

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.

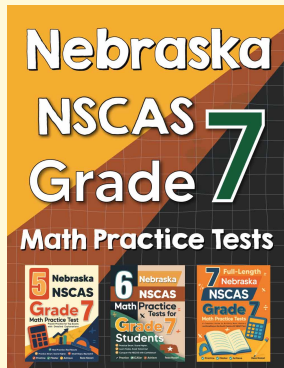
18. Answer: $4 \times (-3) = -12$; bug lands at -12 .

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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