Chapter 7
Lesson 3

Creating Equivalent Fractions

You will need
- counters

GOAL

Develop a strategy to determine and create equivalent fractions.

Matthew and Lauren are looking at a display of moccasins at the Glenbow Museum. Matthew says that $\frac{6}{12}$ of the moccasins have red beads. Lauren says that $\frac{3}{6}$ of the moccasins have red beads.

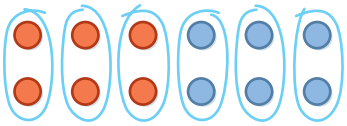
Are Matthew and Lauren both correct?

Matthew's Solution

I'll use 12 counters to represent the 12 moccasins. I'll use red counters to represent the moccasins with red beads. I'll use blue counters to represent the moccasins with blue and yellow beads.

6 of the 12 moccasins have red beads. That's $\frac{6}{12}$.
Lauren must be thinking about the moccasins in pairs, instead of individually.

So there are $6 \div 2 = 3$ pairs of moccasins with red beads.
There are $12 \div 2 = 6$ pairs of moccasins in total.



If I start with my fraction, I can divide both the numerator and the denominator by 2 to get Lauren's equivalent fraction.

$$\frac{6 \div 2}{12 \div 2} = \frac{3}{6}$$

If I start with Lauren's fraction, I can multiply both the numerator and the denominator by 2 to get my equivalent fraction.

$$\frac{3 \times 2}{6 \times 2} = \frac{6}{12}$$

Since $\frac{6}{12} = \frac{3}{6}$, we are both correct.

Reflecting

A. Why would Lauren have to multiply and Matthew have to divide to get the other person's fraction?

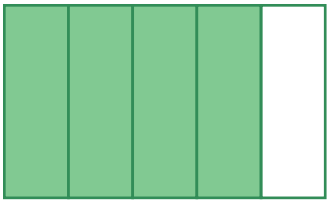
B. Why do you multiply or divide the numerator and the denominator by the same number to get an equivalent fraction?

Checking

1. Matthew says that $\frac{8}{12}$ of the moccasins have no fur.
Lauren says that $\frac{4}{6}$ have no fur.

a) Use counters to show that $\frac{8}{12}$ is equivalent to $\frac{4}{6}$.

b) Multiply or divide to show that both students are correct.



Practising

2. **a)** How can you split the rectangle at the left to make an equivalent fraction in tenths?

b) Split the rectangle a different way to show another fraction that is equivalent to $\frac{4}{5}$. How do you know that the two fractions are equivalent?

3. Allison said that $\frac{9}{15}$ of the juice boxes are fruit punch. Owen said that $\frac{3}{5}$ of the juice boxes are fruit punch.

a) How can you arrange the counters below to show that $\frac{9}{15}$ of the juice boxes is equivalent to $\frac{3}{5}$ of the juice boxes?

b) Use multiplication or division to show that $\frac{9}{15}$ and $\frac{3}{5}$ are equivalent. Show your work.

4. Claire is making a scrapbook. The stickers for her scrapbook come in strips. This is one strip.

a) What fraction of the strip represents the sun stickers? Write an equivalent fraction. Explain what you did.

b) What fraction of the strip represents the star stickers? Write an equivalent fraction. Explain what you did.

5. Sara made the following pattern using fractions that are equivalent to $\frac{1}{2}$. Write the next three fractions in her pattern.

$\frac{1}{2}, \frac{2}{4}, \frac{3}{6}, \frac{\square}{\square}, \frac{\square}{\square}, \frac{\square}{\square}, \ldots$

6. Solve each equation.

a) $\frac{10}{12} = \frac{\square}{6}$ **b)** $\frac{6}{9} = \frac{\square}{3}$

7. List two fractions that are equivalent to each fraction below. Show your work.

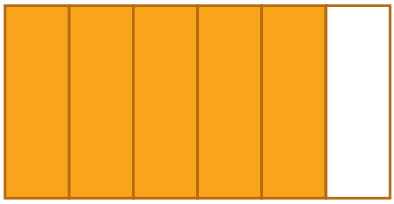
a) $\frac{2}{3}$ **b)** $\frac{3}{4}$ **c)** $\frac{4}{5}$ **d)** $\frac{4}{8}$

8. Eva is reading a 500-page book. How will she know when she has read half the book?

9. Amir said that $\frac{4}{7}$ is equivalent to $\frac{2}{14}$. How do you know this statement is wrong?

10. Here is $\frac{3}{4}$ of Ben's marble collection. How many marbles are in his collection?

11. **a)** How is splitting all the parts of the rectangle below into smaller equal parts like multiplying both the numerator and the denominator of a fraction by the same number? How does this show equivalent fractions?



b) How is grouping the counters below into equal groups like dividing both the numerator and the denominator of a fraction by the same number? How does this show equivalent fractions?