

## Lesson 13: The Graph of a Linear Equation in Two Variables

### Classwork

#### Exercises

1. Find at least 10 solutions to the linear equation  $3x + y = -8$  and plot the points on a coordinate plane.

$x$	Linear Equation: $3x + y = -8$	$y$

What shape is the graph of the linear equation taking?

2. Find at least 10 solutions to the linear equation  $x - 5y = 11$  and plot the points on a coordinate plane.

$x$	Linear Equation: $x - 5y = 11$	$y$

What shape is the graph of the linear equation taking?

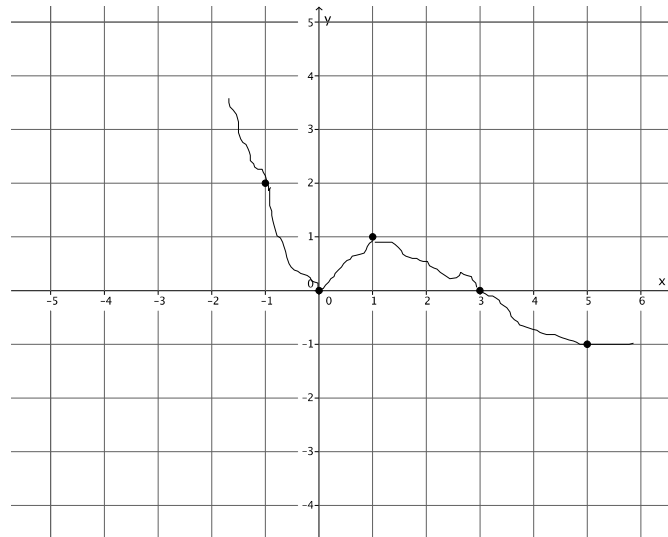
3. Compare the solutions you found in Exercise 1 with a partner. Add their solutions to your graph.

Is the prediction you made about the shape of the graph still true? Explain.

4. Compare the solutions you found in Exercise 2 with a partner. Add their solutions to your graph.

Is the prediction you made about the shape of the graph still true? Explain.

5. Joey predicts that the graph of  $-x + 2y = 3$  will look like the graph shown below. Do you agree? Explain why or why not.



6. We have looked at some equations that appear to be lines. Can you write an equation that has solutions that do not form a line? Try to come up with one, and prove your assertion on the coordinate plane.

**Lesson Summary**

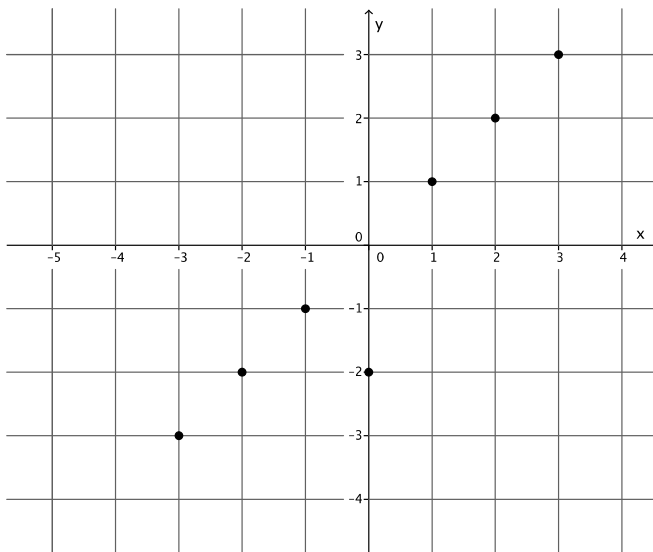
One way to determine if a given point is on the graph of a linear equation is by checking to see if it is a solution to the equation. At this point, all graphs of linear equations appear to be lines.

**Problem Set**

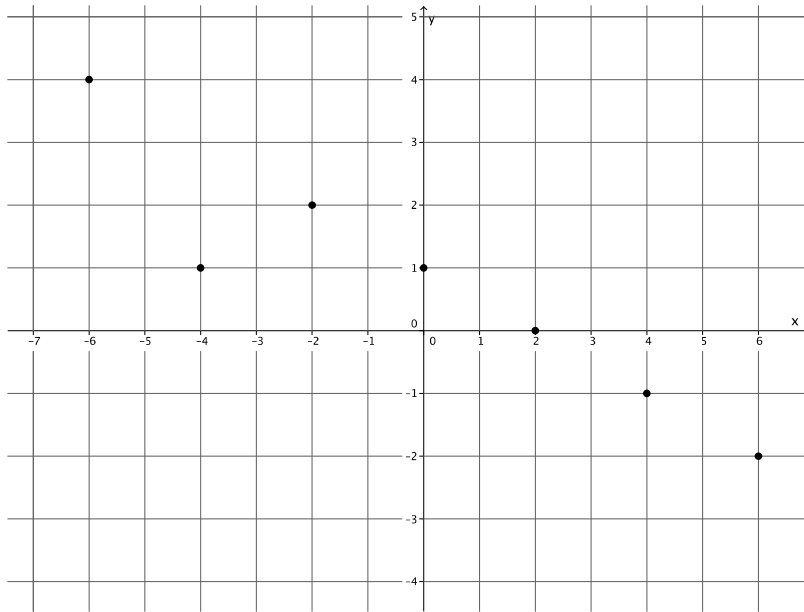
1. Find at least 10 solutions to the linear equation  $\frac{1}{2}x + y = 5$  and plot the points on a coordinate plane.

What shape is the graph of the linear equation taking?

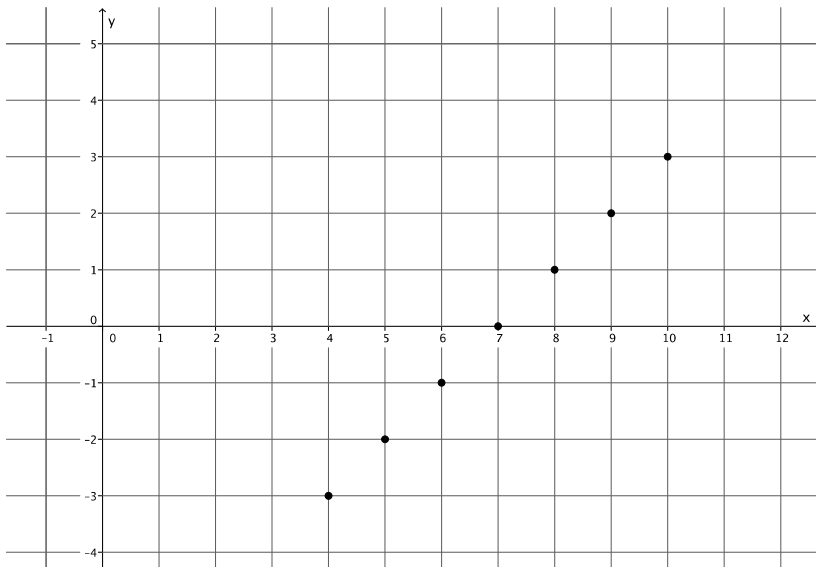
2. Can the following be a graph of the equation  $x - y = 0$ ? Explain.



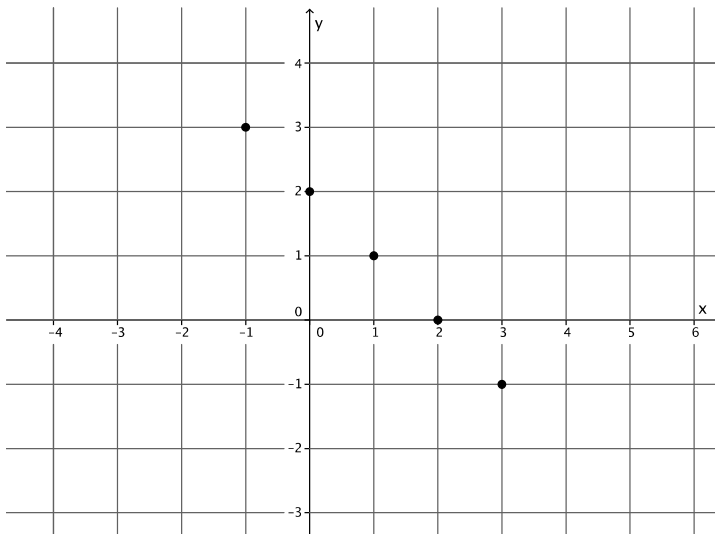
3. Can the following be a graph of the equation  $x + 2y = 2$ ? Explain.



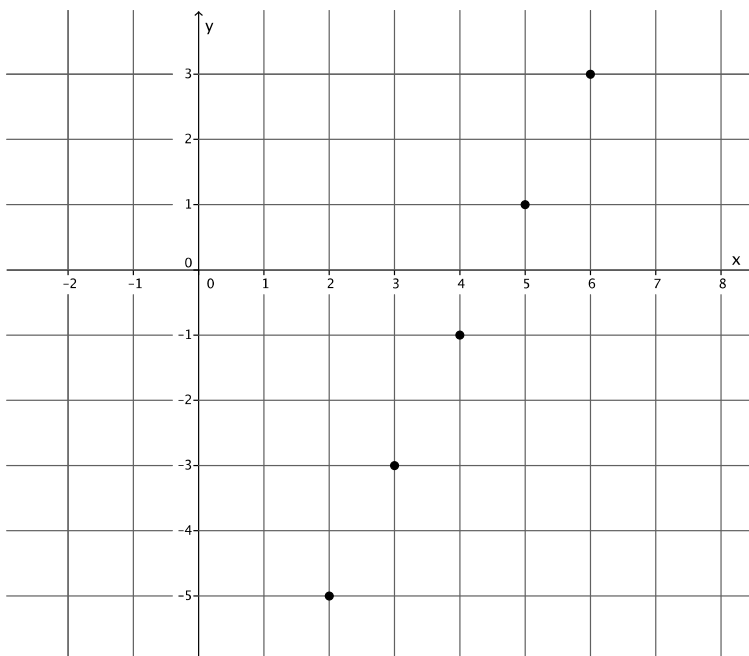
4. Can the following be a graph of the equation  $x - y = 7$ ? Explain.



5. Can the following be a graph of the equation  $x + y = 2$ ? Explain.



6. Can the following be a graph of the equation  $2x - y = 9$ ? Explain.



7. Can the following be a graph of the equation  $x - y = 1$ ? Explain.

