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

### Student Outcomes

- Students understand that, for instance, the opposite of $-5$ is denoted $-(-5)$ and is equal to 5. In general, they know that the opposite of the opposite is the original number; e.g., $-(-a) = a$.
- Students locate and position opposite numbers on a number line.

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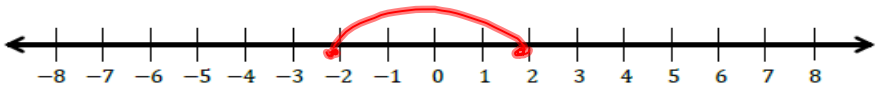
1. Locate the number $-2$ and its opposite on the number line below.




2. Write an integer that represents each of the following:
   a. 90 feet below sea level

   −90

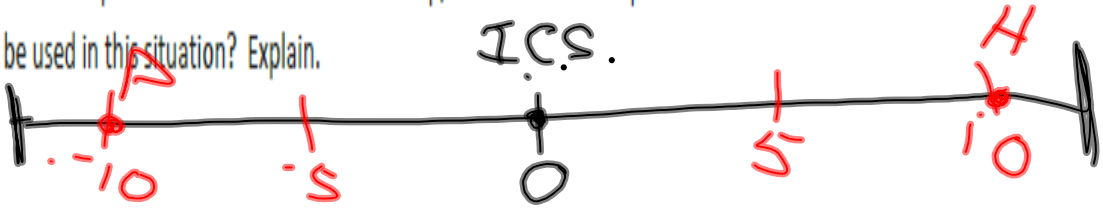
   b. $100 of debt

   −100

   c. 2°C above zero

   2

3. 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.

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

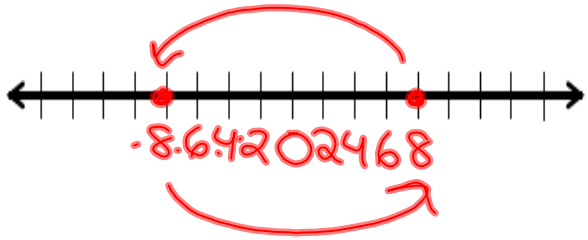
$-(-8)=8$

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? What is the opposite of 8? −8

c. Use the same process to locate the opposite of −8. What is the opposite of −8? 8




d. The opposite of an opposite of a number is The original #

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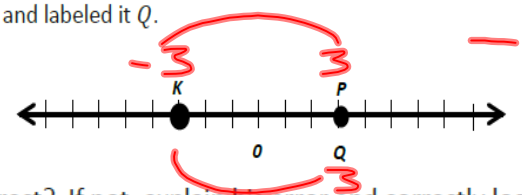
## Problem Set

$-(10)=-10$

1. Read each description carefully and write an equation that represents the description.
   a. The opposite of negative seven. 7
   b. The opposite of the opposite of twenty-five. $-(-25)=25$
   c. The opposite of fifteen. −15
   d. The opposite of negative thirty-six. 36

2. Jose graphed the opposite of the opposite of 3 on the number line. First, he graphed point $P$ on the number line 3 units to the right of zero. Next, he graphed the opposite of $P$, 3 units to the left of zero and labeled it $K$. Finally, he graphed the opposite of $K$ and labeled it $Q$.

$-(-3)=3$




   a. Is his diagram correct? If not, explain his error and correctly locate and label point $Q$.

   b. Write the relationship between the points:

   $P$ and $K$ Oppo

   $K$ and $Q$ Oppo

   $P$ and $Q$ Same

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3. Read each real-world description. Write the integer that represents the opposite of the opposite. Show your work to support your answer.

   a. A temperature rise of 15 degrees Fahrenheit. $-(-15) = 15$

   b. A gain of 55 yards. $-(-55) = 55$

   c. A loss of 10 pounds. $-(10) = -10$

   d. A withdrawal of $2,000. $-(2{,}000) = -2{,}000$

4. Write the integer that represents the statement. Locate and label each point on the number line below.

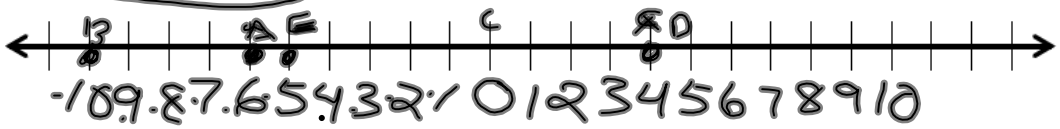
   a. The opposite of a gain of 6. $-6$

   b. The opposite of a deposit of $10 $-10$

   c. The opposite of the opposite of 0. $0$

   d. The opposite of the opposite of 4. $-(-4) = 4$

   e. The opposite of the opposite of a loss of 5. $-(5) = -5$

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