Integer Multiplication and Division

Integer multiplication and division: Applications and decisions

Name _____ **Date** _____ **Score** _____ / 8

QUICK REVIEW

The product or quotient of numbers with the same sign is positive; different signs give a negative result. Thus $(-3)(-4) = 12$, but $(-12)/4 = -3$. Multiply or divide absolute values first, then determine the sign. Zero times any integer is zero; division by zero is undefined.

Worked example

Find $(-6)(-4)$.

1. First calculate sizes: $6 \times 4 = 24$.
2. The signs are the same, so the result is positive: 24.
3. Check $24 \div (-4) = -6$.
Answer: 24.

Practice Problems

Show your thinking.

1. A game loses 6 points per penalty. Find the signed change for 7 penalties.

2. A total debt of 64 dollars is shared as 8 equal signed balances. Find each balance.

3. A temperature changes -9 degrees Celsius each hour for 5 hours. Write a multiplication expression for the total change.

4. A dive totals -84 m at -12 m/minute. Find elapsed minutes.

5. A robot moves 3 units west in each of 12 equal moves. East is positive. Find displacement.

6. A student shares a -56-point change over 7 turns and reports $+8$ per turn. Correct it.

7. Two robots start together. A moves 5 units west per step for 8 steps; B moves 2 units east per step for 3 steps. East is positive. How far apart do they finish?

8. A total -72-point change comes from penalties of -8 each. Find the number of penalties.

Answer Key

1. -42 points.
2. -8 dollars.
3. $(-9) \times 5 = -45$ degrees Celsius.
4. 7 minutes.
5. -36 grid units.
6. -8 points per turn.
7. 46 grid units.
8. 9 penalties.

Step-by-Step Solutions

Follow each calculation, then check your own work.

Problem 1

1. First calculate sizes: $6 \times 7 = 42$.
2. The signs are different, so the result is negative: -42 points.
3. Check $-42 \div (7) = -6$.

Problem 2

1. First calculate sizes: $64 \div 8 = 8$.
2. The signs are different, so the result is negative: -8 dollars.
3. Check $-8 \times (8) = -64$.

Problem 3

1. The change for each hour is -9 degrees Celsius. There are 5 such hours, so use $(-9) \times 5$.
2. $9 \times 5 = 45$, and opposite signs give a negative product.
3. The signed total change is $(-9) \times 5 = -45$ degrees Celsius.

Problem 4

1. Divide the signed change -84 m by -12 m per minute; the meter units cancel and the result is in minutes.
2. The signs are the same, so the result is positive: 7 minutes.
3. Check $7 \times (-12) = -84$.

Problem 5

1. First calculate sizes: $3 \times 12 = 36$.
2. The signs are different, so the result is negative: -36 grid units.
3. Check $-36 \div (12) = -3$.

Problem 6

1. First calculate sizes: $56 \div 7 = 8$.
2. The signs are different, so the result is negative: -8 points per turn.
3. Check $-8 \times (7) = -56$.

Problem 7

1. A ends at displacement $8(-5) = -40$ grid units.
2. B ends at displacement $3(2) = 6$ grid units.
3. They are $6 - (-40) = 46$ grid units apart.

Problem 8

1. First calculate sizes: $72 \div 8 = 9$.
2. The signs are the same, so the result is positive: 9 penalties.
3. Check $9 \times (-8) = -72$.

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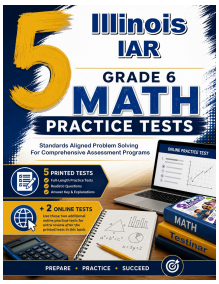

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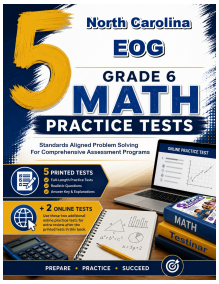

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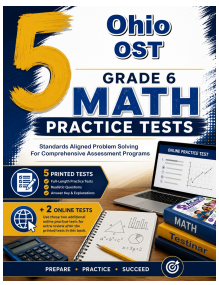

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