

# Absolute Value Encyclopedia Article

## Absolute Value

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# Contents

<a href="#">Absolute Value Encyclopedia Article.....</a>	<a href="#">1</a>
<a href="#">Contents.....</a>	<a href="#">2</a>
<a href="#">Absolute Value.....</a>	<a href="#">3</a>

# Absolute Value

Absolute value is an operation in mathematics, written as bars on either side of the expression. For example, the absolute value of -1 is written as  $|-1|$ .

Absolute value can be thought of in three ways. First, the absolute value of any number is defined as the positive of that number. For example,  $|8| = 8$  and  $|-8| = 8$ . Second, one absolute value equation can yield two solutions. For example, if we solve the equation  $|x| = 2$ , not only does  $x = 2$  but also  $x = -2$  because  $|2| = 2$  and  $|-2| = 2$ .

Third, absolute value is defined as the distance, without regard to direction, that any number is from 0 on the **real number** line. Consider a formula for the distance on the real number line as  $|k - 0|$ , in which  $k$  is any real number. Then, for example, the distance that 11 is from 0 would be 11 (because  $|11 - 0| = 11$ ). Likewise, the absolute value of 11 is equal to 11. The distance for -11 will also equal 11 (because  $|-11 - 0| = |-11| = 11$ ), and the absolute value of -11 is 11.

Thus, the absolute value of any real number is equal to the absolute value of its distance from 0 on the number line. Furthermore, if the absolute value is not used in the above formula  $|k - 0|$ , the result for any negative number will be a negative distance. Absolute value helps improve formulas in order to obtain realistic solutions.

## See Also

Number Line; Numbers, Real.