Positive numbers are greater than 0. They can be written with or without a positive sign (+).

$$+1 \qquad 5 \qquad +20 \qquad 10{,}000$$

Negative numbers are less than 0. They are written with a negative sign (−).

$$-1 \qquad -5 \qquad -20 \qquad -10{,}000$$

Two numbers that are the same distance from 0 on a number line, but on opposite sides of 0, are called **opposites**.

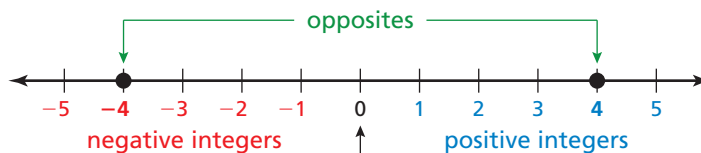## The Meaning of a Word

Opposite

When you sit across from your friend at the lunch table, you sit **opposite** your friend.

Key Idea

Integers

Words   **Integers** are the set of whole numbers and their opposites.

Graph

Zero is neither negative nor positive. Zero is its own opposite.

EXAMPLE 1   Writing Positive and Negative Integers

Write a positive or negative integer that represents the situation.

a. A contestant gains 250 points on a game show.

"Gains" indicates a number greater than 0. So, use a positive integer.

    +250, or 250

b. Gasoline freezes at 40 degrees below zero.

"Below zero" indicates a number less than 0. So, use a negative integer.

    −40

Practice

Write a positive or negative integer that represents the situation.

1. A hiker climbs 900 feet up a mountain.
2. You have a debt of $24.
3. A student loses 5 points for being late to class.
4. A savings account earns $10.

Multi-Language Glossary at BigIdeasMath.com.

EXAMPLE 2 Graphing Integers

Graph each integer and its opposite.

a. 3

> Graph 3.

```
←——+——+——●——+——+——+——+——●——+——+——→
   −5  −4  −3  −2  −1   0   1   2   3   4   5
```

> −3 is the same distance from 0 as 3.

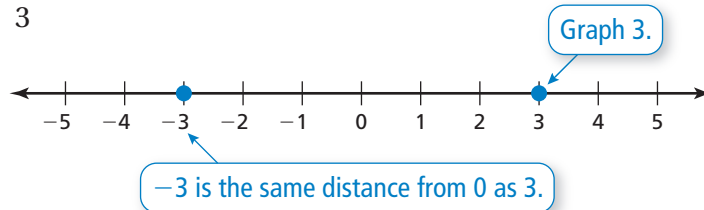**Reading**

You can think of the negative sign (−) as referring to the opposite of a number. For example, you can read −2 as "the opposite of 2."

b. −2
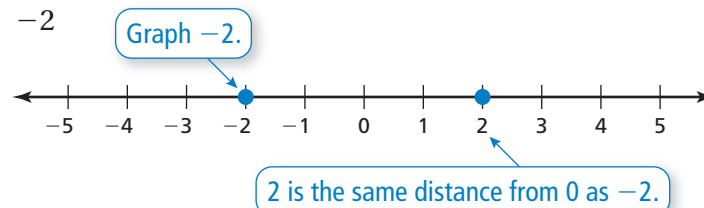
> Graph −2.

```
←——+——+——+——●——+——+——●——+——+——+——→
   −5  −4  −3  −2  −1   0   1   2   3   4   5
```

> 2 is the same distance from 0 as −2.

**EXAMPLE 3 Real-Life Application**

You deliver flowers to an office building. You enter at ground level and go down two floors to make the first delivery. Then you go up seven floors to make the second delivery. Write an integer that represents the return to ground level.

Use a vertical number line to model your movement, as shown.

The second delivery is on the fifth floor. You must go down five floors to return to ground level.

∴ The integer representing "down five floors" is −5.

You go *up* seven floors (+7).

You enter at ground level.

You go *down* two floors (−2).
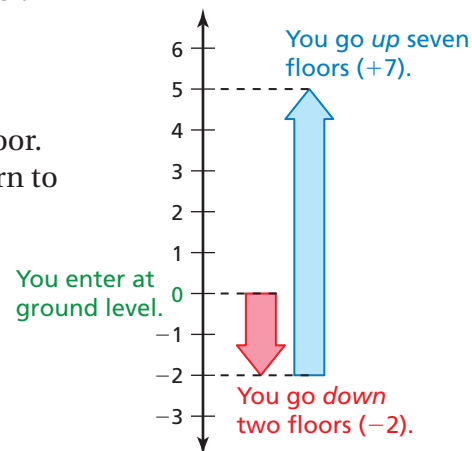
Practice

Graph the integer and its opposite.

5. 6 **6.** −4 **7.** −12 **8.** 1

9. REASONING Choose any positive integer.

   a. Find the opposite of the integer. **b.** Find the opposite of the integer in part (a).

   c. What can you conclude about the opposite of the opposite of the integer? Is this true for all integers? Use a number line to justify your answer.

10. SUBMARINE A submarine descends 100 meters from the ocean's surface. The submarine ascends 40 meters and then descends 90 meters. Write an integer that represents the return to the surface.