathematical problems involving addition and subtraction within 1,000.

- **2.NR.2.1** Fluently add and subtract within 20 using a variety of mental, part whole strategies

2.NR.3: Work with equal groups to gain foundations for multiplication through real-life, mathematical problems.

- **2.NR.3.1** Determine whether a group (up to 20) has an odd or even number of objects. Write an equation to express an even number as a sum of two equal addends.
- **2.NR.3.2** 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.

2.PAR.4: Identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns.

- **2.PAR.4.1** Identify, describe, and create a numerical pattern resulting from repeating an operation such as addition and subtraction.
- **2.PAR.4.2** Identify, describe, and create growing patterns and shrinking patterns involving addition and subtraction up to 20.

2.MP. 1-8 Display perseverance and patience in problem-solving. Demonstrate skills and strategies needed to succeed in mathematics, including critical thinking, reasoning, and effective collaboration and expression. Seek help and apply feedback. Set and monitor goals.

- **2.MP.1** Make sense of problems and persevere in solving them.
- **2.MP.2** Reason abstractly and quantitatively.
- **2.MP.3** Construct viable arguments and critique the reasoning of others.

- **2.MP.4** Model with mathematics.
- **2.MP.5** Use appropriate tools strategically.
- **2.MP.6** Attend to precision.
- **2.MP.7** Look for and make use of structure.
- **2.MP.8** Look for and express regularity in repeated reasoning.

The [Framework for Statistical Reasoning](#) and the [Mathematical Modeling Framework](#) should be taught throughout the units. The [K-12 Mathematical Practices](#) should be evidenced at some point throughout each unit depending on the tasks that are explored. It is important to note that MPs 1, 3 and 6 should support the learning in every lesson.

Essential Questions/ I CAN Statements

- I can arrange an array using columns and rows with up to 5 rows and up to 5 columns.
- I can write an equation using an array.
- I can use addition to find the total number of objects arranged in a rectangular array.
- I can fluently add and subtract within 20 using a variety of mental, part-whole strategies.
- I can determine whether a group, up to 20, has an odd or even number of objects.
- I can write an equation to express an even number as a sum of two equal addends.

Tier II Vocabulary Words- High Frequency Multiple Meaning

addends, addition, equation, sum, even, total

Tier III Vocabulary Words- Subject/ Content Related Words

[K-12 Mathematics Glossary](#)
repeated addition, pairing, array, product, columns, rows, rectangular,
equal sharing/forming equal sized groups

Assessments

Formative Assessment(s):

- [MCS K-5 Activity & Assessment Collection](#)
- [Unit 8 Assessment](#)

It is the responsibility of each schools' grade level PLC to identify appropriate instructional lessons and resources, based on data and student needs, using the suggested pacing duration. The following learning tasks have been vetted to align to the standards included in this unit. The GA Dept. of Education strongly recommends that any additional tasks, resources, and/or assessments used for instruction should be vetted using the [Quality Assurance Rubric](#), to ensure alignment to the state standards.

Objective or Content	Learning Experiences	Differentiation Considerations
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<p>2.NR.3: Work with equal groups to gain foundations for multiplication through real-life, mathematical problems.</p>	<p><u>Bumpy or Not Bumpy (2-3 Days)</u> *Also includes 2.PAR.4 <i>In this learning plan, students will use real-life objects to determine whether a number is odd or even through building numbers with concrete manipulatives to see and feel even “not bumpy” or odd “bumpy” numbers. .</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Materials <p><u>Two of Everything. Add It Up! (2-3 Days)</u> *Also includes 2.NR.2 and 2.PAR.4 <i>In this learning plan, students will continue to develop and apply the concept of equal addends to mathematical problem-solving opportunities. Students will also use a growing understanding of odd and even numbers to form problems solving strategies for adding numbers. Students will begin to understand that adding two equal numbers will produce an even number, and adding two odd numbers will produce an even number, however, adding an even number to an odd number will produce an odd number.</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Materials <p><u>A Patchwork Quilt (4-5 Days)</u> *Also includes 2.NR.2 and 2.PAR.4 <i>In this learning plan, students will apply a growing understanding of odd and even numbers to a beginning understanding of arrays. Students will use manipulatives to begin this exploration.</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Materials <p><u>Cereal Arrays (2-4 Days)</u> <i>In this learning plan, students will work to create arrays and explore real life situations in which they will utilize creating an array to solve the real-life situation.</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Material 	<p><u>SAVVAS enVision Topic 2: Work with Equal Groups</u></p> <ul style="list-style-type: none"> • Lesson 2-1: Even and Odd Numbers • Lesson 2-2: Continue Even and Odd Numbers • Lesson 2-3: Use Arrays to Find Totals • Lesson 2-4: Make Arrays to Find Totals • Lesson 2-5: Problem Solving - Model with Math <p><u>MIP Module 3: Building Foundations for Multiplication</u></p> <ul style="list-style-type: none"> • Odd or Even Grid Models pg. 71-72 • Splitting the Chain pg. 73-75 • Even Steven and Odd Todd pg. 75-77 • Sticky Note Arrays pg. 80-81 • Making Arrays pg. 81 	<p>Animal Arrays Use addition to find the total number of objects arranged in rectangular arrays.</p> <p>Number Path State the forward and backward number word sequence in the range 0 –100 for twos, fives and tens</p> <p>Smiley Face Solving multiplication and division problems using skip counting by twos, fives, and tens</p> <p>Threes Company Solve multiplication problems by using repeated addition</p>
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	<p><u>Creating Arrays (2-3 Days)</u></p> <p><i>In this learning plan, students will work to create arrays and explore real life situations in which they will utilize creating an array to solve the real-life situation.</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Material 		
<p>2.PAR.4: Identify, describe, extend, and create repeating patterns, growing patterns, and shrinking patterns.</p>	<p><u>Cookie Monster (2-3 Days)</u></p> <p><i>*Also includes 2.NR.3</i></p> <p><i>In this learning plan, students will apply a growing understanding of odd and even numbers to a beginning understanding of arrays. Students will use manipulatives to begin this exploration.</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Materials 		

Content Resources	
<p>MCS Links:</p> <ul style="list-style-type: none"> • MCS 2nd Grade Math Curriculum Map • MCS Math Instructional Framework <p>GA DOE Links:</p> <p>Access all GADOE Curriculum Resources at the following site: GaDOE Inspire.</p>	<p>Additional Resources:</p> <ul style="list-style-type: none"> •