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

Classwork

Exercises

1. Find at least ten 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 ten 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 the partner's 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 the partner's 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

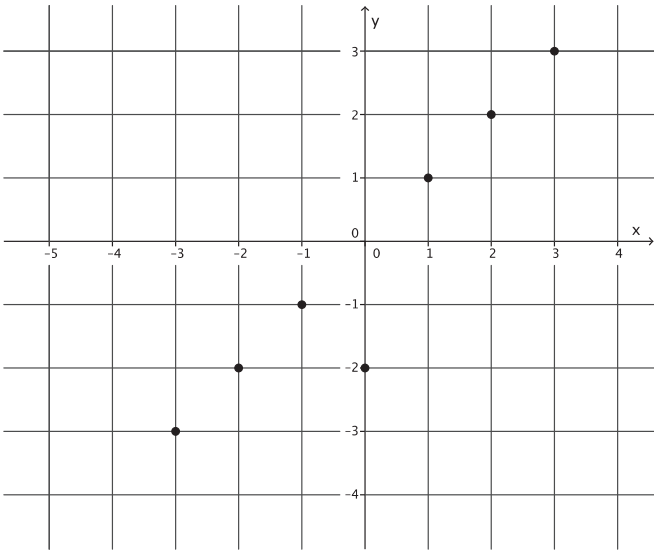
One way to determine if a given point is on the graph of a linear equation is by checking to see if it is a solution to the equation. Note that all graphs of linear equations appear to be lines.

Problem Set

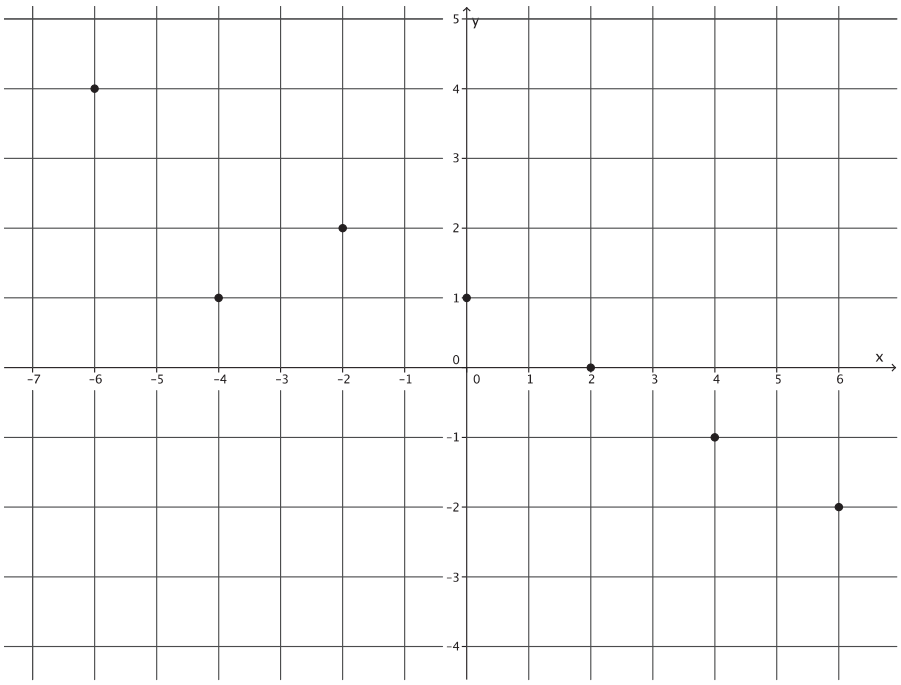
1. Find at least ten solutions to the linear equation $\frac{1}{2}x + y = 5$, and plot the points on a coordinate plane.

   What shape is the graph of the linear equation taking?

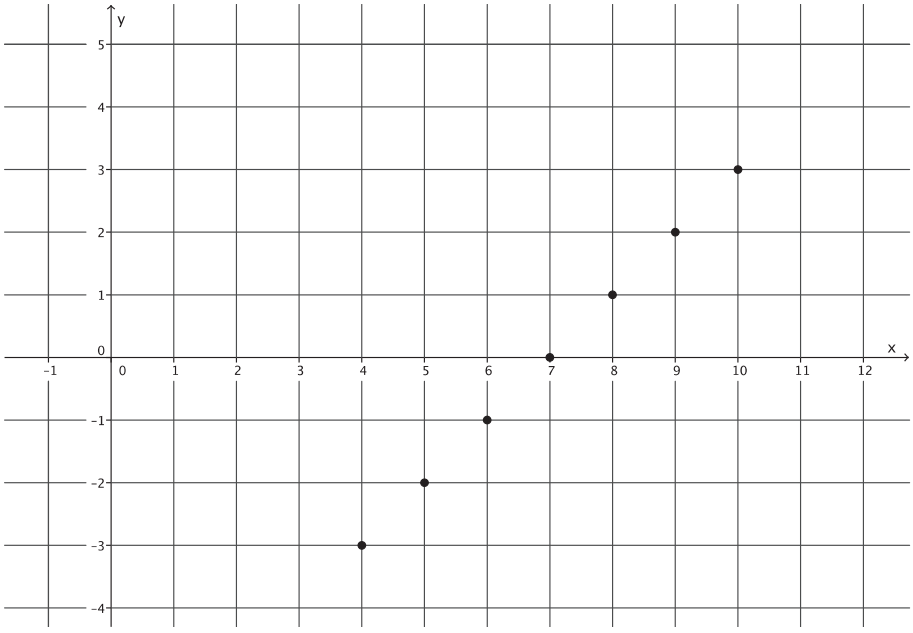
2. Can the following points be on the graph of the equation $x - y = 0$? Explain.



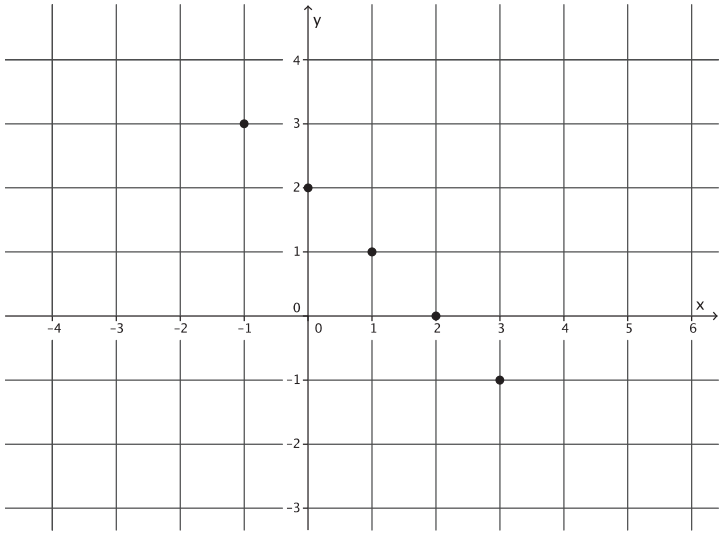
3. Can the following points be on the graph of the equation $x + 2y = 2$? Explain.



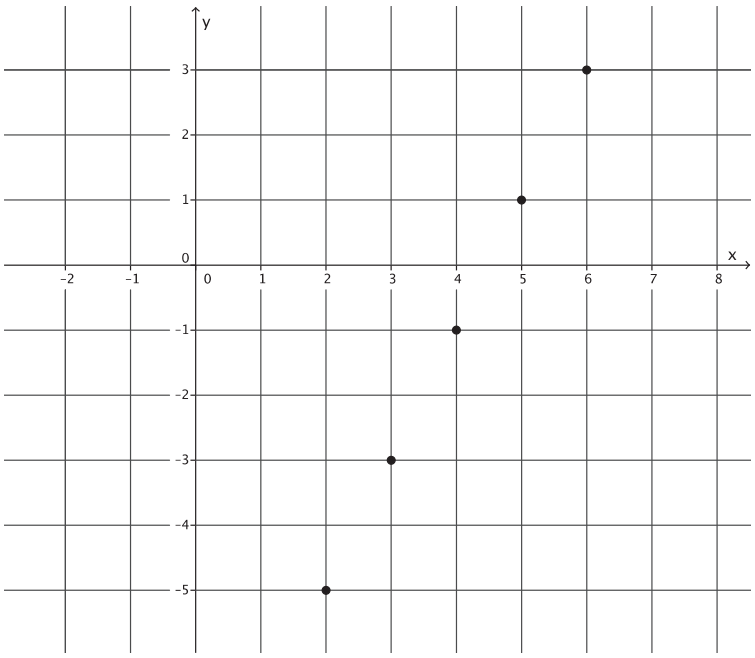
4. Can the following points be on the graph of the equation $x - y = 7$? Explain.



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



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



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