0-0 Guided Notes #2
Linear Equations

Objectives:
1. Identify parallel/perpendicular slopes
2. Graph Linear Equations
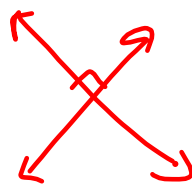3. Find equations of lines given geometric properties

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Bell Work:

Draw a picture of a pair of parallel lines and a pair of perpendicular lines. What do you know about their slopes?

m = same slope

m = opposite reciprocal

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Parallel and Perpendicular Slopes

Parallel: Slopes are the same
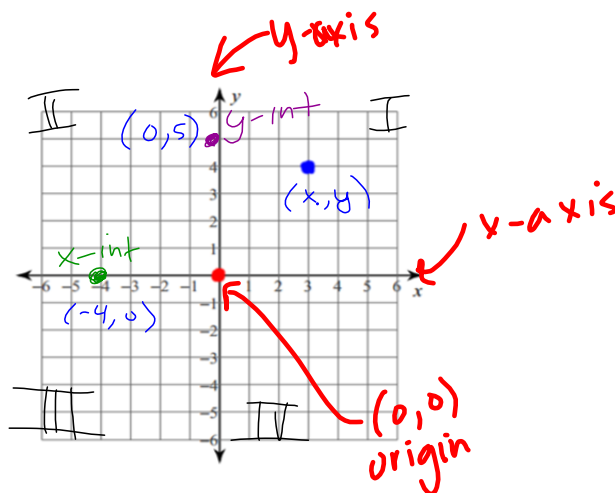
$$2x + 5y = 10$$

$$y = \left(-\frac{5}{2}\right)x + 4$$

Perpendicular: opposite reciprocals

✗ make sure in slope-int form

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Important Terminology
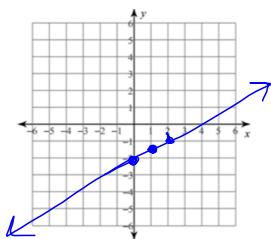

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Graphing General Form

$4x - 8y = 16$

1. Make Table

x	y
0	-2
1	-1.5
2	-1

$8 - 8y = 16$
$-8y = 8$
$y = -1$

$-\dfrac{4(1)}{4} - 8y = 16$
-4
$-8y = 12$
$y = -12/8 = -3/2$

2. FIND INTERCEPTS

$(0, -2) \quad (4, 0)$
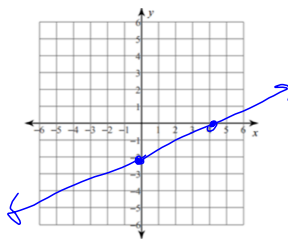
3. SLOPE-INT

$-8y = -4x + 16$
$\dfrac{}{-8} \quad \dfrac{}{-8} \quad \dfrac{}{-8}$

$y = \dfrac{1}{2}x - 2$
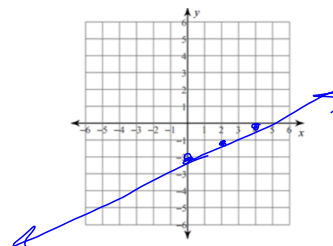
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FORMS OF A LINE

NAME	FORM	DESCRIPTION
General/Standard	$Ax + By = C$	(x, y) point on line
SLOPE - INTERCEPT	$y = mx + b$	$m = $ slope $b = y$-intercept
POINT-SLOPE	$y - y_1 = m(x - x_1)$	$m = $ slope (x_1, y_1) point on line

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Ex. 1: Find the equation of a line through the points (0,5) and (6,1).

$(6,1)$

$$m = \frac{5-1}{0-6} = \frac{4}{-6} = -\frac{2}{3}$$

$$y = -\frac{2}{3}x + 5$$
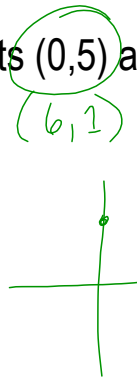
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Ex 2: Find the equation of the line that passes through (8,3) and (2,-1).

$(2,-1)$

$$m = \frac{4}{6} = \frac{2}{3}$$

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

$$\frac{2}{3} \cdot \frac{8}{1}$$

$$y - y_1 = m(x - x_1)$$

$$y - 3 = \frac{2}{3}(x - 8)$$

$$y - 3 = \frac{2}{3}x - \frac{16}{3} + \frac{9}{3}$$
$$\quad +3$$

$$y = \frac{2}{3}x - \frac{7}{3}$$

$$y = mx + b$$

$$3 = \frac{2}{3}(8) + b$$

$$3 = \frac{16}{3} + b$$

$$-\frac{16}{3}$$

$$-\frac{7}{3} = b$$

$$y = \frac{2}{3}x - \frac{7}{3}$$

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Ex. 3: Find the equation of a line with x-intercept 9 and y-intercept 3.

$$(9, 0)$$
$$(0, 3)$$

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

$$m = \frac{3 - 0}{0 - 9} = -\frac{1}{3}$$

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Homework

0-0 Worksheet #2

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