Home Connection

In this chapter, students deepen their understanding of fractions by learning how to multiply fractions and whole numbers.

Multiplying a Fraction by a Whole Number

Students will look at examples where the fraction is the unit being multiplied. For example, 3 x $\frac{1}{5}$ means 3 groups of $\frac{1}{5}$. Students may use repeated addition to solve this problem if needed.

Remember, think of fractions as units. 3 x 1 fifth = 3 fifths, or $\frac{3}{5}$. The unit (fifths) does not change, only the number of units changes. Here are two methods for solving multiplication problems

Method 1: Multiply the numerator of the fraction by the whole number:

$3 \text{ x } \frac{2}{5} = \frac{3 \text{ x } 2}{5} = \frac{6}{5}$

Method 2: Since the numerator counts the number of unit fractions, we can multiply it by the whole number first, then multiply the unit fraction by that product:

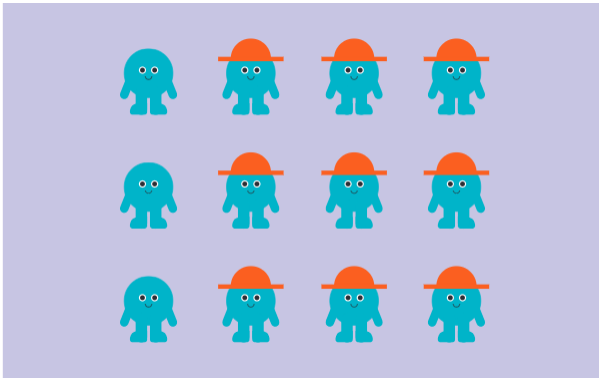
$3 \text{ x } \frac{2}{5}$

$3 \text{ x } 2 \text{ x } \frac{1}{5} = 6 \text{ x } \frac{1}{5}$

$= \frac{6}{5}$ or $1\frac{1}{5}$

Fractions of a Set

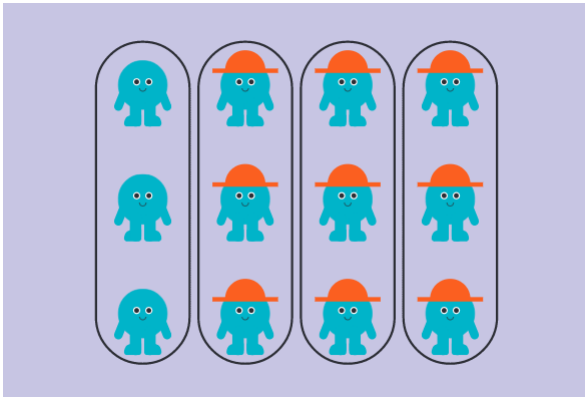
Students will learn how to find a fraction of a set. Below we have a set of toys.



3 out of 12 toys do not have a hat. We can write this as a fraction, $\frac{3}{12}$.

$\frac{3}{12}$ can by simplified to $\frac{1}{4}$, so $\frac{1}{4}$ of the toys do not have a hat.

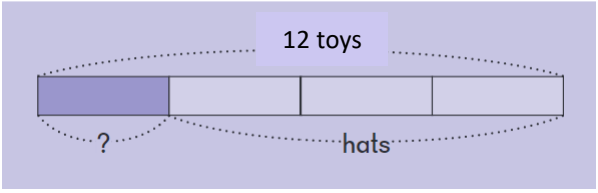
This can also be illustrated by making 4 equal groups.



1 group out of the 4 do not have hats, or $\frac{1}{4}$ of the toys have no hats.

It's important to remind students that the number of groups and the number of units are different. Recording what units they're after is helpful in differentiating what numbers to use. Is the questions asking for toys (units), or groups of toys?

Another way to solve for a fraction of a set is to use a bar model. This pictorial representation helps us easily distinguish those toys with hats and those without hats.



Without Hats:	With Hats:
4 units → 12	4 units → 12
1 unit → $\frac{12}{4}$ = 4 toys have no hats	1 units → $\frac{12}{4}$ = 4
	3 units → 12 have hats

Important to Note…

Often, we tell students that "of" tells us to multiply, however, for some students this can be misleading. On one hand, when we say $\frac{1}{6}$ **of** 12, we are looking for $\frac{1}{6}$ x 12. On the other hand, 6 out **of** 12 potatoes is $\frac{6}{12} = \frac{1}{2}$ of the set **of** potatoes—not 6 x 12, or 72 potatoes. Although key words can be helpful, students need to rely on the context of the problem rather than simply relying on key words.

What Can We Do At Home?

Greatest Product

Materials: Three dice (can be 6-sided, but 10-sided is prefereable)

On each turn, the players roll the dice and make a proper fraction with the numbers from two of the three dice. They multiply that fraction by the number on the third die.

Players can arrange the numbers in any order. The player with the greatest product is the winner.

Ex:

Player may try the following:

$7 \times \frac{3}{9}$

$9 \times \frac{3}{7}$

$3 \times \frac{7}{9}$

$9 \times \frac{3}{7}$ results in the greatest product: $\frac{27}{7}$ or $3\frac{6}{7}$.