Marietta City Schools
District Unit Planner

Fifth Grade

Unit Name	*Unit 5: Making Sense of Fraction Multiplication and Division*	Unit duration (Days)	*5-6 weeks*

GA K-12 Standards

In this unit, students begin by interpreting a fraction as a quotient and use their understanding of whole number multiplication to multiply a whole number and a fraction. Students solve problems involving division of whole numbers with answers that are fractions (which could be in the form of mixed numbers). They develop an understanding of fractions as the division of the numerator by the denominator, that is $a \div b = a /b$. Building from students' work in third grade with multiplication and division with whole numbers in terms of equal-sized groups, students will use multiplication to represent equal-sized groups of fractional amounts. They will solve problems that involve the multiplication of a whole number by a fraction or mixed number using properties of operations. Students will make sense of division of fractions from situations that involve a whole number and a unit fraction and recall that division can be understood in terms of finding the number of equal-sized groups or finding the size of each group. Students will use multiplicative comparison to compare the size of a product of a fraction and a whole number to the size of one of the factors.

5.NR.3: Describe fractions and perform operations with fractions to solve real-life, mathematical problems using part whole strategies and visual models.
- **5.NR.3.1** Explain the meaning of a fraction as division of the numerator by the denominator ($a\,b$ = a ÷ b). Solve problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.
- **5.NR.3.4** Model and solve problems involving multiplication of a fraction and a whole number.
- **5.NR.3.5** Explain why multiplying a whole number by a fraction greater than one results in a product greater than the whole number, and why multiplying a whole number by a fraction less than one results in a product less than the whole number and multiplying a whole number by a fraction equal to one results in a product equal to the whole number.
- **5.NR.3.6** Model and solve problems involving division of a unit fraction by a whole number and a whole number by a unit fraction

5.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. *(It is important to note that MPs 1, 3 and 6 should support the learning in every lesson.)*
- **5.MP.1** Make sense of problems and persevere in solving them.
- **5.MP.2** Reason abstractly and quantitatively.
- **5.MP.3** Construct viable arguments and critique the reasoning of others.
- **5.MP.4** Model with mathematics.
- **5.MP.5** Use appropriate tools strategically.
- **5.MP.6** Attend to precision.
- **5.MP.7** Look for and make use of structure.
- **5.MP.8** Look for and express regularity in repeated reasoning.

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Essential Questions/ I Can Statements

(5.NR.3.1) I can explain fractions as division.

(5.NR.3.1) I can solve problems where division of whole numbers leads to fractional answers.

(5.NR.3.4) I can model multiplication of a fraction and a whole number.

(5.NR.3.4) I can solve problems involving multiplication of a fraction and a whole number.

(5.NR.3.5) I can explain the difference in products when multiplying a whole number by a fraction greater than 1 versus a fraction less than 1.

(5.NR.3.6) I can model and solve problems involving division of a unit fraction by a whole number.

(5.NR.3.6) I can model and solve problems involving division of a whole number by a unit fraction.

Tier II Vocabulary Words- High Frequency Multiple Meaning	Tier III Vocabulary Words- Subject/ Content Related Words
Division, expression, equation, equivalent, fraction, reasonableness, subtraction, product, Properties of Operations, quotient, remainder	Partition division (fair sharing), partial product, partial quotient, unit fraction [K-12 Mathematics Glossary](#)

Assessments

Formative Assessment(s):

5.NR.3.1 and 5.NR.3.6

Unit 5 Summative Assessment

Performance Task

Topic 9 Performance Task Apply Understanding of Division to Divide Fractions. (TE pg 423-424)

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

Objective or Content	GA DOE Learning Plans	MCS Curriculum Resources	GADOE Intervention Tasks
5.NR.3.1: Explain the meaning of a fraction as division of the numerator by the denominator ($a\ b$ = a ÷ b). Solve problems involving division of whole numbers leading to answers in the form of fractions or mixed numbers.	**Race Day** *In this learning plan, students relate equal shares of objects to division and to fractions. (1-2 days)* ● Teacher Guidance ● Student Reproducibles **Sharing Sweets** *In this learning plan, students relate equal shares of objects to division and to fractions. (2-3 days)* ● Teacher Guidance ● Student Reproducibles	**SAVVAS enVision Topic 9** *Students are introduced to division of fractions by dividing with unit fractions.* ● Lesson 9-1: Students understand how fractions are related to division. ● Lesson 9-2: Students implement division of fractions to show quotients as fractions and mixed numbers.	**GADOE Intervention Tasks** Non-Unit Fractions Identify symbols for halves, quarters, thirds, fifths and tenths including fractions greater than 1. Show a Fraction Identify symbols for any fractions including those greater than 1. Sharing and Partitioning Solve division problems involving fractions. Sharing Fabric Solve division problems involving fractions. Sharing Pizza Solve division problems involving fractions.
5.NR.3.4 Model and solve problems involving multiplication of a fraction and a whole number. ***These learning plans also include elements from 5.NR.3.5*	**Lemonade Recipes** *In this learning plan, students use their prior knowledge of multiplying fractions by a whole number to determine the amount of ingredients needed for lemonade recipes. (1-2 days)* ● Teacher Guidance ● Student Reproducibles **Fraction of a Set 1** *In this learning plan, students will explore collections as single entities. Students will consider a set of objects as a whole, and the subsets of the whole make up fractional parts. (1-2 days)* ● Teacher Guidance ● Student Reproducibles **Fraction of a Set 2** *In this learning plan, students will explore collections as single*	**SAVVAS enVision Topic 8** *Students extend their understanding of multiplication with fractions.* ● Lesson 8-1: Students multiply a fraction by a whole number. ● Lesson 8-2: Students multiply a whole number by a fraction. ● Lesson 8-3: Students multiply fractions and whole numbers. ● Lesson 8-7: Students connect their knowledge of multiplying whole numbers using partial products or the distributive property to multiply a whole number by a mixed number. ***Use caution when using this lesson. Students do not need to know how to multiply a fraction by a fraction, so only attend to the problems involving*	Birthday Cakes Find fractions of a set by using multiplication and division Candy is Dandy Find fractions of a set by using multiplication and division Helping a Farmer Find fractions of a set by using multiplication and division ***These Intervention tasks/ activities also include elements of 5.NR.3.5 and 5.NR.3.6

	entities. Students will consider a set of objects as a whole, and the subsets of the whole make up fractional parts. (1-2 days) ● Teacher Guidance ● Student Reproducibles **Fraction of a Set 3** *In this learning plan, students will explore collections as single entities. Students will consider a set of objects as a whole, and the subsets of the whole make up fractional parts. (1-2 days)* ● Teacher Guidance ● Student Reproducibles **Book Buddies** *In this learning plan, students will investigate and explore real-world applications of determining what will happen to products when one factor remains the same and the other changes.* ● Teacher Guidance ● Student Reproducibles	*multiplication of a whole number by a mixed number.* **MIP Module 9** *The Key Ideas focus on multiplying a fraction, including mixed numbers, by a whole number or a fraction. It also includes making sense of the product when multiplying fractions, using models and solving problems involving multiplying fractions and mixed numbers.* ● Reviewing Multiplying Fractions by Whole Numbers. P. 181-182 ● Is it the Same? P. 182-185 ● Roll and Equation p. 187	
5.NR.3.5: Explain why multiplying a whole number by a fraction greater than one results in a product greater than the whole number, and why multiplying a whole number by a fraction less than one results in a product less than the whole number and multiplying a whole number by a fraction equal to one results in a product equal to the whole number.	**Exploring the Relationship Between Factors and Products (Part 1)** *In this learning plan, students will build on their understanding of multiplicative comparison as it relates to fractions. Students will explore, through visual representations, what happens to a whole number when multiplied by a fraction less than one, equal to one, and greater than one. (2-3 days)* ● Teacher Guidance ● Student Reproducibles **Exploring the Relationship Between Factors and Products (Part 2)** *In this learning plan, students will build on their understanding of multiplicative comparison as it relates to fractions. Students will explore, through visual representations, what happens to a whole number when multiplied by a fraction less than one, equal to one, and greater than one.* ● Teacher Guidance	**SAVVAS enVision Topic 8** *Students extend their understanding of multiplication with fractions.* ● Lesson 8-8: Students compare the size of the product to the size of one factor without multiplying to consider multiplication as scaling. **MIP Module 9** *The Key Ideas focus on multiplying a fraction, including mixed numbers, by a whole number or a fraction. It also includes making sense of the product when multiplying fractions, using models and solving problems involving multiplying fractions and mixed numbers.* ● Multiplication as scaling p. 186	

*** The Learning Plans in 5.NR.3.4 include elements of this standard as well.	● Student Reproducibles		
5.NR.3.6 Model and solve problems involving division of a unit fraction by a whole number and a whole number by a unit fraction	**Dividing with Unit Fractions** *This learning plan was developed to give students an opportunity to make sense of division with fractional divisors and dividends. (2-3 days)* ● Teacher Guidance ● Student Reproducibles **Fraction Division Situations** *In this learning plan, students will find quotients of a whole number divided by a unit fraction and observe patterns in how the size of the numerator and denominator influence the size of the quotient. Students may draw a tape diagram or reason about the size of the quotient in other ways. (2-3 days)* ● Teacher Guidance ● Student Reproducibles	**SAVVAS enVision Topic 9** *Students are introduced to division of fractions by dividing with unit fractions.* ● Lesson 9-3: Students use multiplication to divide a whole number by a unit fractions. ● Lesson 9-4: Students use models, such as pictorial models or a number line, to show dividing a whole number by a unit fractions. ● Lesson 9-5: Students use models to divide unit fractions by non-zero whole numbers. ● Lesson 9-6: Students use models to divide whole numbers and unit fractions. ● Lesson 9-7: Students solve multi-step problems involving division with unit fractions. **MIP Module 10** *The Key Ideas focus on understanding what happens when a unit fraction is divided by a whole number or a whole number is divided by a unit fraction. It also involves modeling and solving problems involving division with fractions.* ● How many oranges? P. 207 ● What Fraction of the Whole? P. 211-213 ● Graphic Organizer p. 210	Sharing and Partitioning Solve division problems involving fractions.

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:** ● Salad Dressing: Students solve a real-world problem of dividing fractions by a whole number. ● Dividing with Fractions: Students will use reasoning to solve division problems with fractions. ● Fractions as Division ● Making Fractions from Division ● Model and Divide a Whole Number by a Unit Fraction ● Dividing a Unit Fraction by a Whole Number

	[Show Division as Fractions](#) [Multiply Whole Numbers by Fractions Word Problems](#) [Multiply Whole Numbers by Mixed Numbers with Models](#) [Models of Division](#) [Dividing Fractions](#) PPT [Reasoning with fractions](#) - Students will use manipulatives and grid paper to investigate what happens to the product when a whole number is multiplied by 1, by a fraction less than 1, and by a mixed number greater than 1.