

Content and Language Objective:

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

Setup Notes

Lesson #12: Equivalent Equations and Y-Intercept Form

Date: September 30th

Summary: I will be able to write equivalent equations in y-intercept form.

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Warm-Up

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

$$y = 2 + 2/3(x + 3) \quad y - 2 = 2/3(x + 3)$$

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

$$\frac{-1 - 2}{5 + 3} = -\frac{3}{8} \quad y - 2 = -3/8(x + 3)$$
$$y - (-1) = -3/8(x - 5)$$

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Planner:

1. Study for Big Daddy Retention Quiz
2. Get binder ready for binder check on Friday.

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

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

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.

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

$$y = y_1 + m(x - x_1)$$

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).

Subtract 2

Switch 4 and 2

distribute - 3

Combine like terms

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

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

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

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

$$y = -2 - 3x$$

$$y = -3x - 2$$

$$m = -3$$

$$b = -2$$

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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.

$$\begin{aligned} y &= -3 + 4(x - 5) \\ y &= -3 + 4x - 20 \\ y &= -23 + 4x \end{aligned}$$

$m = 4$
 $b = -23$

$$\begin{aligned} y + 1 &= 3(x - 2) \\ y + 1 &= 3x - 6 \\ \underline{-1 \quad -1} \\ y &= 3x - 7 \end{aligned}$$

$m = 3$
 $b = -7$

$$\begin{aligned} y &= 2 - 3(x - 3) \\ y &= 2 - 3x + 9 \\ y &= 11 - 3x \end{aligned}$$

$m = 3$
 $b = 11$

$$\begin{aligned} y - 2 &= -2(x + 3) \\ y - 2 &= -2x - 6 \\ \underline{+2 \quad +2} \\ y &= -2x - 4 \end{aligned}$$

$m = -2$
 $b = -4$

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$$y = -3 + 4x - 5)$$

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

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

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