

Content and Language Objective

Students will manipulate a standard equation to intercept form to see what the relationship is between the two equations and what equivalent equations mean.

Warm-Up

Write an equation in point-slope form using the given information.

1. (3, 7) and (-2, -1)

$x_1 y_1$ $x_2 y_2$

$$\frac{-1-7}{-2-3} = \frac{-8}{-5} = \frac{8}{5}$$

$$y = 7 + \frac{8}{5}(x - 3)$$

Transform to y-intercept form.

2. $y = 3 - 5(x - 2)$

$$y = 3 - 5x + 10$$

$$y = 3 + 10 - 5x$$

$$y = 13 - 5x$$

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We have been mentioning equivalent equations over the last few days, what does it mean to have equivalent equations?

- two equations that are equal to each other and have the same values
- $2(3)=x$ $4(6)=x$
- 2 equations where the sum = each other

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

$$y = mx + b$$

Point - Slope Form to Y-Intercept Form

$$\begin{aligned} y &= -3 - 6(x - 2) \\ &= -6x + 12 - 3 \end{aligned}$$

$$\underline{y = -6x + 9}$$

$$y + 4 = 7(x + 1)$$

$$\begin{array}{rcl} y + 4 & = & 7x + 7 \\ -4 & & -4 \end{array}$$

$$y = 7x + 3$$

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Given the equation $-3x + 7y = 21$, how would we write an equivalent equation.

$Ax + By = C$
Standard Form

$$\begin{array}{r} -3x + 7y = 21 \\ +3x \quad \downarrow \quad \downarrow +3x \\ \hline 7y = 21 + 3x \\ \frac{7y}{7} = \frac{21}{7} + \frac{3x}{7} \\ y = 3 + \frac{3}{7}x \end{array}$$

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Given the equation $2x - 6y = 24$, write an equivalent equation.

$$\begin{array}{r} 2x - 6y = 24 \\ -2x \quad -2x \\ \hline -6y = 24 - 2x \\ -6 \quad -6 \\ \hline y = -4 + \frac{1}{3}x \end{array}$$

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$$\begin{array}{r} 4x + 2y = 16 \\ -4x = -4x \\ \hline 2y = 16 - 4x \\ \div 2 \div 2 \\ \hline y = 8 - 2x \end{array}$$

$$1.) \quad x - y = 3$$

$$\begin{array}{r} x - y = 3 \\ -x \quad -x \\ \hline -y = 3 - x \\ -1 \quad -1 \\ \hline \boxed{y = -3 + x} \end{array}$$

$$2.) \quad \boxed{y = 6}$$