Dear Parents,
We will begin our next unit of study in math soon. The information below will serve as an overview of the unit as you work to support your child at home. If you have any questions, please feel free to contact me. I appreciate your ongoing support.

Sincerely,
Your Child's Teacher

Unit Name: Using Models to Multiply and Divide Fractions

North Carolina Content State Standards:

NC.5.NF.3
Use fractions to model and solve division problems.

- Interpret a fraction as an equal sharing context, where a quantity is divided into equal parts.
- Model and interpret a fraction as the division of the numerator by the denominator.
- Solve one-step word problems involving division of whole numbers leading to answers in the form of fractions and mixed numbers, with denominators of 2, 3, 4, 5, 6, 8, 10, and 12, using area, length, and set models or equations.

NC.5.NF.4
Apply and extend previous understandings of multiplication to multiply a ~~fraction or~~ whole number by a fraction, including mixed numbers.

- Use area and length models to multiply ~~two fractions~~ [a fraction by a whole number], with the denominators 2, 3, 4.
- Explain why multiplying a given number by a fraction greater than 1 results in a product greater than the given number and when multiplying a given number by a fraction less than 1 results in a product smaller than the given number.
- ~~Solve one-step word problems involving multiplication of fractions using models to develop the algorithm.~~

NC.5.NF.7
Solve one-step word problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions using area and length models, and equations to represent the problem.

Math Language:

- Magnitude
- Visual Fraction Model
- Partition
- Divisor
- Factor
- Fraction
- Unit Fraction
- Dividend
- Product
- Numerator
- Array
- Quotient
- Number Line
- Denominator
- Repeated Addition

Unit Overview:

This unit builds on the understanding that fractions are equal parts of a whole. Students will continue to develop fluency with adding and subtracting fractions while also learning to multiply and divide fractions using models. They will build conceptual understanding of mathematical operations as they relate to fractions, demonstrating the meaning of each operation does not change when a problem involves fractions. When multiplying fractions, students often expect the product (the answer) to be larger, like multiplication with whole numbers. It is very important for students to show these situations with drawings and other models to visualize what is actually happening in the problem. This visualization helps students make sense of the process to build understanding of the math in the problem. Therefore, students will not use algorithms to problem-solve at this point, but will use visual models to understand why multiplying two fractions less than one results in a

product that is less than either of the original fractions. Students also extend their understanding of division of whole numbers by unit fractions and division of unit fractions by whole numbers. Unit fractions are fractions with 1 as a numerator (½, ⅓, ¼, etc.). It is important that students continue to use models and drawings to justify their thinking and make sense of what the problem is asking. These models and drawings are especially important because there are different types of situations for dividing fractions. Students will also learn to name remainders as fractions. In this unit, students will apply their knowledge of fractional multiplication and division when evaluating story-based problems within a real-world context.

Skills/Strategies:

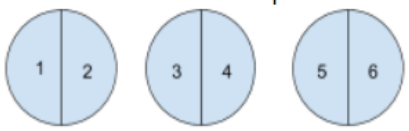
Students will be able to:

- Use area, length and set models or equations to solve one-step word problems involving division of whole numbers that lead to fractions or mixed numbers
- Multiply a whole number by a fraction, including mixed numbers
- Write equations involving division by unit fractions and whole numbers by unit fractions to represent a one-step problem using area and length models

Examples of Visual Fraction Models for Division:

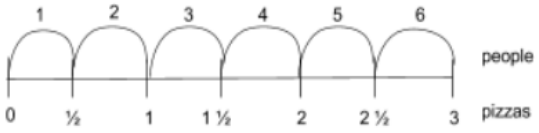
Whole Number ÷ Fraction

There are 3 pizzas. If each person gets ½ of a pizza, how many people can have pizza?



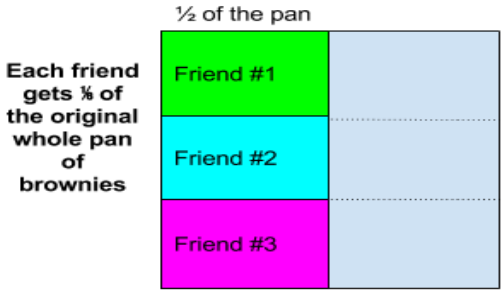
÷ 3 ½ = 6

6 people could have pizza.

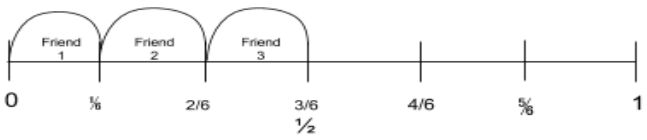


Fraction ÷ Whole Number

There is ½ of a pan of brownies left from a party at school. If 3 friends share the leftover brownies, how much will each friend get?



½ ÷ 3 = ⅙
Each friend gets ⅙ of the original pan of brownies.



Video Support:

Video support can be found on The WCPSS Academics YouTube Channel.
http://tinyurl.com/WCPSSAcademicsYouTube

- ES 5 Math Multiply Fraction X Whole w/ Number Lines
- ES 5 Math Multiply Non-Unit Fraction X Whole w/ Number Lines
- ES 5 Math Multiply Fraction X Whole with Area Models
- ES 5 Math Divide Unit Fraction by Whole Number
- ES 5 Math Divide Whole Number by Unit Fraction

Additional Resources:

- NCDPI Additional Resources

Questions to Ask When Helping Your Child with Math Homework

Keep in mind that homework in elementary schools is designed as practice. If your child is having problems, please let the classroom teacher know. When helping your child with his/her math homework, you don't have to know all the answers! Instead, we encourage you to ask probing questions so your child can work through the challenges independently. Some examples may include the following:

- What is the problem you're working on?
- What do the directions say?
- What do you already know that can help you solve the problem?
- What have you done so far and where are you stuck?
- Where can we find help in your notes?
- Are there manipulatives, pictures, or models that would help?
- Can you explain what you did in class today?
- Did your teacher work examples that you could use?
- Can you go onto another problem & come back to this one later?
- Can you mark this problem so you can ask the teacher for an explanation tomorrow?