Unit 2, Lesson 8

Divide to Multiply Non-Unit Fractions

Let's solve problems about multiplying whole numbers by fractions.

Warm-up

True or False: A Fraction by a Whole Number

Decide if each statement is true or false. Be prepared to explain your reasoning.

- $2 \times \left(\frac{1}{3} \times 6\right) = \frac{2}{3} \times 6$

- $2 \times \left(\frac{1}{3} \times 6\right) = 2 \times (6 \div 3)$

- $\frac{2}{3} \times 6 = 2 \times \left(\frac{1}{4} \times 6\right)$

Activity 1

Multiply a Whole Number by a Fraction

Find the value of each expression. Explain or show your reasoning. Draw a diagram if it is helpful.

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

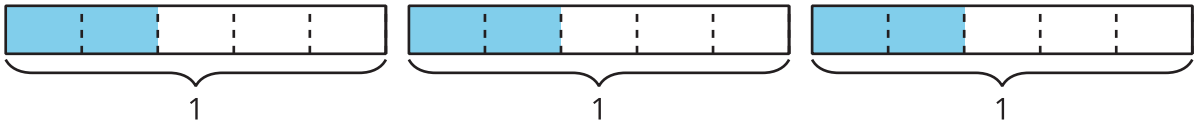
2. $\frac{2}{5} \times 3$

3. $\frac{3}{5} \times 3$

Activity 2

Match Expressions to Diagrams

Explain how each expression represents the shaded region of this diagram.



1. $2 \times (3 \div 5)$

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

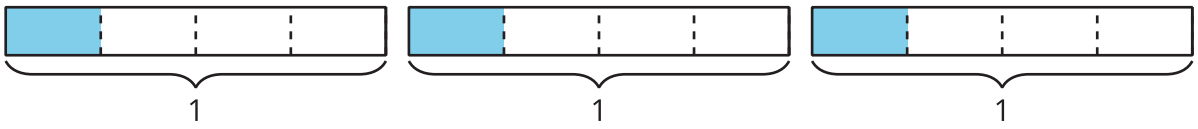
3. $3 \times \frac{2}{5}$

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

Section B Summary

We explored the relationship between multiplication and division. We learned that a diagram can represent different multiplication and division expressions.

Example: We can represent this diagram with 4 different expressions:



- $\frac{3}{4}$

  Each rectangle is divided into 4 equal parts, and 3 parts are shaded.

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

  There are 3 parts shaded, and each part is $\frac{1}{4}$ of the rectangle.

- $3 \div 4$

  There are 3 rectangles, and each rectangle is divided into 4 equal parts.

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

  There are 3 rectangles, and $\frac{1}{4}$ of each rectangle is shaded.

We know that all of these expressions have the same value because they all represent the same diagram. We can use any of these expressions to represent and solve this problem:

- Mai eats $\frac{1}{4}$ of a 3-pound bag of blueberries. How many pounds of blueberries does Mai eat?