Example 3:

Write an equation in standard form of the line that passes through the given points.

a) $(3, 9), (1, 1)$

Example 1:

Transform each equation into standard form.

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

b) $y - 4 = 3(x + 2)$

Writing Linear Equations in

Standard Form

What is Standard Form?

Standard Form
(of a linear equation)

$Ax + By = C$

b) $(-5, 2), (-4, 3)$

Given: Two Points

Example 2:

Write an equation in standard form of the line that passes through the given point and has the given slope.

a) $(4, -1); m = 3$

b) $(0, 5); m = -2$

Given: A Point & the Slope

Writing Linear Equations in Standard Form

Example 3:

Write an equation in standard form of the line that passes through the given points.

b) (3, 9), (1, 1)

Find the slope

$m = \dfrac{1-9}{1-3} = \dfrac{-8}{-2} = 4$

Use the slope & a point & sub the values into point-slope (or slope-intercept) form.

$(y - 9) = 4(x - 3)$

$y - 9 = 4x - 12$

$+9 +9$

$y = 4x - 3$

$-4x -4x$

$-4x + y = -3 \qquad \boxed{4x - y = -3}$

Example 1:

Transform each equation into standard form.

a) $*4 \; y = \left(\dfrac{1}{4}x - 3\right) *4$

$4y = x - 12$

$ -x -x$

$-x + 4y = -12$

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

b) $y - 4 = 3(x + 2)$

$y - 4 = 3x + 6$

$ +4 +4$

$y = 3x + 10$

$-3x -3x$

$-3x + y = 10$

$\boxed{3x - y = -10}$

What is Standard Form?

Standard Form
(of a linear equation)

$$Ax + By = C$$

"A" must be a whole number (no negatives!)
"B", and "C" must be integers. (no fractions or decimals are allowed in standard form!!!)

b) $(-5, 2), (-4, 3)$

$$m = \frac{3-2}{-4+5} = \frac{1}{1} = 1$$

$y - 2 = 1(x + 5)$
$y - 2 = x + 5$
$\underline{+2 \qquad +2}$
$y = x + 7$
$\underline{-x \quad -x}$
$-x + y = 7$
$\boxed{x - y = -7}$

Given: Two Points

Example 2:

Write an equation in standard form of the line that passes through the given point and has the given slope.

c) $(4, -1); m = 3$

$y + 1 = 3(x - 4)$
$y + 1 = 3x - 12$
$\underline{+1 \qquad +1}$
$y = 3x - 11$
$\underline{-3x \quad -3x}$
$-3x + y = -11$
$\boxed{3x - y = 11}$

d) $(0, 5); m = -2$

$y - 5 = -2(x - 0)$
$y - 5 = -2x$
$\underline{+5 \quad +5}$
$y = -2x + 5$
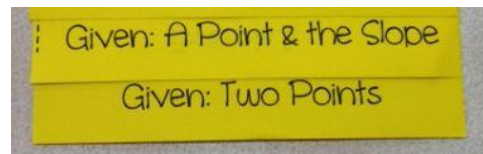$\underline{+2x \quad +2x}$
$\boxed{2x + y = 5}$

Given: A Point & the Slope

Directions:

Step 1: Print the pages front to back (flip pages along the long side). The information should be facing in opposite directions.

Step 2: Cut along the dotted line, creating two pieces.

Step 3: Line up the pieces as shown:

Step 4: Fold over the top half of both pieces and secure with a few staples. The final product should look like this: