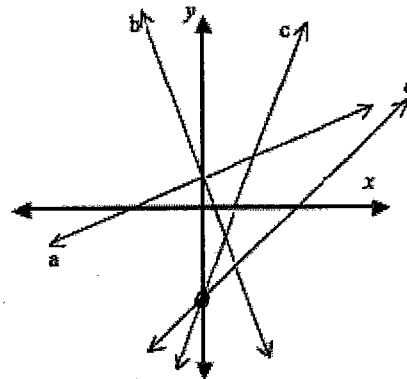1.) For the rule $y = 6x - 4$:

a.  Draw a complete graph.
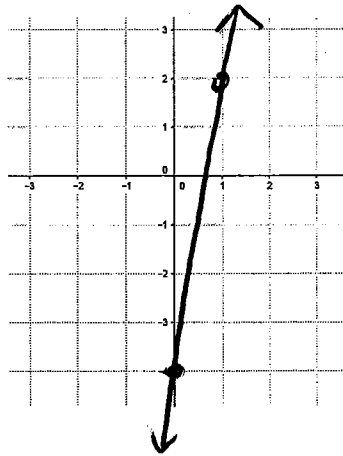


2.) Mariela graphed all of the equations below but forgot which equation went with which graph. Help her match each equation with the appropriate graph. Discuss the answers with your group and write a few sentences explaining how you figured it out.

$y = x - 3$   X    *b*    d

$y = -2x + 1$   X    *c*    b

$y = \frac{1}{2}x + 1$   a    *d*    X

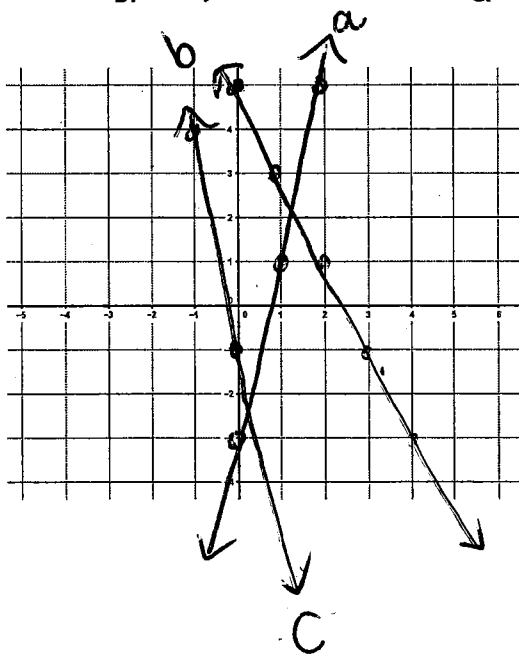$y = 2x - 3$   c    *b*    X



3.) Graph the following rules on one set of axes. Label each line with its equation, the *y*-intercept, and a growth triangle.

a.  $y = 4x - 3$       b.  $y = -2x + 5$       c.  $y = -5x - 1$

**4.)** Molly and Tess like to shop at the mall. Their sister Jessica prefers to play bocce ball instead. Molly has $280 in her bank account and spends $40 every trip. Tess has $170 in her account and spends half as much as Molly during each trip. Jessica has $50 in her account and does not spend any of it.

How many trips it will take for the Molly and Tess to have the same amount of money in their accounts? Show all of your work and explain your method for finding the number of trips.

Molly             Tess          $X = $ # of trips

$$280 - 40x = 170 - 20x$$
$$+40x \qquad\qquad +40x$$

$$280 = 170 + 20x$$
$$-170 \qquad -170$$

$$110 = 20x$$
$$5.5 = x$$

$\boxed{6 \text{ trips}}$

**5.)** Draw a line through the points A(−3, −7) and B(−1, −4) on graph paper. Name three more points on this line.



$\boxed{\begin{array}{l}(1,-1) \\ (3,2) \\ (-5,-10)\end{array}}$
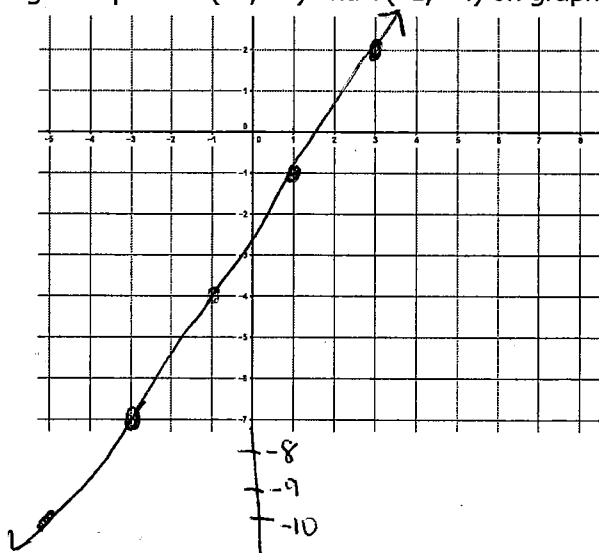
**6.)** Without graphing, find the equation of the line that passes through the points (− 4, 3) and (6, −2). Show all work in a clear and organized manner.

$$m = \frac{3--2}{-4-6} = \frac{5}{-10} = -\frac{1}{2}$$

$$y = -\frac{1}{2}x + b$$
$$3 = -\frac{1}{2}(-4) + b$$
$$3 = 2 + b$$
$$-2 \qquad -2$$
$$1 = b$$

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

**7.)** Complete the table at right. Using what you know about *m* and *b*, fill in the missing entries, and write and equation (rule) for the table.

$$y = 2x + 10$$

| x | y |
|---|---|
| 0 | 10 |
| 1 | 12 |
| 2 | 14 |
| 3 | 16 |
| 4 | 18 |
| 100 | 210 |
| 150 | 310 |
| x | 2x+10 |

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

$b = 10$

$$310 = 2x + 10$$
$$-10 \qquad -10$$
$$300 = 2x$$
$$150 = x$$

$$2(4) + 10$$
$$18$$

$$2(100) + 10$$

8.) Solve the following equations for the indicated variable.

a.     $5(3x + 7) = 20 - 2(x + 1)$ for $x$

$15x + 35 = 20 - 2x - 2$
$+ 2x \qquad\qquad + 2x$
$17x + 35 = 18$
$\quad -35 \quad -35$
$\dfrac{17x}{17} = \dfrac{-17}{17} \qquad \boxed{X = -1}$

b.     $2x - y = 24$ for $y$
$-2x \qquad\quad -2x$

$\dfrac{-y}{-1} = \dfrac{24 - 2x}{-1}$

$\boxed{y = -24 + 2x}$

9.) Complete the following pattern and write the equation for the sequence.

$\overset{-5}{\ }$  4, 9, 14, 19, $\underline{24}$ , $\underline{29}$ , $\underline{34}$
$\quad +5 \ +5$

or  $\boxed{\begin{array}{l} t(n) = -1 + 5n \\ t(n) = 5n - 1 \end{array}}$

10.) Write a rule for each graph below.

a.



$\boxed{y = -3x + 3}$

b.



+4
+1
10
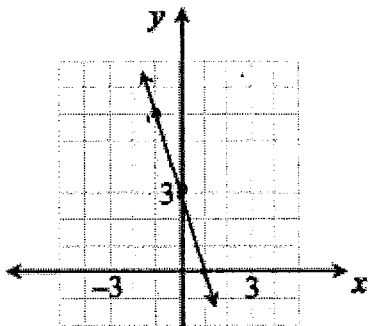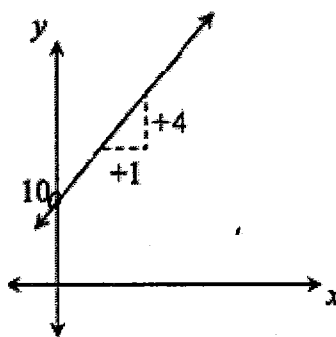
$\boxed{y = 4x + 10}$

11.) Given the following two clues, complete the table and create a rule for the pattern.
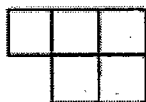


Figure #5

| $x$ | $y$ |
|---|---|
| 0 | 10 |
| 1 | 9 |
| 2 | 8 |
| 3 | 7 |
| 4 | 6 |
| 5 | 5 |
| 6 | 4 |

$m = \dfrac{7 - 5}{3 - 5} = \dfrac{2}{-2} = -1$

$\boxed{y = -1x + 10}$

**12.)** Find the point of intersection for each pair of lines below by using the elimination method. Be sure to show your steps algebraically and check each solution once you are finished.

a. $\begin{cases} 8x - 3y = 38 \\ -2(4x - 5y = 26) \end{cases}$

$4x - 5(-2) = 26$
$4x + 10 = 26$
$\quad -10 \quad -10$
$4x = 16$
$\boxed{x = 4}$

$-8x + 10y = -52$
$8x - 3y = 38$
_____
$7y = -14$
$\boxed{y = -2}$

b. $2(4x + 3y = 3)$       $8x + 6y = 6$
$3(3x - 2y = -19)$  $+$  $9x - 6y = -57$
_____
$17x = -51$
$\boxed{x = -3}$

$4(-3) + 3y = 3$
$-12 + 3y = 3$
$+12 \qquad +12$
$3y = 15$
$\boxed{y = 5}$

**13.)** It costs $20 plus $1.50 per hour to rent a golf cart.

a. Write an equation showing the relationship between the cost of renting a cart ($y$) and the number of hours it was rented ($x$).

$$\boxed{y = 20 + 1.50x}$$

b. Find the cost to rent a cart for 5 hours.

$\boxed{\$27.50}$

$y = 20 + 1.50(5)$
$y = 27.5$

$y = cost$
$x = hours$

c. Find the number of hours you get the cart if you spend $32.

$\boxed{8 \text{ hours}}$

$32 = 20 + 1.50x$
$-20 \quad -20$
$12 = 1.50x$

$8 = x$

**14.)** For each situation below, write the equation of the situation described.

a. A line through the points (12, 3) and (8, 15).

$\boxed{y = -3x + 39}$

$\dfrac{15 - 3}{8 - 12} = \dfrac{12}{-4} = -3$

$3 = -3(12) + b$
$3 = -36 + b$
$+36 \quad +36$
$39 = b$

b. A line with a slope of 4 and a $y$-intercept of 0.4

$\boxed{y = 4x + 0.4}$

c. For her birthday, Louise got $100 from her Grammy, but she has been spending $10.00 each week.

$y = 100 - 10x$

d. A line has intercepts of (6, 0) and (0, 12). ← $y$-intercept  $(x = 0)$

$\dfrac{12 - 0}{0 - 6} = \dfrac{12}{-6} = -2$

$y = -2x + b$

$\boxed{y = -2x + 12}$

15.) Part of a table of values is shown below. Could the equation $y = \frac{9}{10}x - 12$ be the rule for this table? Why or why not? Explain completely.

| x | y |
|-----|--------|
| -27 | -36.3 | ✓
| 0.5 | -11.55 | ✓
| 67 | 48 |
| 200 | 168 |

$\frac{9}{10}(-27) - 12 = -36.3$

$\frac{9}{10}(200) - 12 = 168$

$\frac{9}{10}(0.5) - 12 = -11.55$

$\frac{9}{10}(67) - 12 = 48.3$

No. When you plug in 67, you get 48.3

16.) Below are representations of three different linear functions. For each one, write the equation that corresponds to the given representation.

a. Table:

| x | -3 | -2 | -1 | 0 |
|---|-----|---|-----|---|
| y | $\frac{15}{2}$ | 7 | $\frac{13}{2}$ | 6 |

$m = \frac{7-6}{-2-0} = \frac{1}{-2}$

$y = \frac{-1}{2}x + 6$

b. Situation:
When Josh planted his bean plant, it stood only 2 inches tall. Since then it has grown 3.25 inches every two weeks.

$y = 2 + \frac{3.25}{2}x$

or

$y = 2 + 1.625x$

c. Graph:

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