

MAFS.5.NF.2.4

Multiply a fraction or whole number by a fraction.

- Understand a number sentence can be restated as a word sentence.
Examples: $5 \times \frac{3}{4}$ is the same as 5 groups of $\frac{3}{4}$, $\frac{1}{2} \times \frac{1}{2}$ is the same as $\frac{1}{2}$ of a group of $\frac{1}{2}$.
- Understand that a whole number multiplied by a fraction can be represented as repeated addition. Example: $6 \times \frac{3}{4} = \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4} + \frac{3}{4}$.
- Create a story context for an equation of the form $(\frac{a}{b}) \times q$. ☐ Multiply a fraction by a whole number.
- Multiply a fraction by a fraction including improper fractions and mixed numbers.
- Use visual models (area models, tape diagrams, number lines) to represent multiplication of a fraction by a whole number and a fraction by a fraction.

Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3}$$

How do we multiply a fraction by a fraction?

Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3}$$

First, will the product be greater than, equal to, or less than $\frac{4}{5}$ (think...is $\frac{2}{3}$ greater than, equal to, or less than 1?)

Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3}$$

The product will be less than $\frac{4}{5}$ because $\frac{2}{3}$ is less than 1.

Second, will the product be greater than, equal to, or less than $\frac{2}{3}$ (think...is $\frac{4}{5}$ greater than, equal to, or less than 1?)

Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3}$$

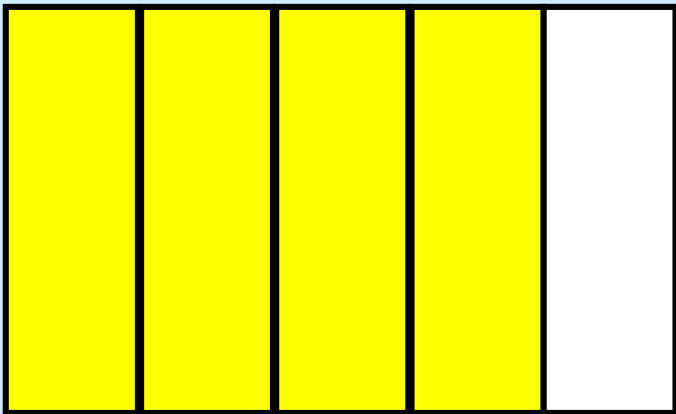
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Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3}$$

Let's make a model for $\frac{4}{5}$.



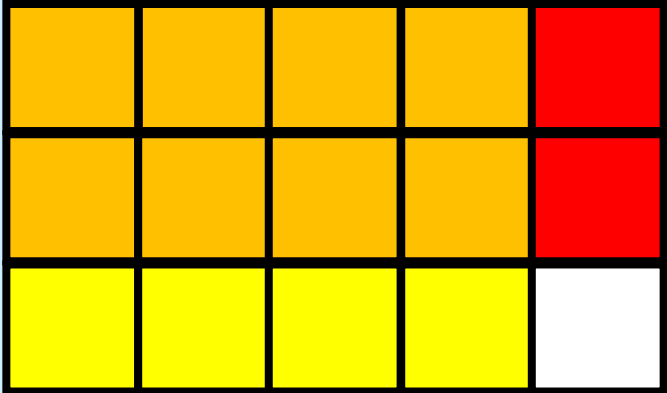
And a model for $\frac{2}{3}$.



Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3}$$

Now, let's put them together.



Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3} = \frac{\quad}{15}$$

Count how many equal parts there are.

1	2	3	4	5
6	7	8	9	10
11	12	13	14	15

Multiplying a fraction times a fraction:

$$\frac{4}{5} \times \frac{2}{3} = \frac{8}{15}$$

Then, count how many DOUBLE SHADED parts there are.

1	2	3	4	
5	6	7	8	

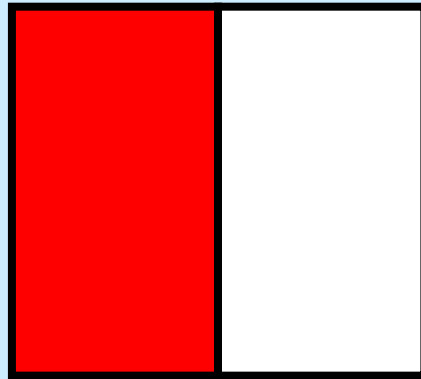
Let's try another one:

$$\frac{1}{2} \times \frac{3}{4}$$

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$$\frac{1}{2} \times \frac{3}{4}$$

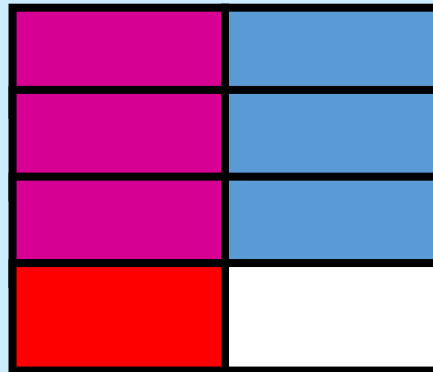
Start with $\frac{1}{2}$.



Let's try another one:

$$\frac{1}{2} \times \frac{3}{4}$$

Then cross
with $\frac{3}{4}$.



Let's try another one:

$$\frac{1}{2} \times \frac{3}{4} = \frac{\quad}{8}$$

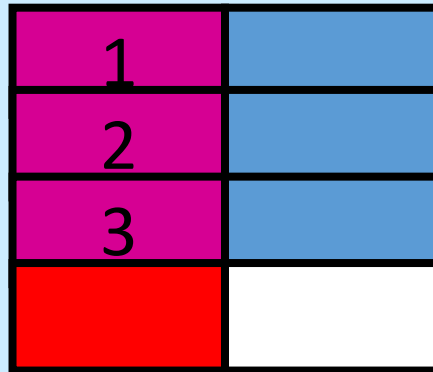
Count the
total
number of
equal parts.

1	5
2	6
3	7
4	8

Let's try another one:

$$\frac{1}{2} \times \frac{3}{4} = \frac{3}{8}$$

Then count
the **DOUBLE**
SHADED
parts.



Multiplying a fraction times a fraction:

$$\frac{5}{8} \times \frac{1}{5} = \frac{5}{40}$$

We can also just multiply straight across.
Numerator times Numerator and
Denominator times Denominator.

Let's practice a few...get out your boards and markers!

$$\frac{4}{7} \times \frac{1}{2} =$$

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$$\frac{4}{7} \times \frac{1}{2} = \frac{4}{14}$$

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$$\frac{2}{3} \times \frac{5}{8} =$$

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$$\frac{2}{3} \times \frac{5}{8} = \frac{10}{24}$$

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$$\frac{1}{4} \times \frac{1}{3} =$$

Let's practice a few...get out your boards and markers!

$$\frac{1}{4} \times \frac{1}{3} = \frac{1}{12}$$

How do we multiply with a mixed number?

$$2\frac{1}{4} \times \frac{3}{7} =$$


How do we multiply with a mixed number?

First, convert the mixed number to an improper fraction.

$$2\frac{1}{4} \times \frac{3}{7} =$$

How do we multiply with a mixed number?

First, convert the mixed number to an improper fraction.

$$2\frac{1}{4} \times \frac{3}{7} =$$
$$\frac{8}{4} + \frac{1}{4} = \frac{9}{4}$$


How do we multiply with a mixed number?

Then just multiply.

$$\frac{9}{4} \times \frac{3}{7} = \frac{27}{28}$$


Let's try another:

First, convert the mixed number to an improper fraction.

$$3\frac{2}{3} \times \frac{4}{5} =$$

Let's try another:

First, convert the mixed number to an improper fraction.

$$3\frac{2}{3} \times \frac{4}{5} =$$
$$\frac{9}{3} + \frac{2}{3} = \frac{11}{3}$$


Let's try another:

Then multiply.

$$\frac{11}{3} \times \frac{4}{5} = \frac{44}{15}$$

Let's try another:

Now, convert
your product
back to a mixed
number.

$$\frac{44}{15}$$

Let's try another:

$$44 \div 15 = 2\frac{14}{15}$$

Practice in your math book!

Go Math!

Chapter 7, Lesson 9

Pages 325-328