

Lesson 3-5 Notes  
Simplifying Fractions

What is a fraction?

numerator  
(how many pieces  
or parts)

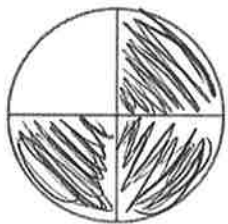


$$\frac{1}{4}$$



denominator  
(how many pieces in the  
whole)

Shade in the bars below to represent the given fractions.



$$\frac{3}{4}$$



$$\frac{6}{8}$$

equivalent fractions are fractions that name the same amount.

Write an equivalent fraction for  $\frac{3}{4} = \frac{6}{8}$ .

## Using Multiples to Write Equivalent Fractions

We can create equivalent fractions using **multiples**. We do this by multiplying the numerator and the denominator by the same number.

$$\frac{1}{2} = \frac{2}{4}$$


$$\frac{1}{2} = \frac{100}{200}$$

All of these fractions are equivalent:  $\frac{1}{2} = \frac{2}{4} = \frac{100}{200}$

Are these equivalent fractions?

$$\frac{3}{5} = \frac{6}{10}$$

yes

$$\frac{4}{7} = \frac{12}{20}$$

no

$$\frac{2}{3} = \frac{8}{12}$$

yes

We can also create equivalent fractions using **factors**. We do this by dividing the numerator and the denominator by the same number.

$$\frac{3}{6} = \frac{1}{2}$$

$$\frac{5}{10} = \frac{1}{2}$$

Are these equivalent fractions?

$$\frac{3}{5} = \frac{6}{10}$$

yes

$$\frac{4}{7} = \frac{12}{20}$$

no

$$\frac{2}{3} = \frac{8}{12}$$

yes

All of these fractions are equivalent:  $\frac{1}{2} = \frac{3}{6} = \frac{5}{10}$

**You Try!** Write an equivalent fraction for the fractions below.

$$\frac{1}{4} = \frac{2}{8}$$

Handwritten annotations:  $\div 2$  above the fraction bar,  $\times 2$  below the fraction bar, and arrows indicating the operations.

$$\frac{5}{7} = \frac{10}{14}$$

Handwritten annotations:  $\times 2$  above the fraction bar,  $\times 2$  below the fraction bar, and arrows indicating the operations.

$$\frac{16}{20} = \frac{4}{5}$$

Handwritten annotations:  $\div 4$  above the fraction bar,  $\div 4$  below the fraction bar, and arrows indicating the operations.

$$\frac{30}{60} = \frac{10}{20}$$

Handwritten annotations:  $\div 3$  above the fraction bar,  $\div 3$  below the fraction bar, and arrows indicating the operations.

### Simplifying Fractions

A fraction is written in simplest form when the numerator and the denominator have no common factors other than 1.

Example: Simplify  $\frac{12}{24}$ .

Step 1: Divide the numerator and denominator by a common factor.

$$\frac{12}{24} = \frac{6}{12}$$

Handwritten annotations:  $\div 2$  above the fraction bar,  $\div 2$  below the fraction bar, and arrows indicating the operations.

Step 2: Is the fraction in simplest form yet? Is there another factor you can divide the numerator and denominator by other than 1? Divide again if needed.

$$\frac{12}{24} = \frac{6}{12} = \frac{1}{2}$$

Handwritten annotations:  $\div 6$  above the fraction bar,  $\div 6$  below the fraction bar, and arrows indicating the operations. The final fraction  $\frac{1}{2}$  is boxed.

**You Try.** Simplify the fractions below.

$$\frac{8}{12} = \frac{4}{6} = \frac{2}{3}$$

Handwritten annotations:  $\div 2$  above the fraction bar,  $\div 2$  below the fraction bar, and arrows indicating the operations. The final fraction  $\frac{2}{3}$  is boxed.

$$\frac{16}{48} = \frac{2}{6} = \frac{1}{3}$$

Handwritten annotations:  $\div 8$  above the fraction bar,  $\div 8$  below the fraction bar, and arrows indicating the operations. The final fraction  $\frac{1}{3}$  is boxed.

