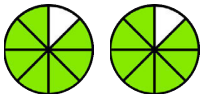
Multiply Fractions and Whole Numbers 1

1. Write a multiplication sentence to match the illustration.

a. Three copies of 4/5:	**b.** Three groups of 7/9:	**c.** Two groups of 7/8:
		
How many *fifths* in total?	How many *ninths* in total?	How many *eighths* in total?
$\underline{3} \times \frac{4}{5} = \frac{\square}{\square}$	$\_\_\_\_ \times \frac{\square}{\square} = \frac{\square}{\square}$	$\_\_\_\_ \times \frac{\square}{\square} = \frac{\square}{\square}$

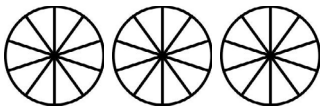
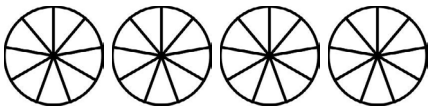
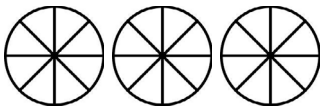
One way to view a product of a whole number and a fraction is to think of so many copies (groups) of the fraction, and to find the total number of pieces.

In this multiplication, the denominator does not change (we still have the same *kind* of parts).

Example 1. $8 \times \frac{3}{4}$ means 8 × 3 pieces, or 24 pieces. Each piece is a fourth. So, we get $\frac{24}{4}$.

We don't leave the answer as an improper fraction, so we write $\frac{24}{4}$ as 6.

2. Multiply. Remember to give your final answer as a mixed number. The pie pictures can help.

a. $3 \times \frac{7}{10} =$	**b.** $4 \times \frac{7}{9} =$	**c.** $3 \times \frac{5}{8} =$
		

3. Solve. Give your answer in lowest terms (simplified) and as a mixed number. Study the example.

a. $6 \times \frac{4}{9} = \frac{24}{9} = \frac{8}{3} = 2\frac{2}{3}$	**b.** $4 \times \frac{7}{10} =$
c. $2 \times \frac{11}{20} =$	**d.** $9 \times \frac{2}{15} =$

4. Erica has beverage glasses that hold 3/8 liters each.
How much water does she need to fill four of them?

Example 2. Multiplication can be done in either order. (Multiplication is *commutative*.)

So, $\frac{3}{10} \times 5$ is equal to $5 \times \frac{3}{10}$. They both equal $\frac{5 \times 3}{10} = \frac{15}{10}$. This simplifies to $\frac{3}{2}$, which is $1\frac{1}{2}$.

5. Solve. Give your answer in lowest terms (simplified) and as a mixed number.

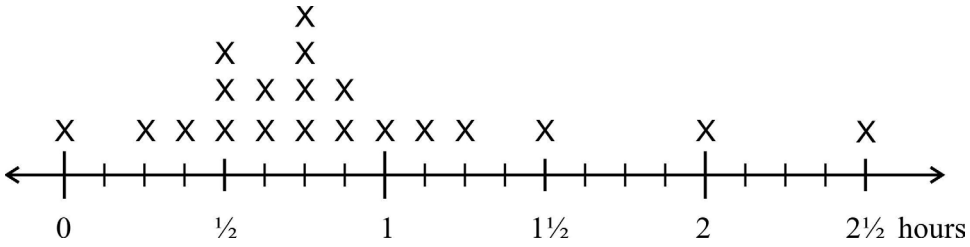
a. $\frac{15}{6} \times 2 =$	**b.** $6 \times \frac{7}{100} =$
c. $\frac{1}{12} \times 16 =$	**d.** $2 \times \frac{35}{100} =$
e. $\frac{9}{20} \times 10 =$	**f.** $\frac{7}{15} \times 7 =$

6. Marlene wants to triple this recipe (make three times as much). How much of each ingredient will she need?

Brownies

3/4 cup butter
1 1/2 cups brown sugar
4 eggs
1 1/4 cups cocoa powder
1/2 cup flour
2 tsp vanilla

7. William asked 20 fifth graders how much time they spent on housework and chores the day before. He then rounded the answers to the nearest 1/8 hour. The line plot shows his results. Each x-mark corresponds to one fifth grader.



a. Exclude the three students who did the least housework and three who did the most, and fill in:

Most students used between _____ and _____ hours for housework and chores.

b. How many students spent 45 minutes on housework and chores?

c. The average for this data is 7/8 hours. Use this to calculate how many hours these 20 fifth graders used for housework in total.