

Warm Up**Week 3**

Solve each equation.

1) $|10 - 4x| - 1 = 1$

2) $|8x + 1| + 2 = 25$

$$\begin{array}{c} +1 \quad +1 \\ |10 - 4x| = 2 \end{array}$$

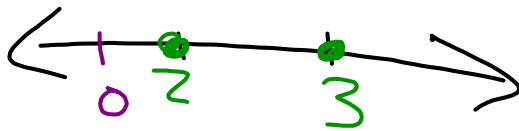
$$\begin{array}{c} -2 \quad -2 \\ |8x + 1| = 23 \end{array}$$

$$\begin{array}{r} 10 - 4x = 2 \\ -10 \quad -10 \\ \hline -4x = -8 \\ \frac{-4}{-4} \quad \frac{-4}{-4} \\ \hline x = 2 \end{array} \quad \begin{array}{r} 10 - 4x = -2 \\ -10 \quad -10 \\ \hline -4x = -12 \\ \frac{-4}{-4} \quad \frac{-4}{-4} \\ \hline x = 3 \end{array}$$

$$\begin{array}{r} 8x + 1 = 23 \\ -1 \quad -1 \\ \hline 8x = 22 \\ \frac{8}{8} \quad \frac{8}{8} \\ \hline x = \frac{22}{8} \end{array} \quad \begin{array}{r} 8x + 1 = -23 \\ -1 \quad -1 \\ \hline 8x = -24 \\ \frac{8}{8} \quad \frac{8}{8} \\ \hline x = -3 \end{array}$$

$$x = 2 \text{ OR } x = 3$$

$$x = \frac{11}{4} \text{ OR } x = -3$$

**Homework Questions?**

Self Scoring Scale

4- I can *summarize* the concepts and explain it to others.

3- I can *apply* the concepts to answer questions correctly.

2- I can *apply* the concepts but with some *mistakes*.

1- I *need help* to know how to apply the concepts.

0- I *can't* apply the concepts even with help.

6.3 Quiz

Was out of 25pts

A- 22.5

B- 20

C- 17.5

D- 15

Warm Up

6.5 Day 2

Is the ordered pair a solution?

1) $x + y > -3$ $(-6, 3)$

$$-6 + 3 > -3$$

$$-3 > -3 \text{ no}$$

 $(-6, 3)$ is
Not a
soln.

2) $2X + 5Y \geq 10$ $(1, 2)$

$$2(1) + 5(2) \geq 10$$

$$2 + 10 \geq 10$$

3) $\frac{3}{4}X - \frac{3}{4}Y < 2$ $(8, -8), (0, 0)$

$$\frac{3}{4}(8) - \frac{3}{4}(-8)$$

$$6 + 6 < 2$$

$$12 < 2$$

Not a
soln.

$$\frac{3}{4}(0) - \frac{3}{4}(0) < 2$$

 $0 < 2 \checkmark$

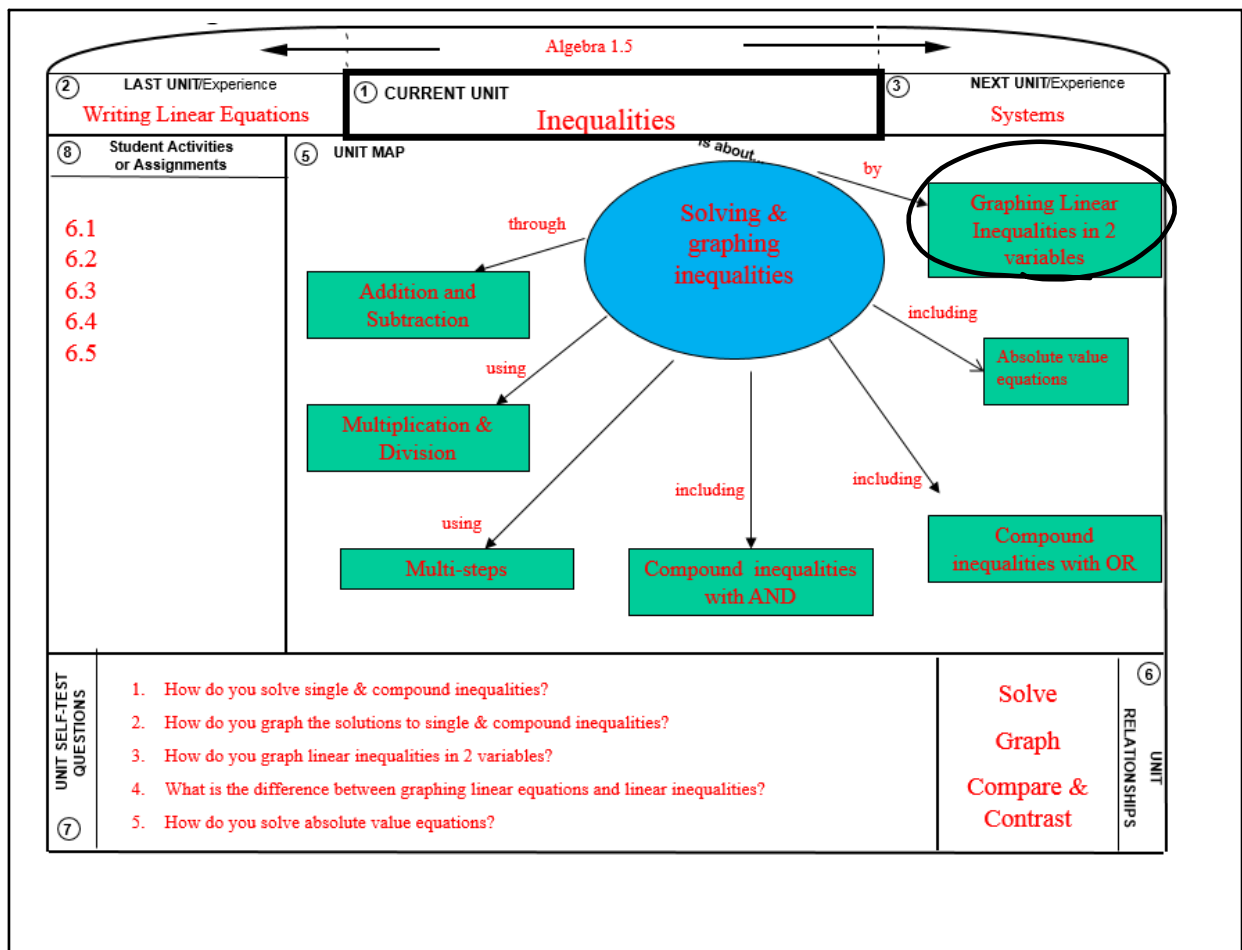
Soln

Homework Questions?

6.5 Graphing Linear Inequalities in Two Variables

- Goals:**
- Graph a linear inequality in two variables.
 - Model a real-life situation using a linear inequality in two variables.

EQ: What is the difference between graphing $< >$ and $\leq \geq$ inequalities?



Vocabulary

Linear inequality:

Can be written as follows:

$$Ax + By \leq C \quad \text{OR} \quad Ax + By > C$$

Solution of a linear inequality:

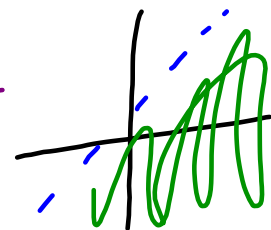
An ordered pair (x, y)
that makes an inequality True

Graph of a linear inequality:

graph of the solutions

Half-plane:

The region on either side
of a boundary line



Example 1: Checking Solutions of a Linear Inequality

Check whether the ordered pair is a solution of $8x - 4y \geq 3$.

*Sub in (x,y); Result; Solution or Not

a. $\overset{x}{(0, \overset{y}{0})}$

$$8(0) - 4(0) \geq 3$$
$$0 \geq 3 \text{ NO}$$

Not a Soln

b. $\overset{x}{(1, \overset{y}{-1})}$

$$8(1) - 4(-1) \geq 3$$
$$8 + 4 \geq 3$$
$$12 \geq 3 \text{ (yes)}$$

Soln.

6.5 Day 1 HW

*Finish Graphing Other Lines wkst

*Review of Graphing wkst #1-27odd

GRAPHING A LINEAR INEQUALITY =

(dotted)

Step 1 Graph the corresponding equation. Use a dashed line for inequalities with $>$ or $<$ to show that the points on the line are not solutions. Use a Solid line for inequalities with \geq or \leq to show that the points on the line are solutions.

Step 2 The line drawn in Step 1 separates the coordinate plane into two half-planes. Test a point in one of the half-planes to find whether it is a solution of the inequality.

Step 3 If the test point is a solution, shade the half-plane it is in. If not, shade the other half-plane.

Example 2: Graphing a Linear Inequality

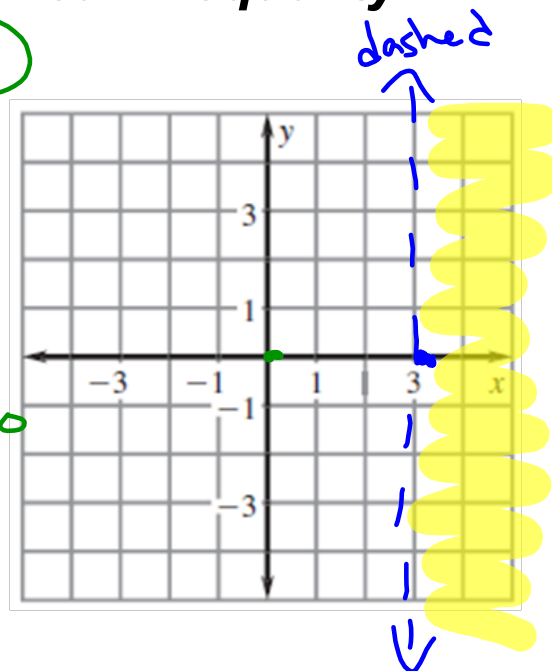
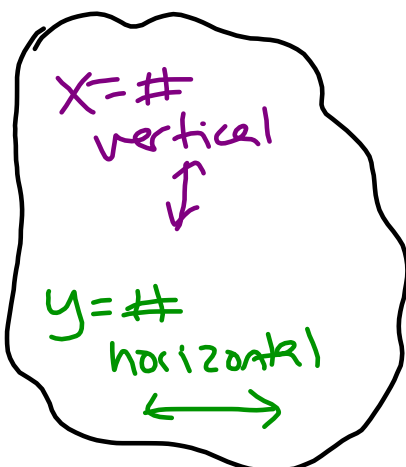
Sketch the graph of $x > 3$.

$$x = 3$$

$$(0, 0)$$

$$0 > 3$$

no

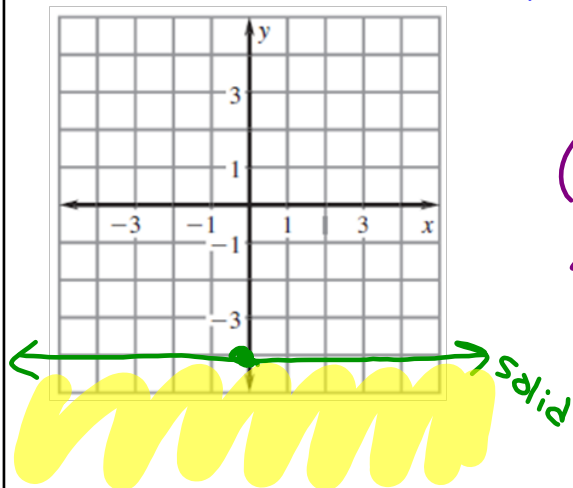


Try It

1. $y \leq -4$

$y = -4$

$(0, 0)$
 $0 \leq -4$ NO

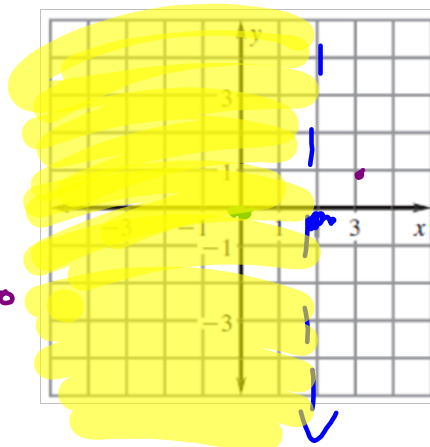


2. $x < 2$

$x = 2$
 $(0, 0)$
 $0 < 2$ ✓

dashed
↑

$(4, 1)$
 $4 < 2$
 NO



STEPS TO REMEMBER

1) Change to =

2) $y = mx + b$ (if possible)

$x = \#$ $y = \#$
 ↓ ↔

3) Find m and b

4) Graph

✓ solid
 or
 dashed

--- < --- ——— ≤ ———
 > ≥

5) Shade

✓ a point
 (Not on line)

→ True, shade w/ the pt
 → False, shade opp. side

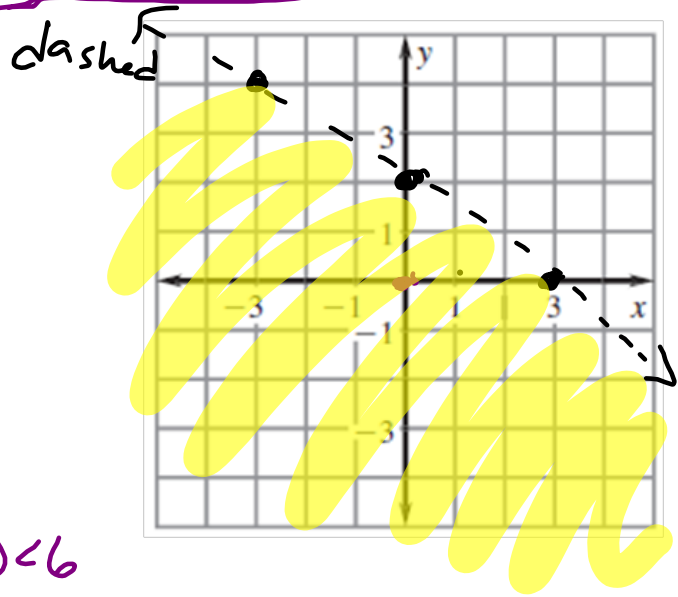
Example 3: Writing in Slope-Intercept Form

Sketch the graph of $2x + 3y < 6$.

$$\begin{aligned}
 2x + 3y &= 6 \\
 -2x \quad -2x \\
 \hline
 3y &= -\frac{2x+6}{3} \\
 \frac{3y}{3} &= \frac{-2x+6}{3} \\
 y &= -\frac{2}{3}x + 2
 \end{aligned}$$

$m = -\frac{2}{3}$ $b = 2$

$(0,0)$ $2(0) + 3(0) < 6$
 $0 < 6 \checkmark$



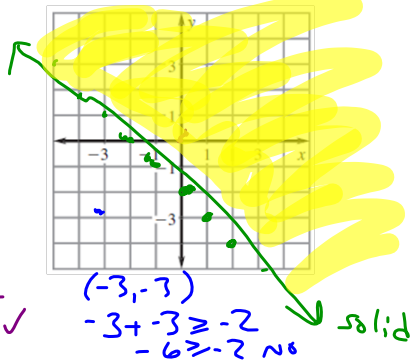
Try It Sketch the graph of the inequality.

3) $x + y \geq -2$

$$\begin{aligned}
 x + y &= -2 \\
 -x \quad -x \\
 \hline
 y &= -x - 2
 \end{aligned}$$

$m = -1$ $b = -2$

$(0,0)$ $0 + 0 \geq -2$
 $0 \geq -2 \checkmark$



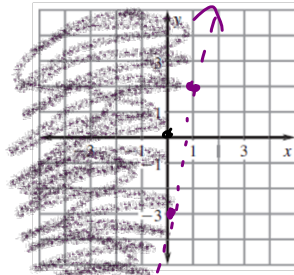
4) $5x - y < 3$

$$\begin{aligned}
 5x - y &= 3 \\
 -5x \quad -5x \\
 \hline
 -y &= \frac{-5x+3}{-1} \\
 y &= 5x - 3
 \end{aligned}$$

$m = 5$ $b = -3$

$(0,0)$

$5(0) - 0 < 3$
 $0 < 3 \checkmark$



Summary

EQ: What is the difference between graphing $<$ $>$ and \leq \geq inequalities?



6.5 Homework

Graphing Linear Inequalities wkst (Kuta)