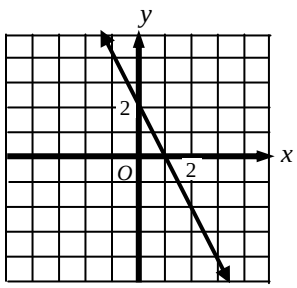
Name _____ Date _____

Reporting Category 3 Notes (A.5.C.)

Linear Function Equations

Standard Form	**Ax + By = C** Example: 2x + y = 2	In standard form the x and the y are on the same side. A, B, and C are all integers.
Slope-intercept Form	**Y = mx + b** Example: Y = -2x + 2	Slope-intercept forms means the equation is solved for y (meaning y is by itself). M is the slope; B is the y-intercept
Point-Slope Form	**$y - y_1 = m(x - x_1)$** Example: Y + 2 = -2(x – 2)	Point-slope form give the point (x_1, y_1) and the slope, m.

There are many ways to represent a linear function including a table, graph, ordered pairs, verbal description, or an equation like the ones described above.

Graph		A linear equation is any equation that makes a straight line.
Table	<table><tr><td>x</td><td>y</td></tr><tr><td>−3</td><td>−2</td></tr><tr><td>−1</td><td>2</td></tr><tr><td>1</td><td>6</td></tr><tr><td>3</td><td>10</td></tr></table>	A table shows the x and y values in a list form.
Ordered Pairs	{(−3, −2), (−1, 2), (1, 6), (3, 10)}	Ordered pairs are listed in pairs as (x, y).
Verbal Description	For every dollar that Jim raised for the fundraiser, Sara raised 4 dollars.	A verbal description is written usually as an example of a real-life scenario.

Name _____ Date _____

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Graphing Linear Functions

To graph a linear function, the equation first needs to be in the form of y = mx + b (slope-intercept form). To transform an equation into slope intercept form, follow the steps below.

Solve for y in the following equation: 4x – 2y = 12. (Solving for y means to get y by itself).

$$4x - 2y = 8$$
$$-4x \qquad -4x$$
$$-2y = -4x + 8$$
$$-2 \quad -2 \quad -2$$
$$y = 2x - 4$$

Step 1: We start by moving the "x" term to the other side of the equation by either adding or subtracting (opposite operation)

Step 2: Bring down what's left on each side. Do not combine!!

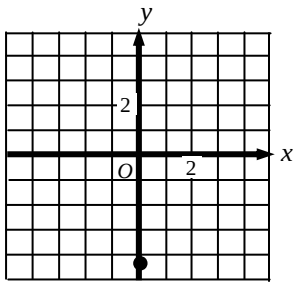
Step 3: Divide EVERYTHING by the number in front of y

The equation solved for y is y = 2x – 6

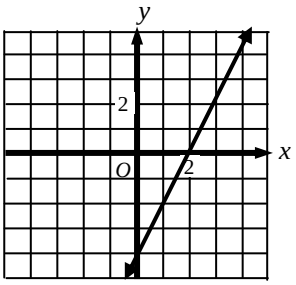
Now we can graph the equation. We identify the M and the B first from the equation.

Y = 2x – 4 M is the slope and has to be written as a fraction. (2) or Y = Mx + B
B is the y-intercept. (-4)

We *Begin* with the B. (-4) We plot (-4) on the y axis first.



Then we Move using the slope M. ($\frac{2}{1}$) This is the($\frac{\text{rise}}{\text{run}}$).
The rise moves up or down. The run moves left or right.
Since the slope is ($\frac{2}{1}$) we move up 2 and over 1.



The graph at right shows the linear equation graphed.