Math 060 WORKSHEET NAME:_____
3.2 Graphing Linear Equations Using Intercepts

We graphed several equations last section. Because the graph of $y = -3x + 2$ is a line, we call it a linear equation. The graph of $y = x^2$ is not a line, so we call it a nonlinear equation. In this section we will look at only linear equations.

GENERAL FORM OF A LINEAR EQUATION:

Any linear equation can be written in the standard form:

$$Ax + By = C$$

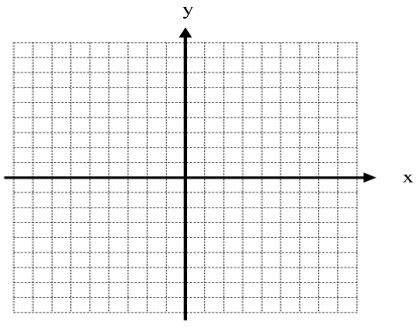
The exponents on the x and y are 1. That is why $y = x^2$ is not linear.

GRAPHING LINEAR EQUATIONS:

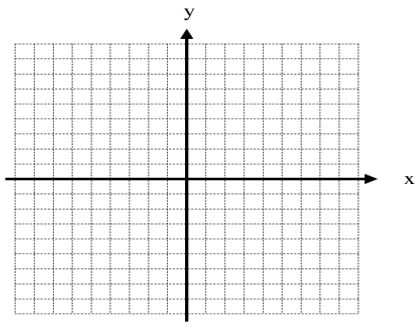
Since two points determine any line, it is only necessary to find two solutions to plot. The only problem arises if you incorrectly compute one point. We get around this by finding three points. That way we will notice if we incorrectly computed one of them.

EXAMPLE: Graph each of the following:

$y = -x - 1$



$8x - 4y = -24$



In the second graph above, it may be easier to first solve for y and then find the solutions.

$$-4y = -8x - 24$$
$$y = \frac{-8x - 24}{-4}$$
$$y = \frac{-8x}{-4} - \frac{24}{-4}$$
$$y = 2x + 6$$

GRAPHING LINEAR EQUATIONS USING INTERCEPTS

The points where the graph crosses the axes are called intercepts.

$x-$intercept: Since the value of y on the $x-$axis is zero, to find the $x-$intercept we set $y = 0$ and solve for x.

$y-$intercept: Since the value of x on the $y-$axis is zero, to find the $y-$intercept we set $x = 0$ and solve for y.