KEY

Common Math 10
Lesson 6.6 ~ General Form of the Equation for a Linear Function

General form is the third of three forms of an equation for a linear function that we will look at.

$$Ax + By + C = 0$$

To write any equation of a line in standard form:

1. Move everything to one side.
2. Multiply by the common denominator to eliminate any fractions (or decimals).
3. Multiply or divide to make A positive.

***Standard form** is also sometimes used; it is very similar to general form except that the constant is on the other side of the equation.

$$Ax + By = -C$$

Example #1: Write each of the following in general form.

a) $y = -\frac{1}{4}x + 3$

$\left(y = -\frac{1}{4}x + 3\right) \times 4$

$4y = -x + 12$

$+x - 12 \quad +x - 12$

$\boxed{x + 4y - 12 = 0}$

b) $y + 2 = \frac{3}{2}(x - 4)$

$\left(y + 2 = \frac{3}{2}x - 6\right) \times 2$

$2y + 4 = 3x - 12$

$-2y - 4 \quad -2y - 4$

$\boxed{0 = 3x - 2y - 16}$

To graph a line in general form:

- Isolate the y to write in slope-intercept form, and then graph, or
- Find the x and y intercepts and graph these.

Example #2: Graph the equation $x + 3y + 9 = 0$ using two methods.

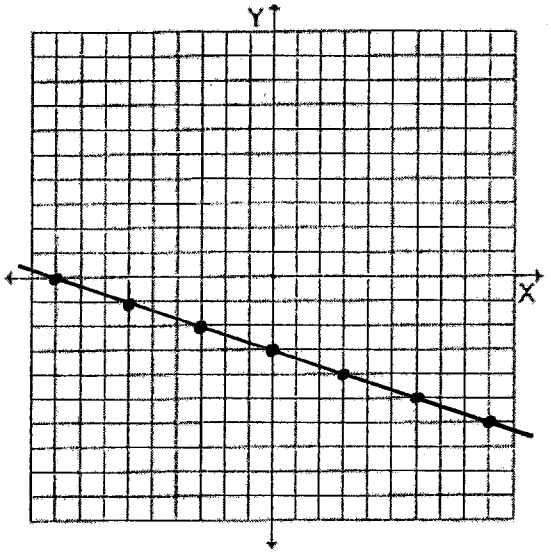
Method 1: write in slope-intercept form to graph

$x + 3y + 9 = 0$

$-x \quad -9 \quad -x - 9$

$\frac{3y}{3} = \frac{-x}{3} - \frac{9}{3}$

$y = -\frac{1}{3}x - 3$



Method 2: calculate intercepts to graph

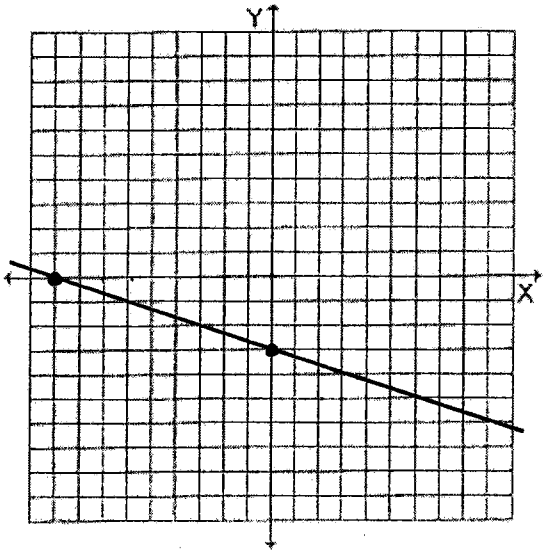
x-int → make $y = 0$

$x + 3(0) + 9 = 0$

$x + 9 = 0$

$-9 \quad -9$

$x = -9 \rightarrow (-9, 0)$



y-int → make $x = 0$

$0 + 3y + 9 = 0$

$3y + 9 = 0$

$-9 \quad -9$

$\frac{3y}{3} = \frac{-9}{3}$

$y = -3 \rightarrow (0, -3)$