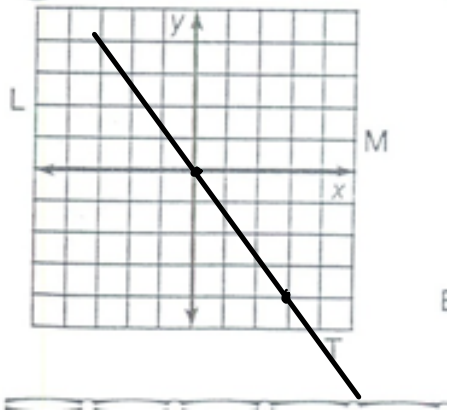
7 $4x + 3y = 0$



$\frac{3}{3}y = -\frac{4}{3}x$

$y = -\frac{4}{3}x + 0$

WARM UP...

Graph the following equation

$$12x - 4y = 20$$

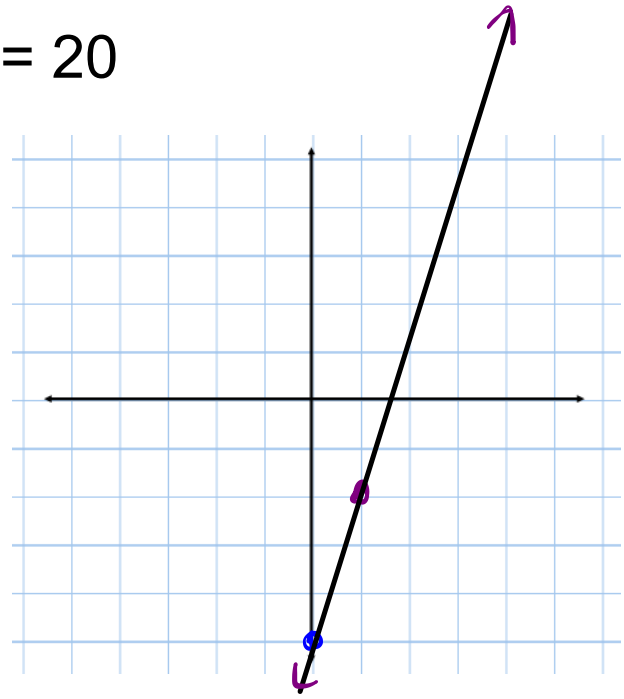
$-4y = -12x + 20$

$-4 \quad -4 \quad -4$

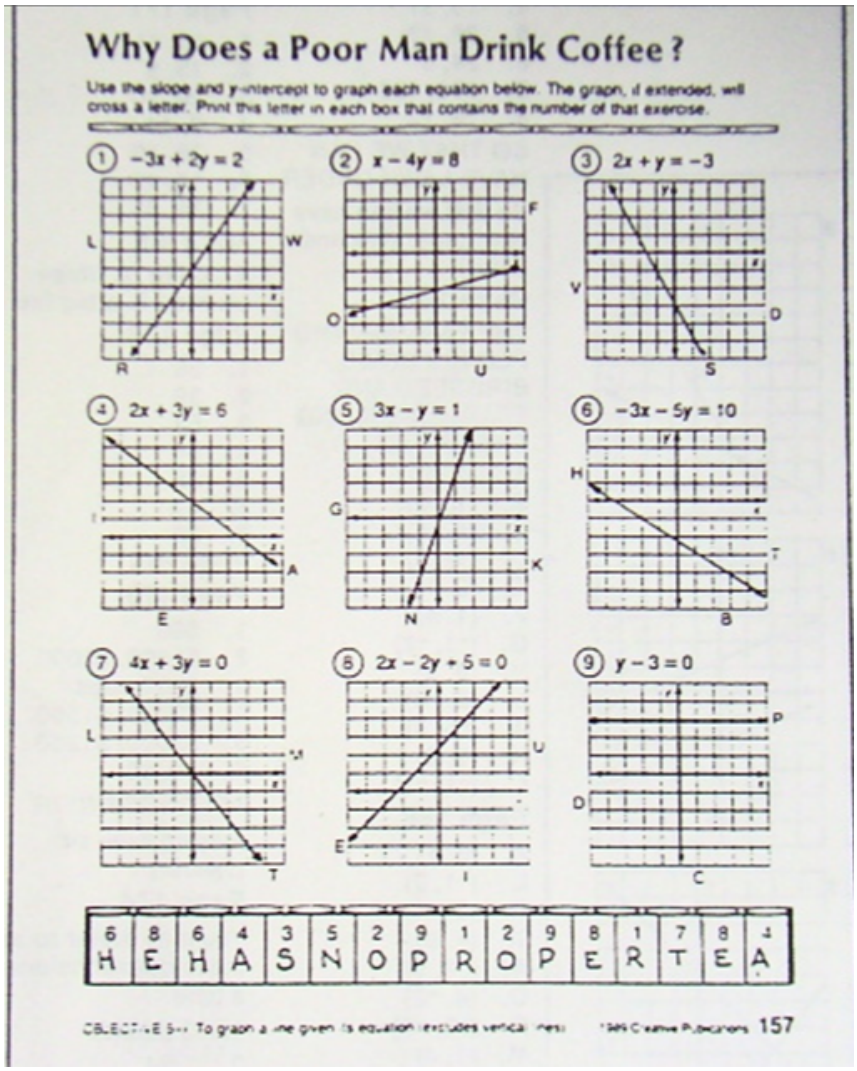
$y = \frac{3x}{1} - 5$

slope: rise/run

y-int: (0, -5)



SOLUTIONS/QUESTIONS FROM THE HOMEWORK???



Why Does a Poor Man Drink Coffee?

Use the slope and y-intercept to graph each equation below. The graph, if extended, will cross a letter. Print this letter in each box that contains the number of that exercise.

① $-3x + 2y = 2$ ② $x - 4y = 8$ ③ $2x + y = -3$

④ $2x + 3y = 6$ ⑤ $3x - y = 1$ ⑥ $-3x - 5y = 10$

⑦ $4x + 3y = 0$ ⑧ $2x - 2y + 5 = 0$ ⑨ $y - 3 = 0$

6	8	6	4	3	5	2	9	1	2	9	8	1	7	8	4
H	E	H	A	S	N	O	P	R	O	P	E	R	T	E	A

OBJECTIVE 5: To graph a line given its equation (excludes vertical lines) ©1985 Creative Publications 157

HE HAS NO PROPER TEA

He has no proper tea (property).

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SHE HAD A BUM STEER

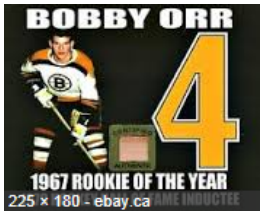
Linear Inequalities:

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

	LESS THAN		LESS THAN OR EQUAL TO	
$>$	$<$	$\geq$	$\leq$	$\neq$
GREATER THAN		GREATER 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!!!

NOTES - Graphing a Linear Inequation.docx

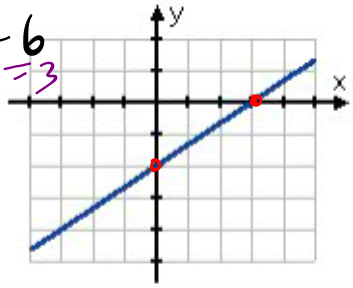
When the solution set to a linear inequality is continuous and the sign does not include equality, use a dashed line for the boundary and shade the solution region.

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

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

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

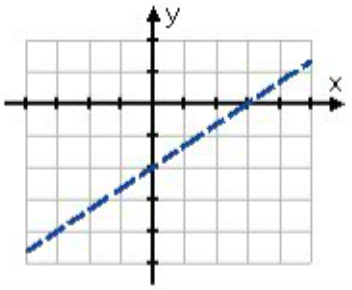
$2x - 3y < 6$
$-3y < -2x + 6$
$y > (2/3)x - 2$



STEP 1: Graph the boundary line

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

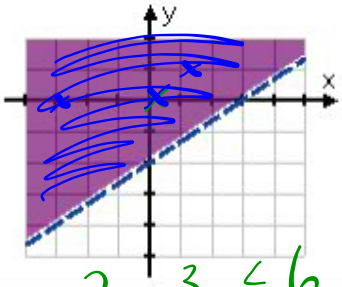
But this example is a **strict** inequality. That is, it's only "*y* greater than." We denote strict inequalities on the number line (such as $x > 5$) by using an open dot instead of a closed dot. In the case of these linear inequalities, the notation for a strict inequality is a dashed line. So the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



STEP 2: Decide on dashed or solid ← $\leq$ OR $\geq$

$<$ OR $>$

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:



STEP 3: Pick a 'test point' and verify

(0, 0)

STEP 4: Shade

Test (0,0)

$2x - 3y < 6$

LS | RS

$2(0) - 3(0) \quad | \quad < 6$

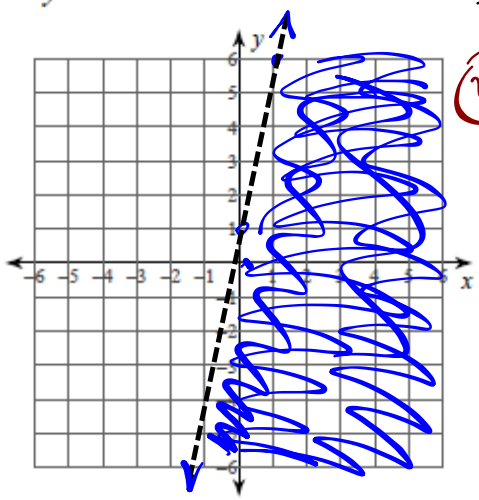
$0 \quad | \quad$ Yes

VIDEO - Graphing Inequalities

Click HERE to watch the video!!!

EXAMPLE #2:

$y < 5x + 1$



① Make it an equation $y = 5x + 1$

② $y = mx + b$
*Rearrange

③ Graph
↳ y-int
↳ Rise/Run

④ Boundary (≤ or ≥)
↳ solid
↳ dashed (< or >)

⑤ * Test
↳ sub (0,0) into original inequation

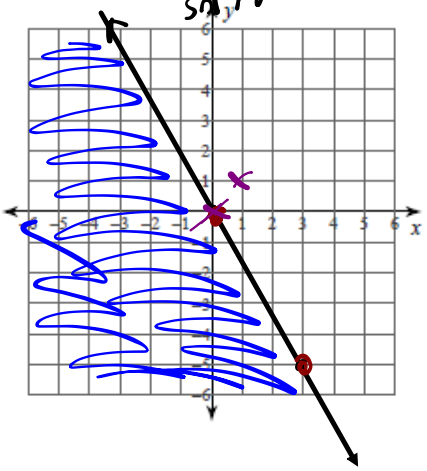
$y < 5x + 1$

LS	RS
0	$5(0) + 1$
	1 yes

EXAMPLE #3:

$3y \leq -5x$

solid



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

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

Test (1,1)

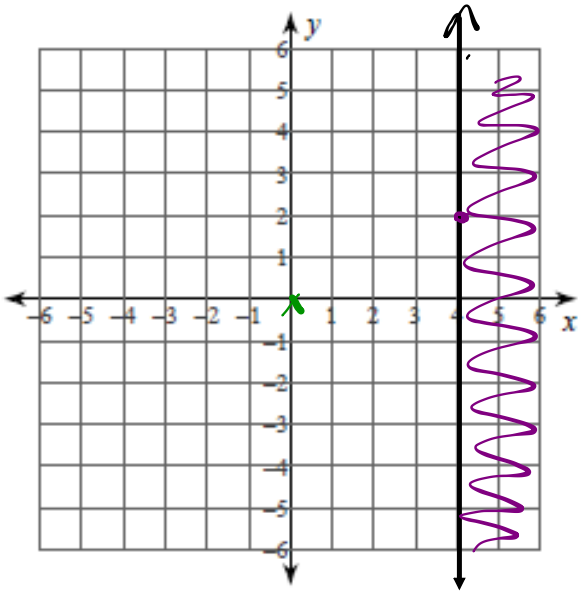
$LS \leq RS$

$3(1)$	$-5(1)$
$3 \not\leq -5$	

NOT a solution

EXAMPLE #4:

$x \geq 4$



$x = 4$

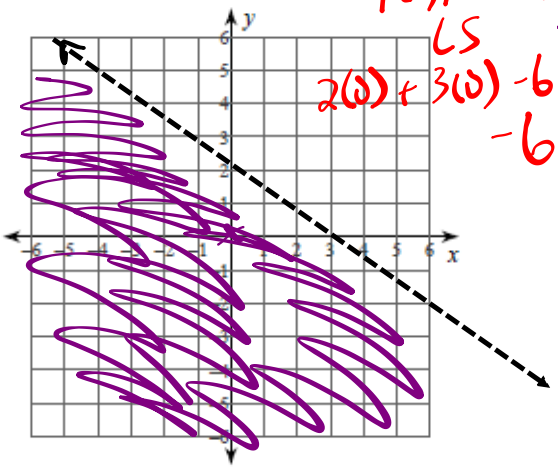
* vertical

LS ≥ RS

0 ≥ 4 No

EXAMPLE #5...

$$2x + 3y - 6 < 0$$



Test (0,0)

LS | RS

$2(0) + 3(0) - 6$ | 0

-6 | $<$

yes

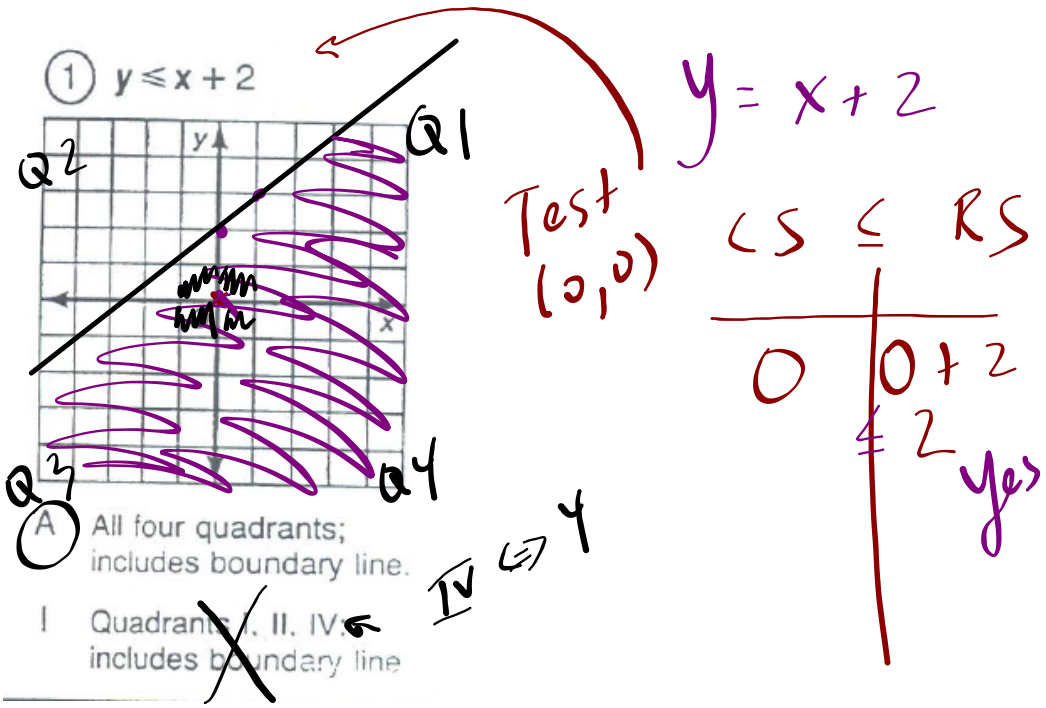
$2x + 3y - 6 = 0$

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

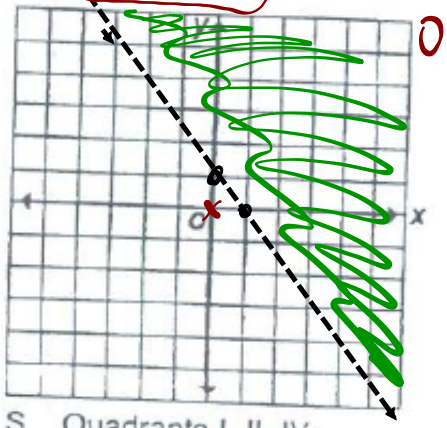
$y = -\frac{2}{3}x + 2$

HOMEWORK...

Puzzle Worksheet - Graphing Linear Inequalities with Two Variables.pdf


1 y ≤ x + 2
Q2
Q1
Q3
Q4
y
x
A All four quadrants; includes boundary line.
I Quadrants I, II, IV; includes boundary line
IV ⇔ 4
Test (0,0)
y = x + 2
≤ RS
0 0 + 2
≤ 2
yes

② $x + y > 1$



LS > RS

0 + 0 | 1

0 > No

$x + y = 1$

$y = -x + 1$

S Quadrants I, II, IV; excludes boundary line.

B All four quadrants; includes boundary line.

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

Attachments

NOTES - Graphing a Linear Inequation.docx

Puzzle Worksheet - Graphing Linear Inequalities with Two Variables.pdf