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Finding the Absolute Value of a Real Number

You can find the absolute value of any real number. This lesson will define absolute value, explain what real numbers are and give the steps to finding the absolute value of any real number.

How Far?

Do you know how far away you are from your refrigerator right now? Is it about 20 feet or 20 miles? Or maybe somewhere in between? How about your shoes? Are they on your feet, so the distance is zero? Or are they in the next room, 20 or 30 feet away?

No matter the distance between two objects, it is always positive. You will never be -5 feet, or any other negative distance, away from anything.

Absolute Value

The **absolute value** of a number is its distance from zero on the number line. Absolute value is designated by a set of straight vertical lines - $|x|$.

So,
$|5| = 5$
$|-7| = 7$

The absolute value bars do not work like parenthesis or brackets. Check out these examples:

Simplify -(-3)
Since these are parentheses, the two negative make a positive.
-(-3) = +3

However, with absolute value, it works differently.

Simplify -|-3|

Since the absolute value of negative 3 is positive 3, we end up with negative positive 3, which is negative 3.

-|-3| = -(+3) = -3

Real Numbers

Real numbers are numbers that are not imaginary. Honestly, that's the definition. Real numbers are just numbers; 0, -1/2, 1,500, the square root of 7 and basically all other numbers. The imaginary numbers are the square root of -1 and infinity. Numbers were not called real until mathematicians discovered imaginary numbers and needed something to call all the other numbers. And thus, the name real numbers was born.

Find the Absolute Value of a Real Number

Finding the absolute value of a real number is just a matter of determining the distance that number is from zero on a number line. One way to do this is by drawing a number line and counting the distance the number is from the zero, remembering that distance is always positive. The other method involves just knowing that absolute value is always positive, and whatever number or variable is inside the absolute value symbols, the result will be positive.

For example:

|-3| = 3
|1.5| = 1.5
|x| = x
|-b| = b

Lesson Summary

The absolute value of a number is its distance from zero on a number line. Real numbers are numbers that are not imaginary, which is all numbers except for the square root of -1 and infinity. To find the absolute value of a real number, find its distance from zero on the number line.

Learning Outcomes

Using this lesson, you could determine the absolute value of any real number by using a number line to locate its position in relation to the zero.