

$a \parallel b$   
 $a \perp b$

Linear function

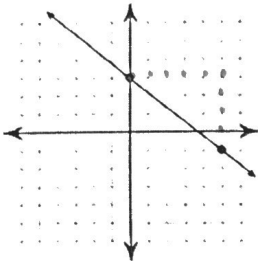
$$y = mx + b$$

Slope  $\left(\frac{\text{rise}}{\text{run}}\right) \left(\frac{y_2 - y_1}{x_2 - x_1}\right)$

← y-intercept

A. Identify the slope given a graph or two coordinates.

1.



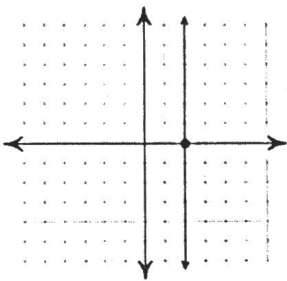
2.  $(10, 2)$  and  $(8, 1)$

$$m = \frac{4}{-5}$$

$$m = \frac{1 - 2}{8 - 10} = \frac{-1}{-2} = \frac{1}{2}$$

B. Identify the slope for a vertical and horizontal line.

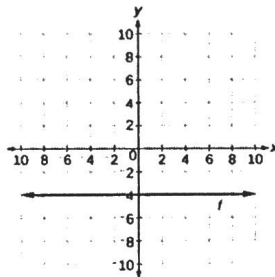
3.



$x = 2$

$m = \text{undefined}$

4.



$y = -4$

$m = 0$

Fact One: Two line segments are parallel if their slopes are same.

Fact Two: Two line segments are perpendicular if their slopes are opp. reciprocals

ex:  $m = \frac{1}{2} \perp m = -\frac{2}{1}$

5. Identify the slope that would create a line that is parallel to the given line.

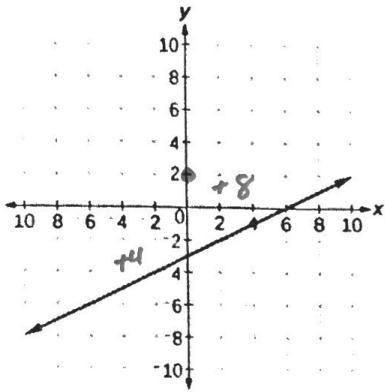
$y = \frac{1}{2}x + 3$        $m = \frac{1}{2}$

6. Identify the slope that would create a line that is perpendicular to the given line.

$y = -2x + 5$        $m = \frac{1}{2}$

9.1 Notes: Parallel and Perpendicular Lines

7. Identify a line that is parallel and passes through  $(0, 2)$ .



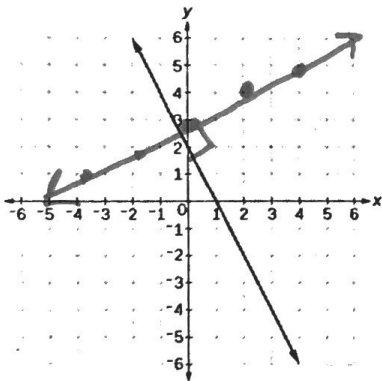
①  $y = mx + b$

②  $y = \frac{1}{2}x + b$

③  $y = \frac{1}{2}x + 2$

$m = \frac{4}{8} = \frac{1}{2}$

8. Identify a line that is perpendicular and passes through  $(2, 4)$ .



①  $y = mx + b$

②  $y = \frac{1}{2}x + b$

③  $4 = \frac{1}{2}(2) + b$

$3 = b$

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

$m = \frac{+4}{-2} = -2$