

# Solving Inequalities

• inequalities: when you are comparing quantities

ex  $x < 7$  "x is less than 7"  
 $x \geq 5$  "x is greater than or equal to 5"

graphing rules  
○  $\rightarrow <, >$   
●  $\rightarrow \leq, \geq$

Solving \*very similar to an equal sign\*

1.  $\frac{6x}{6} \geq \frac{12}{6}$   
 $x \geq 2$

2.  $-5 < x < 4$   
 $-4$        $-4$   
 $-9 < x$

3.  $2(x-1) \leq 7$   
 $2x-2 \leq 7$   
 $+2$        $+2$   
 $2x \leq 9$   
 $\frac{2x}{2} \leq \frac{9}{2}$   
 $x \leq \frac{9}{2}$

4.  $-3(x-2) > -7$   
 $-3x+6 > -7$   
 $-6$        $-6$   
 $-3x > -13$   
 $\frac{-3x}{-3} > \frac{-13}{-3}$   
 $x < \frac{13}{3}$

\*When multiplying or dividing by a negative you switch the sign!!

5.  $-4x+5 > 2x-3$   
 $+3$        $+3$   
 $-4x+8 > 2x$   
 $+4x$        $+4x$   
 $8 > 6x$   
 $\frac{8}{6} > \frac{6x}{6}$   
 $\frac{4}{3} > x$

## special solutions

6.  $-2(4x-2) < -8x+4$   
 $+8x+4 < +8x+4$   
 $+8x$        $+8x$   
 $4 < 4$   
no solution  
b/c not true!

7.  $-6x-5 < -3(2x+1)$   
 $-6x-5 < -6x-3$   
 $+6x$        $+6x$   
 $-5 < -3$   
infinite solutions  
b/c true!