**Linear Graphs** – will have a **straight line**

When the change in the **input** **(x)** is constant and the change in the **output (y)** is ***constant***.

* + We see this in a **table** where the x and y values go up in a constant manner
	+ We see this in a **graph** that has a straight line

**Table with Constant Values Graph with a Straight Line**



 **Discrete Data Points vs. Continuous Data**

**Discrete Data Points**

* Only a fixed (finite) # of values is possible and the values can’t be subdivided into parts.
* DO NOT connect the points on a graph

Examples:

* # of books sold – can’t have parts of books
* # of people in class – can’t have parts of people

**Continuous Data**

* The values can be ANY value within the X and Y range on the graph
* DO connect the points on a graph

Examples:

* Height of students – can be a range of values divided into points (1.82 m, 2.07 m, etc…)
* Time to complete classwork – can be broken down into parts of an hour…

**Creating a Table of Values**

* The **input (x)** information is plotted on the horizontal axis. (independent variable)
* The **output (y)** information is plotted on the vertical axis. (dependent variable)
* Choose a variable for each axis (not necessarily x and y) 🡪 relate this to what the label is on each axis.

**Using a Graph to Create Table of Values**

Example 1

**n** represents the number of topping.

(independent variable)

**c** represents the cost ($)

(dependent variable)

1. What is the cost of Brad’s Burgers with no toppings? $4
2. How much is a Brad’s Burgers with 4 toppings? $8
3. How much for a burger with 7 topping? $11
4. How many topping for $7? 3
5. Make a table of values for zero to five toppings

|  |  |
| --- | --- |
| **n** | **C** |
| 0 | 4 |
| 1 | 5 |
| 2 | 6 |
| 3 | 7 |
| 4 | 8 |
| 5 | 9 |

|  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- |
| **n** | 0 | 1 | 2 | 3 | 4 | 5 |
| C | 4 | 5 | 6 | 7 | 8 | 9 |

Example 2

1. Make table of values

|  |  |
| --- | --- |
| **t** | **P** |
| 1 | 10 |
| 2 | 20 |
| 3 | 30 |
| 4 | 40 |

1. Describe the pattern.

**Each hour you multiply by $10**

1. What is Nicole’s hourly rate of pay?

 $\frac{\$10}{1 hour}$

1. Is it possible to have points between the ones on the graph?

 **Yes, Nicole could work 2.5 hours (2 hours 30 minutes)**

Example 3

This is called a Coordinate

(1,2)

(2,4)

(3,6)



1. Make table of values

|  |  |
| --- | --- |
| **n** | **C** |
| 1 | 2 |
| 2 | 4 |
| 3 | 6 |
| 4 | 8 |

1. Describe the pattern

**each notebook is $2**

1. What is the cost per notebook?

 $\frac{\$2}{1 notebook}$

1. Is it possible to have points between the ones on the graph?

**No, you cannot buy half or part of a notebook**.

**Using an Equation to Create Table of Values**

Example 1

Consider the relation: *y* is related to 20 – 3*x*

When x = 1 (input), what is y = ? (output)

* **Substitute** 1 into 20 – 3*x*

20 – 3(1)

= 20 – 3

y= **17**

When x = 2 (input), what is y = ? (output)

 y = **14**

When x = 3 (input), what is y = ? (output)

 y = **11**

**Example 2**

Kelowna Pizza charges $11 for a medium cheese pizza, plus $2 for each topping.

1. Write an equation that relates cost (*c*) to the number of toppings (*n*).

**Hint:** *c* = 11 + 2n



b) Use the equation to create a table of values.



1. What is the cost of the pizza with 5 toppings?



1. How many toppings are on a pizza that costs $27?

