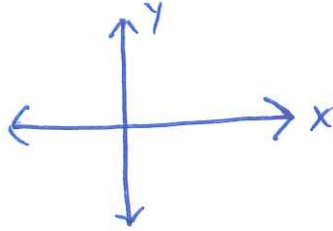


NAME _____

Key

What's Linear?

1. Draw a set of graphing axes below and label the x and y-axis.



2. What is the difference between an input (independent variable) and an output (dependent variable)?

Input: Located on the horizontal axis usually associated with the x-value.
Output: Located on the vertical axis it depends on the input. usually associated with the y-value.

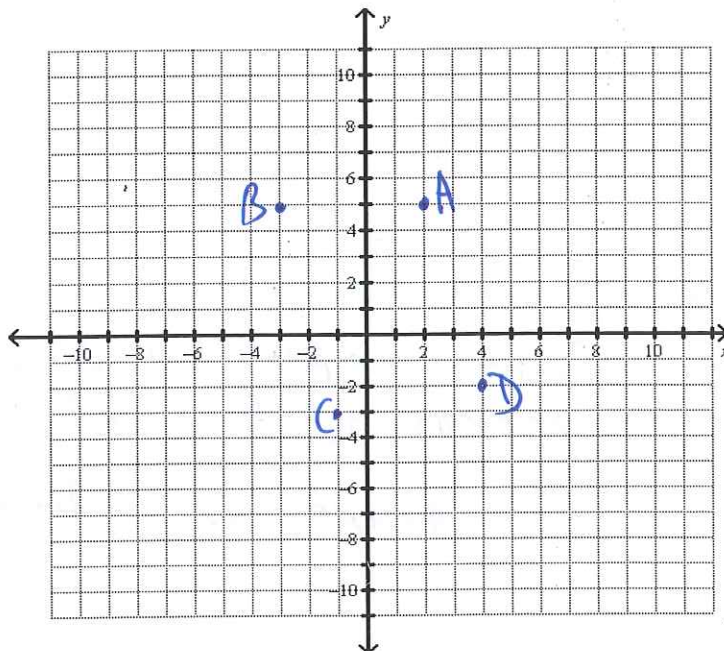
3. Plot each of the following on the grid below. Be sure to label each point with the letter.

A(2, 5)

B(-3, 5)

C(-1, -3)

D(4, -2)



4. The soccer boosters make \$5 on each T-shirt they sell.

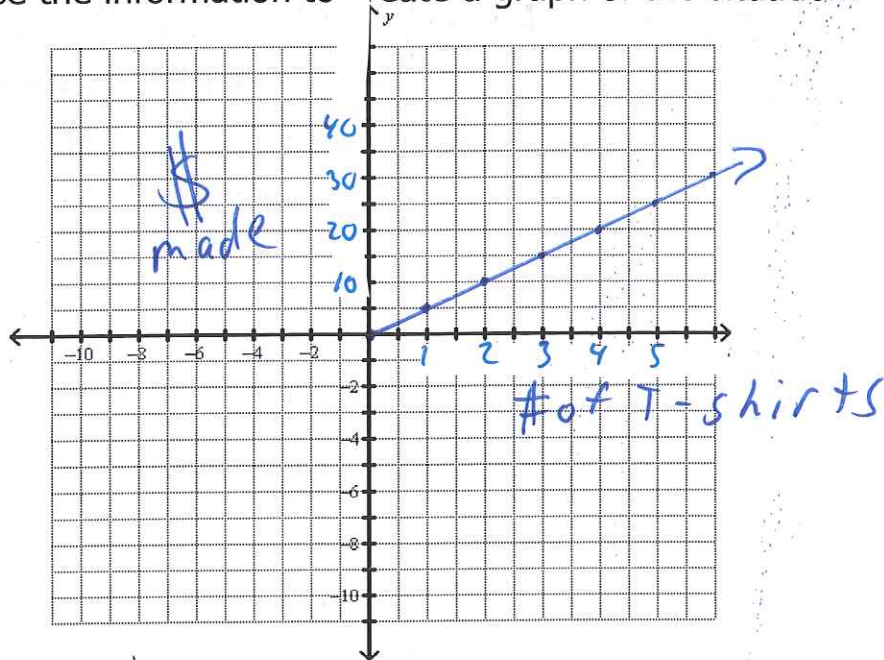
a. Determine the input and the output.

Input: # of T-shirts sold Output: \$ Made

b. Use the information to fill in the table below...

Input:	0	1	2	3	4
Output:	0	5	10	15	20

c. Use the information to create a graph of the situation.



d. Is the situation linear? How can you tell by looking at the table?
How can you tell by looking at the graph?

Yes. - Both input and output are increasing by the same amount
- The graph is a line.

e. Explain what does the point (6, 30) mean in the context of the t-shirt sale?
Boosters sold 6 shirts and made \$30.

5. Determine whether each situation is linear or not linear. If it is linear write an equation.

- a. A van averaged a steady 60 miles per hour on the interstate highway.

Linear

$$y = 60x$$

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

$$y = \text{Total Dist. (mi)}$$

- b. The fish population is currently 25. The population triples every year.

Non-Linear

$$y = 25 \cdot 3^x$$

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

$$y = \text{Total \# of fish}$$

- c. Josie has \$200 in the bank. She deposits \$40 each month.

Linear

$$y = 40x + 200$$

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

$$y = \text{Total \$ in bank}$$

- d. Kayla is selling pizza kits for a fundraiser. Each pizza kit costs \$16.

Linear

$$y = 16x$$

$$x = \# \text{ of pizza kits}$$

$$y = \text{Total \$ for fundraiser}$$

- e. Bryce is entering a walk-a-thon. He proposes a pledge plan where he asks for a \$6 donation plus \$1.50 for each mile he walks.

Linear

$$y = 1.5x + 6$$

$$x = \# \text{ miles walked}$$

- f. Lazer Lights, a lazer tag facility, charges \$10 a person, \$18 for a couple, \$25 for a group of three, and \$30 for a family of four or more.

Non-Linear

6. Use the equations below to answer each of the following questions...

$$y = 3x + 6$$

$$y = 2x + 10$$

- a. If graphed, which equation would produce the steepest line? How can you tell?

The 1st one because $m > 2$

- b. If graphed, which equation would produce a higher y-intercept? How can you tell?

The 2nd one because $b > 6$

- c. Write a situation that could be represented by each equation.

$$y = 3x + 6$$

Sam has 6 pencils. He gets 3 every week.

$$y = 2x + 10$$

Lori has \$10. She gets \$2 a month from her parents.

6. When looking at a table, how can you determine where the y-intercept is?

The y-intercept is when the x-value is zero.

7. Lisa's proposes the following pledge plan. She asks for a \$3 donation and \$2 for every mile she walks. Write a linear equation to represent this situation.

$$x = \# \text{ of miles walked}$$
$$y = \text{total } \$ \text{ made}$$
$$y = 2x + 3$$

Use this equation to answer each of the following questions...

- a. How much money will Lisa raise if she walks 6 miles?

$$y = 2(6) + 3$$
$$y = 12 + 3$$
$$y = \$15$$

- b. How much money will Lisa raise if she walks 4 miles?

$$y = 2(4) + 3$$
$$y = 8 + 3$$
$$y = \$11$$

- c. How many miles will Lisa have to walk to earn \$13?

$$13 = 2x + 3$$
$$\begin{array}{r} -3 \\ 10 = 2x \end{array}$$
$$x = 5 \text{ miles}$$

- d. How many miles will Lisa have to walk to earn \$21?

$$21 = 2x + 3$$
$$\begin{array}{r} -3 \\ 18 = 2x \end{array}$$
$$x = 9 \text{ miles}$$