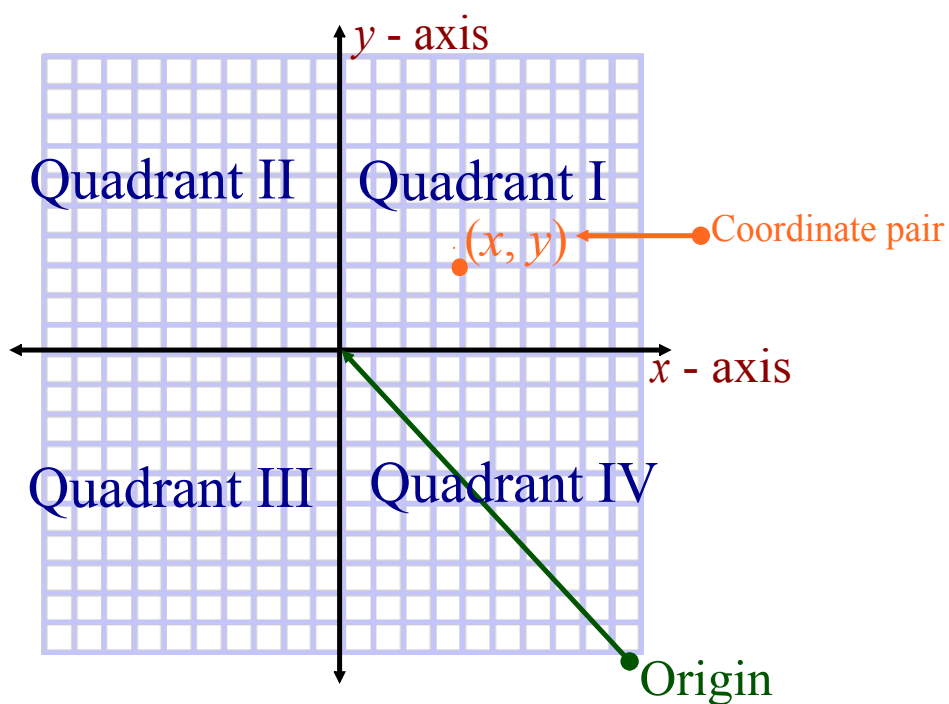


# Review of 2-Dimension Coordinate Geometry

'AKA... Numbers, Relations and Functions 10'

## Cartesian Plane

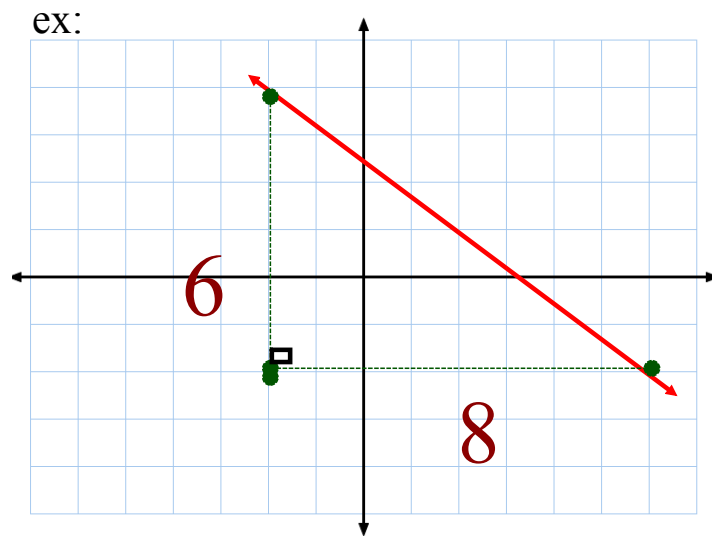


Associates each point with a pair of numbers (**ordered pair**).

## Calculating Slope

### #1. Graph

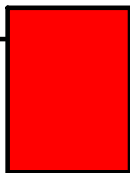
$$\text{Slope} = \frac{\text{Rise}}{\text{Run}}$$



### #2. Two Points

ex:  $(-3, 5)$  &  $(1, -7)$

$$m = \frac{\Delta y}{\Delta x} = \frac{y_2 - y_1}{x_2 - x_1}$$



### #3. Equation

ex: Determine the slope of...

$$3x - 2y - 6 = 0$$

$$y = mx + b$$

↑  
slope

Example...

Find the slope of the following line...  $6x + 4y - 12 = 0$

# Intercepts

## x intercept

Where does it cross the x - axis? (Let  $y = 0$ )

## y intercept

Where does it cross the y - axis? (Let  $x = 0$ )

Ex.  $2x - 3y = 12$

# Graphing Linear Functions

NOTES - Graphing Linear Relationships.docx

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

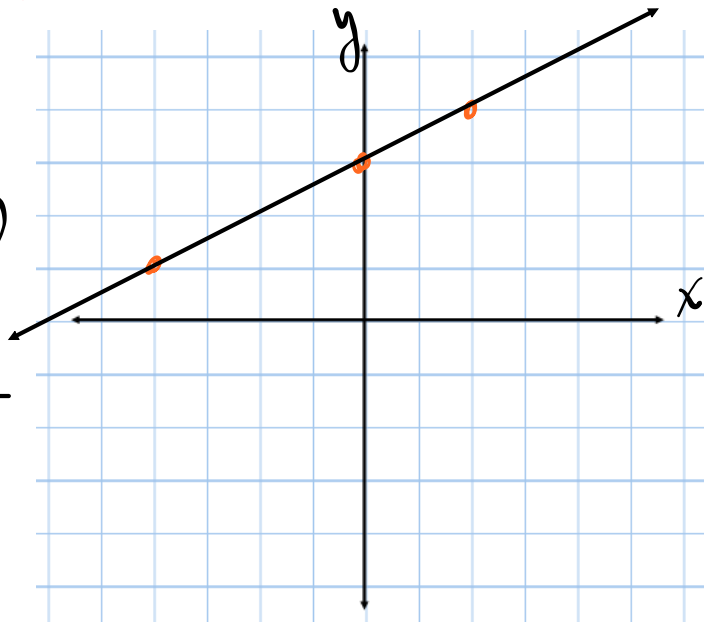
Rearrange "y ="  
ex:  $3x - 6y + 18 = 0$

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

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

sub

x	y
(0	3)
(2	4)
(-4	1)

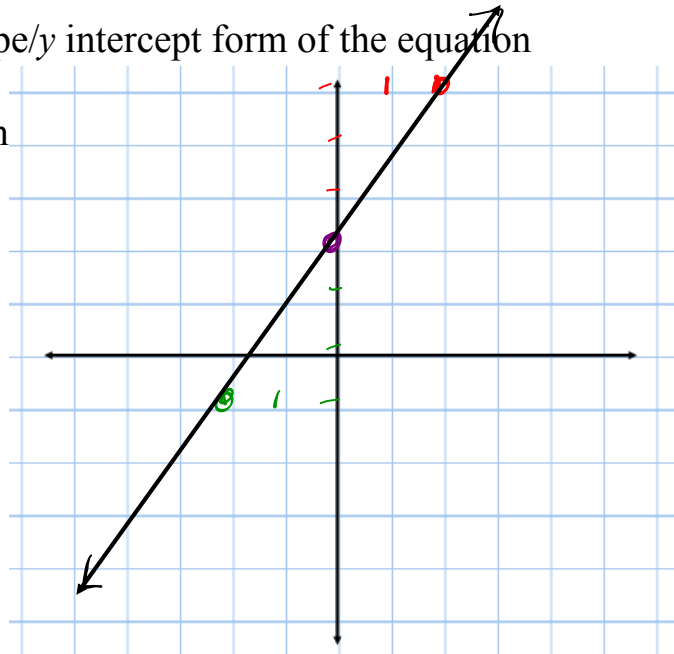


## Method #2 - Using the slope/y intercept form of the equation

- put equation in the form

$$y = mx + b$$

- plot the y intercept
- use slope =  $\frac{\text{Rise}}{\text{Run}}$  to plot other points.



ex:  $3x - 2y = -4$

$$\frac{-2y}{-2} = \frac{-3x - 4}{-2}$$

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

1) y-int (0, 2)  
2) Rise 3  
Run 2

Method #3 - Using  $x / y$  intercepts

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

$x$ -int (let  $y=0$ )

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

$x - 10 = 0$

$x = 10$

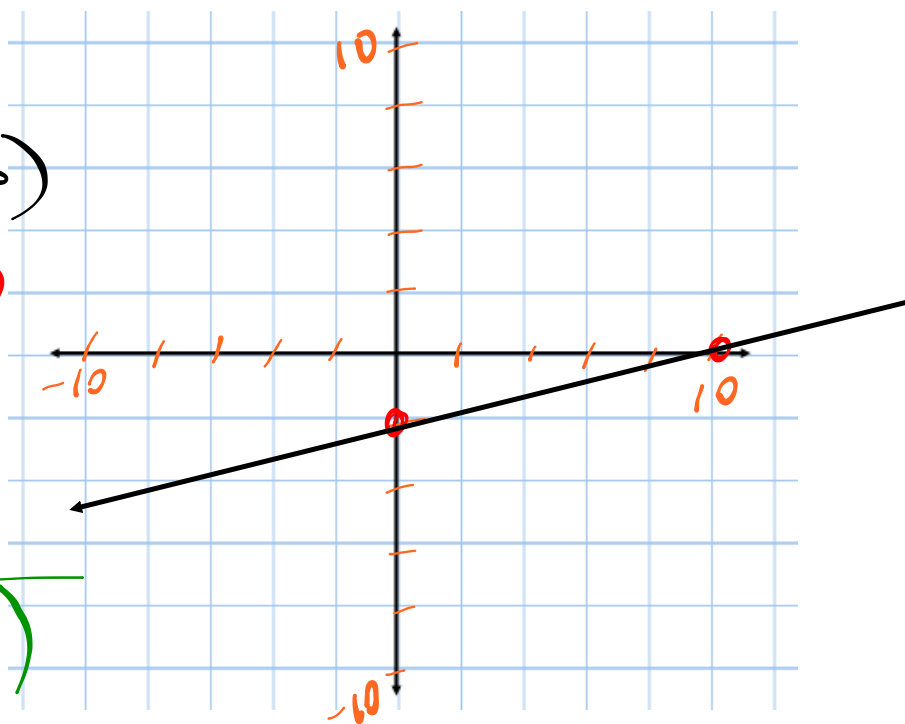
$(10, 0)$

$y$ -int (let  $x=0$ )

$0 - 5y - 10 = 0$

$-\frac{5}{5}y = \frac{10}{-5}$

$y = -2$   
 $(0, -2)$



What about vertical versus horizontal lines???

Graphs of Special Lines

$$m = \frac{y_2 - y_1}{x_2 - x_1}$$

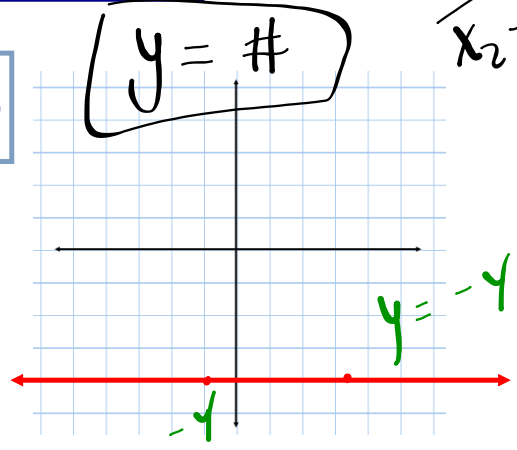
- horizontal lines - slope value of zero

ex: (3, -4) & (-1, -4)

$$m = \frac{-4 - (-4)}{-1 - 3}$$

$$= \frac{0}{-4}$$

$$= 0$$



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

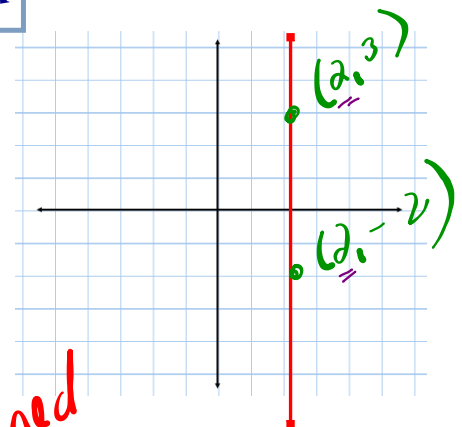
ex: x = 2

(x = #)

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

$$= \frac{-5}{0}$$

Undefined



Why can't we divide by zero?

$$\frac{\cancel{||} \times \cancel{0}}{\cancel{0}} = \square \times 0$$

$$|| = \square \times 0$$

?

Not Possible  
Error  
Undefined

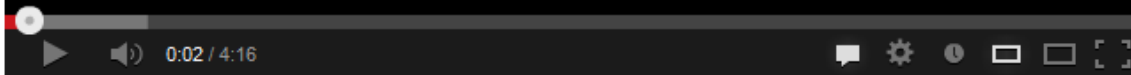



WHY WE CAN'T DIVIDE BY ZERO...

$$y = mx + b$$

Graph!

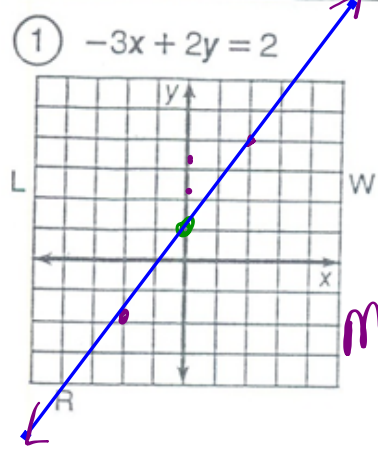
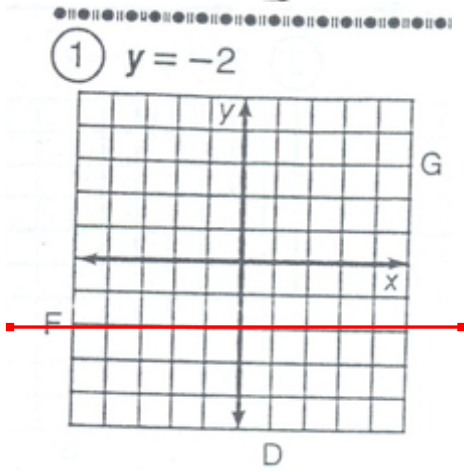
Westerville South High School



 Graph! (WSHS Math Rap Song)

# HOMWORK...

Puzzle Worksheet - Graphing Lines.docx



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

*Y int (0, 1)*

*m = 3/2 Rise Run*

## Attachments

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NOTES - Graphing Linear Relationships.docx

Puzzle Worksheet - Graphing Lines.docx