

Investigation: Solutions to Systems of Equations



1. Are the following points solutions to $y = 3x - 1$? Explain how you know. (hint: plug the values for x and y into the equation)

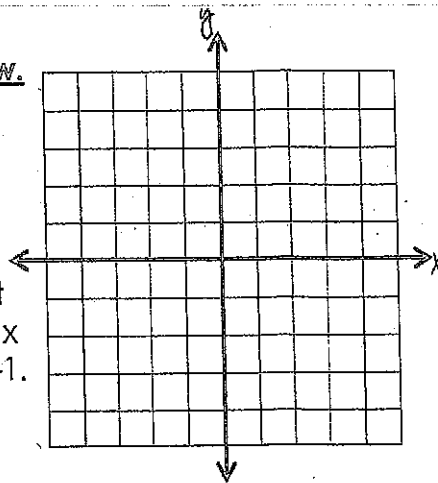
(1, 2):

(2, 5):

Graph the line $y = 3x - 1$ and then answer the questions below.

2. Do the points (1, 2) and (2, 5) lie directly on the line you graphed of $y = 3x - 1$?

3. Choose a different point on the line $y = 3x - 1$ by looking at the graph. Prove algebraically, by plugging in the values for x and y , that the point you chose is a solution to the line $y = 3x - 1$.



4. Based on your answers in #1, #2 and #3, where on the coordinate plane do you think all of the solutions to $y = 3x - 1$ will lie? On the line, above the line, or below the line?

5. List one more solution to the equation $y = 3x - 1$ by looking at the graph and using your conjecture from #4.

Now graph $y = -2x + 4$ on the same coordinate plane above.

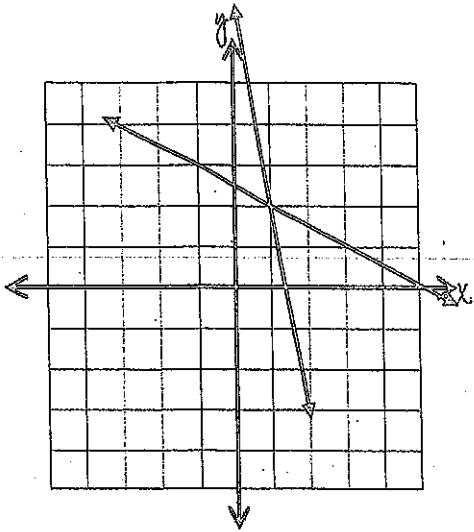
7. List two solutions to $y = -2x + 4$ by looking at the graph and using your conjecture from #4.

8. Do the lines $y = -2x + 4$ and $y = 3x - 1$ have any points in common? If so, list them here.

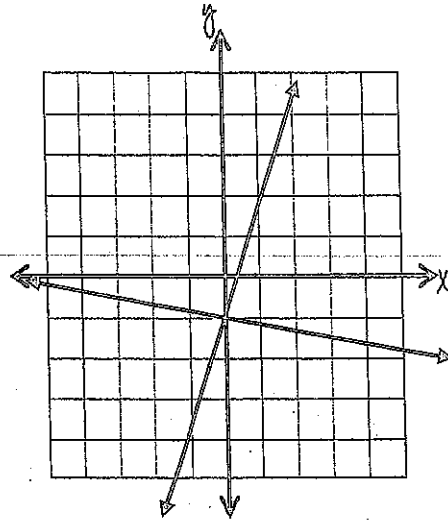
9. Is the point you listed in #8 a solution to both of the equations $y = -2x + 4$ and $y = 3x - 1$? Explain how you know.

10. Summarize how you can find a solution that satisfies two linear equations simultaneously, by looking at their graphs.

A. Write the solution to each system of equations.



1. Solution:



2. Solution:

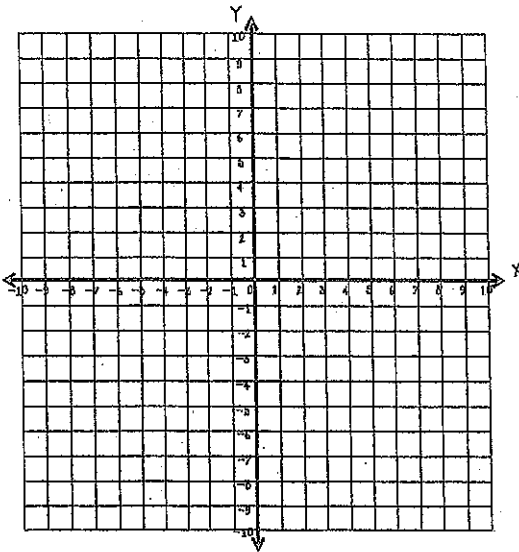
B. Solve each system of equations by graphing.

$$y = \frac{1}{2}x - 4$$

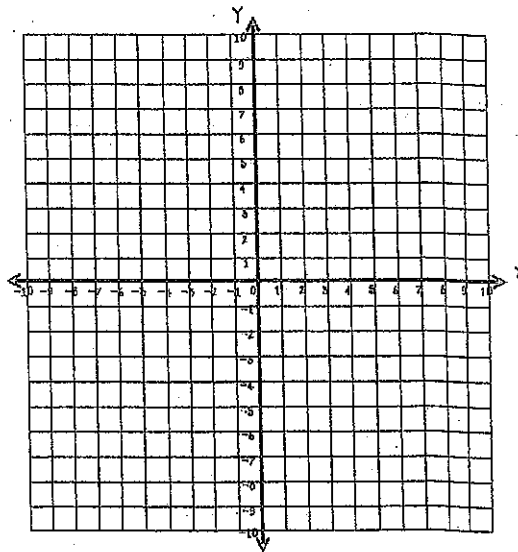
$$y = -x + 2$$

$$y = -\frac{2}{3}x + 2$$

$$y = 2x - 6$$



3. Solution:



4. Solution: