Solving Linear Inequalities

In This Unit:

1. Linear Inequalities
2. Compound Inequalities

Bellwork
01/10/2012

Solve for the indicated variable.

1. Area of a Kite

Solve for d_2: $A=\frac{1}{2}d_1d_2$

$$\frac{A}{d_1}=\frac{\frac{1}{2}d_1d_2}{d_1}$$

$$2\cdot\frac{1}{2}d_2=\frac{2A}{d_1}$$

$$d_2=\frac{2A}{d_1}$$

$$\frac{A}{\frac{1}{2}d_1}\rightarrow\frac{2A}{d_1}$$

2. Slope-Intercept Form

Solve for y: $7-y=3.5x$

$y=mx+b$

$$7-y=3.5x-7$$

$$-7$$

$$\frac{-y}{-1}=\frac{3.5x}{-1}-\frac{7}{-1}$$

$$y=-3.5x+7$$

Linear Inequalities

What You Need to Know:

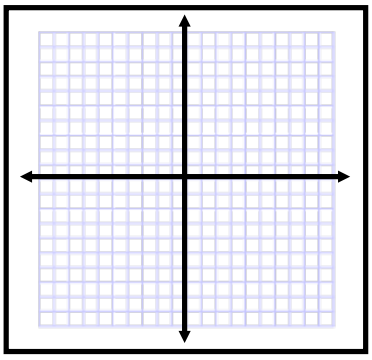
To solve an inequality, solve just like an equation!

But remember, if you multiply or divide by a negative you have to flip the symbol!

There are two different ways to graph an inequality.

One variable

Two Variable



Is Greater Than	>	o
Is Less Than	<	o
Is Greater Than or Equal To	≥	●
Is Less Than or Equal To	≤	●

Linear Inequalities

Solve the inequality and graph its solution.

x+3≤0

$-3 \quad -3$

$x \leq -3$

$-3 \geq x$

$x \leq -3$

k-4>-6

$+4 \quad +4$

$k > -2$

$\frac{x}{4}$ <-1

$\cdot 4$

$x < -4$

-2a≥-6

$-2 \quad -2$

$a \leq 3$

-4x+2≤-22

$-2 \quad -2$

$\frac{-4x}{-4} \leq \frac{-24}{-4}$

$x \geq 6$

1. Distribution?
2. Combine Like Terms?
3. Addition or Subtraction?
4. Multiplication or Division?
5. Check!

-(x+7)>8x-25

$-1x - 7 > 8x - 25$

$-8x \quad -8x$

$-9x - 7 > -25$

$+7 \quad +7$

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

$x < 2$

You wash dishes in a restaurant and earn $5.15 per hour. How many hours must you work to make at least $200 to buy a new snowboard? Write a linear inequality and then solve.

$\frac{5.15x}{5.15} \geq \frac{200}{5.15}$

$x \geq 39$ hours

Homework Assignment

Worksheet
"Solving Linear Inequalities"

Compound Inequalities

What You Need to Know:

There's two different compound inequalities:

And	Or
(in between)	(two different)
$-3<2x+1\leq 7$	$2x-3<5$ *or* $3x+1\geq 16$

And: **whatever you do to the variable, do to both sides of the inequality.**

Or: **treat the two different inequalities as two different equations.**

Compound Inequalities

Solve the inequality and graph its solution.

$-6<-3+x<-4$

$2\leq -3x+8<17$

$-4x+2<6$ *or* $2x\leq -6$

$5x+1<-4$ *or* $6x-2\geq 10$

The human ear cannot hear any sound lower than 20 Hz and higher than 20,000 Hz. Write a compound inequality to represent the range hear by a human.

Homework Assignment

Worksheet
"Solving Compound Inequalities"