

Absolute value is a basic concept you will often encounter in algebra. Absolute values tell you how far a given value is from 0. For example, while 6 and -6 are on opposite sides of 0 on the number line, both are 6 moves away from 0. Therefore, the absolute value of both 6 and -6 is 6. Absolute values are always positive.

Absolute value symbols ($||$) appear around any number for which you are trying to find the absolute value. For example, the absolute value of -7 is written as $|-7|$.

Calculating the absolute value of a number is simple. All you have to do is remove the negative sign, if there is one. For example, the absolute value of -4 is 4. Even though you convert negative numbers to positive numbers, absolute values are not always opposite values. The absolute value of a positive value remains positive. Just remember that absolute values are eternal optimists—positive no matter what.

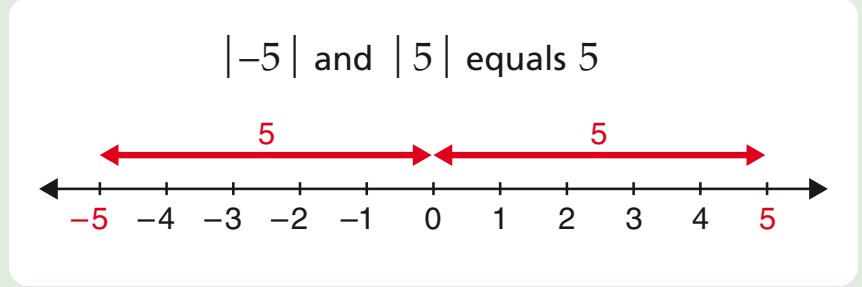
Grouping symbols are your friends. When you are confronted with a long, mind-boggling algebra problem, the grouping symbols—parentheses $()$, brackets $[]$ and braces $\{ \}$ —will guide you. Grouping symbols are used to show you where you should begin as you work to simplify a problem. Whatever operations appear inside the symbols are considered grouped together and should be the first thing you tackle.

No set of grouping symbols takes prominence over another, though you will probably see parentheses most often.

You will find that grouping symbols can be used separately in a problem or within one another. When sets of grouping symbols appear within one another, you should begin with the innermost set and work your way outward.

$$|5| = 5$$

$$|-5| = 5$$



$$-|5| = -5$$

$$-|-5| = -5$$

$$-|6 - 3| = -|3| = -3$$

$$-|3 - 6| = -|-3| = -3$$

About Grouping Symbols

$$8 - (5 \times 2)$$

$$= 8 - 10$$

$$= -2$$

$$20 \div \{6 - 2\}$$

$$= 20 \div 4$$

$$= 5$$

$$16 - [2 \times (3 + 4)]$$

$$= 16 - [2 \times 7]$$

$$= 16 - 14$$

$$= 2$$

Working with Grouping Symbols and Variables

$$100 + (a \times b)$$

$$x \div \{y - z\}$$

$$20 - [x \times (y + 6)]$$

$$(x + y)(6 - z)$$

$$6 \times (x - y - 8)$$

- The absolute value of a number is always the positive value of the number, whether the number is positive or negative.
- For example, the absolute value of 5 and -5 is 5.
- An absolute value is indicated by two thin vertical lines ($||$) around a number or numbers.
- An absolute value indicates how far a number is from zero, regardless of whether the number is positive or negative. For example, 5 and -5 have the same absolute value since they are both 5 units from zero.

- If a negative sign ($-$) appears in front of absolute value symbols ($||$), after you determine the absolute value of a number, you will need to place a negative sign ($-$) in front of the number. For example, $-|5|$ equals -5 .

- You will see several types of grouping symbols, including parentheses $()$, brackets $[]$ and braces $\{ \}$.
- You should always work with numbers inside grouping symbols first.
- If more than one set of grouping symbols appear in a problem, work with the numbers in the innermost set of grouping symbols first. Then work your way to the outside of the problem.

- As with numbers, you will also see grouping symbols used with variables. A variable is a letter, such as x or y , which represents an unknown number.