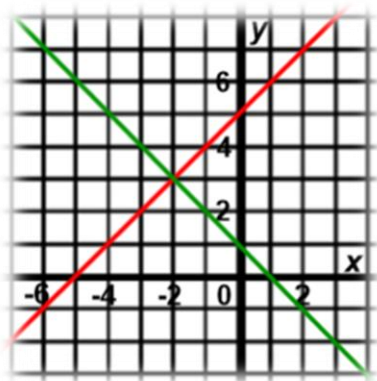


## Lesson 7.2 – Solving a Linear System Graphically

**Specific Outcome:** 9.1 – Model a situation, using a system of linear equations. 9.3 – Determine and verify the solution of a system of linear equations graphically, with and without technology. 9.4 – Explain the meaning of the point of intersection of a system of linear equations. 9.8 – Solve a problem that involves a system of linear equations.

Two equations in a linear system are graphed on the same grid.

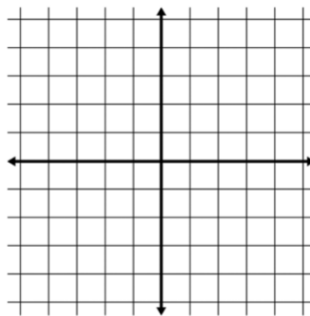


1. Determine the equations of lines on the graph (slope-int. form).
2. Where is the *solution* to this system? Determine the coordinates.
3. Explain why these coordinates are the solution of this linear system.

\*In the rest of this unit, we will be solving linear systems using different methods.

Consider: Solve this linear system by graphing.

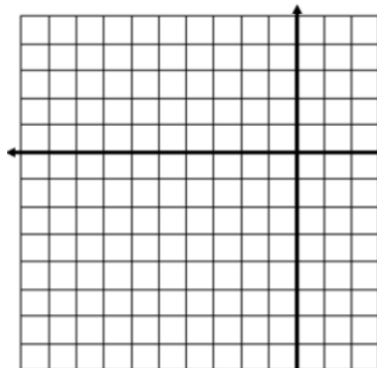
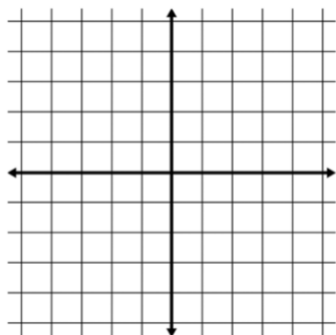
1.  $y = -x + 5$
2.  $y = x - 1$



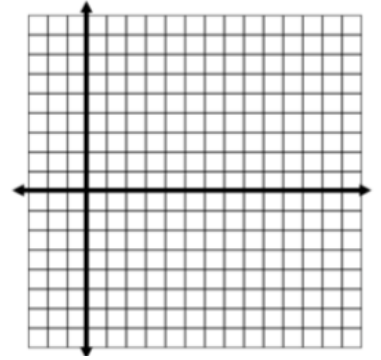
**Practice:** Solve the following linear systems by graphing.

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

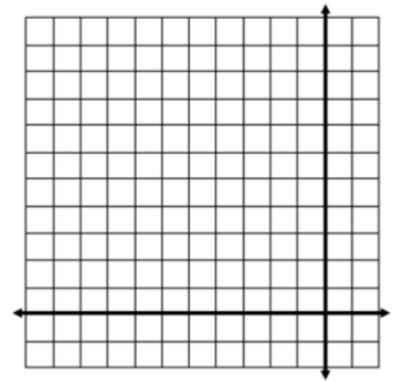
b)  $0 = x + y + 5$   
 $0 = 2x + y + 7$



- c) Two numbers have a sum of 8. Three times the smaller number is the same as fourteen more than twice the larger number. Solve by developing a linear system and graphing.



- d) Two numbers have a sum of 1. The larger number is 11 more than the smaller number. What are the two numbers? Solve by developing a linear system and graphing.



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**HOMEWORK: P. 409 – 3, 4, 5, 6**

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**SOLVING BY GRAPHING WITH A CALCULATOR**

1. Write each equation in terms of  $y$ .
2. Access the “Y= editor” by pressing the  key.
3. Enter one equation in .
4. Enter the other equation in .
5. Press the  key to display the graphs.
6. Access the intersect command by pressing  then  and scroll down to “intersect”.  
The calculator will return to the display window with the graphs.
7. The calculator will display “First curve?”. Use the cursor key, if necessary, to select the first graph and then press .
8. The calculator will display “Second curve?”. Use the cursor key, if necessary, to select the second graph and then press .
9. The calculator will display “Guess?”. Press .

- Another method is as follows:

1. Do steps 1-5 from the above method.
2. Press the '2<sup>nd</sup>' button, then the 'GRAPH' button. This will display the table of values for the graphs.
3. Use the arrows to scroll up and down the table to find where  $Y_1$  and  $Y_2$  values are the same.

Consider: Solve the linear system by using a graphing calculator.

1.  $y = \frac{2}{3}x - 1$

2.  $y = -x + 4$

Solution: \_\_\_\_\_

**Practice:** Solve each of the linear systems using a graphing calculator.

a)  $y = -2x + 1$

$y = x - 5$

b)  $y = 2x$

$x + y = 3$

c)  $y = \frac{1}{2}x - 3$

$y = \frac{3}{2}x - 1$

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

d)  $y = -x$

$2x + 4y = 12$

e)  $x = 3 - 3y$

$2y = x - 8$

f)  $x + 2y = -4$

$4y = 3x + 12$

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_

g)  $3x + 9y + 18 = 0$

$y = x + 2$

h)  $y = -4$

$4x - 5y = 20$

Solution: \_\_\_\_\_

Solution: \_\_\_\_\_