

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