

## Lesson 4-5 Dividing Fractions

What happens when you divide fractions?

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

← You can think of this as "how many halves are in two wholes?"

FLIP  
↓

Reciprocals: Numbers like 2 and  $\frac{1}{2}$  are reciprocals because their product is 1. Write the reciprocals of the numbers below.

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

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

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

### Dividing Fractions

When dividing fractions, you can rewrite the division as a related multiplication problem in which you multiply by the reciprocal of the divisor. ← always flip 2nd number (divisor)

$$\frac{2}{9} \div \frac{2}{5} =$$

**Step 1:** Rewrite as a multiplication problem in which you multiply by the reciprocal of the divisor (what you're dividing by).

$$\frac{2}{9} \times \frac{5}{2} = \frac{10}{18} =$$

**Step 2:** Multiply.

$$\frac{10}{18}$$

**Step 3:** Simplify.

$$\frac{5}{9}$$

$$\frac{3}{8} \div \frac{10}{12}$$

$$\frac{3}{8} \times \frac{12}{10} = \frac{36}{80} = \frac{9}{20}$$

## Dividing Mixed Numbers

$$1\frac{3}{4} \div \left(-2\frac{5}{8}\right) =$$

**Step 1: Change each mixed number into an improper fraction.**

$$\frac{7}{4} \div -\frac{21}{8}$$

**Step 2: Multiply by the reciprocal.**

$$\frac{7}{4} \times -\frac{8}{21} = -\frac{8}{12}$$

**Step 3: Simplify.**

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

**You Try!**

$$1\frac{1}{3} \div \frac{5}{6} = \frac{4}{3} \times \frac{6}{5} = \frac{8}{5} = \boxed{1\frac{3}{5}}$$

$$-1\frac{3}{5} \div 1\frac{1}{5} = -\frac{8}{5} \times \frac{5}{6} = -\frac{8}{6} = -1\frac{2}{6} = \boxed{-1\frac{1}{3}}$$

$-\frac{8}{5} \div \frac{6}{5}$

$$12\frac{1}{2} \div 1\frac{2}{3} = \frac{25}{2} \times \frac{3}{5} = \frac{15}{2} = \boxed{7\frac{1}{2}}$$

$\frac{25}{2} \div \frac{5}{3}$