

Study Guide and Intervention

7NS2.5

Integers and Absolute Value

A number line can help you order a set of integers. When graphed on a number line, the smaller of two integers is always to the left of the greater integer.

Example 1 Order the set of integers $\{10, -3, -9, 4, 0\}$ from least to greatest.

Graph each integer on a number line.



The numbers from left to right are $\{-9, -3, 0, 4, 10\}$.

The absolute value of a number is the distance of that number from 0 on a number line.

Example 2 Evaluate the expression $|-20| + |10|$.

$$\begin{aligned} |-20| + |10| &= 20 + |10| && \text{The absolute value of } -20 \text{ is } 20. \\ &= 20 + 10 && \text{The absolute value of } 10 \text{ is } 10. \\ &= 30 && \text{Simplify.} \end{aligned}$$

Exercises

Order each set of integers in each set from least to greatest.

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|---|---|
| 1. $\{3, 0, -5, 1, 4\}$
$\{-5, 0, 1, 3, 4\}$ | 2. $\{-6, -8, 3, -1, -4\}$
$\{-8, -6, -4, -1, 3\}$ |
| 3. $\{2, 13, -11, -21, 5\}$
$\{-21, -11, 2, 5, 13\}$ | 4. $\{31, 0, -34, -9, 7\}$
$\{-34, -9, 0, 7, 31\}$ |

Evaluate each expression.

- | | | |
|-----------------------------|-----------------------------|---------------------------|
| 5. $ -13 $ 13 | 6. $ 21 $ 21 | 7. $ -3 + -5 $ 8 |
| 8. $ 9 + -8 $ 17 | 9. $ -13 + 15 $ 28 | 10. $ 21 - 18 $ 3 |
| 11. $ -11 - -5 $ 6 | 12. $ 4 - -4 $ 0 | 13. $ 23 + 15 $ 38 |

Evaluate each expression if $a = -6$, $b = 4$, and $c = 5$.

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|--------------------------|--------------------------|--------------------------|
| 14. $ a + 14$ 20 | 15. $ c - b $ 1 | 16. $b + c $ 9 |
| 17. $ 3b $ 12 | 18. $2 a + c$ 17 | 19. $ 2b + c $ 13 |