

Chapter 5 Review Questions: Algebra 1-2**5-1: Rate of Change and Slope****5-2: Direct Variation****5-3: Slope-Intercept Form ($y = mx + b$)****5-4: Point-Slope Form ($y - y_1 = m(x - x_1)$)****5-5: Standard Form ($Ax + By = C$)****5-6: Parallel and Perpendicular Lines****5-7: Scatter Plots and Trend Lines**

1. Is the point $(-6, 4)$ on the line $y - 4 = \frac{1}{2}(x + 4)$?

$$4 - 4 = \frac{1}{2}(-6 + 4)$$

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

$$0 = -1$$

NO, 0 does not equal -1.

2. Write the function below in *slope intercept form*.

$$4x + 2y - 8 = 0$$

$$-4x \quad -4x$$

$$2y - 8 = -4x + 8$$

$$\frac{2y}{2} = \frac{-4x + 8}{2}$$

$$\rightarrow y = mx + b$$

$$y = -2x + 4$$

3. Find the slope of the line that connects the two points $(1, 3)$ and $(-8, -2)$.

$$m = \frac{-2 - 3}{-8 - 1} = \frac{-5}{-9} = \frac{5}{9}$$

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

4. Graph: $3x - 5y = 30$

Way 1: Solve for y

$$3x - 5y = 30$$

$$-5y = -3x + 30$$

$$y = \frac{3}{5}x - 6$$

Way 2: Find the Intercepts

$$x: 3x - 5(0) = 30$$

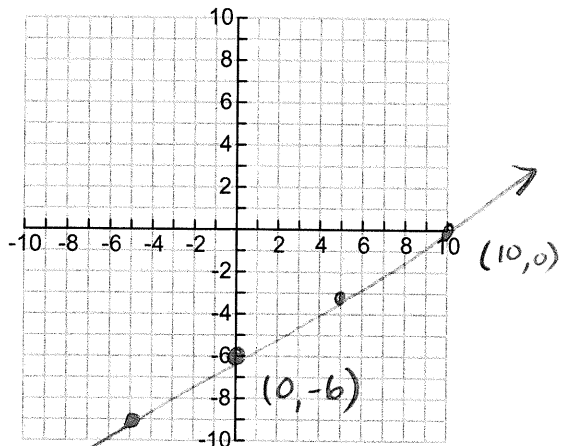
$$\frac{3x}{3} = \frac{30}{3}$$

$$x = 10 \rightarrow (10, 0)$$

$$y: 3(0) - 5y = 30$$

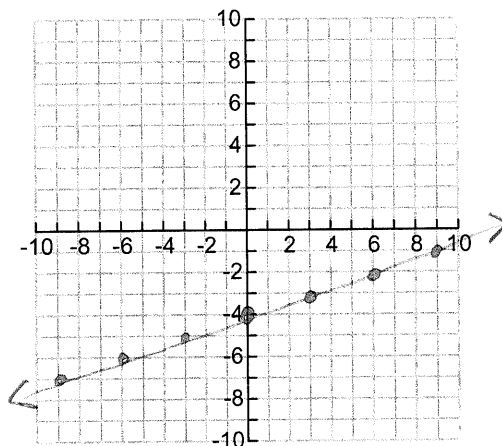
$$-5y = 30$$

$$y = -6 \rightarrow (0, -6)$$



5. Graph: $y = \frac{1}{3}x - 4$

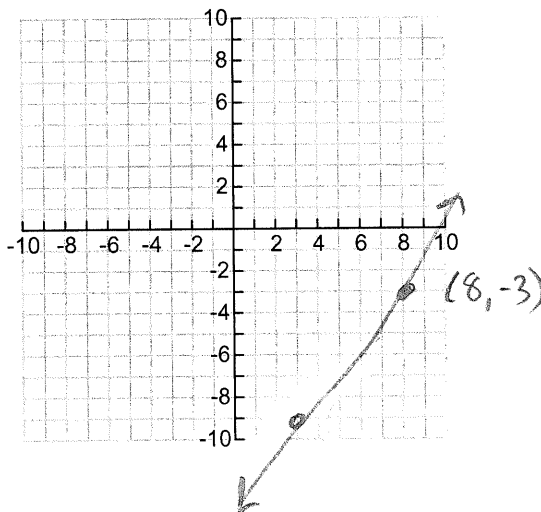
$m = \frac{1}{3}$
 $b = -4$



6. Graph: $y + 3 = \frac{6}{5}(x - 8)$

(GRAPH SMARTLY WITH THIS ONE!!!)

$m = \frac{6}{5}$ point: $(8, -3)$



7. Write the equation of the line that passes through the two points $(-3, 6)$ and $(-6, 2)$ in *point-slope form*.

$$m = \frac{2 - 6}{-6 - (-3)} = \frac{-4}{-3} = \frac{4}{3}$$

$$y - 6 = \frac{4}{3}(x + 3)$$

or $y - 2 = \frac{4}{3}(x + 6)$

8. Determine which of the following three equations represent the same line. Two of them will be the same!

Same $\left\{ \begin{array}{l} \text{A)} \\ \text{C)} \end{array} \right.$

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

B) $y = \frac{4}{3}x + 12$

C) $y - 8 = \frac{4}{3}(x - 3)$

$$\frac{3y}{3} = \frac{4x + 12}{3}$$

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

$$y = \frac{4}{3}x + 12$$

$$y - 8 = \frac{4}{3}x - 4$$

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

Same

9. You are in a foreign country and make a long distance telephone call. A one-time fee of \$2 is charged for any long distance phone call and the rate is \$.20 per minute on the phone.

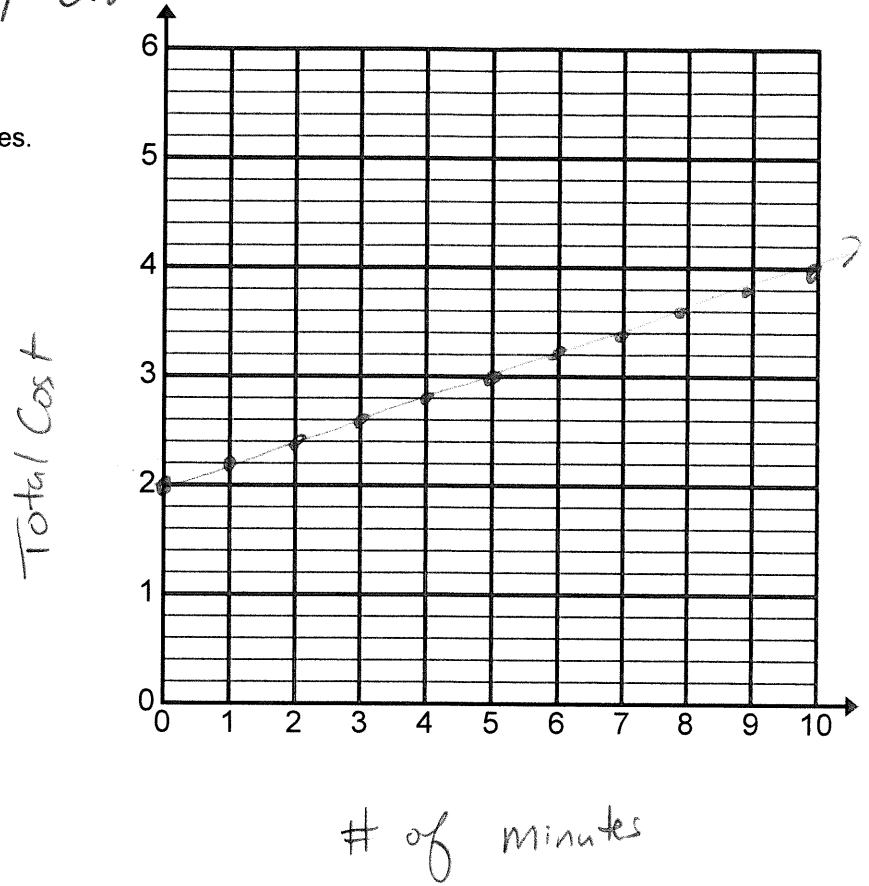
a) Write a function showing your total cost per call and define your variables.

$x = \# \text{ of minutes}$

$$y = 0.20x + 2$$

$y = \text{total cost}$

b) Graph your function. LABEL your axes.



c) Calculate the cost of call that lasts for 17 minutes using your equation from part a). SHOW YOUR WORK.

$$y = 0.20(17) + 2$$

$$y = 3.40 + 2$$

$$y = 5.40 \rightarrow$$

\$5.40 for a 17 minute call.

10. At a recent ski sale, skis sold for \$120 and snowboards sold for \$80. At this ski sale the total sales for skis and snowboards totaled \$2160.

a) Write a function that shows the possible combinations of skis and snowboards that were sold.
Define your variables.

$x = \# \text{ skis sold}$
 $y = \# \text{ S.B. sold}$
 $120x + 80y = 2160$

b) Graph your function. LABEL your axes.

$120x + 80(0) = 2160$

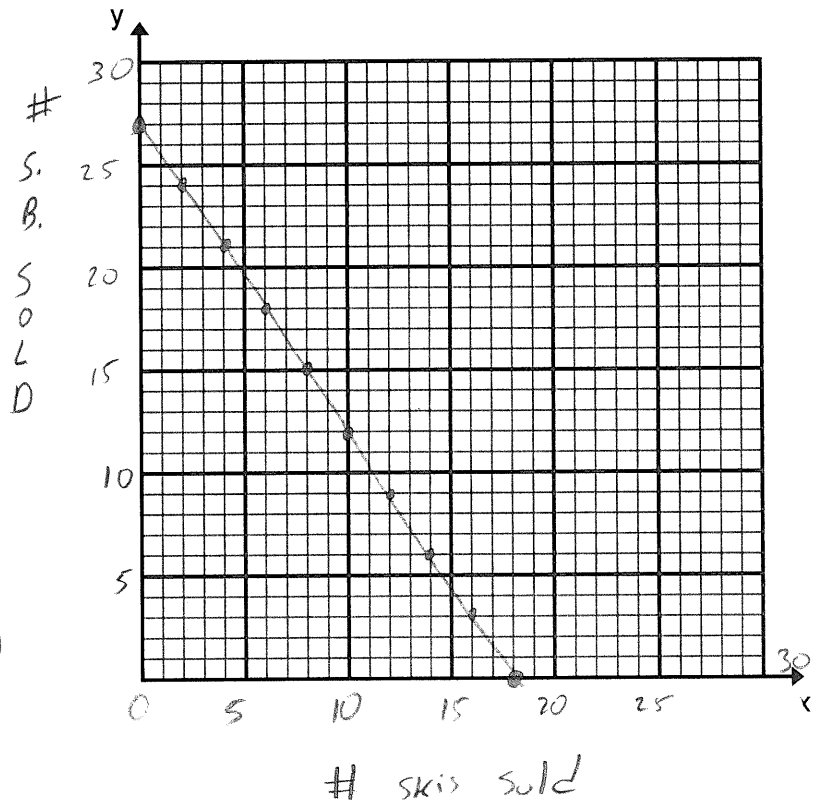
$120x = 2160$
 $\frac{120x}{120} = \frac{2160}{120}$

$x = 18 \rightarrow (18, 0)$

$120(0) + 80y = 2160$
 $\frac{80y}{80} = \frac{2160}{80}$

$y = 27 \rightarrow (0, 27)$

$m = -\frac{27}{18} = -\frac{3}{2}$



c) Write 3 combinations of possible sales that total \$2160.

0 skis, 27 SB

18 skis, 0 SB

2 skis, 24 SB

... and many many more

11. Write the equation of a line that passes through the point $(-3, 7)$ and is parallel to the line $y = -2x + 7$ in *point-slope form* then convert it to *slope-intercept form*.

Point-Slope Form:

$m = -2$

$(-3, 7)$

$y - 7 = -2(x + 3)$

Slope-intercept Form:

$y - 7 = -2(x + 3)$

$y - 7 = -2x - 6$
 $+ 7 \quad + 7$

$y = -2x + 1$

