??

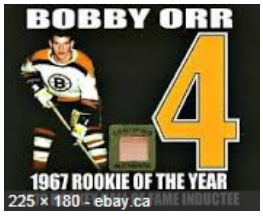
Linear Inequalities:

Inequality sign - could be one of the following...

$>$	$<$	$\geq$	$\leq$	$\neq$
GREATER THAN	LESS THAN	GREATER THAN OR EQUAL TO	LESS THAN OR EQUAL TO	NOT EQUAL TO

When solving an in-equation, all the steps are the same EXCEPT when it comes to isolating...

4 $<$ 11 , fill in the box.



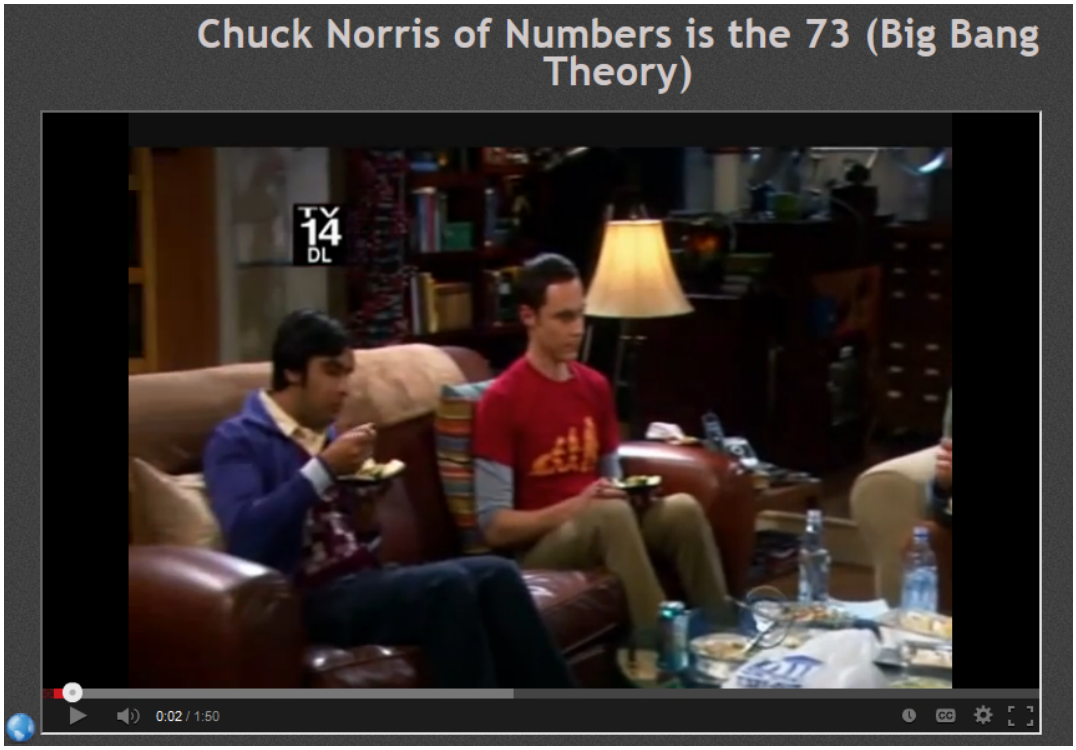
VS

Now divide both by -1

-4 $>$ -11, fill in the box.

RULE: If you multiply or divide by a negative, reverse the inequality sign!!!

Favorite Numbers... What's Sheldon's???



NOTES - Graphing a Linear Inequation.docx

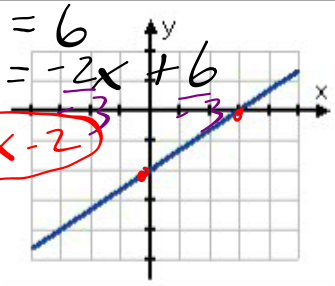
When the solution set to a linear inequality is continuous and the sign does not include equality, use a dashed line for the boundary and shade the solution region.

Example: Graph the solution to: $2x - 3y < 6$.

First, solve for the equation in the slope – y intercept form ($y = mx + b$).

$2x - 3y < 6$
$-3y < -2x + 6$
$y > (2/3)x - 2$

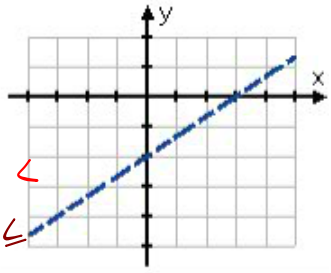
$2x - 3y = 6$
$-3y = -2x + 6$
$y = \frac{2}{3}x - 2$



STEP 1: Graph the boundary line

Find the "equals" part, which is the line $y = (2/3)x - 2$. It looks like this:

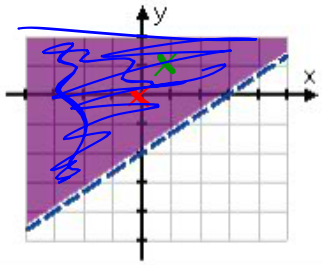
But this example is a **strict** inequality. That is, it's only "y greater than." We denote strict inequalities on the number line (such as $x > 5$) by using an open dot instead of a closed dot. In the case of these linear inequalities, the notation for a strict inequality is a dashed line. So the boundary line of the solution region actually looks like this:



STEP 2: Decide on dashed or solid

$>$ or $<$
$\geq$ or $\leq$

By using a dashed line, we can still identify the boundary line, but the dashed line indicates that the boundary line isn't included in the solution. Since this is a "y greater than" inequality, we will shade above the line, so the solution looks like this:



(0, 0)

STEP 3: Pick a 'test point' and verify

STEP 4: Shade

VIDEO - Graphing Inequalities

Click HERE to watch the video!!!

sub

$2(x) - 3(y) < 6$

Test (0, 0)

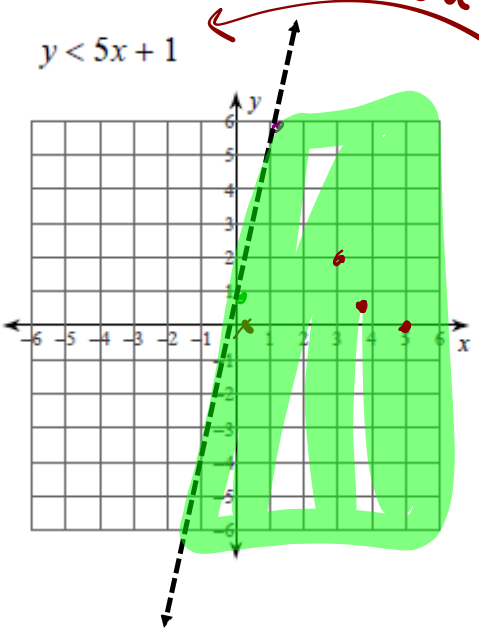
LS	RS
$2(0) - 3(0)$	6
0 $<$	yes

Test (1, 1)

$LS < RS$

$2(1) - 3(1)$	6
$2 - 3$ $<$	yes
-1	

EXAMPLE #2:



sub

$y = \frac{5}{1}x + 1$ yint

m

Test (0, 0)

LS < RS

0 | 5(0) + 1

< | 1 yes

EXAMPLE #3:

$3y \leq -5x$

Solid

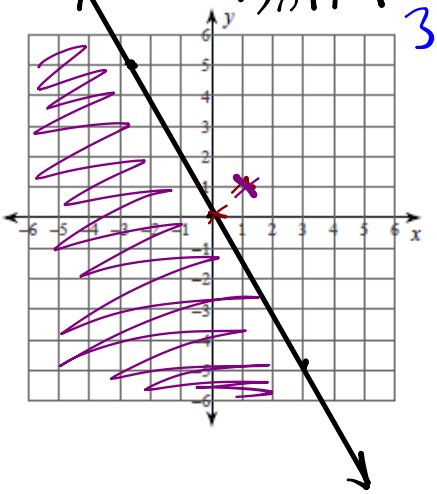
Test (1, 1)

LS ≤ RS

$3(1) \mid -5(1)$

$3 \leq -5$

No



$\frac{3}{3}y = \frac{-5}{3}x$

$y = \frac{-5}{3}x$

$m = \frac{5}{-3}$

Rise -5

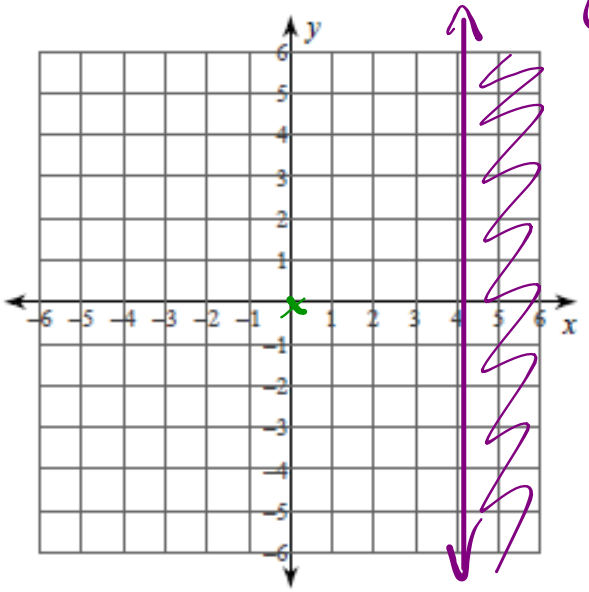
Run 3

y-int

(0, 0)

EXAMPLE #4:

$x \geq 4$



LS ≥ RS

0 ≥ 4

x = 4

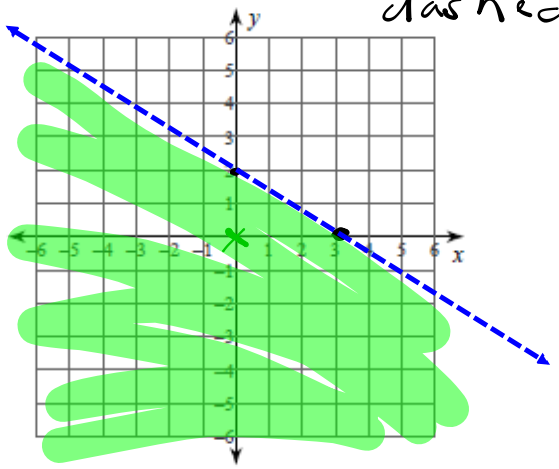
EXAMPLE #5...

$2x+3y-6<0$ ← sub $2x+3y-6=0$

dashed

$\frac{3}{3}y = -\frac{2}{3}x + \frac{6}{3}$

$y = -\frac{2}{3}x + 2$



Test (0,0)

LS < RS

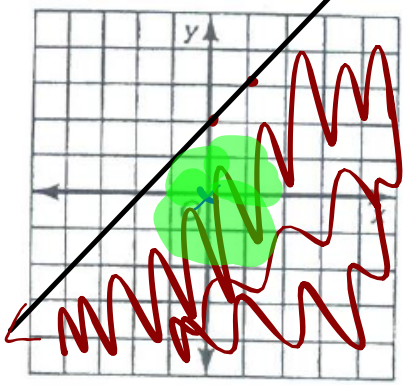
$2(0)+3(0)-6 \mid 0$ yes

$-6 < 0$

HOMEWORK...

Puzzle Worksheet - Graphing Linear Inequalities with Two Variables.pdf

(1) $y \leq x + 2$



Test (0,0)

$y = \frac{1}{1}x + 2$

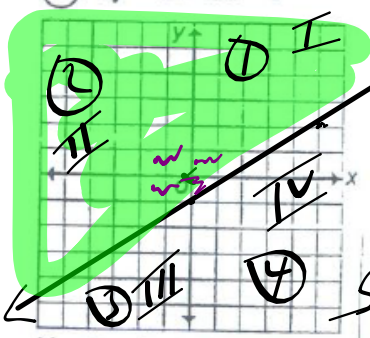
$LS \leq RS$

0	$0+2$
$\leq$	2 yes

(A) All four quadrants; includes boundary line.

I Quadrants I, II, IV; includes boundary line

(11) $5y - 2 \geq 3x - 7$



Test (0,0)

$LS \geq RS$

$5(0) - 2$	$3(0) - 7$
$-2 \geq$	-7
yes	

$5y - 2 = 3x - 7$

$5y = 3x - 7 + 2$

$\frac{5y}{5} = \frac{3x}{5} - \frac{5}{5}$

$y = \frac{3}{5}x - 1$

N Quadrants I, III, IV; excludes boundary line.

(B) All four quadrants; includes boundary line.

D Quadrants I, II, IV; includes boundary line.

Attachments

NOTES - Graphing a Linear Inequation.docx

Puzzle Worksheet - Graphing Linear Inequalities with Two Variables.pdf

Worksheet - Graphing Linear Inequalities.pdf