TUESDAY, FEBRUARY 5, 2019

slope = rise / run

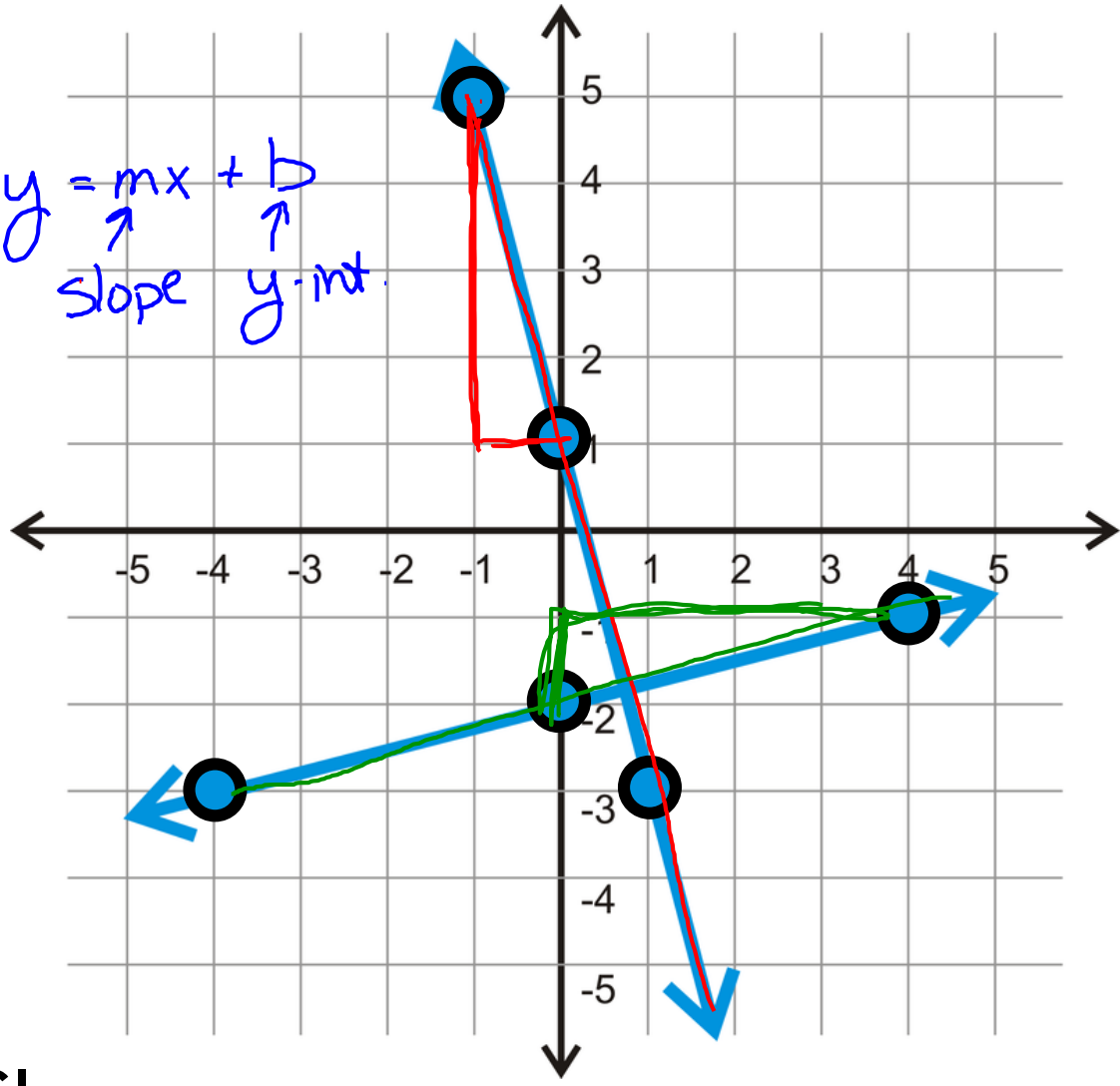
Warm-up

- Write the equations in slope-intercept form for each of the given lines:

$y = mx + b$ (m: slope, b: y-int)

$y = 1 - \frac{4}{1}x$

$y = -2 + \frac{1}{4}x$



Team Builder

Talk about Tests

Unit Overview

Review & Extend Slopes

OBJECTIVES

Content: I will review and extend slope calculations and apply them to parallel and perpendicular lines.

Social: I will work with my group and get to know them better.

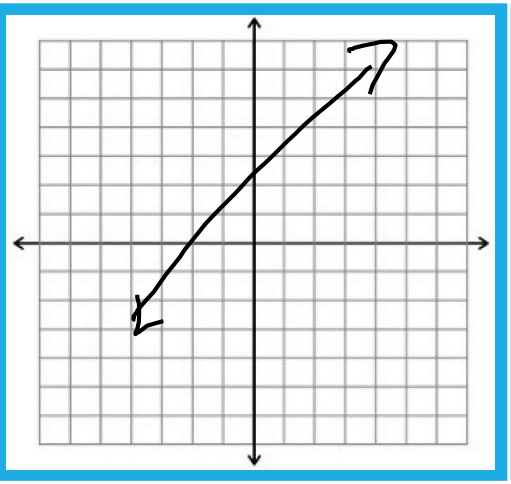
Language: I will write clear notes so that I can refer to them later.

REVIEW SLOPE – WHAT IT MEANS

rise / run

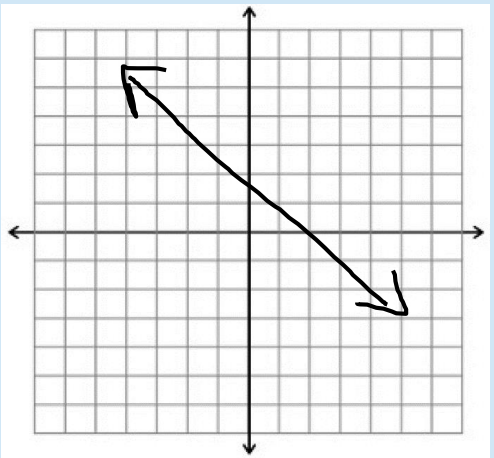
Positive:

up to the right



Negative:

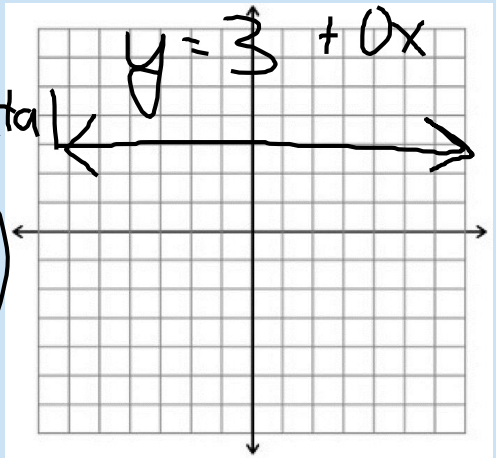
down to the right



0:

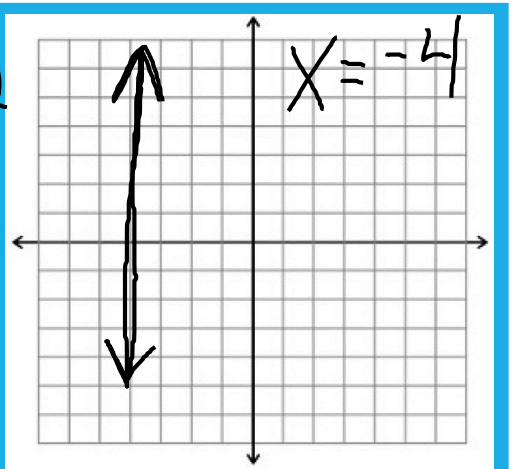
horizontal

0 / runs



Undefined:

vertical line



rises / 0

↗

÷0 = undefined

$(7,5)$ $(3,-7)$ $\rightarrow \frac{-7-5}{3-7}$ $d=\sqrt{(y_2-y_1)^2+(x_2-x_1)^2}$

x_1 y_1 x_2 y_2

$\frac{-12}{-4} = 3$

CALCULATING THE SLOPE

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

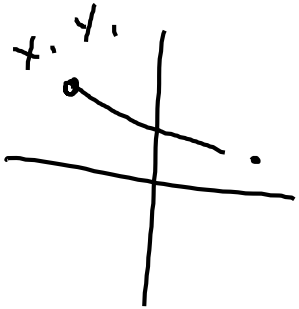
If you're given two points

(x_1, y_1) **and** (x_2, y_2)

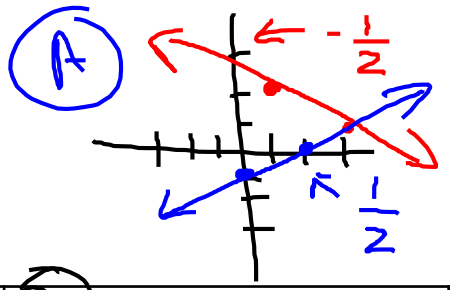
order must be consistent!

$\frac{\text{rise}}{\text{run}}$ rise $\updownarrow$ y's

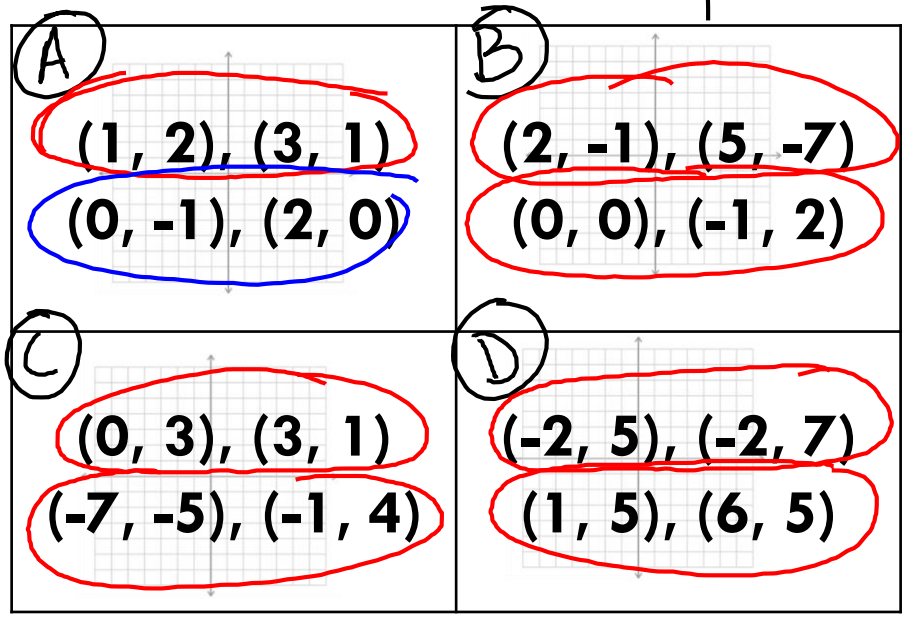
run $\leftrightarrow$ x's



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



APPLYING SLOPE TO PARALLEL AND PERPENDICULAR LINES



For each pair of points

- Plot on the graph
- Connect to make a line
- Calculate the slope of each
- Make note of how (if at all) the lines seem to be related.
- Make note of how (if at all) the slopes are related.

Make some conclusions about the slopes of parallel and perpendicular lines.

BRAIN BREAK

$y = 3x + 1$

$2 = 3(4) + b$

$2 = 12 + b$

$-12 \quad -12$

$-10 = b$

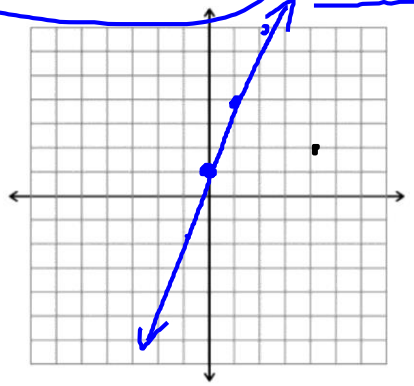
$y = 3x - 10$

WRITING EQUATIONS

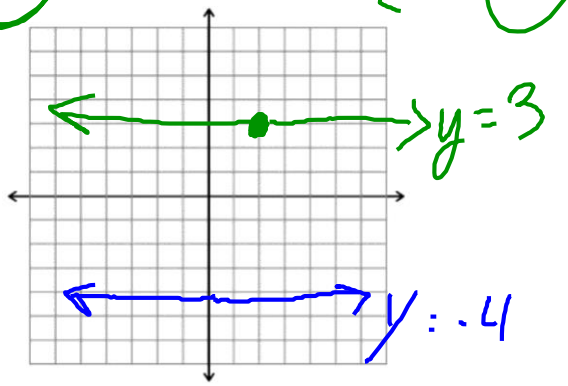
Use the left half of the back of your graph paper to do the following:

Write the equation in slope-intercept form of the line that is **parallel** to the graph of each equation and passes through the given point.

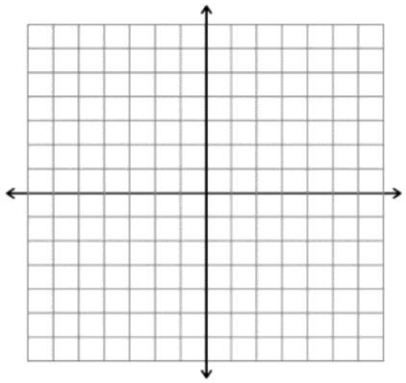
1. $y = 3x + 1$; (4, 2)



2. $y = -4$; (2, 3)



3. $y = \frac{1}{2}x + 5$; (4, -5)



Graph the two lines to verify that they are parallel

perpendicular slope = opposite reciprocal

$y = 3x + 1$ (slope $3 = \frac{3}{1}$)

$y = -\frac{1}{3}x + b$

$2 = -\frac{1}{3}(4) + b$

$2 = -\frac{4}{3} + b$

$+\frac{4}{3} \quad +\frac{4}{3}$

$3\frac{1}{3} = b$

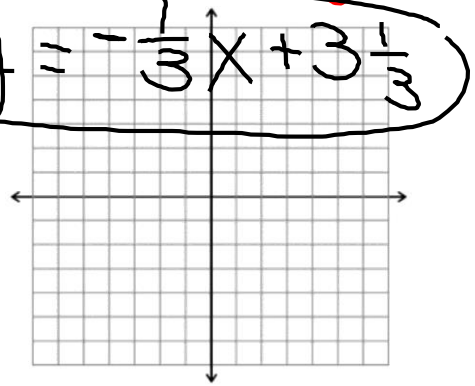
WRITING EQUATIONS

Use the right half of the back of your graph paper to do the following:

Write the equation in slope-intercept form of the line that is **perpendicular** to the graph of each equation and passes through the given point.

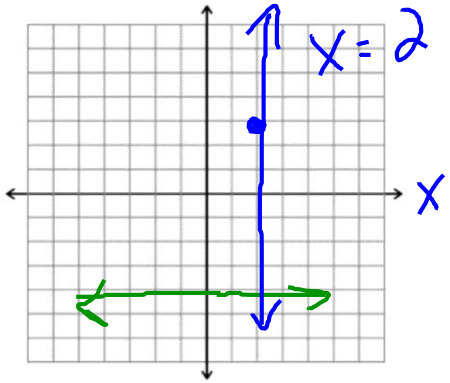
1. $y = 3x + 1$; (4, 2)

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

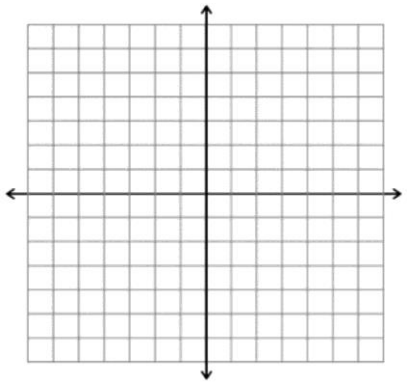


2. $y = -4$; (2, 3)

x y

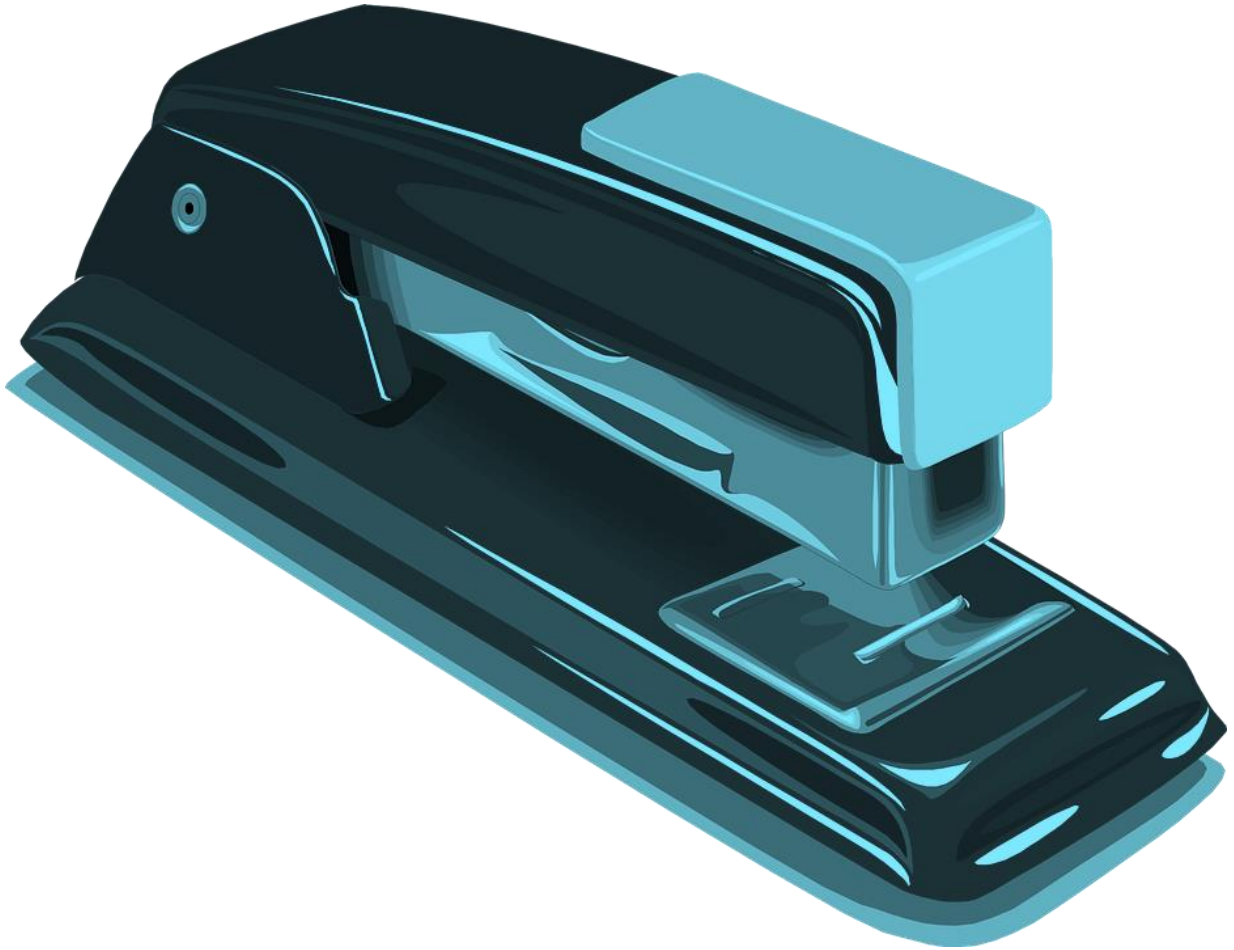


3. $y = \frac{1}{2}x + 5$; (4, -5)



Graph the two lines to verify that they are perpendicular

ATTACH THIS PAPER TO THE WEEKLY SHEET



TESTS