Name: _____ Date: _____ #35 Finding equations of lines
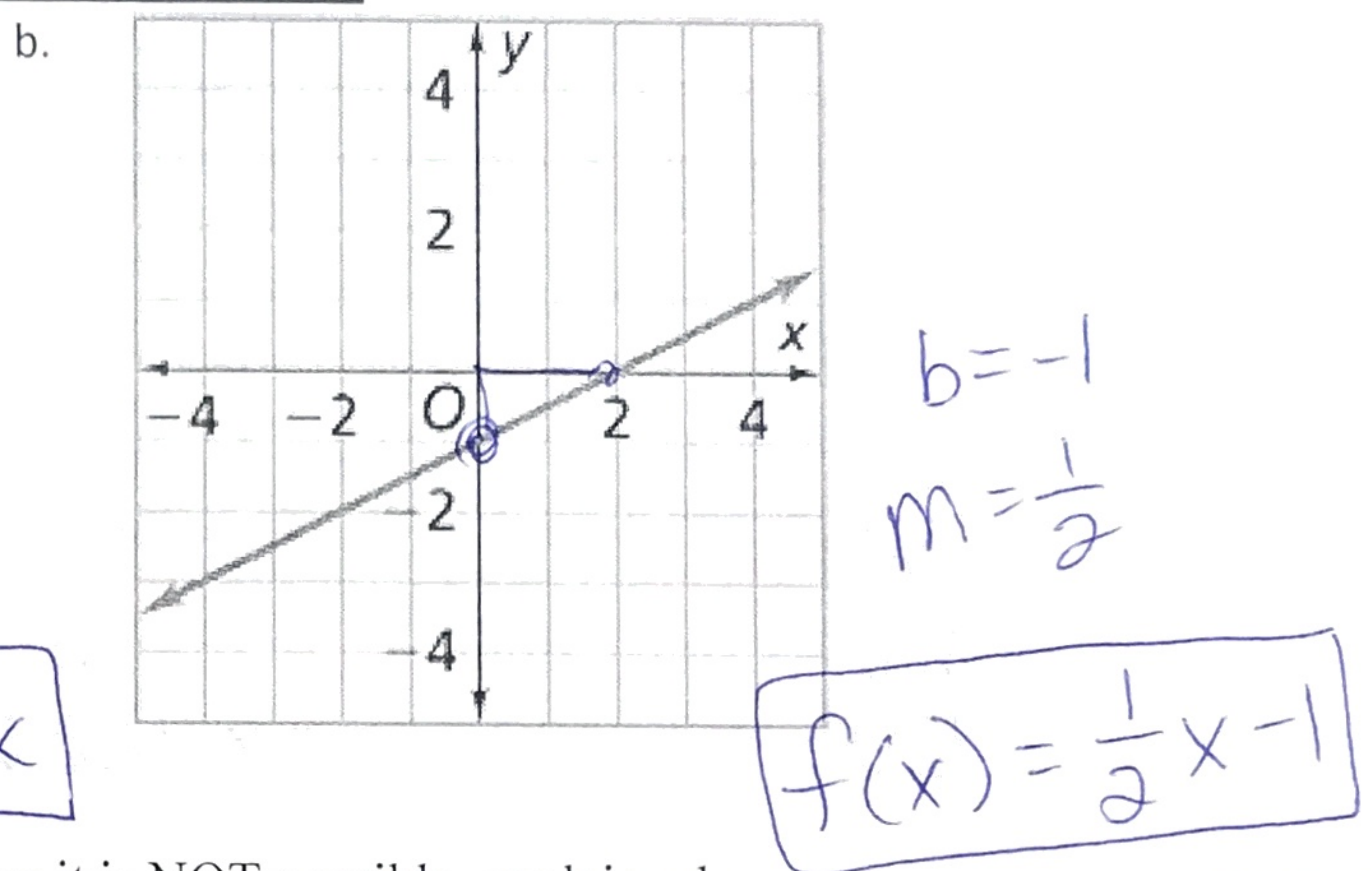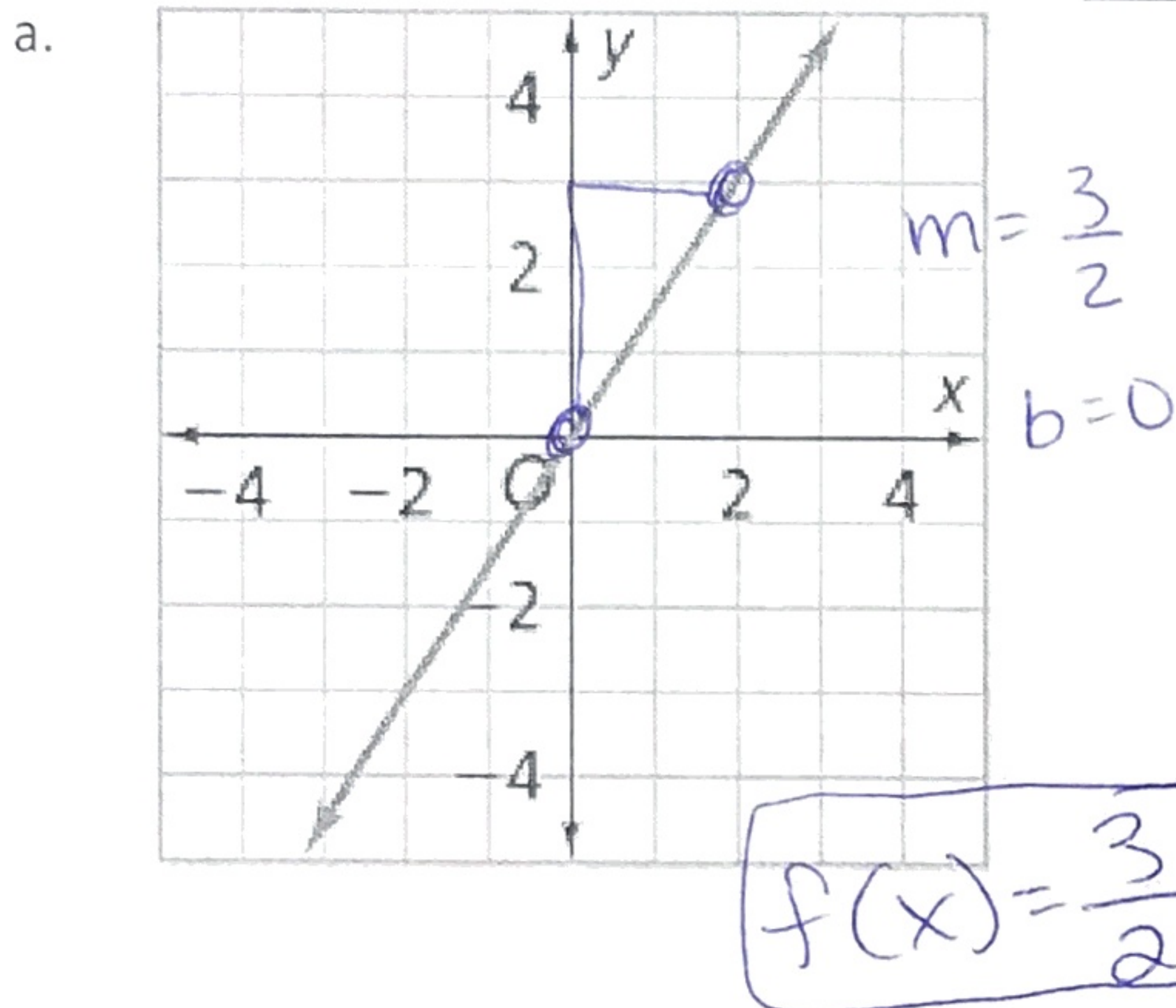
1. Write the equation of each line.
   a. A [vertical line] through the point (7, -2). b. A [horizontal line] through the point (-4, 5).

   $x = 7$

   constant
   function $f(x) = 5$

2. **Write the equation of each graph in function notation.** $f(x) = \ldots$

   a.

   $m = \dfrac{3}{2}$

   $b = 0$

   $\boxed{f(x) = \dfrac{3}{2}x}$

   b.

   $b = -1$

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

   $\boxed{f(x) = \dfrac{1}{2}x - 1}$

3. **Write the equation of each table.** IF you believe it is NOT possible, explain why.

   $\boxed{f(x) = 3x - 22}$

a.

X	f(x)
11	17
5	2
5	12
7	7

Not a function!

b.

X	f(x)
6	-4
5	-7
4	-10
3	-13
2	-16
1	-19
0	-22

-1 -3

$m = \dfrac{-3}{-1}$

$m = 3$

4. Write the equation of each line described in ANY FORM YOU WANT.
   a. Through the points (6, -2) and (5, 1)   b. Through the points (4, 1) and (-2, 4)

   $\dfrac{1 - -2}{5 - 6} = \dfrac{3}{-1} \quad m = -3$

   $\boxed{y - 1 = -3(x - 5)}$

   OR

   $\boxed{y + 2 = -3(x - 6)}$

   OR
   $\dfrac{y + 2 = -3x + 18}{-2 \quad\quad -2}$ $\boxed{y = -3x + 16}$

   $\dfrac{4 - 1}{-2 - 4} = \dfrac{3}{-6} \quad m = -\tfrac{1}{2}$

   $\boxed{y - 1 = -\tfrac{1}{2}(x - 4)}$

   OR

   $\boxed{y - 4 = -\tfrac{1}{2}(x + 2)}$

   OR

   $\begin{array}{c} y - 4 = -\tfrac{1}{2}x - 1 \\ +4 \quad\quad +4 \end{array}$

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

There's a back!

Write an equation for each situation below.

5. Kaya buys a $20 phone card. She is charged $0.15 per minute for calls. Write an equation that gives the value v left on her card after she makes t minutes of calls.

$$V(t) = -.15t + 20$$

6. Use your equation from #5 to find how many minutes Kaya has talked if the value on her card is $5.75.

$$5.75 = -.15t + 20$$
$$\frac{-20 \qquad\qquad -20}{}$$
$$\frac{-14.25}{-.15} = \frac{-.15t}{-.15}$$
$$95 = t$$

$\boxed{95 \text{ minutes}}$

7. A machine sales person earns a monthly salary and also a bonus for every machine they sell. One month the sales person sold 6 machines and made $3500. The next month, he sold 10 machines and made $4500.

a) How much is the bonus the sales person earns for each machine?

$$\text{Slope } \frac{\$}{mac} \quad \frac{4500-3500}{10-6} = \frac{1000}{4} \quad m = 250$$

$\boxed{\$250 \text{ bonus per machine}}$

b) How much is the monthly salary?

y int.

$$y - 4500 = 250(x - 10)$$
$$y - 4500 = 250x - 2500$$
$$\frac{+4500 \qquad\qquad +4500}{y = 250x + 2000}$$

$\boxed{\$2000 \text{ base salary}}$

c) Write the equation that models the situation.

$$y - 4500 = 250(x-10) \quad \underset{\equiv}{OR} \quad y - 3500 = 250(x-6) \quad \underset{\equiv}{OR} \quad y = 250x + 2000$$

d) What would the monthly income be if they sold 20 machines.

$$y = 250(20) + 2000$$
$$y = 5000 + 2000 \qquad y = 7000 \qquad \boxed{\$7000}$$

8. The scatter plot below represents the average number of beach visitors depending on the temperature. The line of best fit goes through the points (88, 375) and (82, 75). What is the equation of the line of best fit?

$$m = \frac{375-75}{88-82} = \frac{300}{6} \quad \boxed{m = 50}$$

$$y - 75 = 50(x-82) \underset{\equiv}{OR} \quad y - 375 = 50(x-88) \underset{\equiv}{OR}$$

$$y - 375 = 50x - 4400$$
$$\frac{+375 \qquad\qquad +375}{} \qquad y = 50x - 4025$$

Beach Visitors

Average Daily Temperature (°F)

9. What does the y intercept of your equation represent and explain whether or not it makes sense in this situation?

It represents # of visitors if the temp is 0°F. It does NOT make sense b/c there can not be negative people.