Name: _____ Period: _____ Date: _____

Standard Form Guided Notes

Standard Form

The standard form of a linear equation is given by:

$$ax + by = c$$

Where:

- $a, b, c \in \mathbf{R}$
- a and b are not both zero

Intercepts in the linear equation

We can find the x-intercept and y-intercept of the graph of a linear equation by putting $x = 0$ or $y = 0$.(depending on the intercept to be found)

- For finding **x-intercept**, put $y = 0$ in the standard form.
- For finding **y-intercept**, put $x = 0$ in the standard form.

$$ax + by = c$$

$$ax + b(0) = c \Rightarrow x = \frac{c}{a}$$

$$a(0) + by = c \Rightarrow y = \frac{c}{b}$$

Problem 1: What are the x- and y-intercepts of the graph $4x - 12y = 24$?

- For finding **x-intercept**, put $y = 0$ in the standard form.

$$4x - 12(0) = 24 \Rightarrow x = \frac{24}{4}$$

$$\Rightarrow x = 6$$

- For finding **y-intercept**, put $x = 0$ in the standard form.

$$4(0) - 12y = 24 \Rightarrow y = \frac{24}{12}$$

$$\Rightarrow y = 2$$

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Graphing Linear Equations in Standard Form

If we are given linear equations in standard form, we can graph it by finding the x-intercept and y-intercept.

- **(0,y-intercept)** is the point on the y-axis
- **(x-intercept, 0)** is the point on the x-axis

Connect these two points to graph the linear equation.

Problem 2: Graph the equation $2x - y = 2$.

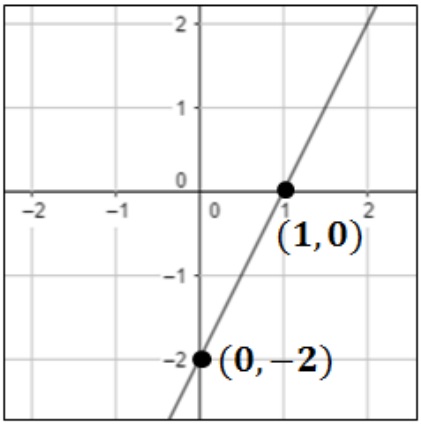
- For finding **x-intercept**, put $y = 0$ in the standard form.

$2x - (0) = 2 \Rightarrow x = \frac{2}{2} \Rightarrow x = 1 \Rightarrow (1, 0)$

- For finding **y-intercept**, put $x = 0$ in the standard form.

$2(0) - y = 2 \Rightarrow y = -2 \Rightarrow (0, -2)$

Graph:



$2x - y = 2$