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| Standards: (Your child will be able to)**Grade 4 GT Mathematics Unit Preview**Unit 4: Number Relationships and Computation (Fractions)* Understand a fraction *a/b* with *a > 1* as a sum of fractions *1/b*
* 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,  +  =  +  =
1. Ability to create equivalent fractions for each addend by using the identity property.
* 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.
* Knowledge of understanding addition and subtraction of fractions as joining and separating parts referring to the same whole. (4.NF.3a).
* Apply and extend previous understandings of multiplication to multiply a fraction by a whole number.
1. Ability to use concrete materials to model multiplication of fractions
2. Knowledge that when multiplying a whole number by a fraction, you are finding that fractional part of the whole number (e.g.: x 2/4 is the same as of 2/4
3. Ability to connect the multiplication of fractions to the repeated addition of fractions (e.g.: 4 x = + + + )
* 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 of 5 x (1/4), recording the conclusion by the equation 5/4 = 5 x (1/4).*
1. Ability to apply the concept of a unit fraction in relationship to a multiple of that fraction (e.g.: is the unit fraction of fourths)
* 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 x (2/5) as 6 x (1/5), recognizing this product as 6/5. (In general, n x (a/b) = (n x a)/b.)*
* 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 a 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?*
1. Ability to apply knowledge of multiplication of fractions by a whole number to a variety of real life problem situations
* Interpret a fraction as division of the numerator by the denominator. 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 34 as the result of dividing 3 by 4, noting that 34 multiplied by 4 equals 3 and that when 3 wholes are shared equally among 4 people each person has a share of size 34. 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?
1. Ability to recognize that a fraction is a representation of division.
* Apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.
1. Interpret the product () • 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 () • 4 = , and create a story context for this equation. Do the same with () • () =. (In general, () • () = .)
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| * 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.
1. Knowledge of unit fractions to multiply all fractions. (4.NF.3)
2. Knowledge of using rectangular arrays to find area using rational numbers. (4.NBT.5)
* Interpret multiplication as scaling (resizing) by:
1. 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.
2. Explaining why multiplying a given number by a fraction greater than one 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 =  X  to the effect of multiplying by 1.
* Solve real world problems involving multiplication of fractions and mixed numbers, e.g., by using visual fraction models or equations to represent the problem.
* Apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. (Students able to multiply fractions in general can develop strategies to divide fractions in general, by reasoning about the relationship between multiplication and division. But division of a fraction by a fraction is not a requirement at this grade.)
1. Interpret division of a unit fraction by a non-zero whole number, and compute such quotients. For example, create a story context for (13) ÷ 4 and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that () ÷ 4 = because () • 4 = .
* Interpret division of a whole number by a unit fraction, and compute such quotients. For example, create a story context for 4 ÷ ( ) and use a visual fraction model to show the quotient. Use the relationship between multiplication and division to explain that 4 ÷ () = 20 because 20 • () = 4.
* 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 12 lb of chocolate equally? How many 13-cup servings are in 2 cups of raisins?
1. Knowledge of the relationship between multiplication and division
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Activities to do with your student (in addition to homework, optional):

* Create or pick numbers to make fractions. Add, subtract, multiply, divide, or simplify the fractions that you make.
* Find examples of fractions around the house or neighborhood. Add, subtract, or simplify the fractions that you find.
* Practice simplifying different fractions by finding the greatest common factor..
* With a partner, pick numbers. Race to find the common factors of those numbers.
* With a partner, choose fractions. Race to put the fractions in order from least to greatest or greatest to least.
* Pick or create numbers to make improper fractions. Change the improper fractions to mixed numerals.
* Find examples of fractions and/or mixed numerals around your house.
* Pick or create numbers to make fractions, improper fractions, or mixed numbers. Draw pictures of the fraction, improper fraction, or mixed number.

# Vocabulary: (Words your student will need to understand)

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| **• Equivalent Fractions:** Two or more fractions with the same value. Example: 1/2 = 2/4  | **• Numerator:** The number above the line in a fraction. The numerator represents how many pieces of the whole, or how many parts of a set, that are discussed.  |
| **• Improper Fraction:** A fraction where the numerator is greater than the denominator.  | **• Denominator:** The number below the line in a fraction. The denominator represents the number of equal pieces the whole is broken into. |
| **• Mixed Number:** A number that is made up of a whole number and a fraction | **• Percent:** A special ratio that compares a number to 100 using the symbol %. |