## Check Up

1. One equation of a linear system is $6x + 4y - 1 = 0$. Write a second equation that will produce a system with

   a. 1 solution

   b. 0 solutions

   c. an infinite number of solutions

Compare your answers.

1. One equation of a linear system is $6x + 4y - 1 = 0$. Write a second equation that will produce a system with

   a. 1 solution

   Equations will vary. A sample is shown.

   The given line, along with any line with a different slope, will produce a system with one solution. Rearrange the given equation to slope-intercept form to determine its slope.

   $$6x + 4y - 1 = 0$$
   $$4y = -6x + 1$$
   $$y = \frac{-6}{4}x + \frac{1}{4}$$
   $$y = -\frac{3}{2}x + \frac{1}{4}$$

   The slope is $-\frac{3}{2}$.

   The line $y = 5x + 1$ has a different slope than the line $6x + 4y - 1 = 0$, so the two form a system of linear equations with one solution.

   b. 0 solutions

   Equations will vary. A sample is shown.

   The line $y = -\frac{3}{2}x + 5$ has the same slope as $6x + 4y - 1 = 0$, but a different $y$-intercept. The lines are parallel, so the system will have no solutions.

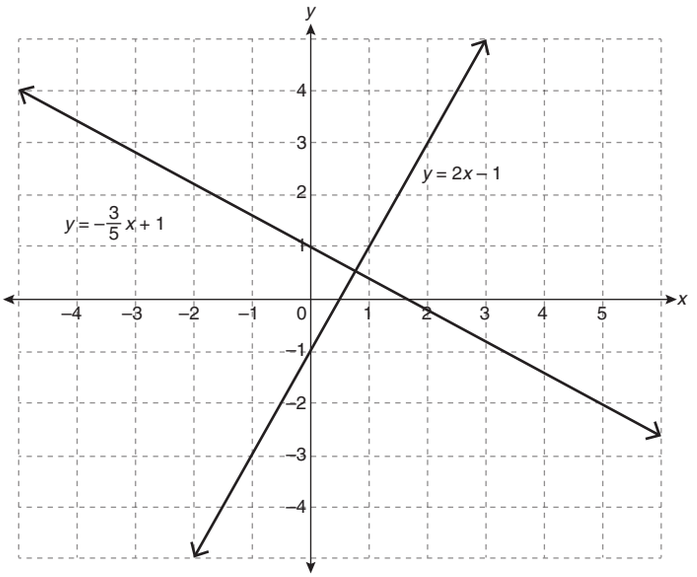
c. an infinite number of solutions

Equations will vary. A sample is shown.

The line $y = -\frac{3}{2}x + \frac{1}{4}$ is coincident with $6x + 4y - 1 = 0$. Each line shares all of its points with the other line, so the system will have an infinite number of solutions.

## C. Solving Systems of Linear Equations Graphically Using Technology

The graph of a linear system is shown. The point of intersection does not lie on a grid intersection, so it is impossible to determine an accurate solution by looking at this graph. The best you can do is say the solution is approximately (0.8,0.5).

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Many graphing calculators and graphing programs allow you to determine the coordinates of a point of intersection with greater precision. In general, you will need to

- graph the two functions separately.
- use an 'intersection' command to determine where the lines cross.

For more specific instructions, consult your calculator's manual or enter "solving linear systems using [enter the name of your graphing calculator or program]" into a search engine. More specific instructions for TI-83™ and TI-84™ calculators are provided in the *Appendix*. If you have difficulty solving systems of linear equations using technology, contact your teacher.