**Name:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Date:\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ Per.\_\_\_\_\_\_\_**

**U8 CW #3** *More About Linear Functions*

1. Paradise Valley Orchards has the banner shown hanging from their store window. Sally is trying to determine how much she will spend depending on how many bushels of apples she purchases.

1 bushel of apples for only $15



* 1. Write an equation that gives the amount Sally will spend *y* depending on how many bushels of apples *x* she purchases.
	2. Complete the graph and table below for this relationship.

|  |  |
| --- | --- |
| Number of Bushels*x* | Amount Spent (dollars)*y* |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

We know from the previous lessons, that the relationship between number of bushels purchased and amount spent is an example of a function. The equation above gives us a rule for how to determine the amount of money spent based on the number of bushels purchased.

In a functional relationship represented with an equation, the **independent variable** represents the input or *x-*value of the function and the **dependent variable** represents the output or *y-*value of the function. In a function, the **dependent variable** is determined by or depends on the **independent variable**. In our example above the **independent variable** is the number of bushels purchased and the **dependent variable**is the amount of money spent. The amount of money one spends **depends** on the number of bushels one purchases. Another way to say this is that the amount of money spent is a function of the number of bushels purchased.

If we think of our input machine, we are inputing the number of bushels purchased and the machine takes that number and multiplies it by 15 to give us our output which is the amount of money we will spend.

1. Miguel is taking a road trip and is driving at a constant speed of 65 mph. He is trying to determine how many miles he can drive based on how many hours he drives.
	1. Identify the **independent variable** in this situation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Identify the **dependent variable** in this situation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Complete the graph and table below for this relationship. Make sure you label the columns and axes in your table and graph.

|  |  |
| --- | --- |
| *x* | *y* |
|  |  |
|  |  |
|  |  |
|  |  |
|  |  |

* 1. Write an equation that represents this situation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. In this situation \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ is a function of \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
1. The average cost of a movie ticket has steadily increased over time.
	1. Identify the dependent and independent variables in this functional relationship.
	2. Sketch a possible graph of this situation using the information from the context and your anwer in a. Label your graph with variables.



1. Chris is also reading his history text book for an upcoming test and can also read 5 pages in 10 minutes. However, Chris is interested in determining how long it will take him to read based on how many pages he has to read.
	1. Identify the **independent variable** in this situation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	2. Identify the **dependent variable** in this situation: \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_
	3. Create a representation (table, graph, equation) of this function in the space below.

**Directions:** Each of the following situations represents a functional relationship between two quantities. Determine the dependent variable and the independent variable. The first one has been done for you.

1. In warm climates, the average amount of electricity used rises as the daily average temperature increases and falls as the daily average temperature decreases.

Independent (x): amount of electricity Dependent (y): daily average temperature

1. The number of calories you burn increases as the number of minutes that you walk increases.
2. The air pressure inside a tire increases with the temperature.
3. As the amount of rain decreases, so does the water level of the river.
4. The total number of jars of pickles that a factory can produce depends on the number of pickles they receive.
5. The weight of the box increases as the number of books placed inside the box increases.

|  |
| --- |
| A **function** is a relation in which each member of the domain (input value) is paired with exactly one member of the range (output value). You can organize the input, rule, and output of a function using a function table. |