

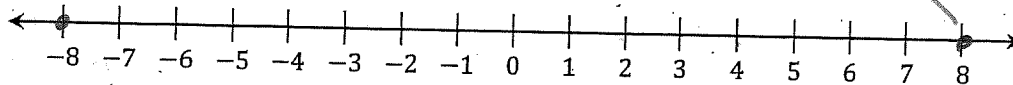
Lesson 4: The Opposite of a Number

Classwork

Exercise 1: Walk the Number Line

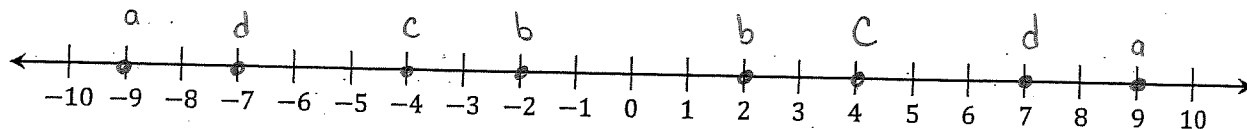
- Each nonzero integer has an opposite, denoted $-a$; $-a$ and a are opposites if they are on opposite sides of zero and the same distance from zero on the number line.

Example 1: Every Number Has an Opposite The opposite of 8 is -8. The opposite of -8 is 8.
 Locate the number 8 and its opposite on the number line. Explain how they are related to zero.



Exercises 2-3

- Locate and label the opposites of the numbers on the number line.
 - 9
 - 2
 - 4
 - 7



3. Write the integer that represents the opposite of each situation. Explain what zero means in each situation.

a. 100 feet above sea level

-100; Zero represents sea level.

b. 32°C below zero

32°; Zero represents 0 degrees Celsius.

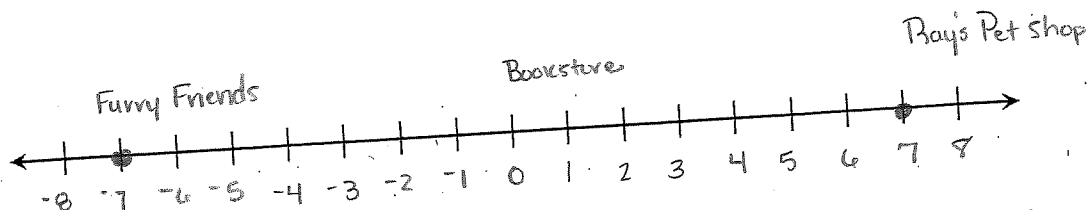
c. A withdrawal of \$25

-25; Zero represents no change, where no withdrawal or deposit is made.

Example 2: A Real-World Example

Maria decides to take a walk along Central Avenue to purchase a book at the bookstore. On her way, she passes the Furry Friends Pet Shop and goes in to look for a new leash for her dog. Furry Friends Pet Shop is seven blocks west of the bookstore. She leaves Furry Friends Pet Shop and walks toward the bookstore to look at some books. After she leaves the bookstore, she heads east for seven blocks and stops at Ray's Pet Shop to see if she can find a new leash at a better price. Which location, if any, is the farthest from Maria while she is at the bookstore?

Determine an appropriate scale, and model the situation on the number line below.



Explain your answer. What does zero represent in the situation?

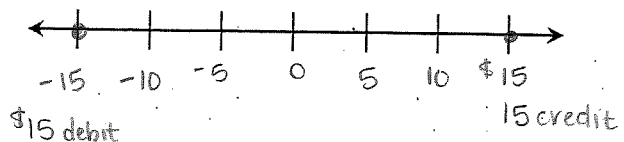
The pet stores are the same distance from Maria, who is at the bookstore. They are 7 blocks away but in opposite directions. In this example, zero represents the bookstore.

Exercises 4–6

Read each situation carefully, and answer the questions.

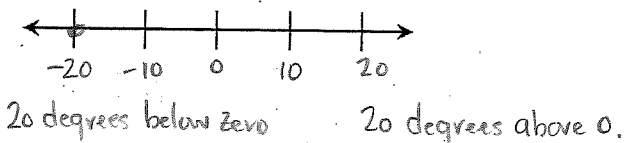
4. On a number line, locate and label a credit of \$15 and a debit for the same amount from a bank account. What does zero represent in this situation?

Zero represents no change in the balance.



5. On a number line, locate and label 20°C below zero and 20°C above zero. What does zero represent in this situation?

Zero represents 0°C .



6. A proton represents a positive charge. Write an integer to represent 5 protons. An electron represents a negative charge. Write an integer to represent 3 electrons.

5 protons: 5

3 electrons: -3