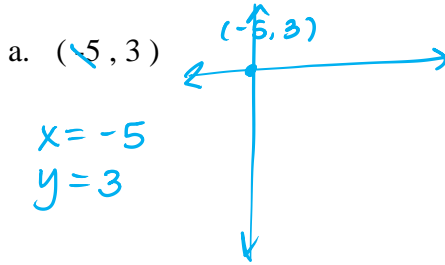


Day 7 Homework

Vertical and Horizontal Lines, Linear Applications

1. What are the equations of the horizontal and vertical lines that pass through the points below?



b. $(2, 11)$

$x = 2$
 $y = 11$

c. $(10, 0)$

$x = 10$
 $y = 0$
↑
x-axis!!

2. For your birthday, your parents have decided to buy tickets for you and up to five friends (so 6 total tickets) to go to a concert to see your favorite band. The tickets cost \$72 each plus a flat fee for the service charge. If your parents were to buy 3 tickets, the total charge would be \$239.



$(3, 239)$

- a. Define your variables.

$x = \# \text{ of tickets}$
 $y = \text{total cost}$

- b. Write an equation that models the total cost of the tickets to the number of tickets purchased. Which form makes the most sense? **Point-slope**

$$y - 239 = 72(x - 3)$$

- c. What does the slope represent?

the cost per ticket

- d. What is the maximum amount your parents are willing to spend? What does this represent on the graph? **6 tickets upper bound on range (& domain)**

$$y - 239 = 72(6 - 3)$$

$$y - 239 = 216$$

$$y = \$455$$

- e. If your parents decided to let you invite more of your friends and spent a total of \$1247, how many tickets did they purchase?

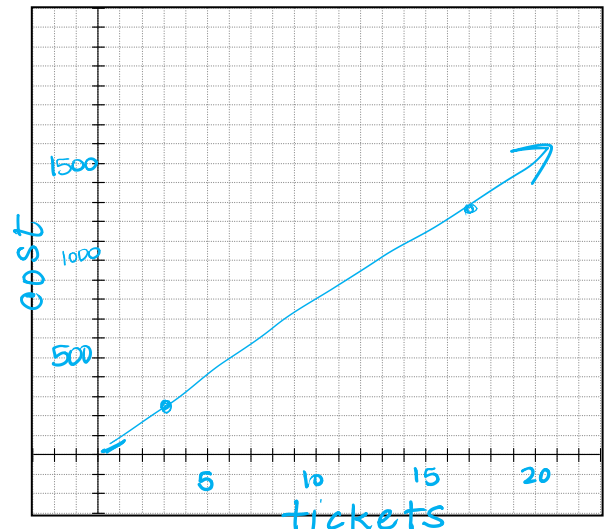
$$1247 - 239 = 72(x - 3)$$

$$1008 = 72x - 216$$

$$1224 = 72x$$

17 tickets

- f. Graph your function the coordinate plane. Label your x- and y-axis in relation to your domain and range.



3. The Hinsdale Central Hockey Team is off to a strong start! However, it will take 20 points to make it to the playoffs. For each win, the team tallies 2 points and each tie gets HC 1 point.

- a. Define your variables and write an equation to model the total numbers of wins and ties HC needs to make the playoffs. Which form makes the most sense here? *Standard*

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

$y = \# \text{ of ties}$

$$2x + y = 20$$

- b. If HC wins 7 games and ties 4, will they make the playoffs? How do you know?

$$2(7) + 4$$

$$14 + 4 < 20 \Rightarrow \text{no}$$

- c. What does the y-intercept represent? What about the x-intercept?

$$2(0) + y = 20$$

$$y = 20$$

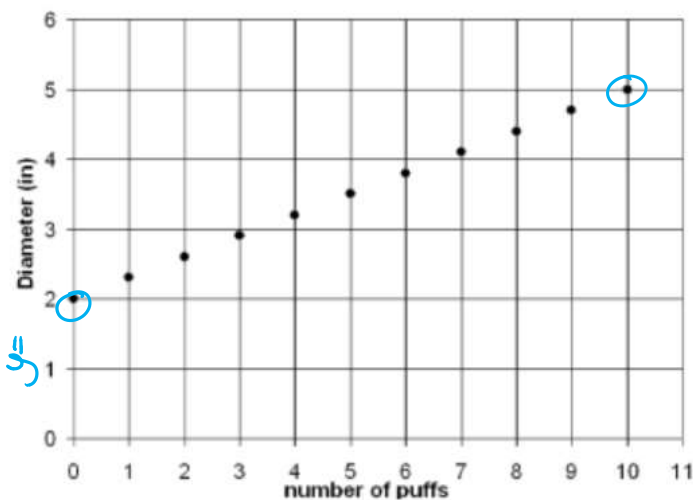
they need 20 ties to qualify

$$2x + (0) = 20$$

$$x = 10$$

they need 10 wins to qualify

4. The graph below represents the number of puffs of air it takes to blow up a balloon.



- a. Define your variables and write an equation to model the graph. Which model makes the most sense? *Slope-intercept*

$$y = \frac{3}{10}x + 2$$

- b. What does the slope represent?

the increase in diameter per puff of air

- c. How many puffs of air would it take to inflate an 8-inch (in diameter) balloon?

$$8 = \frac{3}{10}x + 2$$

$$6 = \frac{3}{10}x$$

$$x = 20 \text{ puffs of air}$$