

Absolute value

The idea of absolute value is really just the idea of “distance from 0.”

Going back to the idea of a number line,



we can say that 2 is a distance of two units away from 0, but also that -2 , the opposite of 2 (and on the other side of 0), is two units away from 0. So both 2 and -2 are two units away from 0. The number 4 is four units away from 0, and -5 is five units away from 0.

So notice that, if we translate both positive and negative numbers into just their distance from 0, we get

Number	Distance from 0
2	2
-2	2
4	4
-5	5

Interestingly, all these numbers, whether they started out as positive or negative, become positive numbers when we think only about their distance from 0.

In fact, this is exactly what the absolute value operation does for us. It turns each number into its distance from the origin, essentially turning all



positive and negative numbers into only positive numbers. (Also, it “turns” 0 into 0, because the number 0 is zero units away from itself.)

We indicate the absolute value of a number by enclosing it in a pair of vertical bars (which we’ll call “absolute value bars”). Here’s an example of what the absolute value operation looks like:

$$|-3|$$

This means “take the absolute value of -3 .” We already know that the absolute value of -3 is 3, since -3 is a distance of three units away from 0. Here are some more examples:

$$|-1| \rightarrow 1$$

$$|1| \rightarrow 1$$

$$|-6| \rightarrow 6$$

$$|6| \rightarrow 6$$

$$|-100| \rightarrow 100$$

$$|100| \rightarrow 100$$

