

## 2.4 Solving Multistep Inequalities

### Algebra 1 - 2.4 Multistep Inequalities

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Remember. Solving Equations is basically identical to solving inequalities. Try to solve the following example as if it were an equation.

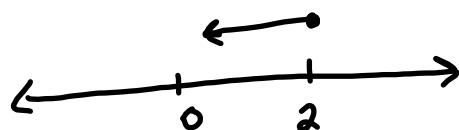
$$2x + 3 \leq x + 5$$

$$-x \quad -x$$

$$x + 3 \leq 5$$

$$-3 \quad -3$$

$$x \leq 2$$



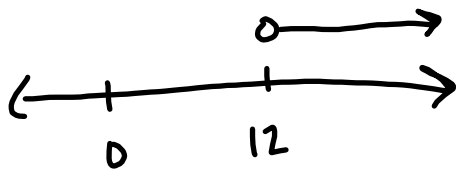
Depending on which side you move your x's to, you may end up dividing by a negative, which would cause your sign to flip.

## 2.4 Solving Multistep Inequalities

Solve:  $\frac{y}{-6} + 7 < 9$

$-6 \cdot \frac{y}{-6} < 2 \cdot -6$

$y > -12$



Flip Sign.  
We multiplied  
by a negative  
on both sides

## 2.4 Solving Multistep Inequalities

General order of solving for x:

1. Simplify each side independently
2. Decide which side to move x's to. Move all x's to that side.
3. Move everything else to the other.

More Guidelines: Undo addition and subtraction first. Then multiplication/division.

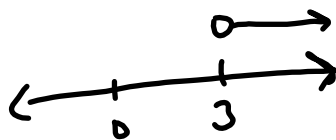
Solve:  $3(x - 3) - 5x > -3x - 6$

$3x - 9 - 5x > -3x - 6$

$-2x - 9 > -3x - 6$   
 $+3x \quad +3x$

$x - 9 > -6$   
 $+9 \quad +9$

$x > 3$



## 2.4 Solving Multistep Inequalities

"No Solutions" and "All Real Numbers" solutions.

Solve:  $6(y + 3) < 3(2y + 6)$

$$6y + 18 < 6y + 18$$

$$0 + 18 < 18$$

$$18 < 18$$

This is a **False Statement**. which means there are No Solutions to this problem.

I'm deciding to get my y's on the left.

If the variables cancel, and the statement is True, then All real numbers will work as a solution. **If the statement is False, then there are No solutions.**

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Homework:

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