

6-4**Study Guide and Intervention*****Multiplying Fractions and Mixed Numbers***

To multiply fractions, multiply the numerators and multiply the denominators.

$$\frac{5}{6} \times \frac{3}{5} = \frac{5 \times 3}{6 \times 5} = \frac{15}{30} = \frac{1}{2}$$

To multiply mixed numbers, rename each mixed number as a fraction. Then multiply the fractions.

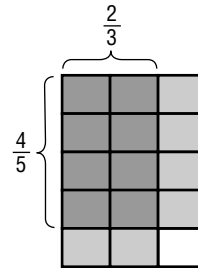
$$2\frac{2}{3} \times 1\frac{1}{4} = \frac{8}{3} \times \frac{5}{4} = \frac{40}{12} = 3\frac{1}{3}$$

EXAMPLE 1 Find $\frac{2}{3} \times \frac{4}{5}$. Write in simplest form.

$$\begin{aligned} \frac{2}{3} \times \frac{4}{5} &= \frac{2 \times 4}{3 \times 5} && \leftarrow \text{Multiply the numerators.} \\ & && \leftarrow \text{Multiply the denominators.} \\ &= \frac{8}{15} && \text{Simplify.} \end{aligned}$$

EXAMPLE 2 Find $\frac{1}{3} \times 2\frac{1}{2}$. Write in simplest form.

$$\begin{aligned} \frac{1}{3} \times 2\frac{1}{2} &= \frac{1}{3} \times \frac{5}{2} && \text{Rename } 2\frac{1}{2} \text{ as an improper fraction, } \frac{5}{2}. \\ &= \frac{1 \times 5}{3 \times 2} && \text{Multiply.} \\ &= \frac{5}{6} && \text{Simplify.} \end{aligned}$$

**EXERCISES**

Multiply. Write in simplest form.

1. $\frac{2}{3} \times \frac{2}{3}$

2. $\frac{1}{2} \times \frac{7}{8}$

3. $\frac{1}{3} \times \frac{3}{5}$

4. $\frac{5}{9} \times 4$

5. $1\frac{2}{3} \times \frac{3}{5}$

6. $3\frac{3}{4} \times 1\frac{1}{6}$

7. $\frac{3}{4} \times 1\frac{2}{3}$

8. $3\frac{1}{3} \times 2\frac{1}{2}$

9. $4\frac{1}{5} \times \frac{1}{7}$

10. $\frac{7}{5} \times 8$

11. $2\frac{1}{3} \times \frac{4}{6}$

12. $\frac{1}{8} \times 2\frac{3}{4}$

6-4**Practice: Skills*****Multiplying Fractions and Mixed Numbers*****Multiply. Write in simplest form.**

1. $\frac{1}{2} \times \frac{4}{5}$

2. $\frac{1}{9} \times \frac{3}{5}$

3. $\frac{15}{24} \times \frac{3}{20}$

4. $\frac{1}{7} \times \frac{1}{5}$

5. $\frac{5}{7} \times \frac{14}{15}$

6. $\frac{9}{10} \times \frac{5}{9}$

7. $\frac{4}{11} \times \frac{3}{8}$

8. $\frac{2}{3} \times \frac{7}{9}$

9. $\frac{9}{13} \times \frac{26}{27}$

10. $\frac{4}{9} \times 5$

11. $7 \times \frac{2}{7}$

12. $2\frac{4}{5} \times \frac{1}{3}$

13. $4\frac{1}{2} \times \frac{1}{3}$

14. $5\frac{3}{4} \times 12$

15. $14 \times 2\frac{3}{7}$

16. $2\frac{3}{5} \times 1\frac{3}{7}$

17. $1\frac{4}{9} \times 2\frac{4}{7}$

18. $5\frac{5}{6} \times 6\frac{3}{8}$

19. $10\frac{7}{9} \times 4\frac{1}{4}$

20. $9\frac{7}{9} \times 7\frac{3}{4}$

21. $3\frac{3}{4} \times 2\frac{4}{7}$

6-4**Practice: Word Problems*****Multiplying Fractions and Mixed Numbers***

<p>1. POPULATION If $\frac{4}{5}$ of the population of a certain town is considered to be middle class and the population of the town is 2,000, how many people are considered middle class?</p>	<p>2. READING Robin has read $\frac{3}{4}$ of a book. Mark said he had read $\frac{1}{2}$ as much as Robin. What fraction of the book has Mark read?</p>
<p>3. RADIO A radio station spends $\frac{1}{40}$ of each 24 hours on public service announcements. How much time is spent on public service announcements each day?</p>	<p>4. SALE A bicycle is on sale for $\frac{2}{3}$ of its original price. If the original price is \$354, what is the sale price?</p>
<p>5. STUDENT POPULATION One sixth of the students at a local college are seniors. The number of freshmen students is $2\frac{1}{2}$ times that amount. What fraction of the students are freshmen?</p>	<p>6. SEWING Anna wants to make 4 sets of curtains. Each set requires $5\frac{1}{8}$ yards of fabric. How much fabric does she need?</p>
<p>7. RUNNING It takes Awan $8\frac{1}{3}$ minutes to run one mile. It takes Kate $1\frac{1}{5}$ times longer. How long does it take Kate to run one mile?</p>	<p>8. STOCK Carl bought some stock at \$25 a share. The stock increased to $1\frac{1}{2}$ times its value. How much is the stock per share?</p>

6-4**Reading to Learn Mathematics*****Multiplying Fractions and Mixed Numbers***

Pre-Activity *Read the introduction at the top of page 254 in your textbook. Write your answers below.*

1. What part of the rectangle represents $\frac{1}{3}$?
2. What part of the rectangle represents $\frac{2}{5}$ of $\frac{1}{3}$?
3. **Make a conjecture** about what fraction of U.S. land is publicly owned forests.

Reading the Lesson

4. What is the rule for multiplying fractions? Give an example.
5. What does GCF stand for? How is it helpful in the multiplication of fractions? Give an example.

Helping You Remember

6. In this lesson, you learned two methods to multiply mixed numbers. Work with a partner and describe how to use one of the methods to find $\frac{3}{5} \times 3\frac{2}{3}$. Have your partner describe how to use the other method to find the result.

6-4**Enrichment****Changing Measures of Length**

Fractions and mixed numbers are frequently used with customary measures.

The problems on this page will give you a chance to practice using multiplication of fractions as you change measures of lengths to different equivalent forms.

$$12 \text{ inches (in.)} = 1 \text{ foot (ft)}$$

$$3 \text{ feet} = 1 \text{ yard (yd)}$$

$$5\frac{1}{2} \text{ yards} = 1 \text{ rod (rd)}$$

$$320 \text{ rods} = 1 \text{ mile (mi)}$$

Use a fraction or a mixed number to complete each statement. Refer to the table above as needed.

1. 12 ft 6 in. = ft

2. 1 rod = ft

3. $\frac{5}{8}$ yd = in.

4. 10 ft = yd

5. 7 yd 2 ft = yd

6. 1,540 yd = mi

7. 1,000 rd = mi

8. 27 in. = yd

Use a whole number to complete each statement. Refer to the table above as needed.

9. $10\frac{1}{2}$ ft = 10 ft in.

10. $12\frac{1}{2}$ yd = in.

11. 1 mi = ft

12. 1 mi = yd

13. $\frac{1}{10}$ mi = yd

14. $\frac{3}{4}$ ft = in.

15. 10 rd = ft

16. $\frac{3}{8}$ mi = ft