Your child can interpret a fraction as division of the numerator by the denominator. Your child can 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).

- Contextualize and decontextualize word problems involving division.
- Produce visual models to justify a division of a fraction.
- Write an equation to represent the division shown in a visual model.
- Estimate the size of the quotient (part) before dividing.

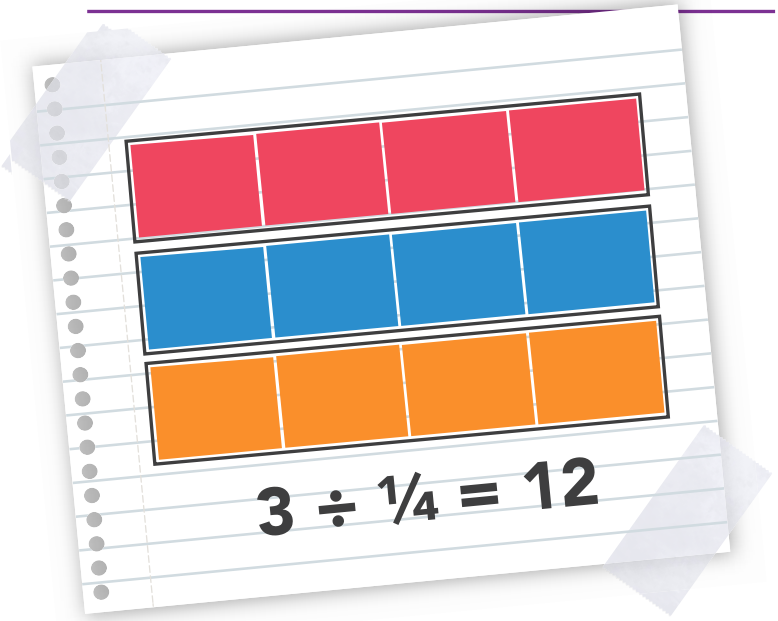
HELP AT HOME

- Draw three bars. Have your child divide each into ¼ pieces. The result is 12 smaller pieces. Therefore 3 ÷ ¼ = 12. Have your child write the equation represented in the visual model he just created (e.g., 3 ÷ ¼ = 12). Repeat this activity with varying number of bars and divisions.

VOCABULARY

CONTEXTUALIZE and **DECONTEXTUALIZE** refer to breaking a word or situation down based on surrounding words to help you understand the problem.

A **QUOTIENT** is the answer to a division problem.



Your child can apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction.

- Multiply a fraction or whole number by a fraction and interpret the product.
- Use visual fraction models and number lines to show the steps used in solving a problem involving multiplication by a fraction.
- Use benchmarks to estimate the product and determine if the solution is reasonable.
- Contextualize and decontextualize problems by creating word problems and/or equations that represent different multiplication situations and models.

HELP AT HOME

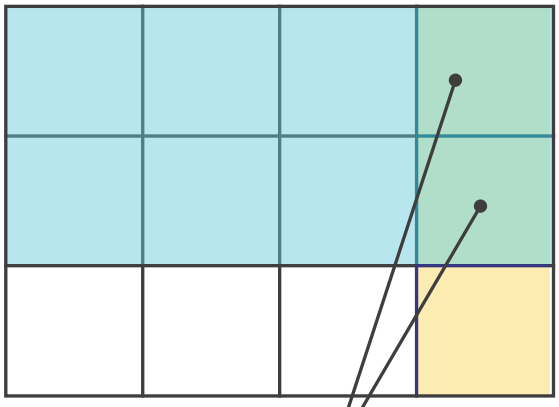
- Have your child draw a 4 by 3 array. Instruct him to shade in 2/3 of it. This shows that 12 × 2/3 = 8.
- Create real-world situations involving fractions for your child to solve (e.g., Makenzie made 5 cakes. Each cake required 1/4 cup of oil. How much oil did she use?).

Your child can apply and extend previous understandings of multiplication to multiply a fraction or whole number by a fraction. Your child can 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. Your child can also multiply fractional side lengths to find areas of rectangles, and represent fraction products as rectangular areas.

- Find the area of a rectangle with fractional side lengths using unit squares of the appropriate unit fraction side lengths.
- Find and explain the relationship between the fractional side lengths of the square unit and the fractional side lengths of the rectangle.
- Show that counting the square units used to tile the rectangle and multiplying the side lengths of the rectangle produce the same answer (similar to finding the area of a rectangle with whole number side and lengths).

HELP AT HOME

- Have your child draw a 4 × 3 array (rectangle). Have him shade two rows of the 4 and shade one of the 3 columns. The shaded array shows 2/4 × 1/3. Thus the area that is double shaded equals 2/12 or 1/6 of the large array. Create more examples like this.



DOUBLE SHADED AREA = $\frac{2}{12}$ or $\frac{1}{6}$

Your child can interpret multiplication as scaling (resizing) by 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.

- Compare the size of a product of two fractions to the size of one of the factors, without performing the indicated multiplication.
- Make use of the structure of multiplication with whole numbers, and apply this knowledge to predict an outcome for multiplication of fractions.
- Use benchmark fractions to determine if a solution is reasonable.

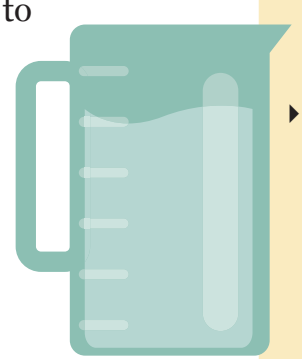
LARGER	SMALLER
10 × 8	7 × ¼
4 × 12	¾ × 2
11 × 11	5 × ½
6 × 7	9 × ⅔

HELP AT HOME

- Give your child a multiplication problem and let him predict if the product will be larger or smaller than both of the factors. Use whole numbers multiplied with whole numbers along with whole numbers multiplied with fractions. Then let your child actually solve the problem to see if his prediction was correct. Have your child make a table with "larger" on one side and "smaller" on the other. Next have him put the problems under the proper heading. Have him explain a pattern he recognizes with the factors compared to the answer (e.g., larger or smaller products). Extend this activity to include fractions multiplied with fractions.

Your child can solve real-world problems involving multiplication of fractions and mixed numbers (e.g., by using visual fraction models or equations to represent the problems).

- Solve real-world multiplication problems involving fractions and mixed numbers by creating a visual model or equation to solve.
- Make use of patterns to solve problems. Use prior knowledge of multiplying by fractions (proper or improper) to solve problems.
- Apply an understanding of the Distributive Property to solve problems.



HELP AT HOME

- Have your child fill a measuring cup 2/3 full and pour it into a large measuring bowl. Repeat this three times. Then let your child measure to determine how much is in the large bowl. This demonstrates 2/3 × 3 = 2 cups.
- Have your child multiply 7 × 5 2/3 by first rewriting 5 2/3 as 5 + 2/3. Then he will multiply each part by 7 and add the products together (e.g., 7(5) + 7(2/3) = 35 + 14/3; this will then become 35 +4 2/3, thus the final answer is 39 2/3.)

VOCABULARY

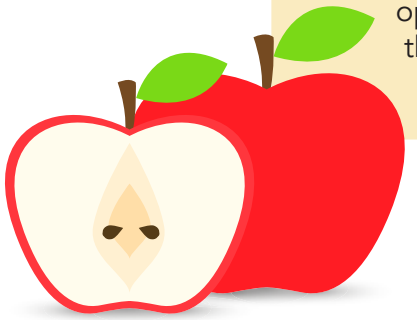
The **DISTRIBUTIVE PROPERTY** lets you find a sum by multiplying each addend separately and then add the products.

Your child can apply previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Your child can interpret division of a unit fraction by a non-zero whole number and compute such quotients.

- Create visual models and divide unit fractions by whole numbers.
- Reason through a division problem.
- Interpret division of a unit fraction by a non-zero whole number and compute quotients. Create a word problem to represent division of a unit fraction by a non-zero whole number.

HELP AT HOME

- Cut an apple in half. Now ask your child if one half can be divided between 4 people. Then cut each half of the apple into 4 equal pieces. This shows ½ ÷ 4= 1/8. Each person would get 1/8 slice of the apple. Use this opportunity to show that 1/8 is smaller than ½.



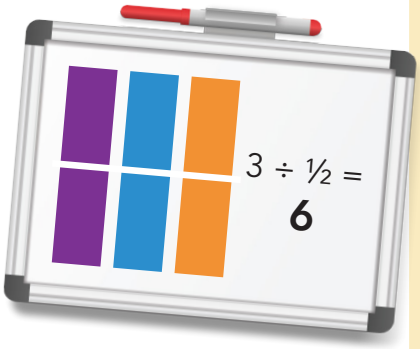
Your child can apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Your child can interpret division of a whole number by a unit fraction, and compute such quotients.

- Create visual models to divide a whole number by a unit fraction.
- Make meaning of a problem.
- Create word problems to represent division problems.
- Draw visual fraction models (bar/circles) using appropriate number of wholes to find out how many of the given unit fraction are found in the whole.

RECIPROCAL REMINDER

2/3 would have a reciprocal of 3/2 because the numerator and denominators are flip-flopped.

FRACTION	RECIPROCAL
3/8	8/3
5/6	6/5
1/3	3/1 = 3
19/7	7/19



HELP AT HOME

- On a chalkboard or dry-erase board, draw a bar. Have your child divide it into 6 equal sections. This shows that 1 ÷ 6 is 1/6. There are 6 smaller sections in 1 bar. Another example would be for your child to draw 3 bars and divide each into 2 equal sections (or ½). The result will be 6 smaller spaces total. Thus 3 ÷ ½ = 6.
- Make a set of cards with a story problem about dividing a whole item into parts on one card. (e.g., Mary had 7 candy bars. She cut each candy bar into equal pieces that were 1/10 the size of the original candy bar. How many people could get a piece of the candy bar?) Then have your child diagram and solve the problem on a chalkboard or dry-erase board. (The diagram would be 7 bars, divided into 10 equal spaces. The solution would be 70). This would be a good time to remind your child that a number multiplied with the reciprocal of the second number is equivalent to dividing the numbers.

Your child can apply and extend previous understandings of division to divide unit fractions by whole numbers and whole numbers by unit fractions. Your child can solve real-world problems involving division of unit fractions by non-zero whole numbers and division of whole numbers by unit fractions.

- Solve real-world problems involving division of unit fractions by non-zero whole numbers.
- Solve real-world problems involving division of whole numbers by unit fractions.
- Use visual fraction models and equations to represent word problems and solve them.
- Use prior knowledge of patterns in dividing fractions and whole numbers to reason through problems.
- Use benchmark fractions to estimate quotients and determine the reasonableness of solutions.

HELP AT HOME

- Help your child determine how much snack mix 2 children would get from 3/4 cup of snack mix if evenly divided. Create more examples for your child using items in your pantry or refrigerator. Let your child create some situations for you to solve.
- Do similar activities as above, but have your child estimate the solution before solving (e.g., will each person get closer to 1 whole cup or ½ cup?).