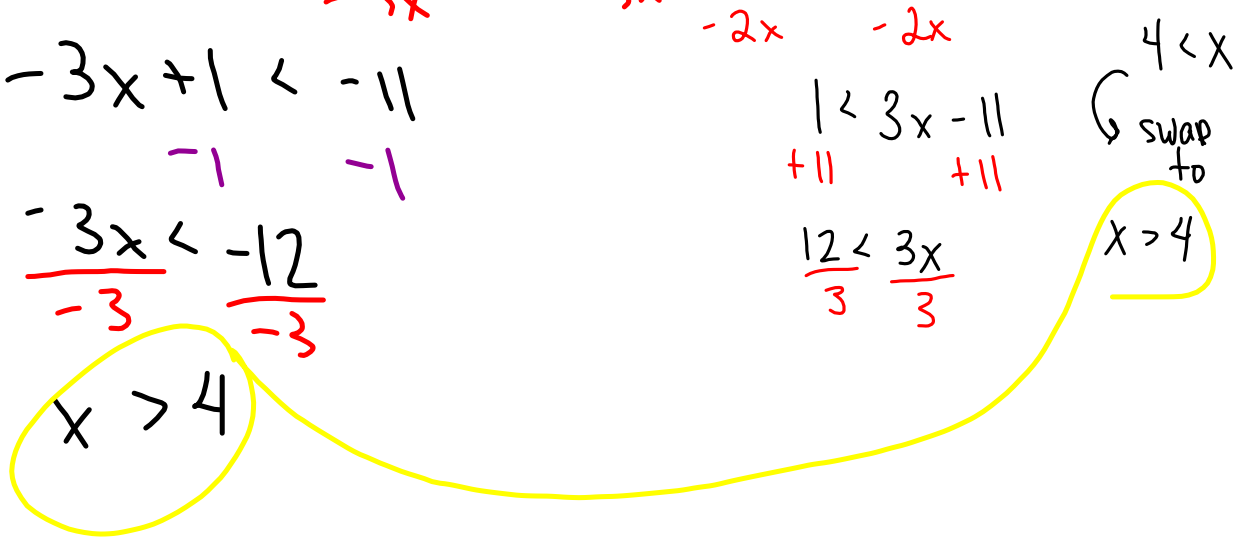
Lesson 8 - Solving Linear Inequalities Day 2

- Solving Compound Inequalities
- Graphing Compound Inequalities on a Number line

Refresher from Last Lesson:

Solve and graph the following on a number line...

$$2x+1<5x-11$$



Compound Inequalities.

There are two main types of compound inequalities. "Or" problems and "Between" problems.

"Or" problems:

- Just solve each inequality separately. Then
- graph both solutions on one number line.

$$x+1<5 \quad or \quad 2x>16$$

$-1 \quad -1 \qquad \frac{2x}{2} > \frac{16}{2}$

$x < 4 \quad or \quad x > 8$

Now you try: $\frac{3x}{3} < \frac{15}{3}$ *or* $2x - 3 > 16$

$+3 \quad +3$

$\frac{2x}{2} > \frac{19}{2}$

$x < 5$ or $x > 9.5$

5 $19/2$

Ex: $2(x-5) \leq -7$ *or* $3x-6 \geq 6$

$2x - 10 \leq -7$

$+10 \quad +10$

$\frac{2x}{2} \leq \frac{3}{2}$

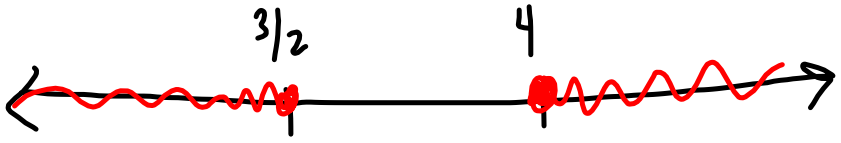
$x \leq \frac{3}{2}$

$+6 \quad +6$

$\frac{3x}{3} \geq \frac{12}{3}$

$x \geq 4$

or



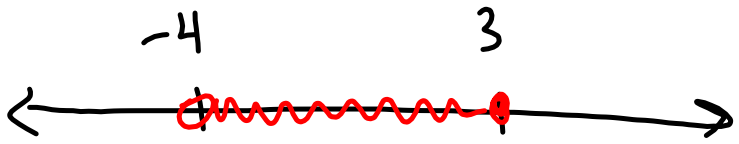
"Between" problems:

"Between" problems are named for having their variable sandwiched "between" two inequalities. What you do to the middle section, you do to each of the two sides.

$$-3 < 2x + 5 \leq 11$$
$$-5 \quad -5 \quad -5$$

$$\frac{-8}{2} < \frac{2x}{2} \leq \frac{6}{2}$$

$$-4 < x \leq 3$$



Ex: $8 \leq 3 - 5x < 28$

$-3 \quad -3 \qquad -3$

$\frac{5}{-5} \leq \frac{-5x}{-5} < \frac{25}{-5}$

$-1 \geq x > -5$