

# Multiplying Integers

Name: \_\_\_\_\_

Date: \_\_\_\_\_

Score: \_\_\_\_\_ / 18

Multiplying integers is really a two-part job: first you figure out the *size* of the answer, then you figure out the *sign*. Multiply the absolute values to get the size. For the sign, count the negative factors—an **even** count gives a positive product, and an **odd** count gives a negative product. That is why  $(-4)(-3) = +12$ , but  $(-4)(-3)(-2) = -24$ . This same pattern explains why powers of negative numbers switch signs depending on whether the exponent is even or odd—a handy connection you will use again and again.

## Key Concepts & Quick Review

**Same signs**  $\Rightarrow$  **Positive**:  $(+)(+) = +$  and  $(-)(-) = +$

**Different signs**  $\Rightarrow$  **Negative**:  $(+)(-) = -$  and  $(-)(+) = -$

**Multiple factors**: Count the negatives. **Even** count  $\Rightarrow$  positive product. **Odd** count  $\Rightarrow$  negative product.

		factor 2			
factor 1	+	-	+	-	
	-	+	-	+	

*Same signs give +; different signs give -.*

## Examples

① Evaluate  $(-7) \times (-6)$ .

**Think It Through:** First multiply the absolute values:  $7 \times 6 = 42$ . Then decide the sign by counting negatives. There are two negatives, and an even number of negatives gives a positive product. So  $(-7) \times (-6) = 42$ .

**Answer:** 42

② A stock drops \$8 in value each day for 6 consecutive trading days. Write a multiplication expression with integers to represent the total change in value, and then evaluate it.

**Think It Through:** A drop of \$8 per day is represented by  $-8$ . Over 6 days, write the total change as  $(-8) \times 6$ . Multiply the absolute values:  $8 \times 6 = 48$ . There is one negative factor, so the product is negative. That means the stock changed by  $-48$ , or a loss of \$48.

**Answer:**  $-48$ ; stock lost \$48



**Practice Problems**

Find each product.

- |                                     |       |                                      |       |
|-------------------------------------|-------|--------------------------------------|-------|
| 1. $(-4) \times 7 =$                | _____ | 9. $(-5) \times 4 \times (-3) =$     | _____ |
| 2. $(-6) \times (-9) =$             | _____ | 10. $(-8) \times (-4) \times (-1) =$ | _____ |
| 3. $5 \times (-8) =$                | _____ | 11. $(-15) \times 3 =$               | _____ |
| 4. $(-3) \times (-12) =$            | _____ | 12. $(-6) \times (-5) \times 2 =$    | _____ |
| 5. $(-10) \times 11 =$              | _____ | 13. $(-1)^4 =$                       | _____ |
| 6. $(-7) \times (-7) =$             | _____ | 14. $(-1)^5 =$                       | _____ |
| 7. $9 \times (-6) =$                | _____ | 15. $(-4)^3 =$                       | _____ |
| 8. $(-2) \times (-2) \times (-2) =$ | _____ |                                      |       |

**Study Tips**

- 👉 **Count the negatives** in a product: even count → positive; odd count → negative.
- 👉  $(-1)^{\text{even}} = +1$  and  $(-1)^{\text{odd}} = -1$ . This pattern holds for any negative base raised to a power.
- 👉 Multiplying any integer by 0 always gives 0, regardless of sign.

**Word Problems**

16. A technology company's stock loses \$6 in value every trading day. There are 15 trading days in a three-week period. Write a multiplication expression using integers to represent the total change in the stock's value over those three weeks, and evaluate it. What does the sign of your answer tell you? \_\_\_\_\_
17. During a card game, a player *earns* 8 points on each of 5 turns and *loses* 12 points on each of 4 turns. Write a multiplication expression for the total points earned and a separate expression for the total points lost, and evaluate both. Then add the two results to find the player's overall net score for the game. \_\_\_\_\_
18. Starting at 0, the bug below makes *four* equal hops of size  $-3$  (each arrow shows one hop). Write the multiplication expression these hops represent, find the bug's final position, and explain why the answer is negative.



\_\_\_\_\_



## Answer Keys

- |         |                           |
|---------|---------------------------|
| 1) -28  | 10) -32                   |
| 2) 54   | 11) -45                   |
| 3) -40  | 12) 60                    |
| 4) 36   | 13) 1                     |
| 5) -110 | 14) -1                    |
| 6) 49   | 15) -64                   |
| 7) -54  | 16) 90 loss               |
| 8) -8   | 17) net -8 points         |
| 9) 60   | 18) -12; bug lands at -12 |

### Step-by-Step Explanations

**Strategy:** For Multiplying Integers, separate the sign decision from the arithmetic; work with the absolute values first, then decide whether the final answer is positive or negative. A small sketch, table, or formula line can make this integer-multiplication topic feel organized.

**Practice 1:**  $(-4) \times 7 =$  **Answer:** -28

For the first worked item,  $4 \times 7 = 28$ , and the single negative factor makes the product  $-28$ .

**Practice 15:**  $(-4)^3 =$  **Answer:** -64

Near the end of this topic, expand  $(-4)^3$  as three negative factors; an odd count of negatives leaves the product negative.

**Word-problem notes:**

**16. Answer:**  $(-6) \times 15 = -90$ ; the stock lost \$90.

Each day's change is  $-6$  dollars, so for 15 days write  $(-6) \times 15$ . Multiply the absolute values to get 90. Because there is one negative factor, the total change is negative. So the stock lost \$90 altogether.

**17. Answer:** Earned:  $8 \times 5 = 40$ ; lost:  $(-12) \times 4 = -48$ ; net =  $-8$  pts.

Earned points are positive, so  $8 \times 5 = 40$  points. Lost points are negative, so  $(-12) \times 4 = -48$  points. Now combine the two results:  $40 + (-48) = -8$ . The player's overall score is  $-8$ , which means the losses were greater than the gains.

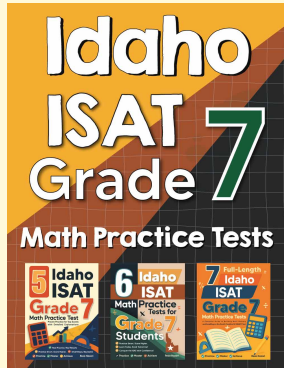
**18. Answer:**  $4 \times (-3) = -12$ ; bug lands at  $-12$ .

Four hops of  $-3$  is the same as  $4 \times (-3)$ . Multiplying a positive by a negative produces a negative result, so  $4 \times (-3) = -12$ . The bug ends at  $-12$ . The answer is negative because each hop moves left, so repeated leftward jumps accumulate to a negative total.



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