



Marietta City Schools
District Unit Planner

Third Grade

Unit Name	<i>Unit 3: Relating Multiplication to Division</i>	Unit duration (Days)	3-4 weeks
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[GA K-12 Standards](#)

In this unit, students will learn that multiplication and division are inverse operations that can be used to solve problems involving equal groups, arrays, and area measurements. Students discover that numbers of objects can be divided by partitioning them into equal shares (partitive) and by grouping them into groups of a known size (quotative).

3.PAR.3 Use part-whole strategies to solve real-life, mathematical problems involving multiplication and division with whole numbers within 100.

- **3.PAR.3.2** Represent single digit multiplication and division facts using a variety of strategies. Explain the relationship between multiplication and division
- **3.PAR.3.3** Apply properties of operations (i.e., commutative property, associative property, distributive property) to multiply and divide within 100.
- **3.PAR.3.4** Use the meaning of the equal sign to determine whether expressions involving addition, subtraction, and multiplication are equivalent
- **3.PAR.3.5** Use place value reasoning and properties of operations to multiply one-digit whole numbers by multiples of 10, in the range 10-90
- **3.PAR.3.6** Solve practical, relevant problems involving multiplication and division within 100 using part-whole strategies, visual representations, and/or concrete models.
- **3.PAR.3.7** Use multiplication and division to solve problems involving whole numbers to 100. Represent these problems using equations with a letter standing for the unknown quantity. Justify solutions

3.MDR.5 Solve real-life, mathematical problems involving length, liquid volume, mass, and time and analyze graphical displays of data to answer relevant questions.

- **3.MDR.5.1** Ask questions and answer them based on gathered information, observations, and appropriate graphical displays to solve problems relevant to everyday life
- **3.MDR.5.5** Estimate and measure liquid volumes, lengths and masses of objects using customary units. Solve problems involving mass, length, and volume given in the same unit, and reason about the relative sizes of measurement units within the customary system.

3. 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.

- **MP.1** Make sense of problems and persevere in solving them.
- **MP.2** Reason abstractly and quantitatively.
- **MP.3** Construct viable arguments and critique the reasoning of others.
- **MP.4** Model with mathematics.
- **MP.5** Use appropriate tools strategically.
- **MP.6** Attend to precision.
- **MP.7** Look for and make use of structure.

- **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

- (3.PAR.3) How can the knowledge of multiplication and division strategies be used to solve real world problems?
- (3.PAR.3) How does understanding the distributive property help us multiply large numbers?
- (3.PAR.3) How are multiplication and division related?
- (3.MDR.5) How can we organize and interpret data from tables, bar graphs, pictographs, and dot plots?
- (3.MDR.5) What strategies could you use to figure out the mass of multiple objects?

Tier II Vocabulary Words- High Frequency Multiple Meaning

array, multiple, bar model, product, column, row, scale, equal groups, equation, twice, expression, factor, double, inverse, operation, table, chart, key, model, mass, liquid volume, capacity, milliliters, grams

Tier III Vocabulary Words- Subject/ Content Related Words

Identity Property of Multiplication, Associative Property, Commutative Property, Zero Property of Multiplication, bar graph, pictograph, repeated addition, Distributive Property, skip count, diagram, Measurement
[K-12 Mathematics Glossary](#)

Assessments

Formative Assessment(s):

- 3.PAR.3 MCS Mini
- 3.PAR.3 Raking Leaves
- 3.PAR.3.2 Savvas Topic 1 Assessment
- 3.PAR.3 MIP Module 3 Fact Assessment, p. 113-115 (Fact Checks)
- 3.PAR.3 MIP Module 1, Formative Assessment, p. 30 (÷ by 10), p. 33 (Option 2 ÷ by array model), p. 38-39 (÷ with area model)
- 3.PAR.3 Savvas Topic 4 Assessment
- 3.PAR.3 Savvas Topic 5 Assessment
- 3.PAR.3.5 Savvas Topic 10 Assessment
- 3.PAR.3 & 3.MDR.5.1 Savvas Topic 10-4 Performance Task (SE, p. 396)
- 3.MDR.5.1 MIP Module 13, Formative Assessment, p.283 (Favorite Pizza Toppings)
- 3.MDR.5.1 Savvas Topic 7 Performance Task: Twisting Balloons, TE p. 283-284

Summative 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
<p>3.PAR.3 Use part-whole strategies to solve real-life, mathematical problems involving multiplication and division with whole numbers within 100.</p>	<p style="text-align: center;"><u>GA DOE Learning Plans</u></p> <p><u>The Doorbell Rang</u> <i>In this learning plan, students will be introduced to division by creating equal groups and fair shares. (Suggested Timeframe 1-2 days)</i></p> <ul style="list-style-type: none"> ● Teacher Guidance ● Student Reproducibles <p><u>Divide and Ride</u> <i>In this learning plan, students will be introduced to modeling the two types of division problems - grouping and sharing. (Suggested Timeframe 2-3 days)</i></p> <ul style="list-style-type: none"> ● Teacher Guidance ● Student Reproducibles <p><u>Seating Arrangements</u> <i>In this learning plan, students will use arrays and equal groups to solve real-world problems involving the commutative property of multiplication and the relationship between multiplication and division. (Suggested Timeframe 2-3 days)</i></p> <ul style="list-style-type: none"> ● Teacher Guidance ● Student Reproducibles <p><u>Balancing Act</u> <i>*Also includes 3.MDR.5</i> <i>In this learning plan, students will use multiplication and division to solve for the unknown when balancing equations. (Suggested Timeframe 2-3 days)</i></p> <ul style="list-style-type: none"> ● Teacher Guidance ● Student Reproducibles <p><u>Field Day Blunder</u> <i>In this learning plan, students will apply their understanding of multiplication and division to solve real-world problems. (Suggested Timeframe 2-3 days)</i></p> <ul style="list-style-type: none"> ● Teacher Guidance ● Student Reproducibles 	<p style="text-align: center;"><u>MCS Curriculum Resources</u></p> <p><u>SAVVAS enVision Topic 1: Understand Multiplication and Division of Whole Numbers</u> <i>Students are introduced to multiplication and division. They use patterns to solve multiplication facts.</i></p> <ul style="list-style-type: none"> ● Lesson 1-4: Division: How Many in Each Group? ● Lesson 1-5: How Many Equal Groups? <p><u>SAVVAS enVision Topic 4: Use Multiplication to Divide: Division Facts</u> <i>Students apply properties of multiplication and use the relationship between multiplication and division to solve problems.</i></p> <ul style="list-style-type: none"> ● Lesson 4-1: Relate Multiplication and Division ● Lesson 4-2: Use Multiplication to Divide with 2, 3, 4, and 5 ● Lesson 4-3: Use Multiplication to Divide with 6 & 7 ● Lesson 4-4: Use Multiplication to Divide with 8 & 9 ● Lesson 4-6: Division Involving 0 & 1 ● Lesson 4-7: Practice Multiplication and Division Facts ● Lesson 4-8: Solve Multiplication and Division equations <p><u>SAVVAS enVision Topic 5: Fluently Multiply and Divide within 100</u> <i>Students explore strategies for solving multiplication and division facts within 100.</i></p> <ul style="list-style-type: none"> ● Lesson 5-2: Use a Table to Multiply and Divide ● Lesson 5-4: Solve Word Problems: Multiplication and Division Facts ● Lesson 5-6: Problem Solving: Look for and Use Structure <p><u>SAVVAS enVision Topic 10: Multiply by Multiples of 10</u></p>	<p>Smiley Face: Solving multiplication and division problems using skip counting by twos, fives, and tens</p> <p>Bug Flip Multiplication: Derive multiplication facts from 2, 5, and 10 times tables</p> <p>Fun With Fives: Derive multiplication facts from 2, 5, and 10 times tables</p> <p>Twos, Fives, Tens: Solve multiplication problems by using doubles/ repeated addition</p> <p>A Little Bit More/ A Little bit Less: Derive multiplication facts from 2-, 5-, and 10-times tables</p> <p>Fun With Fives P2: Derive multiplication facts from 2-, 5-, and 10-times tables</p>

	<p><u>Cupcake Fun!</u> *Also includes 3.MDR.5 <i>In this learning plan, students will solve one-step multiplication and division word problems involving equal groups and arrays. Students will multiply and divide within 100 to solve problems with unknowns in all positions. (Suggested Timeframe 2-3 days)</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Reproducibles <p><u>Savvy Shoppers</u> <i>In this learning plan, students will use their understanding of multiplying a single-digit number by a multiple of ten to find the best deals. (Suggested Timeframe 1-2 days)</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Reproducibles <p><u>Multiply by Multiples of 10</u> <i>In this learning plan, students will use equal groups and arrays to investigate patterns with multiplying by multiples of ten. Students will apply their understanding to word problem situations. (Suggested 2-3 days)</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Reproducibles <p><u>Sharing Pumpkin Seeds</u> <i>In this learning plan, students will use place value understanding and the relationship between multiplication and division to divide larger numbers. (Suggested Timeframe 2-3 days)</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Reproducibles 	<p><i>Students use strategies based on place value and properties of operations to add and subtract within 1,000 and to multiply a one-digit number by a multiple of 10.</i></p> <ul style="list-style-type: none"> • Lesson 10-1: Use Patterns to Multiply • Lesson 10-2: Use Mental Math to Multiply • Lesson 10-3: Use Properties to Multiply <p><u>Illustrative Mathematics</u></p> <ul style="list-style-type: none"> • Markers in Boxes <p><u>Super Source</u></p> <ul style="list-style-type: none"> • It's in the Bag <p><u>MIP Module 1: Understanding Multiplication and Division</u> <i>The key ideas focused on in this module include understanding the concepts of multiplication and division, and using concrete objects and drawings to represent multiplication and division problem situations, creating and interpreting equations to represent multiplication and division problems, and understanding that division is the inverse of multiplication.</i></p> <ul style="list-style-type: none"> • Introducing a Set Model to Show Division, p. 27-29 • Divide and Ride, p. 31 • An Array Model to Show Division, p. 31-32 • How Does Your Garden Grow, p. 35 • Introducing a Number line for Division, p. 35-37 • An Area Model for Division, p. 38 • Eliminate It, p. 41 <p><u>MIP Module 3: Fluently Multiplying and Dividing</u> <i>The key ideas focused on in this module include developing an understanding of multiplication and division math facts and gaining fluency with multiplication and division math facts.</i></p> <ul style="list-style-type: none"> • Understanding $\div 2$ facts, p. 73-75 • One Hundred Hungry Ants ($\div 10$), p. 77-79 • Understanding $\div 1/0$, p. 84-87 • Understanding $\div 3$ Facts, p. 89 • Connecting Multiplication and Division, p. 90 • Understanding $\div 4$ Facts, p. 93 • Understanding $\div 6$ Facts, p. 96 	
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<p>3.MDR.5 Solve real-life, mathematical problems involving length, liquid volume, mass, and time and analyze graphical displays of data to answer relevant questions.</p>	<p><u>Exploring Scaled Graphs</u> <i>*Also includes 3.PAR.3</i> <i>In this learning plan, students use scaled pictographs as a tool for representing data. Students will analyze data and represent & solve multiplication and division problems through the context of bar graphs and pictographs. (suggested Timeframe 2-3 days)</i></p> <ul style="list-style-type: none"> • Teacher Guidance • Student Reproducibles 	<p><u>SAVVAS enVision Topic 14: Solve Time, Capacity, and Mass Problems</u> <i>Students learn to tell and write time to the nearest minute. They estimate and measure liquid volumes and masses, using appropriate units and tools</i></p> <ul style="list-style-type: none"> • Lesson 14-8: Solve Word Problems Involving Mass and Liquid Volume <p><u>MIP Module 12: Exploring Mass and Volume</u> <i>The key ideas focused on in this module include understanding units of measure for mass and volume, estimating and measuring mass and volume, and solving one-step problems involving mass or volume using any operation.</i></p> <ul style="list-style-type: none"> • Measuring Milliliters, p. 260-261 • Problem-Solving With Mass and Volume, p.267-268 • Vocabulary Sort, p. 271 <p><u>MIP Topic 13: Representing and Interpreting Data and Exploring Linear Measurement</u> <i>The key ideas focused on in this module include drawing a</i></p>	<p>Playing Favorites: Pose, plan, analyze data</p>

		<p>scaled picture graph, drawing a scaled bar graph, solving one and two step problems using data from graphs, measuring to the nearest half and fourth of an inch, and creating line plots with the horizontal scale marked in wholes, halves and fourths.</p> <ul style="list-style-type: none"> Lemonade for Sale, p. 281-282 	
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Content Resources

MCS Links:

- [MCS Math Curriculum Map](#)
- [MCS Math Instructional Framework](#)

GA DOE Links:

Access all GADOE Curriculum Resources at the following site: [GaDOE Inspire](#).

Additional Resources:

- [Toy theater](#) (Virtual manipulatives)
- [Unit 3 Think and Share](#)
- [K5 Math Learning](#) (Operations and Algebraic Thinking)
- [Greg Tang Math](#)

Possible Number Sense and Strategy-Development Routine

- [Estimation 180](#)
- [Which one Doesn't belong](#)
- [Splat](#) - Instant multiple splats,
- [Same or Different](#) (multiplication & division)
- [Same or Different](#) (area)

Mathematical Discourse:

- [ESOL Math Talk Starters](#)
- [Sentence Stems](#)