

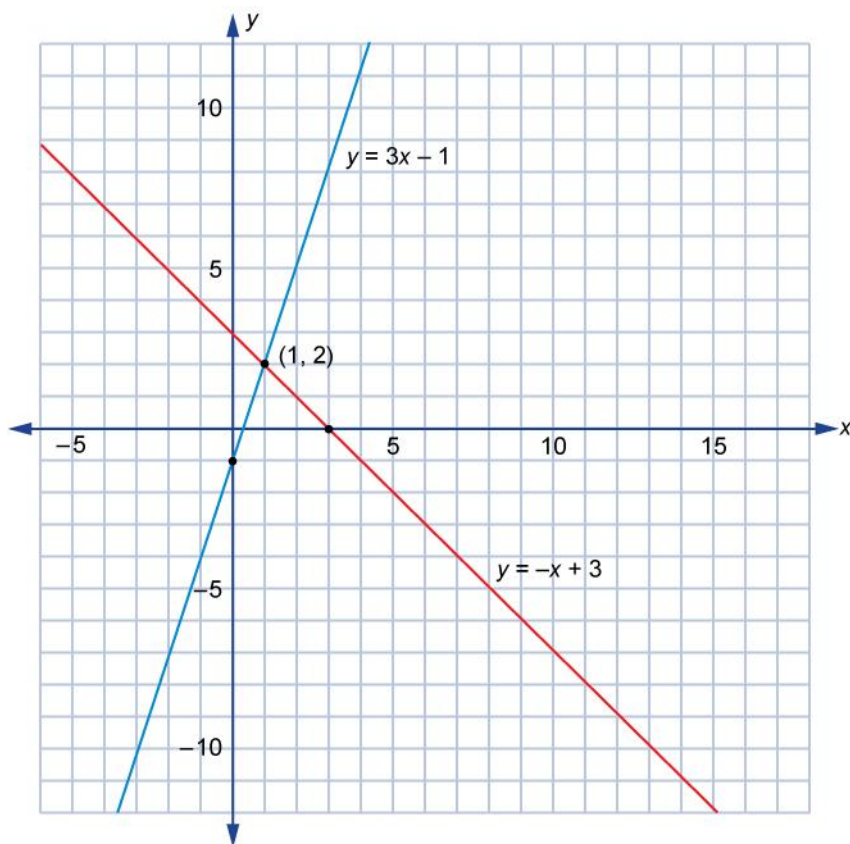
Module 7 Lesson 4: Solving Linear Systems by Elimination

Are You Ready? Possible Solutions

1. a. $5x - 2x + x + 5 = 4x + 5$
b. $-7y + 9x - 3x - 12y = 9x - 3x - 7y - 12y$
 $= 6x - 19y$
c. $13 + 5w - 4w - 11 = 5w - 4w + 13 - 11$
 $= w + 2$
2. Since both equations are in slope-intercept form, use the y-intercept and the slope to draw each graph.

Equation 1: $m = 3$, y-intercept = $(0, -1)$

Equation 2: $m = -1$, y-intercept = $(0, 3)$



The point of intersection and solution of this system of equations is $(1, 2)$.

$$3. \quad \begin{aligned} y &= 3x - 1 && \leftarrow \text{Equation 1} \\ y &= -x + 3 && \leftarrow \text{Equation 2} \end{aligned}$$

Since both equations have isolated y already, substitute either expression for y into the other equation.

$$\begin{aligned} 3x - 1 &= -x + 3 && \leftarrow \text{Substitute the expression for } y \text{ into Equation 2.} \\ 3x + x &= 3 + 1 && \leftarrow \text{Solve for } x. \\ 4x &= 4 \\ x &= 1 \end{aligned}$$

Solve for y .

$$\begin{aligned} y &= -x + 3 && \leftarrow \text{Substitute the value for } x \text{ into Equation 2.} \\ y &= -1 + 3 && \leftarrow \text{Solve for } y. \\ y &= 2 \end{aligned}$$

The solution to the system of equations is $(1, 2)$.

4. a. Answers may vary. One possible assignment of variable is as follows:

Let ℓ = the length of the parking lot in metres and w = the width in metres.

$$\begin{aligned} 2\ell + 2w &= 90 && \leftarrow \text{Equation 1} \\ \ell - w &= 5 && \leftarrow \text{Equation 2} \end{aligned}$$

- b. Answers may vary. Assume that the price of an adult ticket and a child's ticket is what is to be determined from the information. Then one way to assign variables is as follows:

Let A = the price in dollars of an adult ticket and C = the price in dollars of a child's ticket.

$$\begin{aligned} A + 2C &= 28 && \leftarrow \text{Equation 1} \\ 2A + 3C &= 48 && \leftarrow \text{Equation 2} \end{aligned}$$

- c. Answers may vary. Assuming that the problem is to find the number of dimes and quarters in the cashbox, it makes sense to let d be the number of dimes and let q be the number of quarters. Then the system of equations would be as follows:

$$\begin{aligned} 10d + 25q &= 405 && \leftarrow \text{Equation 1} \\ d &= 2q && \leftarrow \text{Equation 2} \end{aligned}$$