

Lesson 1.4.1: Solutions to Equations With 2 Variables

Targets:

1. I can recognize and identify solutions to two-variable equations.
2. I can create two variable equations to represent a situation and represent the solution set graphically.

Warm Up

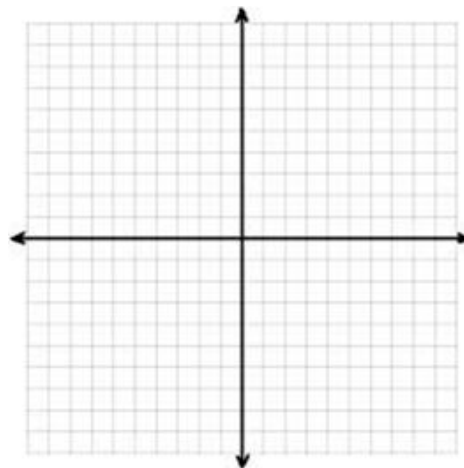
- a. Circle all the ordered pairs (x, y) that are solutions to the equation $4x - y = 10$.

(3,2) (2, 3) (-1, -14) (0,0) (1, -6)
(5,10) (0, -10) (3,4) (6,0) (4, -1)

- b. How did you decide whether or not an ordered pair was a solution to the equation?

Practice 1

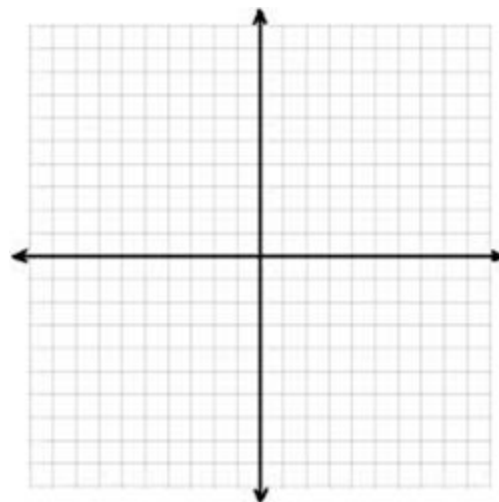
- Discover as many additional solutions to the equation $4x - y = 10$ as possible. Consider the best way to organize all the solutions you have found.
- Now, find 5 more solutions where one or more variables are negative numbers or non-integer values.
- How many ordered pairs (x, y) will be in the solution set of the equation $4x - y = 10$?
- Create a visual representation of the solution set by plotting each solution as a point (x, y) in the coordinate plane.
- Why does it make sense to represent the solution to the equation $4x - y = 10$ as a line in the coordinate plane?



Practice 2

The sum of two numbers is 25. What are the numbers?

- Create an equation using two variables to represent this situation. Be sure to explain the meaning of each variable.
- List at least 6 solution to the equation you created in part a.
- Create a graph that represents the solution set to the equation.



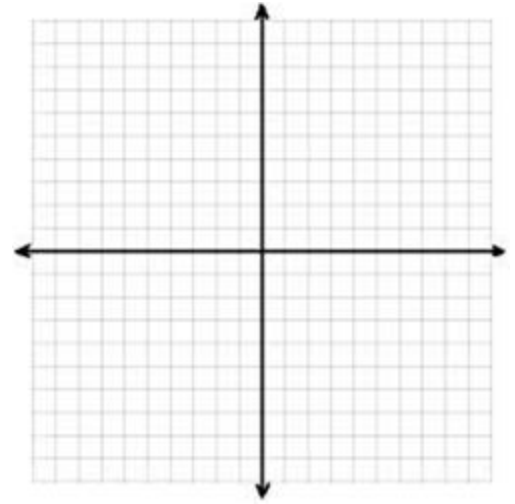
Practice 3

Gina had songs in a playlist composed of songs from her two favorite artists, Beyonce and Jennifer Lopez. How many songs did she have by each one in the playlist?

a. Create an equation using two variables to represent this situation. Explain the meaning of each variable.

b. List at least 3 solutions to the equation you created in part (a).

c. Create a graph that represents the solution set to the equation.



Practice 4

Compare your solutions to Practice 2 and Practice 3.

a. How are they alike?

b. How are they different?

Exit Ticket

The Math Club sells hot dogs at a school fundraiser. The club earns \$108 and has a combination of five-dollar and one-dollar bills in its cash box. Possible combinations of bills are listed in the table below.

Number of five-dollar bills	Number of one-dollar bills	Total = \$108
19	13	$5(19) + 1(13) = 108$
16	28	
11	53	
4	88	

a. Find one more combination of ones and fives that totals \$108.

b. The equation $5x + 1y = 108$ represents this situation. A graph of the line $y = -5x + 108$ is shown. Verify that each ordered pair in the table lies on the line.

c. What is the meaning of the variables (x and y) and the numbers (1, 5 and 108) in the equation $5x + 1y = 108$?

