

Name(s): KEY

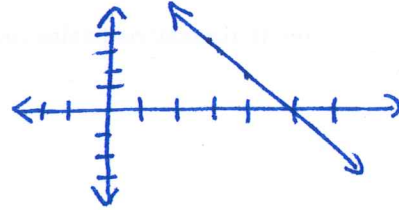
Name(s): _____

Work with partners in groups of 2-4. This is required.

1. Determine the slope of the line containing each pair of points. Graph the line.

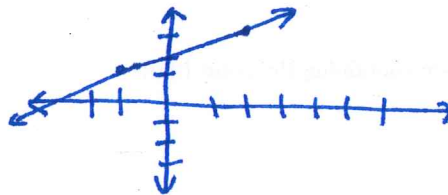
(a) (4,2); (3,4)

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



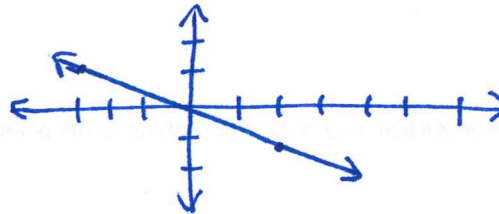
(b) (-1,1); (2,3)

$$m = \frac{3-1}{2-(-1)} = \frac{2}{3}$$



(c) (-3,1); (2,-1)

$$m = \frac{-1-1}{2-(-3)} = \frac{-2}{5}$$



2. Give an equation for the line with the given properties. Express your answer using either the general form or slope-intercept form.

(a) Slope = 2; containing the point (4,-3)

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

$$y + 3 = 2(x - 4)$$

$$y + 3 = 2x - 8$$

$$y = 2x - 11$$

$$2x - y = 11$$

(b) Slope = $\frac{1}{2}$; containing the point (3,1)

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

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

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

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

$$x - 2y = 1$$

(c) x-intercept at $x = 2$ and y-intercept at $y = -1$

two points: (2,0)
(0,-1)

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

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

$$y = \frac{1}{2}(x - 2)$$

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

$$x - 2y = 1$$

(d) Slope undefined; containing the point (2,4)

slope undefined \Rightarrow vertical line

$$\boxed{x=2}$$

(e) Horizontal; containing the point (-3,2)

horizontal \Rightarrow slope = 0

$$\boxed{y=2}$$

(f) Parallel to $x - 2y = -5$; containing the point (0,0)

$$x - 2y = -5$$

$$2y = x + 5$$

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

$$\Rightarrow m_1 = \frac{1}{2} = m_2$$

$$\boxed{y = \frac{1}{2}x}$$
$$\boxed{\frac{1}{2}x - y = 0}$$

(g) Perpendicular to $y = 2x - 3$; containing the point (1,-2)

$$m_1 = 2 \Rightarrow m_2 = -\frac{1}{2}$$

$$y - y_1 = -\frac{1}{2}(x - x_1)$$

$$y + 2 = -\frac{1}{2}(x - 1)$$

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

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

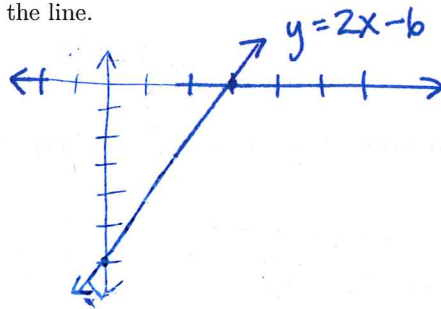
3. Find the slope and y -intercept of each line. Graph the line.

(a) $2x - y = 6$

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

$$y = 2x - 6$$

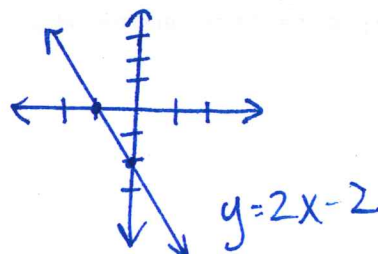
$$m=2, \text{ y-int: } (0, -6)$$



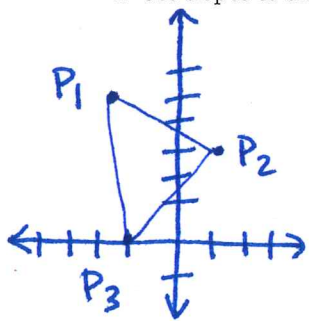
(b) $\frac{1}{2}y = x - 1$

$$y = 2x - 2$$

$$m=2, \text{ y-int: } (0, -2)$$



4. Use slopes to show that the triangle whose vertices are $(-2,5)$, $(1,3)$, $(-1,0)$ is a right triangle.



$$P_1 = (-2, 5)$$

$$P_2 = (1, 3)$$

$$P_3 = (-1, 0)$$

$$m_1 = \frac{5-3}{-2-1} = -\frac{2}{3}$$

$$m_2 = \frac{3-0}{1+1} = \frac{3}{2}$$

Since $m_1 m_2 = -1$, $\overline{P_1 P_2} \perp \overline{P_2 P_3}$ and thus form a right angle. So P_1, P_2, P_3 are vertices of a right triangle.

5. A truck rental company rents a moving truck for one day by charging \$29 plus \$0.20 per mile. Write a linear equation that relates the cost C , in dollars, of renting a truck to the number x of miles driven. What is the cost of renting the truck if the truck is driven 110 miles?

$$\boxed{C(x) = 0.20x + 29}$$

$$C(110) = 0.20(110) + 29$$

$$= 22 + 29$$

$$= \$51$$

\therefore it costs \$51 to rent the truck and drive 110mi

6.