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8:27 AM



2.2

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2.2 Absolute Value

Vocabulary:

1) Opposites - two numbers that are the same distance from zero on a number line, but on opposite sides of 0.

Examples: -6 and 6 $\frac{1}{2}$ and $-\frac{1}{2}$

2) Absolute Value - the distance between 0 and the point representing a real number on the number line. The symbol $|a|$ represents the absolute value of a number "a".

Examples: $|6| = 6$ $|-9| = 9$

3) Counter example - an example used to show that a given statement is false.

Example 1: Find the opposite of these numbers.

A) 16 B) -5 C) $2\frac{1}{2}$ D) 0
 -16 5 $-2\frac{1}{2}$ 0

Example 2: Find the absolute value.

A) $|5| = 5$ B) $|-2.3| = 2.3$ C) $|\frac{1}{2}| = -\frac{1}{2}$ D) $|-4| = -4$

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1) $|-4| = 4$ 2) $|0| = 0$ 3) $|\frac{3}{2}| = \frac{3}{2}$ 4) $-|1.7| = -1.7$

Example 3: Use mental math to solve.

A) $|x| = 7$
 $x = 7$ and
 $x = -7$

B) $|x| = 5.1$
 $x = 5.1$
and $x = -5.1$

C) $|x| = -3$
No Solution

D) $|x| = 4$
 $x = 4$ and
 $x = -4$

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5) $|x| = -4$
No Solution

6) $|x| = 1.5$
 $x = 1.5$ and
 $x = -1.5$

7) $|x| = \frac{1}{6}$
 $x = \frac{1}{6}$ and $x = -\frac{1}{6}$

Example 4: A launch pad elevator for a space shuttle **drops** at a rate of about 12 feet per second. What are its velocity and speed?

$V = -12$ ft per sec. Speed = 12 ft per sec.

Velocity indicates speed and direction. It can be positive or negative.

Speed is always positive.

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8) $V = -17$ ft per sec

9) Speed = 17 ft per sec

Example 5: Give a counter example if the statement is false.

A) The opposite of a number is always negative. **False**

The opposite of -3 is 3 , which is positive.

B) The absolute value of a number is always positive. **True**

C) All odd numbers are prime. **False**

15 is an odd # that is not prime.

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10) **False** - The expression $-a$ is positive if
 $a = -3$ bc $--3 = 3$.

11) **True**

12) **False** - $|-3| = 3$ which is positive.