

Lesson 2-4

Example 1 Multiply Integers with Different Signs

Find each product.

a. $3(-9)$

$$3(-9) = -27$$

The factors have different signs. The product is negative.

b. $-6(2)$

$$-6(2) = -12$$

The factors have different signs. The product is negative.

Example 2 Multiply Integers with the Same Sign

Find $-5(-8)$.

$$-5(-8) = 40$$

The two factors have the same sign. The product is positive.

Example 3 Multiply More Than Two Integers

Find $-2(-7)(-4)$.

$$-2(-7)(-4) = [(-2)(-7)](-4)$$

$$= 14(-4)$$

$$= -56$$

Associative Property

$$(-2)(-7) = 14$$

$$14(-4) = -56$$

Example 4 Use Integers to Solve a Problem

Multiple Choice Test Item

Bob is losing weight at a rate of 8 pounds per month. What is Bob's weight change after 4 months?

A. -4 pounds

B. 12 pounds

C. -32 pounds

D. 4 pounds

Read the Test Item

The word *losing* means going down, so the rate per month is represented by -8 . Multiply 4 times -8 to find the weight loss after 4 months.

Solve the Test Item

$$4(-8) \quad \text{Write an expression.}$$

$$4(-8) = -32 \quad \text{The product is negative.}$$

The answer is C.

Example 5 Simplify and Evaluate Algebraic Expressions

a. Simplify $-6(4x)$.

$$\begin{aligned} -6(4x) &= (-6 \cdot 4)x \\ &= -24x \end{aligned}$$

Associative Property of Multiplication
Simplify.

b. Simplify $-4m(7n)$

$$\begin{aligned} -4m(7n) &= (-4)(m)(7)(n) \\ &= (-4 \cdot 7)(m \cdot n) \\ &= -28mn \end{aligned}$$

$-4m = (-4)(m)$, $7n = (7)(n)$
Commutative Property of Multiplication
 $-4 \cdot 7 = -28$, $m \cdot n = mn$

c. Evaluate $9ab$ if $a = -6$ and $b = -2$.

$$\begin{aligned} 9ab &= 9(-6)(-2) \\ &= [9(-6)](-2) \\ &= -54(-2) \\ &= 108 \end{aligned}$$

Replace a with -6 and b with -2 .
Associative Property of Multiplication.
The product of 9 and -6 is negative.
The product of -54 and -2 is positive.