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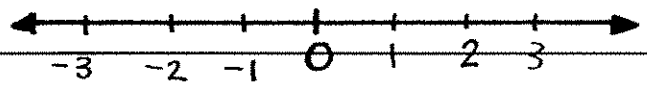
The OPPOSITE and the ABSOLUTE VALUE

The **opposite** of a number (also known as the additive inverse) is the number that is the same distance from 0 on the number line.

example 1: The opposite of 3 is ____



Answer: -3 since the distance from 0 to 3 on the number line is the **same** as the distance from 0 to -3.

example 2: The opposite of -3 is ____

Answer: ____

Written in math terms:

$$-(-3) = 3$$

" the opposite of -3 is 3 "

The **absolute value** of a number represents the distance between 0 and the number on the number line.

The absolute value of x is written $|x|$.

example 3:

$|-4| =$ ____

note: The absolute value of a number is **always positive** since it represents a **distance**.

example 4: Evaluate:

a) $|5| =$

b) $|-2| =$

c) $-|-10| =$

d) $-(-10) =$

Formal Definition of Absolute Value:

$$|x| = \begin{cases} x & \text{if } x \geq 0 \\ -x & \text{if } x < 0 \end{cases}$$

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The Opposite and the Absolute Value Practice Problems

1. What is the opposite of 9?

2. What is the opposite of -9?

3. What is the absolute value of 9?

4. What is the absolute value of -9?

5. What is the opposite of the absolute value of 9?

6. What is the opposite of the absolute value of -9?

7. a) $|-3|$

   b) $-|-4|$

   c) $|-2| + |-3|$