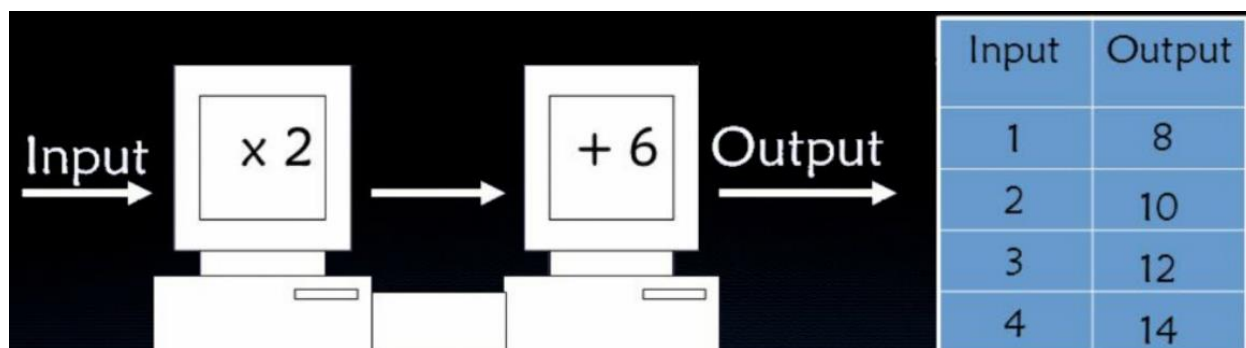


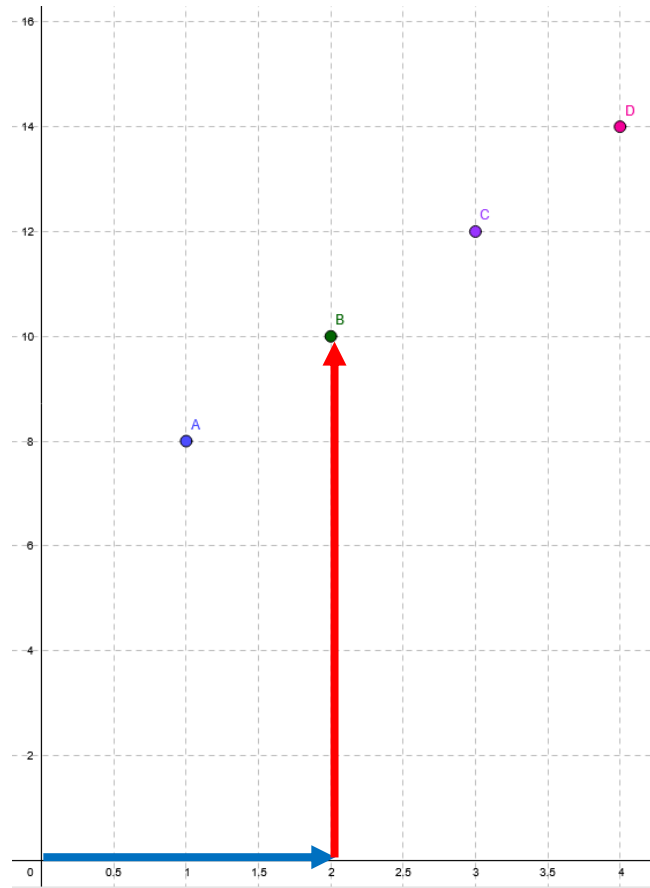
STUDY GUIDE: COORDINATES & GRAPHING

Graphing is the visual representation of the relationship between variable, typically an input and output value. Mathematical *rules* or *relationships* show how an input is changed by some operations to create an output. Remember, we can think of this as a machine. The machine below follows the rule of $y = (x \times 2) + 6$ OR $y = 2x + 6$ (remember, a variable next to a number, called the *coefficient*, is multiplying).



What does this mean? We can organize our data in an **input/output table**. You *choose* your input. If I chose 1, my output is 8, because 1 times 2 equals 2, plus 6 equals 8; If I chose 2, my output is 10, because 2 times 2 equals 4, plus 6 equals 10, etc. etc. We can create a **coordinate** or **ordered pair** representing each input-output relationship in this format: $(input, output)$. For example, our first coordinate is $(1, 8)$, then $(2, 10)$, $(3, 12)$, and finally $(4, 14)$. You **MUST** write all coordinates with parenthesis and commas, otherwise it is considered incorrect.

We can then *graph* this data upon a **coordinate plane**. Coordinate planes are made of two **axes** (singular: **axis**), a **horizontal axis** running left to right, and a vertical **axis** running up and down. It's important to remember that each coordinate's input and output can be thought as the following: **input** is **horizontal distance**, and **output** is **vertical distance**. See the example below to see how we can plot the rule and input/output table that you see above.



The point we're plotting for this example is point B. To plot point B(2, 10), I first travel to 2 on the horizontal axis, this is a horizontal distance of 2. Then, we travel up to 10, this is the vertical distance. The arrows drawn in the example show these steps in order. Try to use this example to plot the rest of the points! This exact same idea can be used to *find* coordinate points that are given to us.

Your Turn

1. Write a possible rule for the table below. This one is started for you.

a	b
1	3
2	6
3	9

$$b = \underline{\hspace{2cm}}$$

2. Write a possible rule for the table below. This one is started for you.

t	r
1	7
3	9
5	11

$$r = \underline{\hspace{2cm}}$$

3. Write a possible rule for the table below.

x	y
0	0
4	16
8	32

$$\underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

4. Write a possible rule for the table below. This one has more than one operation.

x	y
0	5
1	8
2	11
3	14

$$\underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

NAME: _____ DATE: _____ SECTION:5__

5. Piedmont earns \$5 for every chore he completes at home, and for every \$5 he has, he can buy two candy bars. The complete relationship is shown below.

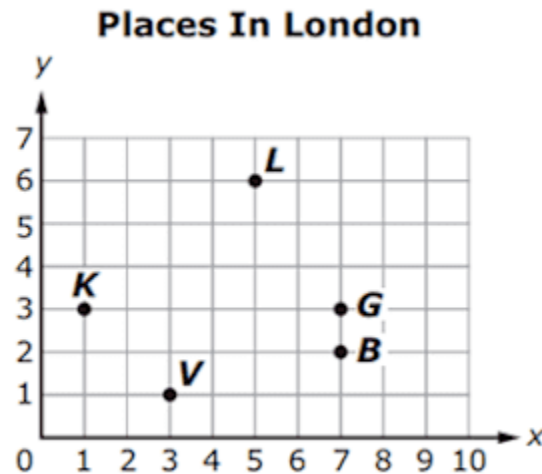
Chores	1	2	3	4	5	6
Dollars	\$5	\$10	\$15		\$25	
Bars	2	4		8		

- Complete the table by using the table by using the information above.
- How many dollars will Piedmont earn if he works 15 hours? How many candy bars can he afford with this?
- One week, Piedmont was able to afford 22 candy bars. How many chores did he complete? How much did this cost?
- Write a rule for the relationship between chores and dollars, then chores and bars. Chores is c, Dollars is d, and Bars is b. The first relationship has been started for you.

$$d = \underline{\hspace{2cm}}$$

$$\underline{\hspace{1cm}} = \underline{\hspace{2cm}}$$

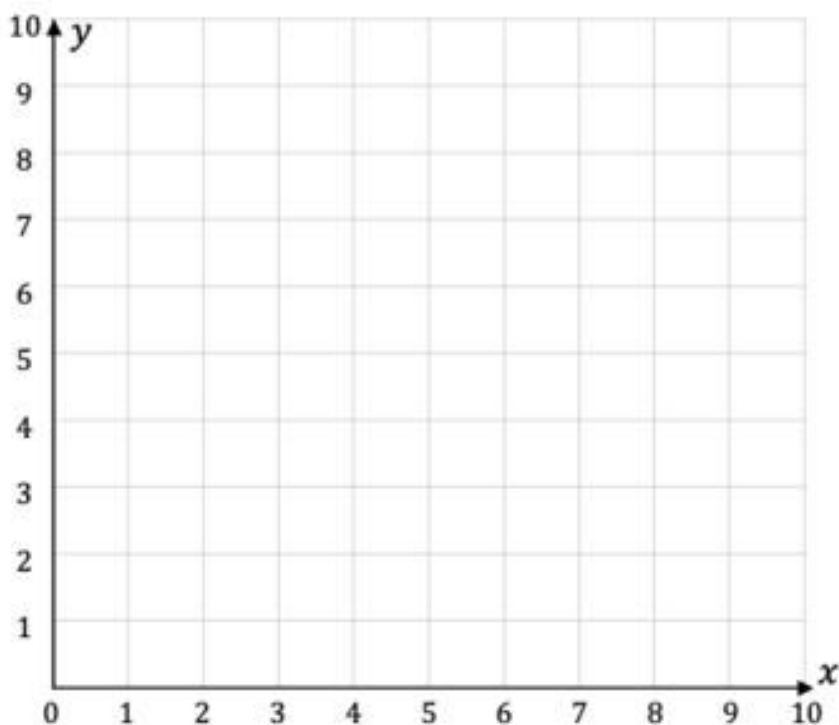
Use the pre-plotted coordinate plane below to answer the questions 6 through 8.



6. Write the coordinate points with proper notation for points K, V and L. Clarify which is which by writing like this example for point B: $B(7,2)$.

7. What is the distance between point K and point G? Remember, don't rely on counting ticks: find the distance in the component (horizontal or vertical) of the coordinate they don't have the same number for.

8. To go from point V to point B, I would move 4 ticks to the right, then 1 tick up. Following this same idea, describe how you would...
 - a. Go from point G to point L.
 - b. Go from point K to point V.
 - c. Go from point L to point K.



Use the blank coordinate plane below to answer questions 9 and 10.

9. Create, then plot the coordinates from the input/output table on question 1. Name the points A, B, and C.
10. Create a table and coordinates for the following rule: $y = \frac{1}{2}x + 2$. Provide **at least** 3 coordinate points. Do NOT name these points, and connect them with line segments.