



## SKILL 15: Dividing a Whole Number by a Fraction

To do division such as  $3 \div \frac{3}{4}$ , you can think about how many  $\frac{3}{4}$ -inch strips can be placed along a 3-inch ruler.

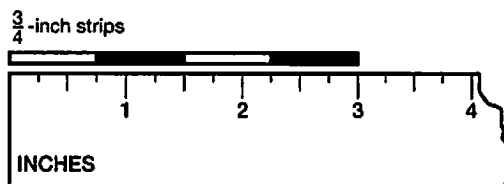
### Example 1

**Divide:**  $3 \div \frac{3}{4}$ .

You can see that there are  $1\frac{1}{3}$  strips in 1 inch.

So, there are  $3 \times 1\frac{1}{3}$  strips in 3 inches.

$$\begin{aligned} \text{So, } 3 \div \frac{3}{4} &= 3 \times 1\frac{1}{3} \\ &= \frac{3}{1} \times \frac{4}{3} \\ &= \frac{12}{3} \\ &= 4 \end{aligned}$$



The model shows that  $3 \div \frac{3}{4} = 4$ .

Two numbers are **reciprocals** if their product is 1. In Example 1,  $\frac{3}{4}$  and  $\frac{4}{3}$  are reciprocals. Notice that dividing by a fraction gives the same result as multiplying by its reciprocal.

### Example 2

**Divide:**  $4 \div \frac{3}{8}$ .

$$\begin{aligned} 4 \div \frac{3}{8} &= 4 \times \frac{8}{3} \\ &= \frac{4}{1} \times \frac{8}{3} \\ &= \frac{4 \times 8}{1 \times 3} \\ &= \frac{32}{3} \\ &= 10\frac{2}{3} \end{aligned}$$

So,  $4 \div \frac{3}{8} = 10\frac{2}{3}$ .

Write the reciprocal of  $\frac{3}{8}$  and change division to multiplication.

Write the whole number as an improper fraction.

Multiply.

Write your answer in simplest form.

### Guided Practice

Find each quotient in simplest form.

1.  $10 \div \frac{1}{3}$

a. The reciprocal of  $\frac{1}{3}$  is  $\frac{\square}{\square}$ .

b.  $10 \div \frac{1}{3} = \frac{\square}{\square} \times \frac{\square}{\square} = \underline{\hspace{2cm}}$

2.  $21 \div \frac{3}{5}$

a. The reciprocal of  $\frac{3}{5}$  is  $\frac{\square}{\square}$ .

b.  $21 \div \frac{3}{5} = \frac{\square}{1} \times \frac{\square}{\square} = \frac{\square}{\square} = \underline{\hspace{2cm}}$

**SKILL 15: Practice**

Name \_\_\_\_\_ Date \_\_\_\_\_ Class \_\_\_\_\_

Write the reciprocal of each number.

1.  $\frac{3}{2} =$  \_\_\_\_\_  
 2.  $\frac{8}{1} =$  \_\_\_\_\_  
 3.  $\frac{7}{4} =$  \_\_\_\_\_  
 4.  $2\frac{1}{2} =$  \_\_\_\_\_  
 5.  $\frac{4}{1} =$  \_\_\_\_\_  
 6.  $5 =$  \_\_\_\_\_

Divide. Simplify each quotient.

7.  $11 \div \frac{1}{7} =$  \_\_\_\_\_  
 8.  $6 \div \frac{1}{3} =$  \_\_\_\_\_  
 9.  $3 \div \frac{8}{5} =$  \_\_\_\_\_  
 10.  $7 \div \frac{3}{2} =$  \_\_\_\_\_  
 11.  $4 \div \frac{4}{3} =$  \_\_\_\_\_  
 12.  $11 \div \frac{4}{3} =$  \_\_\_\_\_  
 13.  $5 \div \frac{9}{2} =$  \_\_\_\_\_  
 14.  $7 \div \frac{9}{8} =$  \_\_\_\_\_  
 15.  $8 \div \frac{1}{3} =$  \_\_\_\_\_  
 16.  $10 \div \frac{9}{2} =$  \_\_\_\_\_  
 17.  $6 \div \frac{2}{1} =$  \_\_\_\_\_  
 18.  $7 \div \frac{9}{2} =$  \_\_\_\_\_  
 19.  $12 \div \frac{3}{1} =$  \_\_\_\_\_  
 20.  $8 \div \frac{7}{3} =$  \_\_\_\_\_  
 21.  $5 \div \frac{5}{2} =$  \_\_\_\_\_  
 22.  $8 \div \frac{1}{7} =$  \_\_\_\_\_  
 23.  $8 \div \frac{3}{1} =$  \_\_\_\_\_  
 24.  $5 \div \frac{3}{2} =$  \_\_\_\_\_  
 25.  $3 \div \frac{3}{1} =$  \_\_\_\_\_  
 26.  $6 \div \frac{5}{1} =$  \_\_\_\_\_  
 27.  $4 \div \frac{5}{2} =$  \_\_\_\_\_

- Solve.**
28. A baby walrus is 4 feet long. This is  $\frac{5}{2}$  of the length of an adult male. What is the length of an adult male walrus?
29. One yard (36 inches) is equal to  $\frac{1}{2}$  of a rod. How many inches are in a rod?

\_\_\_\_\_

\_\_\_\_\_



30. Divide:  $10 \div \frac{5}{4}$ .

- A  $\frac{8}{1}$   
 B  $\frac{2}{25}$   
 C 8  
 D  $12\frac{1}{2}$

Skill 15

31. Find  $2\frac{3}{2} + 3\frac{5}{2}$  in simplest form.

- F  $5\frac{1}{15}$   
 G  $5\frac{4}{15}$   
 H  $5\frac{1}{2}$   
 J  $6\frac{1}{15}$

Skill 4