Direct Variation Exploration Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

**Congrats! You’ve just been hired at FedEx, loading the delivery trucks. Your first task is to stack boxes that are each 12 inches high.**

****1) Complete the table and make a graph of the data points.



|  |  |
| --- | --- |
| **Number of Boxes****(x)** | **Height of the Stack****(y)** |
| 0 |  |
| 1 |  |
| 2 |  |
| 3 |  |
| 4 |  |
| 5 |  |
| 6 |  |

2) What pattern do you notice about the data in the table?

3) What are TWO things you notice about your graph?

 a. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

 b. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4) a. Does the **number of boxes** (the **x** value) ALWAYS stay the same? Yes No

 b. Does the **height of the stack** (the **y** value) ALWAYS stay the same? Yes No

 c. The only value that ALWAYS stays the same is the **height of each box**, which is \_\_\_\_\_\_\_\_\_ inches.

 This is the **CONSTANT**, or the **k** value.

5) A direct variation EQUATION is written as **y = kx**, where **k** is the **constant**. Since your constant is **12**, your

 equation is y = \_\_\_\_\_\_\_x

6) a. What does the **y** in your equation represent? (Hint: look back at your table and graph!)

 b. What does the **x** in your equation represent? (Hint: look back at your table and graph!)

7) The height of the stack **depends** on the number of boxes you have! You can also see that as the number of

 boxes **increases**, the height of the stack also \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_. This is always true with a **direct variation**!

8) **Great job so far! Now, your boss gives you this graph. Use the graph to fill in the table and write the**

 **equation!**

 **Here’s your graph: Fill in the data table: Find the equation:**

|  |  |
| --- | --- |
| **Number of Boxes****(x)** | **Height of the Stack****(y)** |
| 0 |  |
| 1 |  |
| 2 |  |
|  | 30 |
| 4 |  |
|  | 50 |
| 6 |  |



 What’s the height of

 1 box?

 The height of 1 box

 is your constant, k.

 So, what is your

 equation?

**y = \_\_\_\_\_\_x**



9) **This time, the boss lady gives you the equation. If each of these boxes is 5 inches tall,**

 **fill in the table and graph your data! Pay close attention to the numbers in the table!!**

  **Here’s your equation: Fill in your data table: Complete your graph:**

|  |  |
| --- | --- |
| **Number of Boxes****(x)** | **Height of the Stack****(y)** |
| 0 |  |
| **1** | **5** |
| 4 |  |
| 5 |  |
| 8 |  |
|  | 50 |



 **y = 5x**

 What’s the height of 1 box?

10) What are 3 ways to show a direct variation?

 a.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ b.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ c.\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_