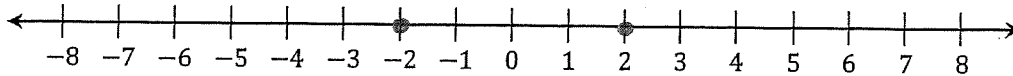


## Lesson 5: The Opposite of a Number's Opposite

### Classwork

#### Opening Exercise

- a. Locate the number  $-2$  and its opposite on the number line below.



- b. Write an integer that represents each of the following.

i. 90 feet below sea level  $-90$

ii. \$100 of debt  $-100$

iii.  $2^{\circ}\text{C}$  above zero  $2$

- c. Joe is at the ice cream shop, and his house is 10 blocks north of the shop. The park is 10 blocks south of the ice cream shop. When he is at the ice cream shop, is Joe closer to the park or his house? How could the number zero be used in this situation? Explain.

He is the same distance from his house and park because both are located 10 blocks away from the ice cream shop but in opposite directions. In this situation, zero represents the location of the ice cream shop.

**Example 1: The Opposite of an Opposite of a Number**

What is the opposite of the opposite of 8? How can we illustrate this number on a number line?

- a. What number is 8 units to the right of 0? 8
- b. How can you illustrate locating the opposite of 8 on this number line? We can count 8 units the left of zero.
- c. What is the opposite of 8? -8
- d. Use the same process to locate the opposite of -8. What is the opposite of -8? 8



- e. The opposite of an opposite of a number is the original number.

**Exercises**

Complete the table using the cards in your group.

Person	Card ( $a$ )	Opposite of Card ( $-a$ )	Opposite of Opposite of Card $-(-a)$
Jackson	4	$-(4) = -4$	$-(-4) = 4$
DeVonte	150	$-(150) = -150$	$-(-150) = 150$
Cheryl	-6	$-(-6) = 6$	$-(-(-6)) = -6$
Toby	-9	$-(-9) = 9$	$-(-(-9)) = -9$

- 1. Write the opposite of the opposite of -10 as an equation.  
 $-10: -(-10) = 10$     The opposite of 10:  $-(10) = -10$     Therefore,  $(-(-(-10))) = -10$

- 2. In general, the opposite of the opposite of a number is the original #.

- 3. Provide a real-world example of this rule. Show your work. Answers vary.

The opposite of the opposite of 100 feet below sea level is 100 feet below sea level.  
-100 is 100 feet below sea level.  
 $-(-100) = 100$ , the opposite of -100  
 $-(100) = -100$ , the opposite of 100.