

Multiplying Rational Numbers

(Pages 140–145)

The product of two numbers having the *same sign* is positive. The product of two numbers having *different signs* is negative. It is also useful to note that multiplying a number or expression by -1 results in the opposite of the number or expression. This is called the **multiplicative property of -1** .

Multiplying Fractions

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

$$\frac{a}{b} \cdot \frac{c}{d} = \frac{ac}{bd}, \text{ where } b, d \neq 0$$

EXAMPLES

A Find $-7\frac{3}{4}\left(\frac{1}{6}\right)$.

$$-7\frac{3}{4}\left(\frac{1}{6}\right) = -\frac{31}{4} \cdot \frac{1}{6}$$

$$= -\frac{31 \cdot 1}{4 \cdot 6}$$

$$= -\frac{31}{24} \text{ or } -1\frac{7}{24}$$

Rewrite $-7\frac{3}{4}$ as an improper fraction.
Multiply numerators and multiply denominators.

The signs are different, so the product is negative.

B Simplify $3.2m(1.5n)$.

$$3.2m(1.5n)$$

$$= (3.2)(m)(1.5)(n)$$

$$= (3.2)(1.5)(m)(n)$$

$$= (3.2 \cdot 1.5)(m \cdot n)$$

$$= 4.8mn$$

Rewrite $3.2m(1.5n)$.

Commutative Property

Associative Property

Simplify.

PRACTICE

Find each product.

1. $-3.7(-4)$

2. $5.2(-0.5)$

3. $(-2.8)(-1.5)$

4. $6 \cdot (-9.3)$

5. $-3.5 \cdot (1.6)$

6. $-8.7 \cdot 4$

7. $-\frac{1}{4}\left(-\frac{2}{5}\right)$

8. $5 \cdot \frac{1}{3}$

9. $\frac{2}{3}\left(-\frac{5}{6}\right)$

10. $-\frac{3}{4} \cdot \left(-3\frac{1}{2}\right)$

11. $-\frac{5}{8}(-2)$

12. $1\frac{5}{6}\left(-\frac{2}{7}\right)$

Simplify each expression.

13. $-7.5a(1.2b)$

14. $-8p(-5.4q)$

15. $\frac{3}{4}g\left(-\frac{2}{3}h\right)$

16. $-\frac{7}{9}c(-4d)$



- 17. Standardized Test Practice** The velocity of an object t seconds after the object is dropped from the top of a tall building is about $-9.8t$ meters per second (m/s). What is its velocity 2.5 seconds after it is dropped?

A -24.5 m/s

B -7.3 m/s

C 7.3 m/s

D 18.4 m/s

Answers: 1. 14.8 2. -2.6 3. 4.2 4. -55.8 5. -5.6 6. -34.8 7. $\frac{10}{1}$ 8. $1\frac{3}{2}$ 9. $-\frac{9}{5}$ 10. $2\frac{8}{5}$ 11. $1\frac{4}{1}$ 12. $-\frac{21}{11}$ 13. $-9ab$ 14. $43.2pq$ 15. $-\frac{2}{9}gh$ 16. $3\frac{2}{9}cd$ 17. A