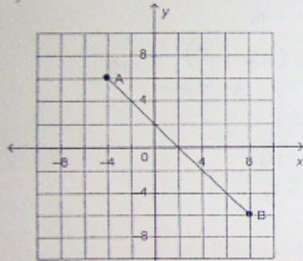


Slope Review

*Answer Key*

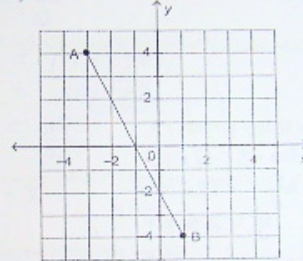
Determine the slope of this line segment.

a)



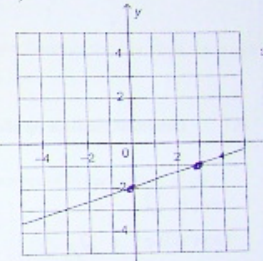
$$m = \frac{6}{-6} = -\frac{1}{1}$$

b)



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

c)



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

Determine the slope of the line that passes through (9, 11) and (15, 27).

$$m = \frac{y_2 - y_1}{x_2 - x_1} = \frac{27 - 11}{15 - 9} = \frac{16}{6} = \frac{8}{3}$$

The slopes of two lines are  $\frac{6}{11}$  and  $-11/6$ . Are the two lines parallel, perpendicular, or neither?

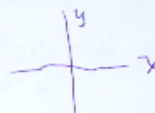
The slopes of two lines are  $-2$  and  $-1/2$ . Are the two lines parallel, perpendicular, or neither?

Complete the chart:

Equation	Slope	y-intercept
a) $y = 4x - 2$	4	-2
b) $-y = 5x - 2$ $y = -5x + 2$	-5	2
c) $2y - 3 = 8x - 5 + 3$ $2y = 8x - 2$ $y = 4x - 1$	4	-1
d) $3(y + 1) = 2x + 9$ $3y + 3 = 2x + 9 - 3$ $3y = 2x + 6$ $y = \frac{2}{3}x + 2$	$\frac{2}{3}$	2
e) $1/2y + 2 = 2x + 1$ $y + 4 = 4x + 2 - 4$ $y = 4x - 2$	4	-2
f) $3x + 5 = 2y - 5 + 5$ $3x + 10 = 2y$ $\frac{3}{2}x + 5 = y$	$\frac{3}{2}$	5

$3x + 10 = 2y$ $\frac{3}{2}x + 5 = y$	$\frac{3}{2}$	5
g) $-5y - 1 = 10x - 20$ $-5y = 10x - 19$ $y = -2x + \frac{19}{5}$	-2	$\frac{19}{5}$

- 6.
- a) The slope parallel to the x-axis is  $\frac{0}{1}$ .
  - b) The slope perpendicular to the x-axis is  $\frac{1}{0}$ .
  - c) The slope of a vertical line is  $\frac{1}{0}$ .
  - d) The slope of a horizontal line is  $\frac{0}{1}$ .
  - e) The perpendicular slope to  $\frac{5}{1}$  is  $-\frac{1}{5}$ .



7. Determine the *slope* and the *y*-intercept for the graph of this equation:  $16x + 32 - 2y = 0$  ( $y = mx + b$ )

$m = 8$   
 $y\text{-int} = 16$

$16x + 32 = 2y$   
 $8x + 16 = y$

8. Find the value of K.  $(K, -7)$  and  $(1, 12)$   $m = 19/6$ .

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

$$\frac{19}{6} = \frac{12 - (-7)}{1 - K}$$

$$19(1 - K) = 6(12 + 7) \quad -19$$

$$\textcircled{19} - 19K = 72 + 42 \quad -19$$

$$\frac{-19K}{-19} = \frac{95}{-19}$$

$$K = -5$$

9. Determine the slope parallel to  $3(2y - 1) = 12x + 3$

$$6y - 3 = 12x + 3$$

$$6y = 12x + 6$$

$$y = 2x + 1$$

$m = 2$   
parallel =  $2/1$

10. Determine the slope perpendicular to  $3y - 4 = 8x + 5$

$$3y = 8x + 9$$

$$y = \frac{8}{3}x + 3$$

$m = \frac{8}{3} \perp -\frac{3}{8}$

11. A line passes through points (4, 8f) and (2f, -2). If the slope is parallel to the y-axis, find f.

$$\frac{1}{0} = \frac{-2 - 8f}{2f - 4} \quad \left| \frac{1}{0} \right.$$

$$\begin{aligned} 1(2f - 4) &= 0 \\ 2f - 4 &= 0 \\ 2f &= 4 \\ f &= 2 \end{aligned}$$

12. A line passes through points (-3k, 2) and (8, k). If the slope is parallel to the x-axis, find k.

$$\frac{0}{1} = \frac{k - 2}{8 - (-3k)} \quad \left| \frac{0}{1} \right.$$

$$\begin{aligned} 1(k - 2) &= 0(8 + 3k) \\ k - 2 &= 0 \\ k &= 2 \end{aligned}$$

13. A line passes through points (5, 6k) and (-3, 4k). If the slope is perpendicular to 1/3, find k.

$$\frac{-3}{1} = \frac{4k - 6k}{-3 - 5} \quad \left| \frac{-3}{1} \right.$$

$$\begin{aligned} 1(4k - 6k) &= -3(-3 - 5) \\ 4k - 6k &= +9 + 15 \end{aligned}$$

$$\frac{1}{0} = \frac{-2 - 8f}{2f - 4}$$

$$1(2f - 4) = 0$$

$$2f - 4 = 0$$

$$2f = 4$$

$$f = 2$$

12. A line passes through points  $(-3k, 2)$  and  $(8, k)$ . If the slope is parallel to the x-axis, find  $k$ .

$$\frac{0}{1} = \frac{k - 2}{8 - (-3k)}$$

$$1(k - 2) = 0(8 + 3k)$$

$$k - 2 = 0$$

$$k = 2$$

13. A line passes through points  $(5, 6k)$  and  $(-3, 4k)$ . If the slope is perpendicular to  $1/3$ , find  $k$ .

$$\frac{-3}{1} = \frac{4k - 6k}{-3 - 5}$$

$$1(4k - 6k) = -3(-3 - 5)$$

$$4k - 6k = +9 + 15$$

$$-2k = 24$$

$$k = -12$$

14. A line passes through  $P(6, 0)$  and  $K(6, 15)$

14. A line passes through R(6, 9) and K(-6, 15).  
a) What is the slope of line RK?  
b) What is the parallel slope?  
c) What is the perpendicular slope?

$$\begin{aligned} \text{a) } m &= \frac{15-9}{-6-6} \\ &= \frac{6}{-12} \\ &= -\frac{1}{2} \end{aligned}$$

$$\begin{aligned} \text{b) parallel} \\ &\text{same} \\ &-\frac{1}{2} \end{aligned}$$

$$\begin{aligned} \text{c) Perpendicular} \\ &+\frac{2}{1} \end{aligned}$$

15. Find the slope perpendicular to (5, 4) and (-9, 5)

$$\begin{aligned} m &= \frac{5-4}{-9-5} \\ &= \frac{1}{-14} \end{aligned}$$

$$\frac{1}{1} = +\frac{14}{1}$$

$$1. \quad m = \frac{\text{rise}}{\text{run}}$$

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

$$y = mx + b$$

↑

$$2. a) \quad y = 5x - 2$$

$$m = \frac{5}{1} \quad \perp \quad -\frac{1}{5}$$

$$b) \quad \frac{2y}{2} = \frac{4x - 3}{2 \cdot 2}$$

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

$$m = \frac{2}{1} \quad \perp \quad -\frac{1}{2}$$

→ +2



$$c) 3y - 2 = 2x - 5$$

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

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

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

$$d) 2(y-3) = 3x+5$$

$$2y - 6 = 3x + 5 + 6$$

$$\frac{2y}{2} = \frac{3x}{2} + \frac{11}{2}$$

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

$$y = \frac{3}{2}x + \frac{11}{2}$$

$$3. a) \frac{4y}{4} = \frac{8x - 12}{4}$$

$$y = 2x - 3$$

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

$$y\text{-int} = -3$$

$$b) 2y - 2 = 6x + 6 + 2$$

$$\frac{2y}{2} = \frac{6x + 8}{2}$$

$$y = 3x + 4$$

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

$$y\text{-int} = 4$$

$$c) 4(y - 1) = 3x + 12$$

$$4y - 4 = 3x + 12 + 4$$

$$4y = 3x + 16$$

$$\begin{aligned} \text{c) } 4(y-1) &= 3x+12 \\ 4y - 4 &= 3x+12+4 \end{aligned}$$

$$\frac{4y}{4} = \frac{3x}{4} + \frac{16}{4}$$

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

$$m = \frac{3}{4} \quad y\text{-int} = 4$$

$$\begin{aligned} \text{d) } 3y - 3 &= 6(x-1) \\ 3y - 3 &= 6x - 6 + 3 \end{aligned}$$

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

$$y = 2x - 1$$

$$m = \frac{2}{1} \quad y\text{-int} = -1$$

#4 Fill in the chart

Slope of the line AB	Slope of the line CD	Parallel, Perpendicular or Neither
-6/5	6/-5	Parallel
4/3	-3/4	Perpendicular
10/20 $\frac{1}{2}$	-2/1	Perpendicular.
9/7	7/9	Neither
32/48 $\frac{2}{3}$	-3/2	Perpendicular
0	Undefined	Perpendicular

#5 Determine if the following lines are parallel or perpendicular.

- a) A(2, 6) B(3, 4) AND C(-1, 4) D(1, 5)  
 b) A(-6, 5) B(-2, 8) AND C(4, -1) D(6, 2)

#6. Fill in the missing information for the following rectangles: (Using the slopes)

5. a)  $m_{AB} = \frac{y_2 - y_1}{x_2 - x_1}$   $m_{CD} = \frac{y_2 - y_1}{x_2 - x_1}$

$A(2, 6)$   $m = \frac{4 - 6}{3 - 2}$   $m = \frac{5 - 4}{1 - (-1)}$   $C(-1, 4)$   
 $B(3, 4)$   $m = \frac{-2}{1}$   $m = \frac{1}{2}$   $D(1, 5)$

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

perpendicular

b)  $m_{AB} = \frac{y_2 - y_1}{x_2 - x_1}$   $m_{CD} = \frac{y_2 - y_1}{x_2 - x_1}$

$A(-6, 5)$   $C(4, -1)$

b)

$A(-6, 5)$   
 $B(-2, 8)$

$$m_{AB} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{8 - 5}{-2 - (-6)} = \frac{3}{4}$$

$C(4, -1)$   
 $D(6, 2)$

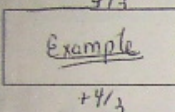
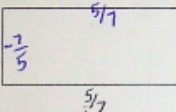
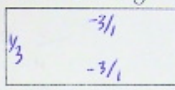
$$m_{CD} = \frac{y_2 - y_1}{x_2 - x_1} = \frac{2 - (-1)}{6 - 4} = \frac{3}{2}$$

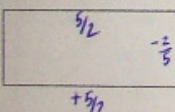
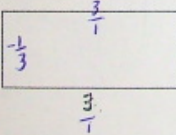
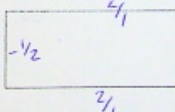
Neither

#5 Determine if the following lines are parallel or perpendicular.

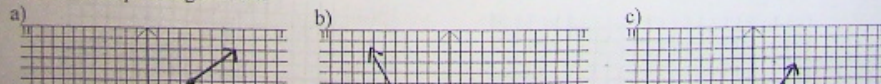
- a) A(2, 6) B(3, 4) AND C(-1, 4) D(1, 5)  
 b) A(-6, 5) B(-2, 8) AND C(4, -1) D(6, 2)

#6. Fill in the missing information for the following rectangles: (Using the slopes)

a)  b)  c) 

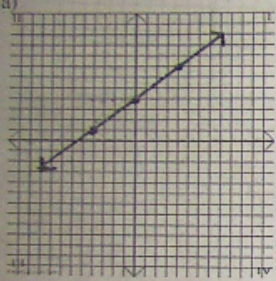
d)  e)  f) 

#7. State the slope using rise/run



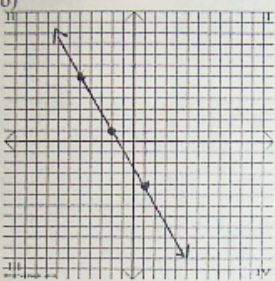
#7. State the slope using rise/run

a)



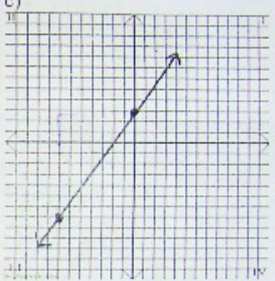
$m = \frac{\text{rise}}{\text{run}}$   
 $= \frac{3}{4}$

b)



$m = \frac{\text{rise}}{\text{run}}$   
 $= -\frac{5}{3}$

c)



$m = \frac{\text{rise}}{\text{run}}$   
 $= \frac{10}{7}$



10.  $3(y-1) = 4x - 9 + 3$   
 $3y - 3 = 4x - 9 + 3$   
 $3y = 4x - 6 + 3$   
 $y = \frac{4}{3}x - 2$

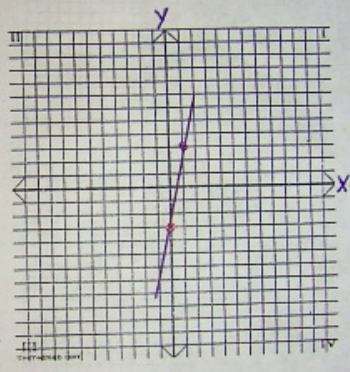
Slope(m):  $\frac{4}{3}$   
 y-int(b):  $-2$

11.  $\frac{4x}{4} = \frac{2}{4}$   
 $y = \frac{1}{2}$

Slope(m):  $\frac{0}{1}$   
 y-int(b):  $-\frac{3}{4}$

y-int(b): \_\_\_\_\_

11.  $\frac{4y}{4} = \frac{24x}{4} - \frac{12}{4}$   
 $y = 6x - 3$



Slope(m):  $\frac{6}{1}$  \_\_\_\_\_

y-int(b):  $-3$  \_\_\_\_\_