



# Compare to 1

Let's explain what happens when we multiply a fraction by a fraction greater than 1, less than 1, or equal to 1.

## Warm-up

**What Do You Know about  $\frac{15}{14} \times \frac{23}{30}$ ?**

What do you know about  $\frac{15}{14} \times \frac{23}{30}$ ?

## Activity 1

### Compare Fraction Products on the Number Line

1. Match each expression to the number line that shows the same value.

◦  $\frac{2}{5} \times \frac{4}{3}$

◦  $\frac{3}{4} \times \frac{5}{2}$

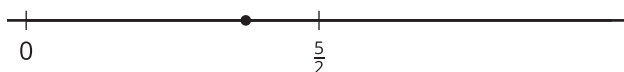
◦  $\frac{4}{3} \times \frac{5}{2}$

◦  $(1 + \frac{1}{3}) \times \frac{5}{2}$

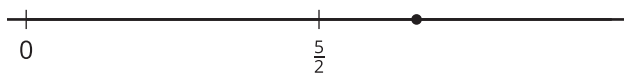
◦  $(1 - \frac{3}{5}) \times \frac{4}{3}$

◦  $(1 - \frac{1}{4}) \times \frac{5}{2}$

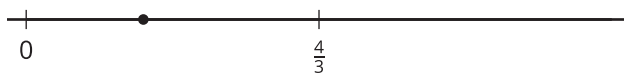
**A**



**B**



**C**



2. Choose one expression from each set. Explain whether the value is greater than or less than the second factor.

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## Activity 2

### True Statement

1. Rewrite each expression as a sum or difference of 2 products.

a.  $\left(1 - \frac{2}{5}\right) \times \frac{4}{7}$

b.  $\left(1 + \frac{1}{5}\right) \times \frac{4}{7}$

c.  $\left(1 - \frac{3}{8}\right) \times \frac{4}{7}$

d.  $\left(1 + \frac{1}{8}\right) \times \frac{4}{7}$

2. Write  $<$  or  $>$  to make the inequality true.

a.  $\left(1 - \frac{2}{5}\right) \times \frac{4}{7}$  \_\_\_\_\_  $\frac{4}{7}$

b.  $\left(1 + \frac{1}{5}\right) \times \frac{4}{7}$  \_\_\_\_\_  $\frac{4}{7}$

c.  $\left(1 - \frac{3}{8}\right) \times \frac{4}{7}$  \_\_\_\_\_  $\frac{4}{7}$

d.  $\left(1 + \frac{1}{8}\right) \times \frac{4}{7}$  \_\_\_\_\_  $\frac{4}{7}$



3. Describe the value of the product when  $\frac{4}{7}$  is multiplied by a fraction greater than 1.  
Explain your reasoning.

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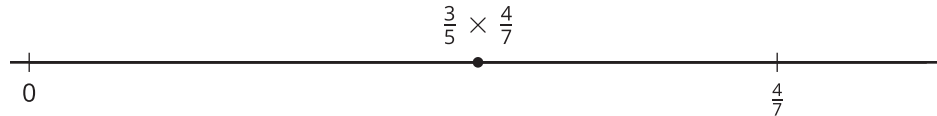
4. Describe the value of the product when  $\frac{4}{7}$  is multiplied by a fraction less than 1.  
Explain your reasoning.

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### Section C Summary

We learned how to compare the size of a product to the sizes of its factors.



To compare  $\frac{3}{5} \times \frac{4}{7}$  with  $\frac{4}{7}$ , we can put them on a number line.

Since  $\frac{3}{5}$  is 3 equal parts with 5 parts in the whole, it is to the left of  $\frac{4}{7}$ . We also can write  $\frac{3}{5}$  as  $1 - \frac{2}{5}$ .

$$\left(1 - \frac{2}{5}\right) \times \frac{4}{7} = \frac{4}{7} - \left(\frac{2}{5} \times \frac{4}{7}\right)$$

The product is less than  $\frac{4}{7}$ , because it is  $\frac{4}{7}$  minus a fraction.