The standard form of an equation is $Ax + By = C$. There are a couple rules we must follow:
   1) A, B, & C all must be integers (no fractions!)
   2) A must not be negative- it can be positive or 0 (B and/or C can be negative)

Let's look at how we can get equations that are in slope-intercept form ($y = mx + b$) turned into equations in standard form ($Ax + By = C$).

Example 1

Find the equation of a line (in standard form) with a slope of $\frac{4}{5}$ and a y-intercept of −3.

Step 1 – Make an equation in $y = mx + b$ form.
   It looks like $m = \frac{4}{5}$ and $b = -3$, so we have…
$$y = \frac{4}{5}x - 3$$

Step 2 – Wipe out the fraction(s).
   If we multiply everything by 5, then the fractions will be gone- we'll have only integers.
$$5(\, y = \frac{4}{5}x - 3 \,)$$
$$5y = 4x - 15$$

Step 3 – Get x and y on the same side and the number on the other side.
   Since A (the number in front of x) is already positive, let's leave it where it is and move the other terms.
$$5y = 4x - 15$$
$$15 = 4x - 5y$$

Step 4 – Make sure the number in front of x is positive.
   It is!
$$15 = 4x - 5y$$

Step 5 – Make sure the x and y terms are on the left side.
   We'll switch the right and left sides for this.
$$\mathbf{4x - 5y = 15}$$

<u>Example 2</u>

Find the equation of a line (in standard form) with a slope of $-\frac{7}{3}$ and a y-intercept of 4.

Step 1 – Make an equation in $y = mx + b$ form.

It looks like $m = -\frac{7}{3}$ and $b = 4$, so we have…

$$y = -\frac{7}{3}x + 4$$

Step 2 – Wipe out the fraction(s).

If we multiply everything by 3, then the fractions will be gone- we'll have only integers.

$$3(\,y = -\frac{7}{3}x + 4\,)$$
$$3y = -7x + 12$$

Step 3 – Get x and y on the same side and the number on the other side.

Since A (the number in front of x) is currently negative, let's leave move it to the other side.

$$3y = -7x + 12$$
$$7x + 3y = 12$$

Step 4 – Make sure the number in front of x is positive.

It is!

$$7x + 3y = 12$$

Step 5 – Make sure the x and y terms are on the left side.

They are!

$$\mathbf{7x + 3y = 12}$$