

Integer Multiplication and Division

Name: _____ Date: _____ Score: _____ / 24

Q Quick Review

For multiplying or dividing integers, the **sign rules** are simple. If the two numbers have the **same sign**, the answer is **positive**. If they have **different signs**, the answer is **negative**. So $(-6)(7) = -42$ but $(-8)(-3) = 24$. First multiply or divide the numbers as if they were positive, then attach the correct sign. When you multiply several numbers, count the negative signs: an *even* number of negatives gives a positive, an *odd* number gives a negative.

◇ **Example:** Find $(-8)(-3)$.

⇒ First ignore the signs and multiply the plain numbers: $8 \times 3 = 24$. Now decide the sign. Both factors are negative, which means they have the *same* sign. The same-sign rule tells us the answer is positive. So $(-8)(-3) = 24$. A helpful way to remember: a negative of a negative turns positive, just like $-(-3) = 3$.

Answer: 24

PRACTICE

Multiply or divide the integers.

- | | | | |
|--------------------|-------|-----------------------|-------|
| 1. $(-6)(7)$ | _____ | 11. $-90 \div 10$ | _____ |
| 2. $(9)(-4)$ | _____ | 12. $64 \div (-16)$ | _____ |
| 3. $(-7)(8)$ | _____ | 13. $-48 \div (-8)$ | _____ |
| 4. $(-11)(5)$ | _____ | 14. $-72 \div (-9)$ | _____ |
| 5. $(-8)(-3)$ | _____ | 15. $-100 \div (-25)$ | _____ |
| 6. $(-5)(-5)$ | _____ | 16. $-81 \div (-9)$ | _____ |
| 7. $(-15)(-2)$ | _____ | 17. $(2)(-5)(3)$ | _____ |
| 8. $(-12)(0)$ | _____ | 18. $(-3)(-4)(-2)$ | _____ |
| 9. $-36 \div 6$ | _____ | 19. $(-4)(-4)(-4)$ | _____ |
| 10. $56 \div (-7)$ | _____ | 20. $(-2)^3$ | _____ |

◆ Word Problems

21. A scuba diver descends 3 feet every minute. Write a product to find her depth change after 8 minutes. _____
22. A store loses \$250 over 5 equal days. What is the average daily change in money? _____
23. A submarine rises at a rate represented by -6 feet per minute relative to its dive. Over -7 minutes (7 minutes earlier), what was its position change? _____
24. A team's total score dropped by 45 points across 9 equal rounds. What was the score change per round? _____



Answer Keys

- | | |
|-------------------------------------|--|
| 1. <input type="text" value="-42"/> | 13. <input type="text" value="6"/> |
| 2. <input type="text" value="-36"/> | 14. <input type="text" value="8"/> |
| 3. <input type="text" value="-56"/> | 15. <input type="text" value="4"/> |
| 4. <input type="text" value="-55"/> | 16. <input type="text" value="9"/> |
| 5. <input type="text" value="24"/> | 17. <input type="text" value="-30"/> |
| 6. <input type="text" value="25"/> | 18. <input type="text" value="-24"/> |
| 7. <input type="text" value="30"/> | 19. <input type="text" value="-64"/> |
| 8. <input type="text" value="0"/> | 20. <input type="text" value="-8"/> |
| 9. <input type="text" value="-6"/> | 21. <input type="text" value="-24 feet"/> |
| 10. <input type="text" value="-8"/> | 22. <input type="text" value="-\$50"/> |
| 11. <input type="text" value="-9"/> | 23. <input type="text" value="42 feet"/> |
| 12. <input type="text" value="-4"/> | 24. <input type="text" value="-5 points"/> |

Step-by-Step Explanations

- | | |
|--|--|
| <p>1. Different signs give a negative: $6 \times 7 = 42$, so -42.</p> <p>2. Different signs give a negative: $9 \times 4 = 36$, so -36.</p> <p>3. Different signs give a negative: $7 \times 8 = 56$, so -56.</p> <p>4. Different signs give a negative: $11 \times 5 = 55$, so -55.</p> <p>5. Same sign gives a positive: $8 \times 3 = 24$.</p> <p>6. Same sign gives a positive: $5 \times 5 = 25$.</p> <p>7. Same sign gives a positive: $15 \times 2 = 30$.</p> <p>8. Anything multiplied by 0 is 0.</p> <p>9. Different signs give a negative: $36 \div 6 = 6$, so -6.</p> <p>10. Different signs give a negative: $56 \div 7 = 8$, so -8.</p> <p>11. Different signs give a negative: $90 \div 10 = 9$, so -9.</p> <p>12. Different signs give a negative: $64 \div 16 = 4$, so -4.</p> <p>13. Same sign gives a positive: $48 \div 8 = 6$.</p> <p>14. Same sign gives a positive: $72 \div 9 = 8$.</p> <p>15. Same sign gives a positive: $100 \div 25 = 4$.</p> | <p>16. Same sign gives a positive: $81 \div 9 = 9$.</p> <p>17. One negative sign (odd), so the product is negative: $2 \times 5 \times 3 = 30$, giving -30.</p> <p>18. Three negative signs (odd), so the product is negative: $3 \times 4 \times 2 = 24$, giving -24.</p> <p>19. Three negatives (odd) give a negative: $4 \times 4 \times 4 = 64$, so -64.</p> <p>20. $(-2)^3 = (-2)(-2)(-2)$; three negatives give a negative 8, so -8.</p> <p>21. Descending 3 feet is -3 per minute, so over 8 minutes the change is $(-3)(8) = -24$ feet.</p> <p>22. A loss of \$250 is -250. Divided over 5 days: $-250 \div 5 = -50$, so $-\\$50$ per day.</p> <p>23. $(-6)(-7) = 42$. Two negatives give a positive, so the position change was $+42$ feet.</p> <p>24. A drop of 45 points is -45. Divided over 9 rounds: $-45 \div 9 = -5$ points per round.</p> |
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