

2-5 Subtracting Integers (Pages 89–93)

Adding and subtracting are inverse operations that undo each other. Similarly, when you add opposites, like 4 and -4 , they undo each other because the sum is zero. An integer and its opposite are called **additive inverses** of each other.

Additive Inverse Property	The sum of an integer and its additive inverse is zero. $5 + (-5) = 0$ or $a + (-a) = 0$
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Use the following rule to subtract integers.

Subtracting Integers	To subtract an integer, add its additive inverse. $3 - 5 = 3 + (-5)$ or $a - b = a + (-b)$
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EXAMPLES

A Solve $s = -4 - 5$.

$$\begin{aligned} s &= -4 - 5 \\ s &= -4 + (-5) \quad \text{Add the opposite of 5, or } -5. \\ s &= -9 \end{aligned}$$

B Solve $w = 12 - (-6)$.

$$\begin{aligned} w &= 12 - (-6) \\ w &= 12 + 6 \quad \text{Add the opposite of } -6, \text{ or } 6. \\ w &= 18 \end{aligned}$$

PRACTICE

Solve each equation.

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|---------------------|----------------------|--------------------|
| 1. $x = -3 - 4$ | 2. $a = -7 - 6$ | 3. $-18 - 4 = k$ |
| 4. $-24 - 7 = b$ | 5. $-5 - 12 = c$ | 6. $-18 - 7 = m$ |
| 7. $j = 32 - 8$ | 8. $r = 8 - (-4)$ | 9. $22 - (-3) = z$ |
| 10. $-9 - (-6) = d$ | 11. $-17 - (-6) = g$ | 12. $h = 4 - 10$ |

Evaluate each expression.

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|------------------------------|----------------------------|
| 13. $n - (-11)$, if $n = 4$ | 14. $18 - k$, if $k = 5$ |
| 15. $9 - (-g)$, if $g = 9$ | 16. $-11 - k$, if $k = 5$ |

Simplify each expression.

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|---------------|----------------|----------------|--------------------|
| 17. $-x - 7x$ | 18. $8m - 18m$ | 19. $-2a - 7a$ | 20. $9xy - (-8xy)$ |
|---------------|----------------|----------------|--------------------|
21. Is the statement $n = -(-n)$ true or false?



22. Standardized Test Practice The elevation of Death Valley, California, is 282 feet below sea level, or -282 feet. To travel from Death Valley to Beatty, Nevada, you must travel over a mountain pass, Daylight Pass, that has an elevation of 4317 feet above sea level. What is the change in elevation from Death Valley to Daylight Pass?

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|------------------|------------------|---------------------|---------------------|
| A 4599 ft | B 4035 ft | C -4035 ft | D -4599 ft |
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Answers: 1. -7 2. -13 3. -22 4. -31 5. -17 6. -25 7. 24 8. 12 9. 25 10. -3 11. -11 12. -6 13. 15 14. 13 15. 18 16. -16 17. $-8x$ 18. $-10m$ 19. $-9a$ 20. $17xy$ 21. true 22. A
