**Lesson 5.1 Understanding Linear Functions**

***Linear Functions-*** every x-value is paired with exactly on y-value. Therefore, the graph is a non-vertical straight line.

***Linear Equation-***is any equation that can be written in the standard form, expressed below:

Any ordered pair that makes the linear equation true is a ***solution of a linear equation in two variables.*** The graph of a linear equation represents all the solutions of the equation.

Once you concluded the equation is in standard form, solve the equation for the *y* variable to get the equation in the form of .

**Example 1:**

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

A = 5, B = 1, and C = 10

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

**Example 2:**

A = -4, B = 1, and C = 11

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

**Example 3:**

A = , B = , and C =

**Example 4:**

Sal opens a new video store and pays the film studios $2.00 for each DVD he buys from them. The amount Sal pays is given by *f(x)*=2(x), where *x* is the number of DVDs purchased.

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

Domain:

Range:

**Example 4:**

Else rents a booth in her grandfather’s mall to open an ice cream stand. She pays $1.00 to her grandfather for each hour of operation. The amount Elsa pays each hour is given by f(x)= x, where x is the number of hours her booth is open.

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

Domain:

Range:

**5.2 Using Intercepts**

**Y-Intercepts** of a graph is the y-coordinate of the point where the graph intersects the y-axis. The x-coordinate of this point is always 0.

**X-Intercepts** of a graph is the x- coordinate of this point where the graph intersects the x-axis. The y-coordinate of this point is always 0.

**Example 1:**

3(x) – 2(y) = 6

To find the x-intercept, replace y with 0 To find the y-intercept, replace x with 0 and solve for x. and solve for y.

**Example 2:**

-5(x) + 6(y) = 60

x-intercept y-intercept

**Example 3:**

The Sandia Peak Tramway in Albuquerque, New Mexico, travels a distance of about 4500 meters to the top of Sandia Peak. Its speed is 300 meters per minute. The function gives the tram’s distance in meters from the top of the peak after *x* minutes.

**x-intercept y-intercept**

Homework: Workbook Pages 205-207 (1, 4, 6, 13-16) & Workbook Page 216 (3-10)