Solving Inequalities

About These Problems

An inequality is just a representation of a range of numbers that satisfy an equation rather than just one solution. Many of these will be coupled with absolute values. In which case you should solve twice; once normally and once by flipping the sign of the variable. If this seems confusing refer to the first example below.

$x<y$: x is less than y
$x>y$: x is greater than y
$x\leq y$: x is less than or equal to y
$x\geq y$: x is greater than or equal to y

Question. Solve for x.

$$3|x| + 17 < 23$$

1. $x < 12$ and $x > -12$
2. $x < 5$ and $x < -5$
3. $x < 2$ and $x > -2$
4. $x < 3$ and $x > -3$
5. $x < 6$ and $x > -6$

Answer. 4: Remember that sign is irrelevant in absolute value scenarios. So solving for x we get $|x| < 2$. Now we have two corresponding equations. If this method is confusing you can always try a number in all 5 options and compare to the inequality if it fits.

Regular equation: $x < 2$.

Flipped equation: $-x < 2 \rightarrow x > 2$

Answer $x < 2$ and $x > -2$.