

Multiplying Integers (Pages 75–79)

The product of two integers with different signs is negative. The product of two integers with the same sign is positive.

EXAMPLES

A Evaluate $-3xy$ if $x = 2$ and $y = -4$.

Replace x with 2 and y with -4 .

$$\begin{aligned} -3xy &= -3(2)(-4) \\ &= -6(-4) \quad -3(2) = -6 \\ &= 24 \end{aligned}$$

Multiply. The signs are the same, so the product is positive.

B Simplify $(-4a)(2b)$.

$$\begin{aligned} &(-4a)(2b) \\ &= (-4)(a)(2)(b) \quad -4a = (-4)(a), 2b = (2)(b) \\ &= (-4)(2)(a)(b) \quad \text{Commutative Property} \\ &= -8ab \end{aligned}$$

Multiply. The signs are different, so the product is negative.

Try These Together

1. Evaluate $6m$ if $m = -3$.

HINT: The signs are different.

2. Simplify $-9(-5c)$.

HINT: The signs are the same.

PRACTICE

Find each product.

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|------------------|----------------|----------------------|---------------------|
| 3. $8(11)$ | 4. $7(-7)$ | 5. $-9(-3)$ | 6. $-2(15)$ |
| 7. $-6(0)$ | 8. $-7(-6)$ | 9. $12(-5)$ | 10. $-3(-3)(-8)$ |
| 11. $5(-2)(-10)$ | 12. $4(6)(-2)$ | 13. $(-2)(1)(2)(-1)$ | 14. $6(-2)(-1)(-2)$ |

Evaluate each expression if $a = -3$ and $b = -5$.

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|-----------|-----------|--------------|--------------|
| 15. $-4b$ | 16. $2ab$ | 17. $5(-3a)$ | 18. $6a + b$ |
|-----------|-----------|--------------|--------------|

Simplify each expression.

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|--------------|--------------|------------------|-----------------|
| 19. $-8(2x)$ | 20. $9(-6a)$ | 21. $(-7m)(-3n)$ | 22. $(-4x)(3y)$ |
|--------------|--------------|------------------|-----------------|



23. Standardized Test Practice Evaluate the expression $-2x + 3y$ if $x = -4$ and $y = -6$.

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|----------------|---------------|----------------|--------------|
| A -26 | B 24 | C -10 | D 0 |
|----------------|---------------|----------------|--------------|

Answers: 1. -18 2. $45c$ 3. 88 4. -49 5. 27 6. -30 7. 0 8. 42 9. -60 10. -72 11. 100 12. -48 13. 4 14. -24 15. 20 16. 30 17. 45 18. -23 19. $-16x$ 20. $-54a$ 21. $21mn$ 22. $-12xy$ 23. C