

Lesson 2-1

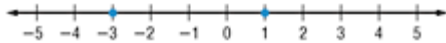
Example 1 Write Integers for Real-World Situations

Write an integer for each situation.

- a. a temperature decrease of 15° The integer is -15 .
- b. a gain of \$310 The integer is $+310$.
- c. 42 feet above sea level The integer is $+42$.

Example 2 Compare Two Integers

Use the integers graphed on the number line below.



- a. Write two inequalities involving -3 and 1 .

Since -3 is to the left of 1 , write $-3 < 1$.

Since 1 is to the right of -3 , write $1 > -3$.

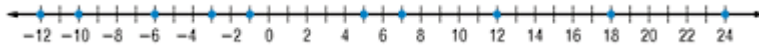
- b. Replace the ____ with $<$ or $>$ in -1 ____ -4 to make a true sentence.

-1 is greater than -4 since it lies to the right of -4 . So write $-1 > -4$.

Example 3 Order Integers

FOOTBALL During a football game, the Busytown Bees completed plays with the following results. Yardage gains are expressed as positive integers and yardage losses are expressed as negative integers. The results were -3 , $+12$, $+7$, -10 , -6 , $+24$, $+18$, -12 , -1 , and $+5$. Order the yardages from least to greatest.

Graph each integer on a number line.



Write the numbers as they appear from left to right.

The yardages -12 , -10 , -6 , -3 , -1 , $+5$, $+7$, $+12$, $+18$, $+24$ are in order from least to greatest.

Example 4 Expressions with Absolute Value**Evaluate each expression.**

a. $|-6|$
 $|-6| = 6$ The graph of -6 is 6 units from 0.

b. $|-3| + |9|$ The absolute value of -3 is 3.
 $|-3| + |9| = 3 + 9$ The absolute value of 9 is 9.
 $= 12$ Simplify.

c. $|15| - |-11|$ The absolute value of 15 is 15.
 $|15| - |-11| = 15 - 11$ The absolute value of -11 is 11.
 $= 4$ Simplify.

Example 5 Algebraic Expressions with Absolute Value**ALGEBRA Evaluate the expression $|x| + 4$ if $x = -9$.**

$$\begin{aligned} |x| + 4 &= |-9| + 4 && \text{Replace } x \text{ with } -9. \\ &= 9 + 4 && \text{The absolute value of } -9 \text{ is } 9. \\ &= 13 && \text{Simplify.} \end{aligned}$$