Name _____

Multiples of Unit Fractions

A unit fraction is a fraction with a numerator of 1. You can write a fraction as the product of a whole number and a unit fraction.

Write $\frac{7}{10}$ as the product of a whole number and a unit fraction.

Write $\frac{7}{10}$ as the sum of unit fractions.

$\frac{7}{10} = \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10} + \frac{1}{10}$

Use multiplication to show repeated addition.

$\frac{7}{10} = 7 \times \frac{1}{10}$

So, $\frac{7}{10} = 7 \times \frac{1}{10}$.

The product of a number and a counting number is a multiple of the number. You can find multiples of unit fractions.

List the next 4 multiples of $\frac{1}{8}$.

Make a table and use repeated addition.

$1 \times \frac{1}{8}$	$2 \times \frac{1}{8}$	$3 \times \frac{1}{8}$	$4 \times \frac{1}{8}$	$5 \times \frac{1}{8}$
$\frac{1}{8}$	$\frac{1}{8} + \frac{1}{8}$	$\frac{1}{8} + \frac{1}{8} + \frac{1}{8}$	$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$	$\frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8} + \frac{1}{8}$
$\frac{1}{8}$	$\frac{2}{8}$	$\frac{3}{8}$	$\frac{4}{8}$	$\frac{5}{8}$

The next 4 multiples of $\frac{1}{8}$ are $\frac{2}{8}$, $\frac{3}{8}$, $\frac{4}{8}$, and $\frac{5}{8}$.

Write the fraction as the product of a whole number and a unit fraction.

1. $\frac{2}{5} =$ _____ **2.** $\frac{5}{12} =$ _____ **3.** $\frac{7}{2} =$ _____

List the next four multiples of the unit fraction.

4. $\frac{1}{4}$, ____, ____, ____, ____ **5.** $\frac{1}{6}$, ____, ____, ____, ____

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Multiples of Fractions

You have learned to write multiples of unit fractions. You can also write multiples of other fractions.

Write the next 4 multiples of $\frac{2}{5}$.

Make a table.

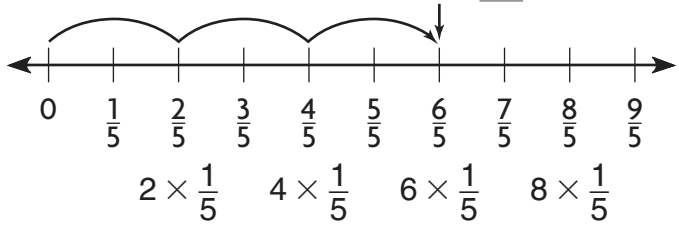
$1 \times \frac{2}{5}$	$2 \times \frac{2}{5}$	$3 \times \frac{2}{5}$	$4 \times \frac{2}{5}$	$5 \times \frac{2}{5}$
$\frac{2}{5}$	$\frac{2}{5} + \frac{2}{5}$	$\frac{2}{5} + \frac{2}{5} + \frac{2}{5}$	$\frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$	$\frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5} + \frac{2}{5}$
$\frac{2}{5}$	$\frac{4}{5}$	$\frac{6}{5}$	$\frac{8}{5}$	$\frac{10}{5}$

So, the next 4 multiples of $\frac{2}{5}$ are $\frac{4}{5}$, $\frac{6}{5}$, $\frac{8}{5}$, and $\frac{10}{5}$.

Write $3 \times \frac{2}{5}$ as the product of a whole number and a unit fraction.

Use a number line. Make three jumps of $\frac{2}{5}$.

$3 \times \frac{2}{5} = \frac{6}{5}$



So, $3 \times \frac{2}{5} = \frac{6}{5}$, or $6 \times \frac{1}{5}$.

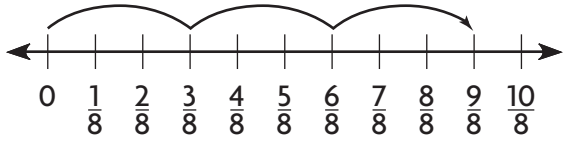
List the next four multiples of the fraction.

1. $\frac{3}{4}$, ____, ____, ____, ____

2. $\frac{5}{6}$, ____, ____, ____, ____

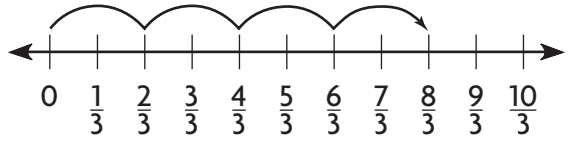
Write as the product of a whole number and a unit fraction.

3.



$3 \times \frac{3}{8} =$ _____

4.



$4 \times \frac{2}{3} =$ _____

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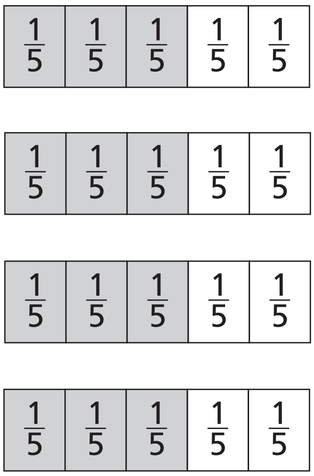
Multiply a Fraction by a Whole Number Using Models

You can use a model to multiply a fraction by a whole number.

Find the product of $4 \times \frac{3}{5}$.

Use fraction strips. Show 4 groups of $\frac{3}{5}$ each.



1 group of $\frac{3}{5} = \frac{3}{5}$

2 groups of $\frac{3}{5} = \frac{6}{5}$

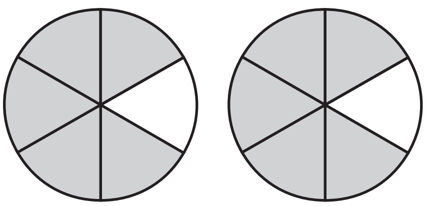
3 groups of $\frac{3}{5} = \frac{9}{5}$

4 groups of $\frac{3}{5} = \frac{12}{5}$

So, $4 \times \frac{3}{5} = \frac{12}{5}$.

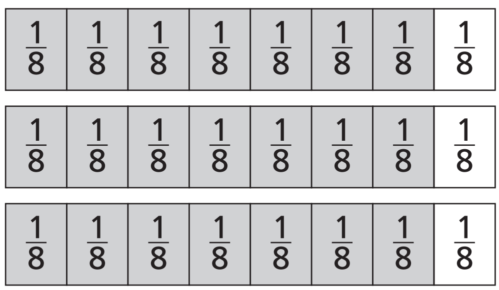
Multiply.

1.



$2 \times \frac{5}{6} =$ ______

2.



$3 \times \frac{7}{8} =$ ______

3. $6 \times \frac{2}{3} =$ ______

4. $2 \times \frac{9}{10} =$ ______

5. $5 \times \frac{3}{4} =$ ______

6. $4 \times \frac{5}{8} =$ ______

7. $7 \times \frac{2}{5} =$ ______

8. $8 \times \frac{4}{6} =$ ______

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Multiply a Fraction or Mixed Number by a Whole Number

To multiply a fraction by a whole number, multiply the numerators. Then multiply the denominators.

A recipe for one loaf of bread calls for $2\frac{1}{4}$ cups of flour. How many cups of flour will you need for 2 loaves of bread?

Step 1 Write and solve an equation.

$2 \times 2\frac{1}{4} = \frac{2}{1} \times \frac{9}{4}$ Write 2 as $\frac{2}{1}$. Write $2\frac{1}{4}$ as a fraction.

$= \frac{2 \times 9}{1 \times 4}$ Multiply the numerators. Then multiply the denominators.

$= \frac{18}{4}$ Simplify.

Step 2 Write the product as a mixed number.

$\frac{18}{4} = \underbrace{\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}}_{1} + \underbrace{\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}}_{1} + \underbrace{\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}}_{1} + \underbrace{\frac{1}{4} + \frac{1}{4} + \frac{1}{4} + \frac{1}{4}}_{1} + \frac{1}{4} + \frac{1}{4}$

$= \underline{4} + \underline{\frac{1}{4}} + \underline{\frac{1}{4}}$ Combine the wholes. Then combine the remaining parts.

$= \underline{4\frac{2}{4}}$, or $\underline{4\frac{1}{2}}$ Add. Write the sum as a mixed number.

So, you will need $\underline{4\frac{1}{2}}$ cups of flour.

Multiply. Write the product as a mixed number.

1. $3 \times \frac{2}{5} =$ _____

2. $4 \times \frac{3}{8} =$ _____

3. $5 \times \frac{1}{3} =$ _____

4. $2 \times 1\frac{3}{10} =$ _____

5. $4 \times 1\frac{2}{3} =$ _____

6. $7 \times 1\frac{1}{6} =$ _____

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Problem Solving • Comparison Problems with Fractions

The Great Salt Lake in Utah is about $\frac{4}{5}$ mile above sea level. Lake Titicaca in South America is about 3 times as high above sea level as the Great Salt Lake. About how high above sea level is Lake Titicaca?

Read the Problem	Solve the Problem
What do I need to find? I need to find about how high above sea level Lake Titicaca is.	Draw a comparison model. Compare the heights above sea level of the Great Salt Lake and Lake Titicaca, in miles. Great Salt Lake: $\frac{4}{5}$ Lake Titicaca: $\frac{4}{5}$ $\frac{4}{5}$ $\frac{4}{5}$; t
What information do I need to use? The Great Salt Lake is about $\frac{4}{5}$ mile above sea level. Lake Titicaca is about 3 times as high above sea level.	Write an equation and solve. t is the height above sea level of Lake Titicaca, in miles.
How will I use the information? I can draw a diagram to compare the heights.	$t = 3 \times \frac{4}{5}$ Write an equation. $t = \frac{12}{5}$ Multiply. $t = 2\frac{2}{5}$ Write the fraction as a mixed number.
So, Lake Titicaca is about $2\frac{2}{5}$ miles above sea level.	

1. Amelia is training for a triathlon. She swims $\frac{3}{5}$ mile. Then she runs about 6 times farther than she swims. About how far does Amelia run?

_____

2. Last week, Meg bought $1\frac{3}{4}$ pounds of fruit at the market. This week, she buys 4 times as many pounds of fruit as last week. In pounds, how much fruit does Meg buy this week?

_____