

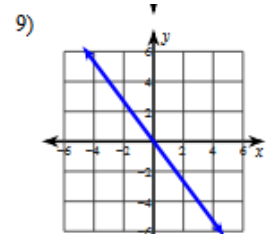
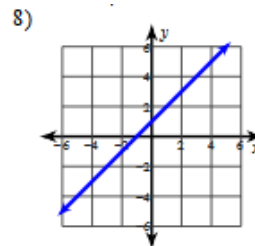
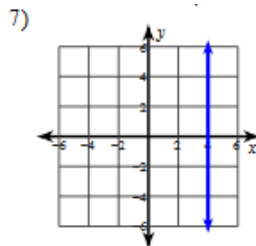
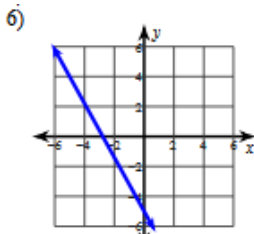
October 29th

Due Today: **3.4**  
worksheet

## Unit 3: Linear Functions

## Lesson 3.5: Parallel and Perpendicular Lines

## Check your HW:



10)  $y = \frac{9}{2}x + 3$

11)  $y = \frac{6}{5}x$

12)  $y = -2x - 2$

13)  $y = -\frac{1}{3}x$

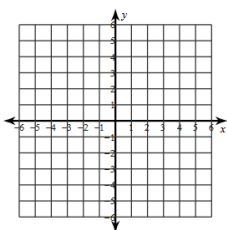
- 14) a. decreasing  
b. (0, -6)  
c. (-2, 0)  
d.  $g(4) = -18$   
e. 8

- 15) a. horizontal  
b. (0, -4)  
c. does not exist  
d.  $h(3) = -4$   
e. it doesn't ever

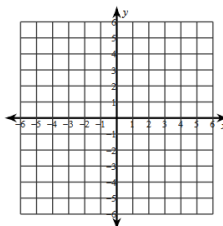
**HW 3.4 Review**

Sketch the graph of each line.

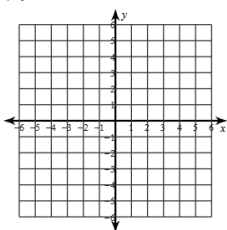
6)  $y = -\frac{9}{5}x - 5$



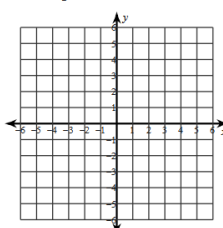
7)  $x = 4$



8)  $y = x + 1$



9)  $y = -\frac{4}{3}x$



Re-write each equation in slope-intercept form.

10)  $9x - 2y = -6$

11)  $6x - 5y = 0$

Write the slope-intercept form of the equation of the line through the given point with the given slope.

12) through:  $(1, -4)$ , slope =  $-2$

Write the slope-intercept form of the equation of the line through the given points.

13) through:  $(-3, 1)$  and  $(3, -1)$

$m = \frac{1 + 1}{-3 - 3} = \frac{2}{-6} = -\frac{1}{3}$

$y = mx + b$   
 $1 = -\frac{1}{3}(-3) + b$   $y = -\frac{1}{3}x + 0$   
 $1 = 1 + b$   
 $-1 \quad -1$   
 $\hline$   
 $0 = b$

Answer each of the questions for the given function.

14) Let  $g(x) = -3x - 6$

a. What type of line is this? (increasing, decreasing, horizontal, vertical?)

b. What is the y-intercept of the line? (write your answer as a coordinate point)

c. What is the x-intercept of the line? (write your answer as a coordinate point)

d. What is  $g(4)$ ?

e. when does  $g(x) = -30$ ?

15) Let  $h(x) = -4$

$y = -4$

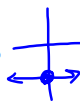
a. What type of line is this (increasing, decreasing, horizontal, vertical?)

b. What is the y-intercept of the line? (write your answer as a coordinate point)

c. What is the x-intercept of the line? (write your answer as a coordinate point)

d. What is  $h(3)$ ?

e. when does  $h(x) = 2$ ?



## Writing the Equation of a Line:

1. From a Graph
2. From the Slope + 1 pt
3. From 2 Points
4. From // or  $\perp$  Lines + 1 pt

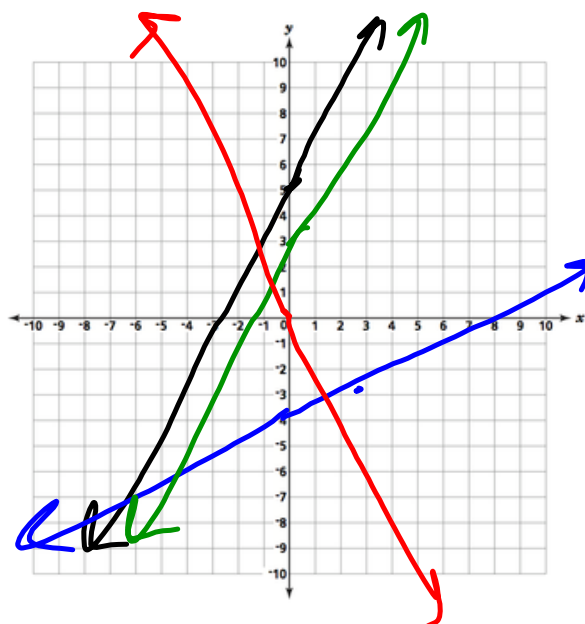
Let's Graph these functions on the same axis:

$$f(x) = 2x + 5$$

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

$$m(x) = 2x + 3$$

$$p(x) = -3x$$



$$f(x) \parallel m(x)$$

$$g(x) \perp p(x)$$

Parallel Lines: Have the same slope

Perpendicular Lines: Have opposite  
reciprocal slope

Original Function	Slope of // Line	Slope of $\perp$ Line
$g(x) = 3x + 2$	$m = 3$	$m = -\frac{1}{3}$
$a(x) = -x$	$m = -1$	$m = 1$
$t(x) = \frac{2}{3}x - 5$	$m = \frac{2}{3}$	$m = -\frac{3}{2}$

## Writing the equation of a line from a point + // or $\perp$ Line

Find the Equation:

through:  $(-2, 5)$ , perp. to  $y = \frac{1}{3}x - 2$

$$m = -3$$

$$y = mx + b$$

$$5 = -3(-2) + b$$

$$5 = 6 + b$$

$$\begin{array}{r} -6 \\ -6 \end{array}$$

$$-1 = b$$

$$y = -3x - 1$$

steps:

1. Identify the slope of your new line.
2. Plug in the slope into  $y = mx + b$
3. use the  $(x, y)$  coordinates to plug into  $y = mx + b$
4. Solve for the missing  $b$ .
5. plug the  $m$  and the  $b$  into slope-intercept form to get your equation

# Practice

1) through:  $(1, 2)$ , parallel to  $y = 5x + 5$

$$y = 5x - 3$$

2) through:  $(3, -1)$ , perp. to  $y = 3x - 2$

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

3) through:  $(4, 5)$ , parallel to  $y = \frac{1}{2}x - 4$

$$y = \frac{1}{2}x + 3 \quad 4$$

4) through:  $(-3, 1)$ , perp. to  $y = -\frac{3}{4}x - 3$

$$y = \frac{4}{3}x + 5$$

$$x = -1$$

$$y = -5x - 5$$

$$y = x$$

$$y = -5$$



# TASK

Each partnership will receive a slip of paper with a line-  $a(x)$  and a point.

Complete the TASK. You will need to work together and use markers/crayons to graph your lines.

find the pt where  $b(x)$  intersects  $c(x)$ !  
what do you notice about this point?

## Unit 3: Linear Functions

Lesson #	Name	Recap	HW
3.1	Review of Basic Line Info	Went over gateway, worked in groups on the modeling worksheet	Finish DELTAMATH 3.1!!!!
3.2	Writing the equation of a line Delta Math Day	Watched online videos over writing the equation of lines and worked on delta math	Video notes and Delta Math 3.2
3.3	Practice with Lines	Went over the 9 skills we should know by now and practiced	Finish 3.3 practice sheet + catch up on videos / delta math
3.4	Quiz + Calculator Function Stuff	talked about function notation and used the calculator to help us.	3.4 HW
3.5	Parallel and Perpendicular Lines		3.5 DELTA MATH

## Finished early? SOLVE THESE:

1)  $2(2 + 8b) = -8(-2b + 5) + 7$

2)  $-(m - 3) = -\frac{5}{2}$

3)  $r - \frac{10}{3} - \frac{7}{2}r = -\frac{16}{9} - \frac{5}{2}r + \frac{2}{3}r$

4)  $-\left(\frac{3}{2}x + 1\right) + \frac{1}{2} = -\frac{1}{2}x - 1$

1)  $2(2 + 8b) = -8(-2b + 5) + 7$

No solution.

2)  $-(m - 3) = -\frac{5}{2} \quad \left(\frac{11}{2}\right)$

3)  $r - \frac{10}{3} - \frac{7}{2}r = -\frac{16}{9} - \frac{5}{2}r + \frac{2}{3}r \quad \left(-\frac{7}{3}\right)$

4)  $-\left(\frac{3}{2}x + 1\right) + \frac{1}{2} = -\frac{1}{2}x - 1 \quad \left(\frac{1}{2}\right)$