

# 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

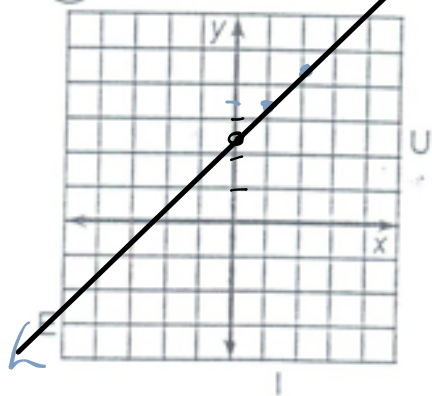
COLLECTIVE S... To graph a line given its equation (includes vertical lines) ©1995 Creative Publications 157

HE HAS NO PROPER  
TEA  
He has no proper tea  
(property).  
Page 158  
SHE HAD A BUM  
STEER

# HOMWORK QUESTIONS?

 Puzzle Worksheet - Graphing Lines.docx

⑧  $2x - 2y + 5 = 0$




$$-2y = -2x - 5$$

$$y = \frac{\text{Rise}}{\text{Run}} x + \text{y-int}$$

$$y = 1x + 2.5$$

$$\frac{1}{1}$$



 Graph! (WSHS Math Rap Song)

## Graphing Linear Functions

NOTES - Graphing Linear Relationships.docx

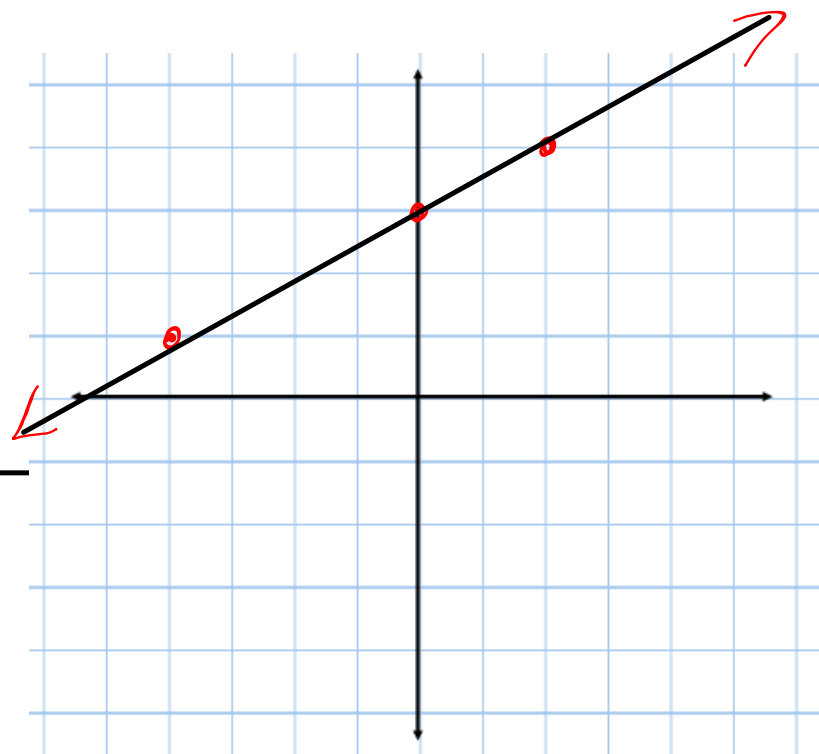
### Method #1 - Table of Values (must have at least 3 points)

ex:  $3x - 6y + 18 = 0$

$$\frac{-6y}{-6} = \frac{-3x - 18}{-6}$$

$$y = \frac{1}{2}x + 3$$

	x	y
y-int	0	3
	2	4
	-4	1



Method #3 - Using  $x / y$  intercepts

ex:  $x - 5y - 10 = 0$

$x$  int

$$x - 5(0) - 10 = 0$$

$$x - 10 = 0$$

$$x = 10$$

$(10, 0)$

$y$  int

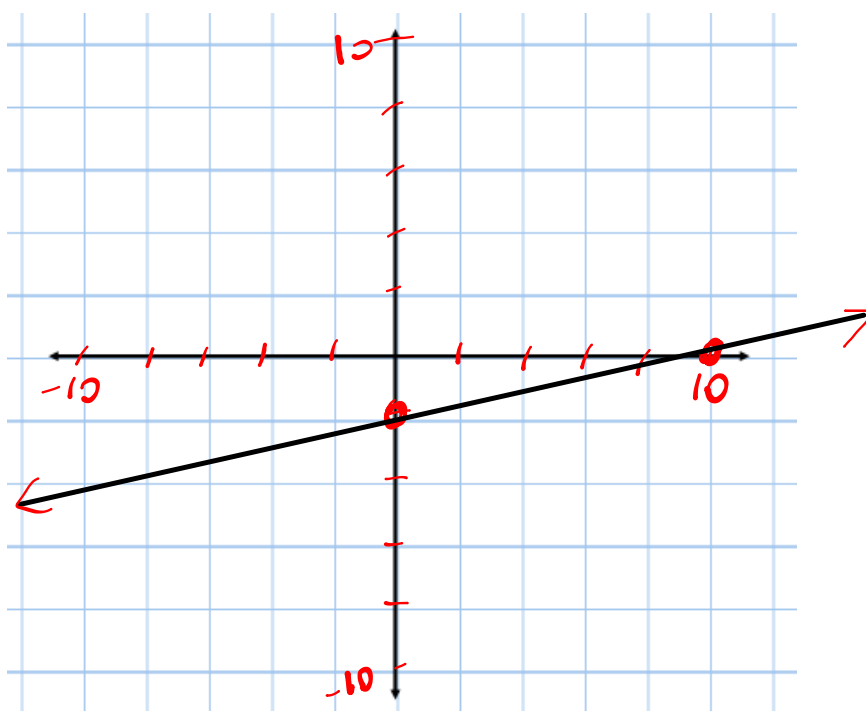
$$0 - 5y - 10 = 0$$

$$-5y = 10$$

$$-y = -2$$

$$y = -2$$

$(0, -2)$

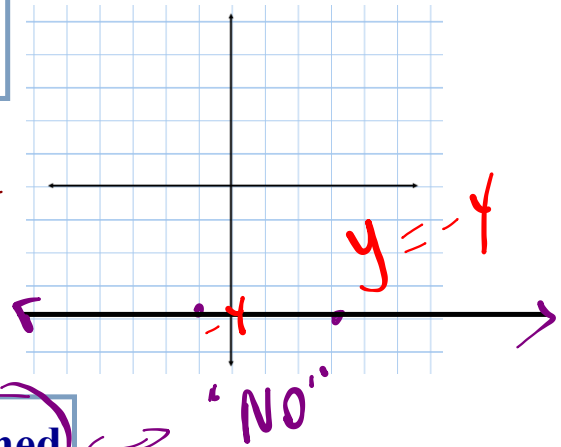


What about vertical versus horizontal lines???

### Graphs of Special Lines

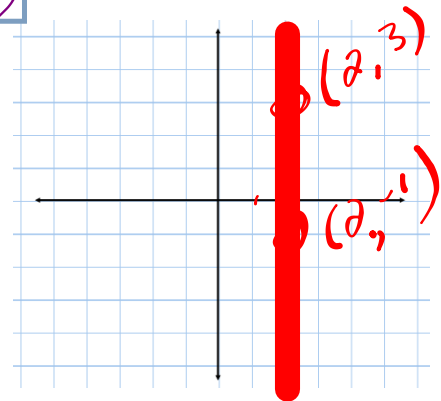
- horizontal lines - slope value of zero

ex:  $(3, -4)$  &  $(-1, -4)$   $m = \frac{-4 - (-4)}{-1 - 3}$   
 $= \frac{0}{-4}$   
 $= 0$



- vertical lines - slope value is **undefined**

ex:  $x = 2$   $m = \frac{-1 - 3}{2 - 2}$   
 $= \frac{-4}{0}$   
 $\Rightarrow$  not possible



## WHY WE CAN'T DIVIDE BY ZERO...

$$\cancel{0} \times \frac{||}{\cancel{0}} = \text{heart} \times 0$$

$$|| = \text{heart} \times 0$$

? Undefined  
Does not exist



## Linear Inequalities:

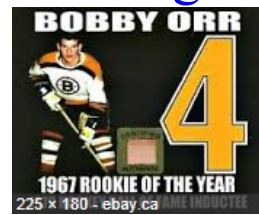


Inequality sign - could be one of the following...

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

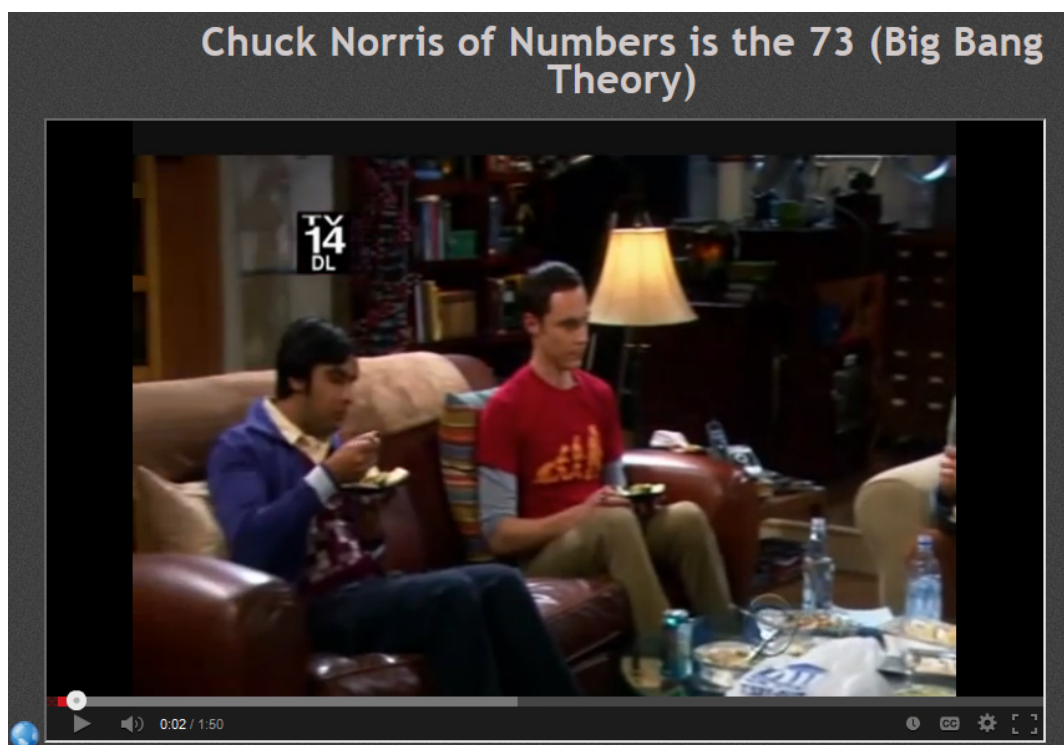
Now divide both by -1

-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 Inequality.docx**

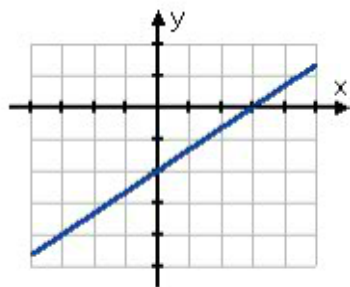
When the solution set to a linear inequality is continuous and the sign does not include equality, use a dashed line for the boundary and shade the solution region.

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

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

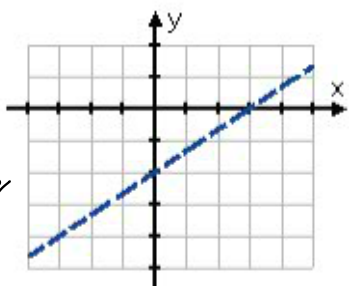
$$\begin{aligned} 2x - 3y &< 6 \\ -3y &< -2x + 6 \\ y &> (2/3)x - 2 \end{aligned}$$

**STEP 1: Graph the boundary line**



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

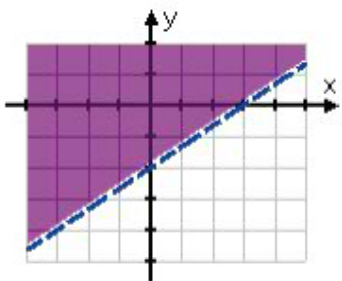
But this example is a **strict** inequality. That is, it's only "y greater than." We denote strict inequalities on the number line (such as  $x > 5$ ) by using an open dot instead of a closed dot. In the case of these linear inequalities, the notation for a strict inequality is a dashed line. So the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



**STEP 2: Decide on dashed or solid**

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

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:

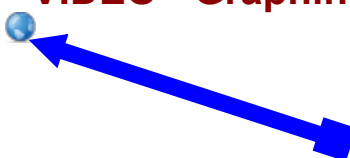


**STEP 3: Pick a 'test point' and verify**

**STEP 4: Shade**

$(0,0)$

**VIDEO - Graphing Inequalities**



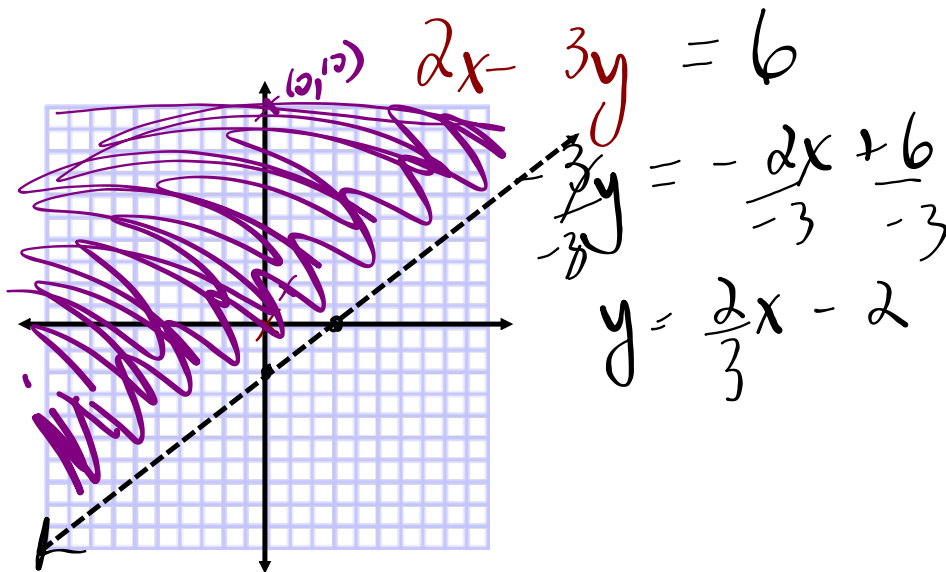
Click **HERE** to watch the video!!!

My Way ...

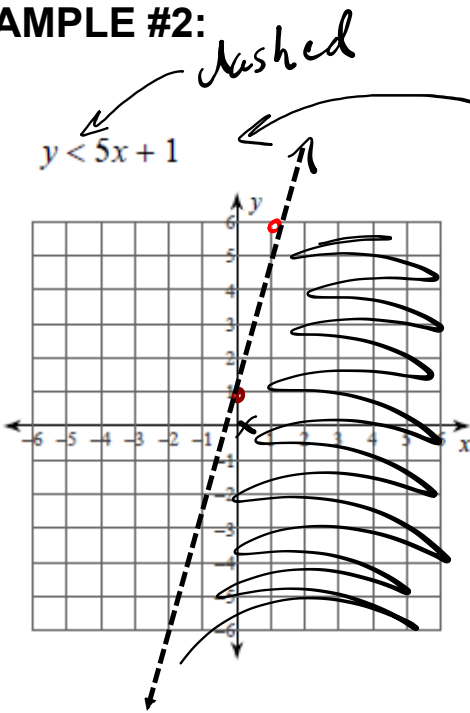
$$\underline{\underline{2x - 3y < 6}}$$

Test  
 $(0, 0)$   
 $LS < RS$

$2(0) - 3(0)$	$6$
$0$	yes



EXAMPLE #2:



dashed


sub

$y = 5x + 1$  y int  
Rise  
Run

Test (0,0) is a solution

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

# HOMWORK...

 Puzzle Worksheet - Graphing Linear Inequalities with Two Variables.pdf

## Attachments

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Puzzle Worksheet - Graphing Lines.docx

NOTES - Graphing Linear Relationships.docx

NOTES - Graphing a Linear Inequation.docx

Puzzle Worksheet - Graphing Linear Inequalities with Two Variables.pdf