



# Multiply More Fractions

Let's multiply mixed numbers.

## Warm-up

### Number Talk: Multiply Mixed Numbers

Find the value of each expression mentally.

$$\bullet 6 \times \frac{3}{8}$$

$$\bullet 6 \times 2\frac{3}{8}$$

$$\bullet 7 \times \frac{9}{10}$$

$$\bullet 7 \times 3\frac{9}{10}$$

## Activity 1

### Multiply Your Way

Write 1 number from the list in each blank so the situations make sense. Each number can be used only once.

4

5

$5\frac{1}{2}$

3

$5\frac{3}{4}$

1. The area of a rectangular rug is  $16\frac{1}{2}$  square feet. The length of the rug is \_\_\_\_\_ feet.

The width of the rug is \_\_\_\_\_ feet.

2. A rectangular puzzle is  $2\frac{1}{2}$  feet wide. It is \_\_\_\_\_ feet long. It has an area of \_\_\_\_\_ square feet.

3. The area of a rectangular whiteboard is 23 square feet. The length of the whiteboard is \_\_\_\_\_ feet. The width of the whiteboard is \_\_\_\_\_ feet.

Share your work with your partner. Explain what choices you made and why.

## Activity 2

### Equivalent Expressions

Each diagram represents a way to calculate  $4 \times 5\frac{2}{3}$ .

Each expression is equivalent to  $4 \times 5\frac{2}{3}$ .

Match each diagram to an expression. Explain or show your reasoning.

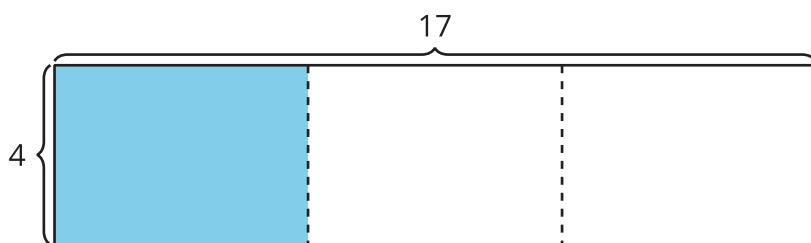
$$1. (4 \times 5) + (4 \times \frac{2}{3})$$

$$2. (4 \times 6) - (4 \times \frac{1}{3})$$

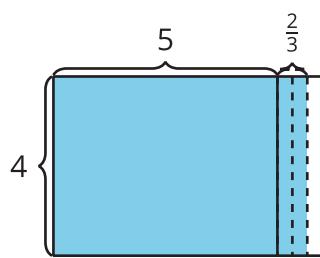
$$3. 4 \times \frac{17}{3}$$

$$4. (4 \times 17) \div 3$$

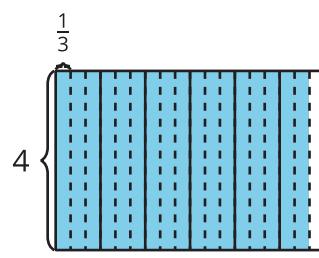
**A**



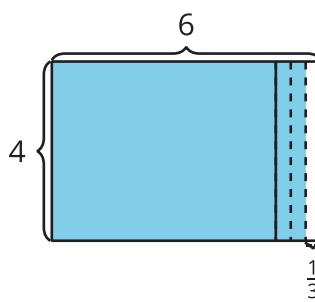
**B**



**C**



**D**

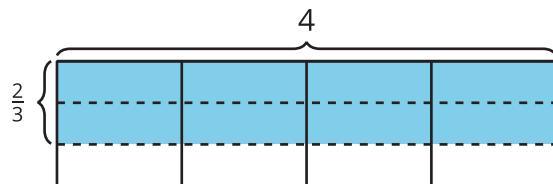


Choose your favorite diagram and expression to find the value of  $4 \times 5\frac{2}{3}$ . Be prepared to explain why it is your favorite.

## Section C Summary

We learned how to find the area of a rectangle with a fractional side length.

Example: The shaded region has an area of  $4 \times \frac{2}{3}$  because there are 4 groups of  $\frac{2}{3}$  of a square unit shaded. The area is  $\frac{8}{3}$  or  $2\frac{2}{3}$  because there are 8 shaded parts and each one is  $\frac{1}{3}$  of a square unit.



We also learned to multiply a mixed number by a whole number. We used diagrams and expressions to see why our strategies work.

Example: To multiply  $3\frac{3}{4} \times 2$ , we can use the expression  $(3 \times 2) + (\frac{3}{4} \times 2)$ . We can see both expressions represented by the shaded region in the diagram.

- The 2 rows of 3 and  $\frac{3}{4}$  squares shaded show  $3\frac{3}{4} \times 2$ .
- The 2 rows of 3 squares shaded show  $3 \times 2 = 6$ .
- The 2 rows of  $\frac{3}{4}$  of a square shaded show  $\frac{3}{4} \times 2 = \frac{6}{4}$ .
- The shaded region in the diagram represents the area of a rectangle with the dimensions of  $3\frac{3}{4}$  units by 2 units.

So, the area of the shaded region is  $6 + \frac{6}{4}$  or  $7\frac{2}{4}$  square units.

