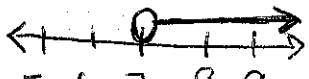
Variables on the Same Side

Solve the inequalities below.

1 $8x - 5(-6x) > 9$



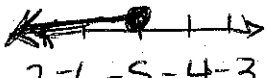
$2x - 5 > 9$

$+5 \quad +5$

$\frac{2x}{2} > \frac{14}{2}$

$x > 7$

2 $6(x + 2) + 1 \leq -17$



$6x + 12 + 1 \leq -17$

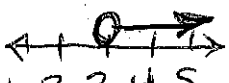
$6x + 13 \leq -17$

$-13 \quad -13$

$\frac{6x}{6} \leq \frac{-30}{6}$

$x \leq -5$

3 $4x + 8 - 9x + 2 < -5$



$-5x + 10 < -5$

$-10 \quad -10$

$\frac{-5x}{-5} \; !! \; \frac{-15}{-5}$

$x > 3$

Variables on Both Sides

Solve the inequalities below.

4 $13x - 8 \geq 4x - 26$

$-4x \quad -4x$

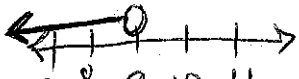
$9x - 8 \geq -26$

$+8 \quad +8$

$\frac{9x}{9} \geq \frac{-18}{9}$

$x \geq -2$

5 $-5x - 11 < -8(x - 2)$



$-5x - 11 < -8x + 16$

$+8x \quad +8x$

$3x - 11 < 16$

$+11 \quad +11$

$\frac{3x}{3} < \frac{27}{3}$

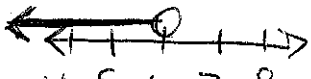
$x < 9$

6 $7x + 9 > 3(x - 1) + 6x$

$7x + 9 > 3x - 3 + 6x$

$7x + 9 > 9x - 3$

$-9x \quad -9x$



$-2x + 9 > -3$

$-9 \quad -9$

$\frac{-2x}{-2} \; !! \; \frac{-12}{-2}$

$x < 6$

Steps:

1. Use the Distributive Property to remove any grouping symbols.
2. Combine like terms on each side of the inequality.
3. Move the variables to the LEFT side.
4. Use inverse operations to solve.

* Don't forget to switch the inequality symbol when multiplying or dividing by a negative!!! *

Solving Multi- Step Inequalities