

Content and Language Objective:

Students will write an equivalent equation to the point-slope form of an equation and identify the slope and y-intercept of the new equation.

Warm-Up

1. Given: $(-3, 2)$ and $m = 2/3$, write an equation in point-slope form.

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

2. Given: $(-3, 2)$ and $(5, -1)$, write an equation in point-slope form.

$$\begin{array}{l} x_1 y_1 \quad x_2 y_2 \\ \frac{-1 - 2}{5 + 3} = \frac{-3}{8} \end{array} \quad \begin{array}{l} y = 2 + \frac{-3}{8}(x + 3) \\ y = 2 - \frac{3}{8}(x + 3) \end{array}$$

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Write down the y-intercept form (slope-intercept form) of an equation.

$$\underline{y = mx + b}$$
$$y = b + mx$$

What does the m represent? slope

What does the b represent? y-intercept

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When we create an equation in point-slope form, we can also use it to help find the intercept form of an equation.

$$y = y_1 + m(x - x_1) \rightarrow y = mx + b$$

Look at the following equation $y = 4 - 3(x + 2)$

Discuss with your table partner how you might convert this equation to intercept form.

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Ideas for converting the equation $y = 4 - 3(x + 2)$ from point-slope form to y-intercept form (slope-intercept form).

Use distributive property with $-3(x+2)$

$$y = -3x + 4$$

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

$$y = 4 - 3x - 6$$

$$y = 4 - 6 - 3x$$

$$y = -2 - 3x$$

$$y = -3x - 2$$

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Let's use your ideas to see if we can convert $y = 4 - 3(x + 2)$ to intercept form.

Try it!

$$y = -3 + 4(x - 5)$$
$$y = -3 + 4x - 20$$
$$y = -23 + 4x$$

$$y + 1 = 3(x - 2)$$
$$y + 1 = 3x - 6$$
$$y = 3x - 7$$

$$y = 2 - 3(x - 3)$$
$$y = 2 - 3x + 9$$
$$y = -3x + 11$$
$$y - 2 = -2(x + 3)$$
$$y - 2 = -2x - 6$$
$$y = -2x - 4$$

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Using the equations from the last example, write down the y-intercept form (slope-intercept form) and identify the slope and y-intercept.

$$y = -3 + 4(x - 5)$$
$$y = -23 + 4x$$
$$m = \text{slope}$$
$$b = -23$$

$$y + 1 = 3(x - 2)$$
$$y = 3x - 7$$
$$m = 3 \quad b = -7$$

$$y = 2 - 3(x - 3)$$
$$y = -3x + 11$$
$$m = 3$$
$$b = 11$$

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

1. What made sense about today's lesson?
2. What are you still confused about?
if you aren't confused what do you
feel confident about?