

## Lesson 4: Equivalent Ratios

### Classwork

#### Example 1

The morning announcements said that two out of every seven sixth-grade students in the school have an overdue library book. Jasmine said, "That would mean 24 of us have overdue books!" Grace argued, "No way. That is way too high." How can you determine who is right?

$$\begin{array}{l} 2:7 \qquad \qquad 24:84 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \quad \times 12 \quad \quad \times 12 \end{array}$$

### Exercise 1

Decide whether or not each of the following pairs of ratios is equivalent.

- If the ratios are not equivalent, find a ratio that is equivalent to the first ratio.
- If the ratios are equivalent, identify the nonzero number,  $c$ , that could be used to multiply each number of the first ratio by in order to get the numbers for the second ratio.

a.  $6:11$  and  $42:88$

$$\begin{array}{l} 6:11 \quad \quad 42:88 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \quad \times 7 \quad \quad \times 4 \end{array}$$

\_\_\_\_\_ Yes, the value,  $c$ , is \_\_\_\_\_.

X No, an equivalent ratio would be  $42:77$ .

b.  $0:5$  and  $0:20$

$$\begin{array}{l} 0:5 \quad \quad 0:20 \\ \swarrow \quad \searrow \quad \swarrow \quad \searrow \\ \quad ? \quad \quad \times 4 \end{array}$$

$$\begin{array}{l} 0 \times 4 = 0 \\ 5 \times 4 = 20 \end{array}$$

X Yes, the value,  $c$ , is 4.

\_\_\_\_\_ No, an equivalent ratio would be \_\_\_\_\_.

## Exercise 2

In a bag of mixed walnuts and cashews, the ratio of the number of walnuts to the number of cashews is 5:6. Determine the number of walnuts that are in the bag if there are 54 cashews. Use a tape diagram to support your work. Justify your answer by showing that the new ratio you created of the number of walnuts to the number of cashews is equivalent to 5:6.

Walnuts 

9	9	9	9	9
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Cashews 

9	9	9	9	9	9	9
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54

$$54 \text{ divided by } 6 = 9$$

$$5 \times 9 = 45$$

There are 45 walnuts in the bag.

The ratio of the number of walnuts to the number of cashews is 45:54. The ratio is equivalent to 5:6.