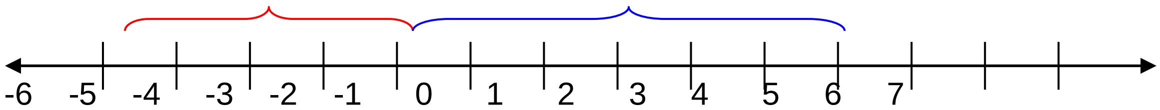
Absolute Value Functions

Absolute Value is the distance a number is from zero on the number line.



Ex: |-4| = 4 |6| = 6

Solving Absolute Value Equations

Absolute Value Equations usually have 2 answers. This is because to get rid of the absolute value bars we have to rewrite the equation as two separate linear equations.

Ex: $|x - 3| = 27$ Rewrite the equation as 2 different equations.

$x - 3 = 27$ and $x - 3 = -27$ *Think about which numbers have an absolute value of 27.*

The steps to solve an absolute value equation are:

1. **Isolate the absolute value first**
2. **Rewrite the equation as two separate linear equations**
3. **Solve each equation individually to get the two answers**

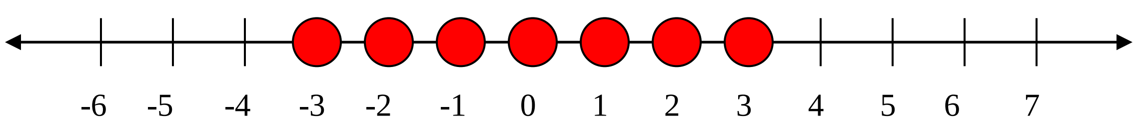
Ex: $|2x + 3| = 15$ $2|x - 7| = 16$

Absolute Value Inequalities

Ex: If $|x| \leq 3$ that means that its distance from zero is less than 3 spaces.
What number(s) is exactly three spaces from zero?

What are other numbers that are less than 3 spaces away from zero?

Plot this on a number line:



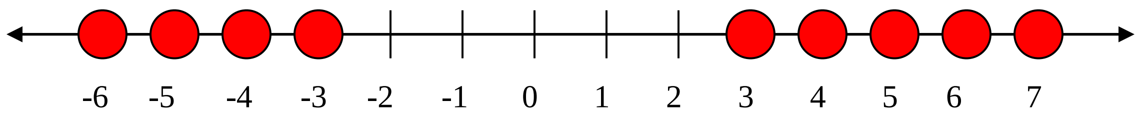
Where do all these numbers seem to lay?

Ex: If $|x| \geq 3$ that means that its distance from zero is more than 3 spaces.

What number(s) is exactly three spaces from zero?

What are other numbers that are more than 3 spaces away from zero?

Plot this on a number line:



Where do these points seem to lie?

We call these two situations compound inequalities. These two types are called ***and*** and ***or*** statements.

And: This is an in-between situation. Your answer would be written # **<** ***x*** **< #**

Or : This is the "going out" situation. Your answer would be written ***x*** **< # or** ***x*** **> #**

All absolute value inequalities make an **and** or an **or** statement. We know which by what the sign is.

Less Thand – Less than Absolute values make and statements

Greator – Greater than Absolute values make or statements.

Video Tutorial:
https://www.youtube.com/watch?v=BhFj7Rkyc5E