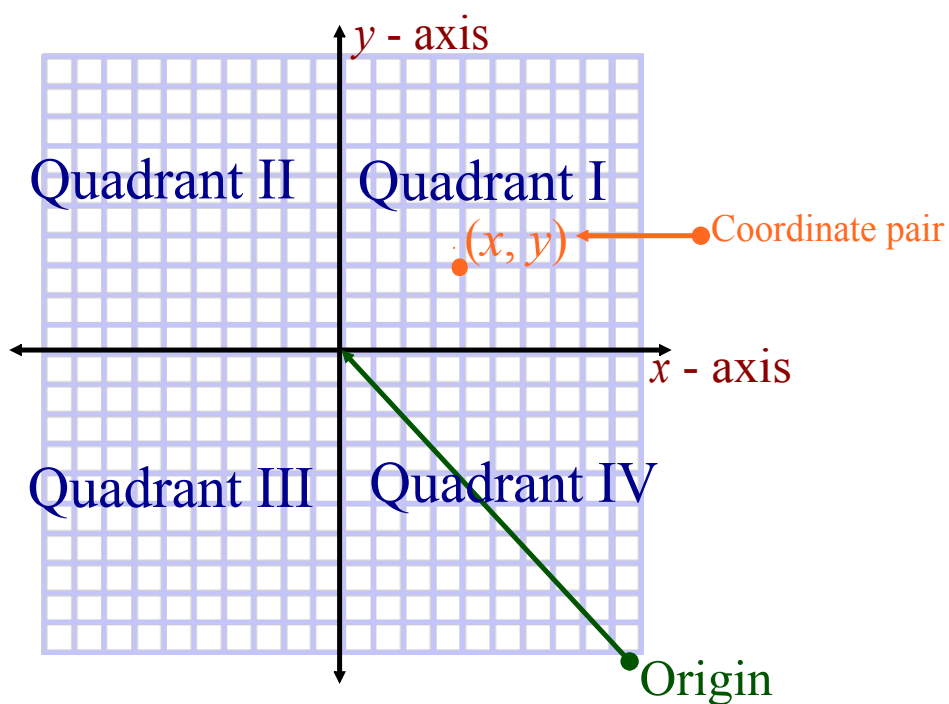


# Review of 2-Dimension Coordinate Geometry

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

## Cartesian Plane

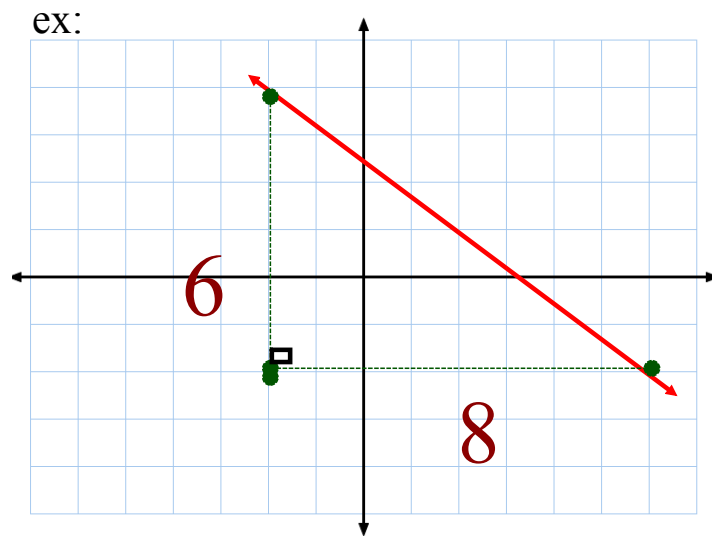


Associates each point with a pair of numbers (**ordered pair**).

## Calculating Slope

### #1. Graph

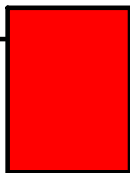
$$\text{Slope} = \frac{\text{Rise}}{\text{Run}}$$



### #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

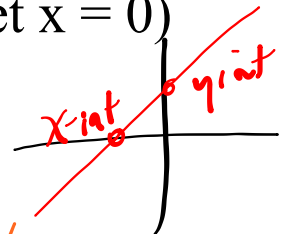
## x intercept

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

## y intercept

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

Ex.  $2x - 3y = 12$



x int (let  $y = 0$ )

$$2x - 3(0) = 12$$

$$2x = \frac{12}{2}$$

$$x = 6$$

$(6, 0)$

y int (let  $x = 0$ )

$$2(0) - 3y = 12$$

$$-3y = \frac{12}{-3}$$

OR  $y = -4$

$(0, -4)$

$$-\frac{3}{-3}y = \frac{-2x + 12}{-3 \quad -3}$$

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

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

y-int

# Graphing Linear Functions

NOTES - Graphing Linear Relationships.docx

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

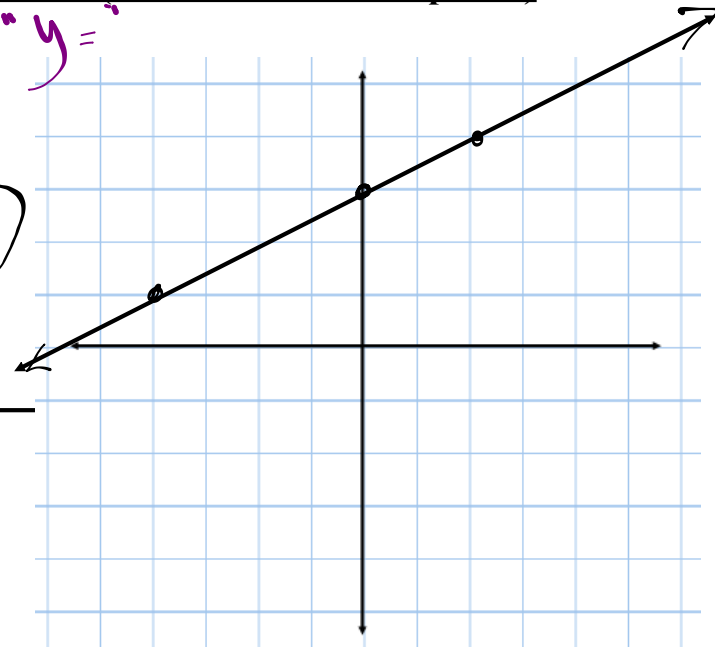
Rearrange "y ="  
ex:  $3x - 6y + 18 = 0$

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

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

sub

x	y
0	3
2	4
-4	1

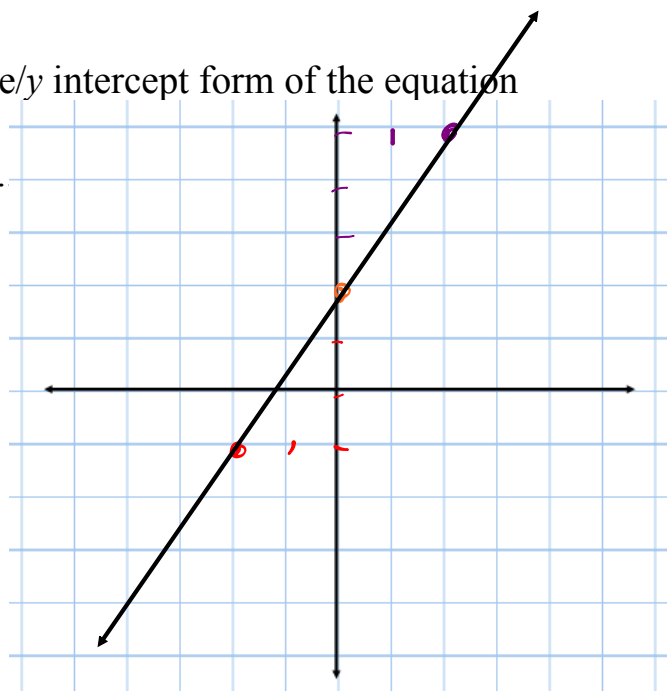


## Method #2 - Using the slope/y intercept form of the equation

- put equation in the form.

$$y = mx + b$$

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



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

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

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

$m = \frac{3}{2}$  Rise 3 Run 2  
1) yint (0, 2)

Method #3 - Using  $x / y$  intercepts

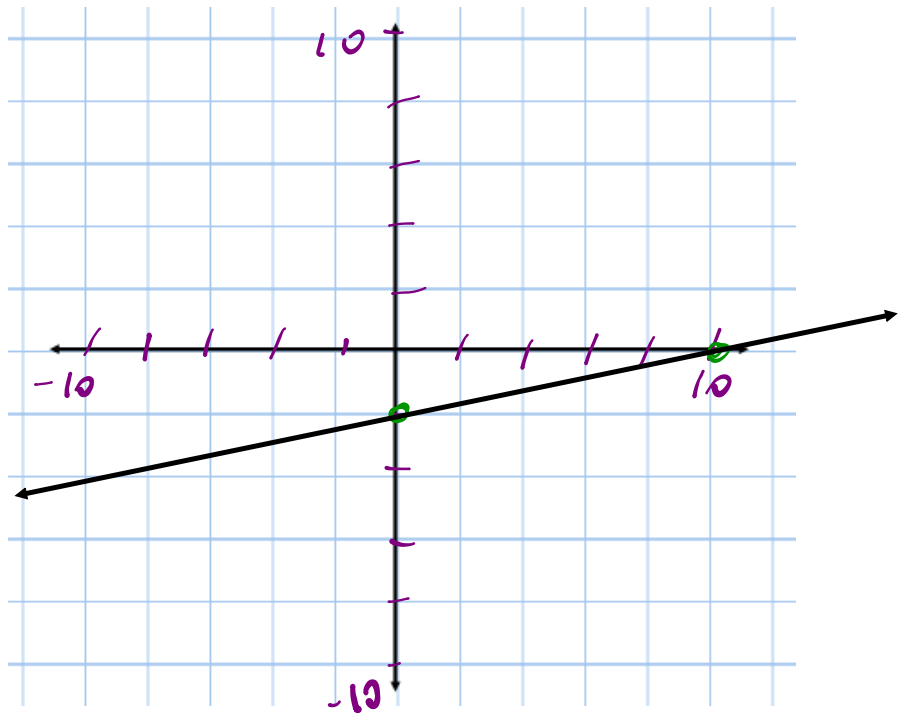
ex:  $x - 5y - 10 = 0$

$x$ -int

$$\begin{aligned} x - 5(0) - 10 &= 0 \\ x - 10 &= 0 \\ x &= 10 \\ (10, 0) \end{aligned}$$

$y$ -int

$$\begin{aligned} 0 - 5y - 10 &= 0 \\ -5y &= 10 \\ y &= -2 \\ (0, -2) \end{aligned}$$



What about vertical versus horizontal lines???

Graphs of Special Lines

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

$y = \#$

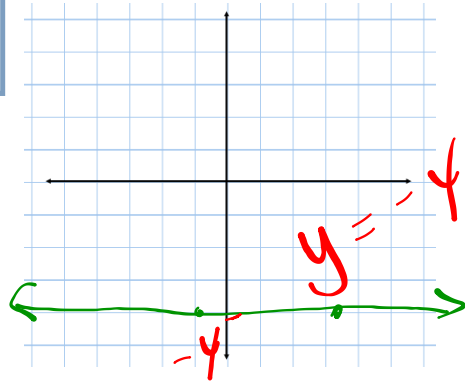
- horizontal lines - slope value of zero

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

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

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

$$= 0$$



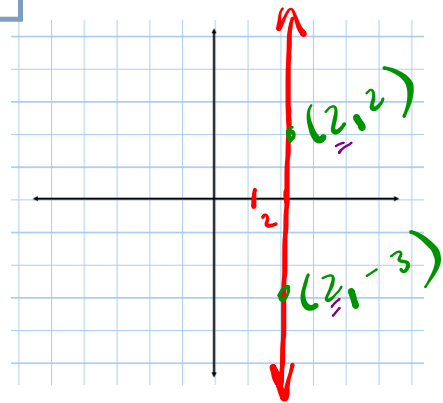
- vertical lines - slope value is **undefined**

$x = \#$

ex:  $x = 2$

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

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



WHY WE CAN'T DIVIDE BY ZERO...

$$\frac{11}{\cancel{0}} = \square \times 0$$

$11 = \square \times 0$

?

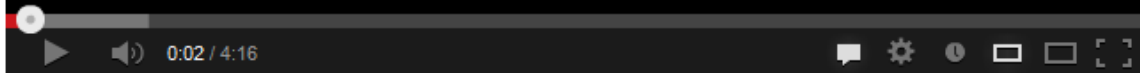
ERROR  
undefined



$$y = mx + b$$

Graph!

Westerville South High School

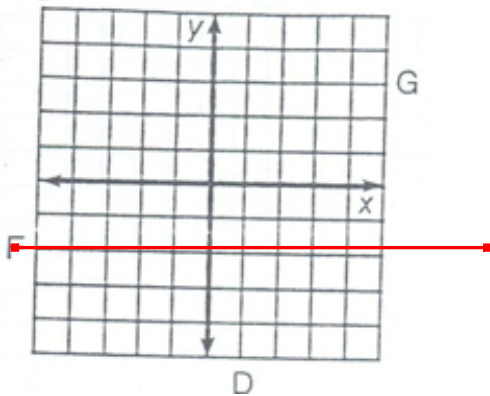


Graph! (WSHS Math Rap Song)

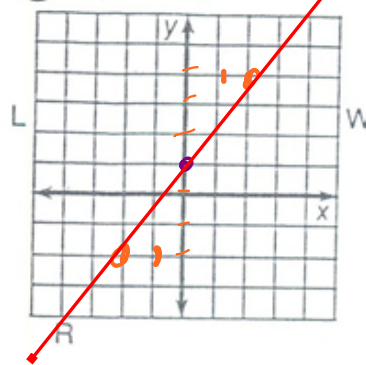
# HOMWORK...

Puzzle Worksheet - Graphing Lines.docx

①  $y = -2$



①  $-3x + 2y = 2$



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

Rise 3  
Run 2  
OR  
 $-\frac{3}{-2}$   
↑  
y-int

## Attachments

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NOTES - Graphing Linear Relationships.docx

Puzzle Worksheet - Graphing Lines.docx