

5.6 Solutions of Inequalities


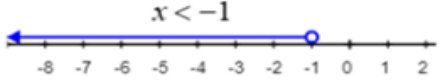


A solution of an inequality is a value that makes the identity true.

Inequalities that contain a variable can have an **INFINITE** number of solutions.

INFINITE → an endless number

A solution set of an inequality contains all the values of a variable that make the inequality true.

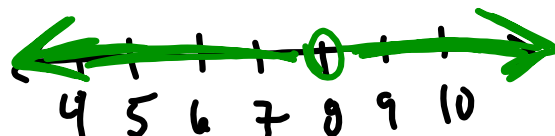
You can use a number line to show the solution set. **Shade** the portion of the number line that shows the solutions.

Inequalities on a Number Line		
Symbol	Words	Example
$>$	Greater than	$x > 5$ 
$<$	Less than	$x < -1$ 
\geq	Greater than or equal to	$x \geq 3$ 
\leq	Less than or equal to	$x \leq 5$ 

\neq

not equal
to

$x \neq 8$



Example: Determine if the given value is a solution to the inequality.

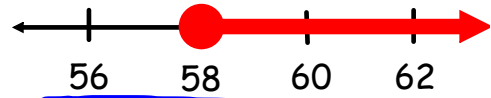
1.) $x + 6 < 5$ when $x = 3$

$$3 + 6 < 5$$

$$9 < 5$$

NOT A SOLUTION

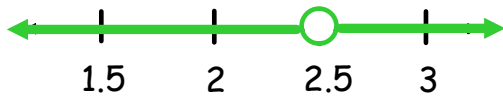
2.) $x = 102$



SOLUTION

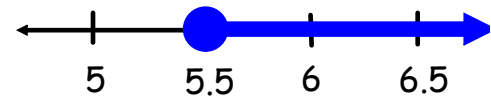
Example: Identify which of the given values are solutions.

3.) $x = 0, 0.5, 2.5, 200.5$



$x = 0, 0.5, 2.5, 200.5$

4.) $x = 10, 5.5, 5, 0$



$x = 10 \text{ \& } 5.5$

Example: Identify which of the given values are solutions.

5.) $x - 2 \leq 10$

a.) $x = 13$ NOT A SOLUTION

$$13 - 2 \leq 10$$

$$11 \leq 10$$

b.) $x = 12$ SOLUTION

$$12 - 2 \leq 10$$

$$10 \leq 10$$

c.) $x = 11$ SOLUTION

$$11 - 2 \leq 10$$

$$9 \leq 10$$

d.) $x = 10$

$$10 - 2 \leq 10$$

$$8 \leq 10$$

SOLUTION

6.) $x + 0.25 \geq 0.75$

a.) $x = 0$ NOT A SOLUTION

$$0 + 0.25 \geq 0.75$$

$$0.25 \geq 0.75$$

b.) $x = 0.5$ SOLUTION

$$0.5 + 0.25 \geq 0.75$$

$$0.75 \geq 0.75$$

c.) $x = 1$ SOLUTION

$$1 + 0.25 \geq 0.75$$

$$1.25 \geq 0.75$$