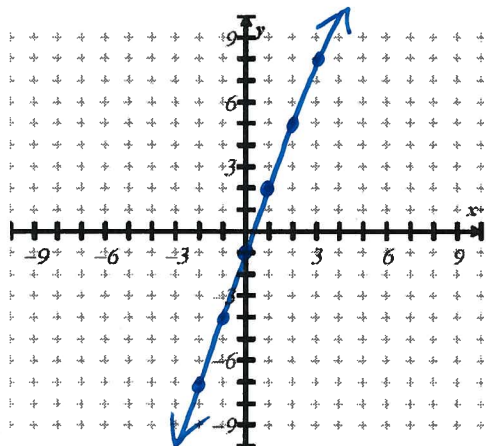


# HOMWORK : LINES AND WORD PROBLEMS

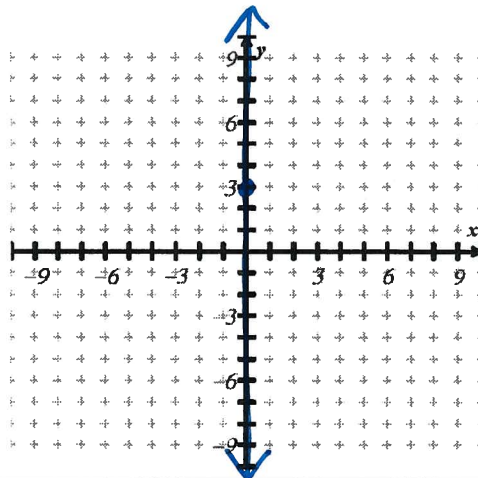
NAME: \_\_\_\_\_ DAY 2 DUE: \_\_\_\_\_

Graph the line containing the point P and having slope m.

1.  $P = (1, 2); m = 3$



2.  $P = (0, 3);$  slope undefined



Find an equation of the line with the given properties. Express your answer using any form.

3. Containing the points  $(1, 3)$  and  $(-1, 2)$ .

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

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

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

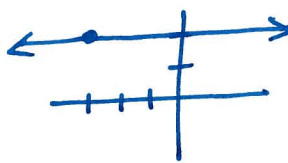
2.  $y = \frac{1}{2}x + \frac{5}{2}$

$$2y = x + 5$$

$$-x + 2y = 5$$

$$x - 2y = -5$$

4. Horizontal; containing the point  $(-3, 2)$ .



$$y = 2$$

5. Perpendicular to the line  $2x + y = 2$ , containing the point  $(-3, 0)$

$$\perp \text{ Line: } \begin{array}{r} 2x + y = 2 \\ -2x \quad -2x \\ \hline y = -2x + 2 \\ m = -2 \end{array}$$

My Line:  $m = \frac{1}{2}$

$$y - 0 = \frac{1}{2}(x + 3)$$

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

$$2y = x + 3$$

$$-x + 2y = 3$$

$$x - 2y = -3$$

6. Going into the final exam, which will count as two-thirds of the final grade, Mike has test scores of 86, 80, 84, and 90. What score does Mike need on the final in order to earn an A, which requires an average of 90?  $x = \text{Final exam score}$

$$\frac{2}{3}(\text{Final Exam}) + \frac{1}{3}(\text{Test Avg}) = 90$$

$$\frac{2}{3}x + \frac{1}{3}\left(\frac{86+80+84+90}{4}\right) = 90$$

$$3. \left[ \frac{2}{3}x + \frac{1}{3}(85) = 90 \right]$$

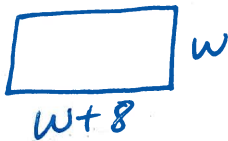
$$2x + 85 = 270$$

$$2x = 185$$

$$x = 92.5\%$$

eight more than

7. The perimeter of a rectangle is 60 feet. Find its length and width if the length is ~~twice~~ <sup>eight more than</sup> its width.



$$P = 2l + 2w$$

$$60 = 2(w+8) + 2w$$

$$60 = 2w + 16 + 2w$$

$$60 = 4w + 16$$

$$\begin{array}{r} 60 = 4w + 16 \\ -16 \quad \quad -16 \\ \hline 44 = 4w \end{array}$$

$$\frac{44}{4} = \frac{4w}{4}$$

$$11 = w$$

$$\begin{array}{l} \text{width} = 11 \text{ ft} \\ \text{length} = 19 \text{ ft} \end{array}$$

8. Trent can deliver his newspapers in 30 minutes. It takes Lois 20 minutes to do the same routes. How long would it take them to deliver the newspapers if they work together?

Trent:  $\frac{1 \text{ route}}{30} = \frac{30 \text{ min}}{30}$

Lois:  $\frac{1 \text{ route}}{20} = \frac{20 \text{ min}}{20}$

$$\frac{1}{30} \text{ route} = 1 \text{ min}$$

$$\frac{1}{20} \text{ route} = 1 \text{ min}$$

$t = \text{time it takes to do the job together}$   
 $\frac{1}{t} = \text{part of the job done in 1 min (together)}$

$$\frac{1}{20} + \frac{1}{30} = \frac{1}{t} \quad \text{LCD} = 60t$$

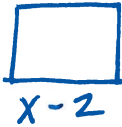
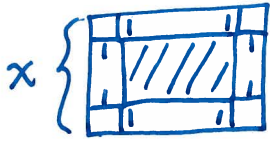
$$\frac{60t}{20} + \frac{60t}{30} = \frac{60t}{t}$$

$$3t + 2t = 60$$

$$5t = 60$$

$$t = 12 \text{ min}$$

9. An open box is to be constructed from a square piece of sheet metal by removing a square piece of sheet metal by removing a square of side 1 foot from each corner and turning up the edges. Of the box is to hold 4 cubic feet, what should be the dimension of the sheet metal?



$x = \text{side length}$

$$V = l \cdot w \cdot h$$

$$4 = (x-2)(x-2)(1)$$

$$4 = x^2 - 2x - 2x + 4$$

$$4 = x^2 - 4x + 4$$

$$\begin{array}{r} -4 \\ \hline 0 = x^2 - 4x \end{array}$$

$$0 = x(x-4)$$

$$x \neq 0 \quad | \quad x-4 = 0$$

$$\boxed{x = 4 \text{ feet}}$$

10. A ball is thrown vertically upward from the top of a building 96 feet tall with an initial velocity of 80 feet per second. The distance,  $s$  (in feet) of the ball from the ground after  $t$  seconds is  $s = 96 + 80t - 16t^2$ .

a) After how many seconds does the ball strike the ground?  $\begin{matrix} \rightarrow s = \text{distance} \\ s = 0 \end{matrix}$

b) After how many seconds will the ball pass the top of the building on the way down?  $s = 96$

$$a) \quad 0 = 96 + 80t - 16t^2$$

$$0 = -16t^2 + 80t + 96$$

$$\begin{array}{r} -16 \\ \hline 0 = t^2 - 5t - 6 \end{array}$$

$$0 = (t-6)(t+1)$$

$$t-6 = 0 \quad | \quad t+1 = 0$$

$$t = 6 \quad | \quad t = -1$$

$$\boxed{t = 6 \text{ sec}}$$

$$b) \quad 96 = -16t^2 + 80t + 96$$

$$\begin{array}{r} -96 \\ \hline 0 = -16t^2 + 80t \end{array}$$

$$\begin{array}{r} -16 \\ \hline 0 = t^2 - 5t \end{array}$$

$$0 = t(t-5)$$

$$t \neq 0 \quad | \quad t-5 = 0$$

$$\boxed{t = 5 \text{ sec}}$$

