

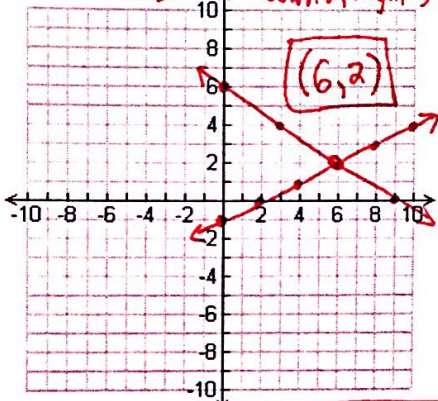
## Solving Systems by Graphing: Review

If you need help with these: [lischwe.weebly.com](http://lischwe.weebly.com)

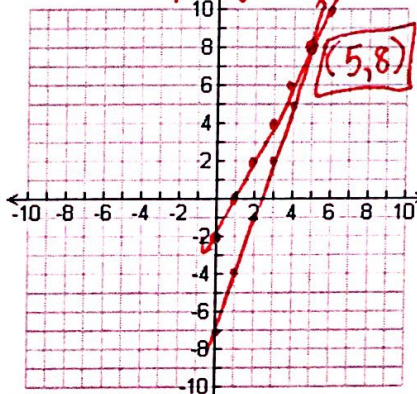
- For help with slope-intercept form, look at the November 14 lesson.
- For help with standard form (where  $x$  &  $y$  are on the same side), look at the November 15 lesson.
- For a bunch of these kinds of problems with answers worked out, ask me for the answer key to the graphing worksheet we did!

Solve the system by graphing.

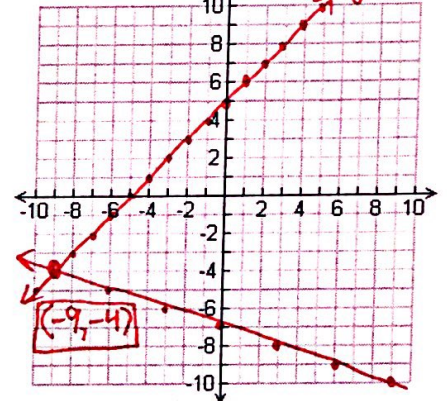
1)  $\begin{cases} y = \frac{1}{2}x - 1 \leftarrow \text{start at } (0, -1) \\ y = -\frac{2}{3}x + 6 \leftarrow \text{start at } (0, 6) \end{cases}$   
 up 1, right 2  
 down 2, right 3



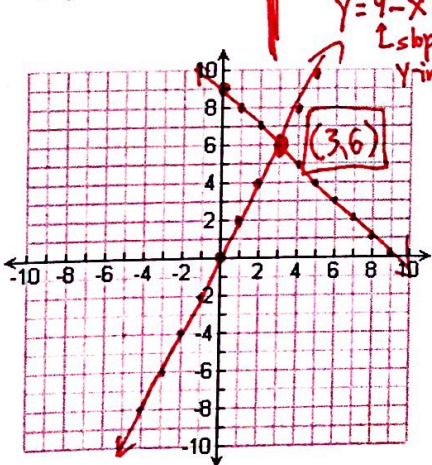
2)  $\begin{cases} y = 2x - 2 \leftarrow \text{start at } (0, -2) \\ y = 3x - 7 \leftarrow \text{start at } (0, -7) \end{cases}$   
 up 2, right 1  
 up 3, right 1



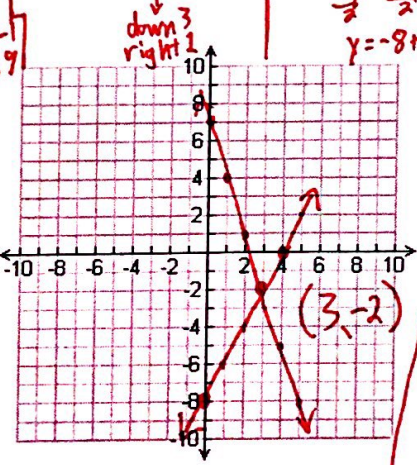
3)  $\begin{cases} y = \frac{1}{3}x + 5 \leftarrow \text{start at } (0, 5) \\ y = -\frac{1}{3}x - 7 \leftarrow \text{start at } (0, -7) \end{cases}$   
 up 1, right 3  
 down 1, right 3



4)  $\begin{cases} x + y = 9 \\ y = 2x + 0 \end{cases}$   
 If  $x=0, y=9$  (0, 9)  
 If  $y=0, x=9$  (9, 0)  
 OR get  $y$  by itself:  
 $x + y = 9$   
 $-x = -x$   
 $y = 9 - x$   
 slope is -1  
 y-int. is 9

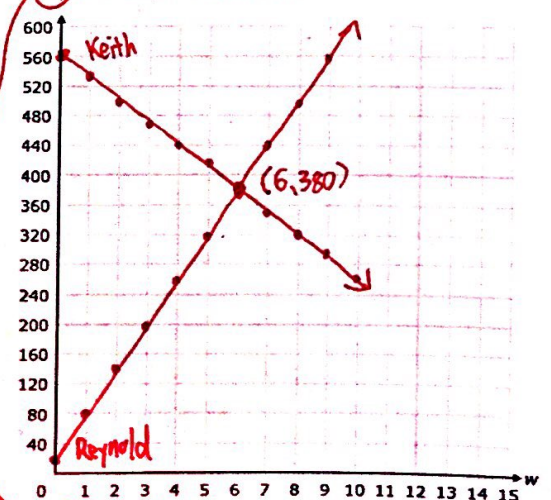


5)  $\begin{cases} -4x + 2y = -16 \\ y = -3x + 7 \end{cases}$   
 If  $x=0, y=-8$  (0, -8)  
 If  $y=0, x=4$  (4, 0)  
 OR get  $y$  by itself:  
 $-4x + 2y = -16$   
 $+4x = +4x$   
 $2y = -16 + 4x$   
 $y = -8 + 2x$



6) Reynold has \$20 in his bank account and deposits \$60 per month. Keith has \$560 in his bank account but withdraws \$30 per month.

- Write a system of equations.
- Graph them and find the intersection.
- Explain what the numbers in your solution represent.
- Check your answer.



Reynold:  $380 = 20 + 60(6)$   
 $380 = 20 + 360$   
 Keith:  $380 = 560 - 30(6)$   
 $380 = 560 - 180$

7) Choose two problems from #1 – 6, then check your solution by substituting the numbers back into both original equations.

#2:  $y = 2x - 2$  |  $y = 3x - 7$   
 $8 = 2(5) - 2$  |  $8 = 3(5) - 7$   
 $8 = 10 - 2$  |  $8 = 15 - 7$   
 $8 = 8$  |  $8 = 8$

#4:  $x + y = 9$  |  $y = 2x$   
 $3 + 6 = 9$  |  $6 = 2(3)$   
 $9 = 9$  |  $6 = 6$



## Solving Systems by Substitution: Review

If you need help with these: Go to [lischwe.weebly.com](http://lischwe.weebly.com) and look at the lessons on November 16 and 17.

Solve by substitution. Use the back if necessary. Don't forget to find both  $x$  and  $y$ !!!

1)  $\begin{cases} y = -x + 10 \\ y = 6x + 59 \end{cases}$  **FIND Y**

$$-x + 10 = 6x + 59$$

$$+x \quad +x$$

$$10 = 7x + 59$$

$$-59 \quad -59$$

$$-49 = 7x$$

$$\frac{-49}{7} = \frac{7x}{7}$$

$$-7 = x$$

$$y = -(-7) + 10$$

$$y = 7 + 10$$

$$y = 17$$

**$(-7, 17)$**

2)  $\begin{cases} y = 3x \\ x - 2y = 15 \end{cases}$  **FIND Y**

$$x - 2(3x) = 15$$

$$x - 6x = 15$$

$$-5x = 15$$

$$\frac{-5x}{-5} = \frac{15}{-5}$$

$$x = -3$$

$$y = 3x$$

$$y = 3(-3)$$

$$y = -9$$

**$(-3, -9)$**

3)  $\begin{cases} x = 5y - 12 \\ x + 3y = 12 \end{cases}$  **FIND X**

$$5y - 12 + 3y = 12$$

$$8y - 12 = 12$$

$$+12 \quad +12$$

$$8y = 24$$

$$\frac{8y}{8} = \frac{24}{8}$$

$$y = 3$$

$$x = 5y - 12$$

$$x = 5(3) - 12$$

$$x = 15 - 12$$

$$x = 3$$

**$(3, 3)$**

4)  $\begin{cases} -3x + 5y = 0 \\ y = x - 6 \end{cases}$  **FIND Y**

$$-3x + 5(x - 6) = 0$$

$$-3x + 5x - 30 = 0$$

$$-3x + 5x - 30 = 0$$

$$+30 \quad +30$$

$$2x = 30$$

$$\frac{2x}{2} = \frac{30}{2}$$

$$x = 15$$

$$y = x - 6$$

$$y = 15 - 6$$

$$y = 9$$

**$(15, 9)$**

5) There are 100 members in the US Senate.

Currently, there are four times as many men as women. Write a system of equations, solve it, and describe what the numbers in your solution represent. Make sure to check your answer.

$M$  = # of men  
 $W$  = # of women

could be:  
5 women, 20 men  
7 women, 28 men  
etc.  
so:  $W \cdot 4 = M$

$$\begin{cases} M + W = 100 \\ 4W = M \end{cases}$$

$$4W + W = 100$$

$$5W = 100 \rightarrow W = 20$$

$$M = 4 \cdot 20 = 80$$

**80 men, 20 women**

6)  $\begin{cases} y = \frac{3}{2}x \\ y = -1x + 10 \end{cases}$  **FIND Y**

$$\frac{3}{2}x = -1x + 10$$

$$+1x \quad +1x$$

$$\frac{5}{2}x = 10$$

$$\frac{\frac{5}{2}x}{\frac{5}{2}} = \frac{10 \cdot \frac{2}{5}}{\frac{5}{2} \cdot \frac{2}{5}}$$

$$x = 4$$

$$y = -1(4) + 10$$

$$y = -4 + 10$$

$$y = 6$$

**$(4, 6)$**

7)  $\begin{cases} 4x - 2y = -14 \\ y = -3x + 2 \end{cases}$  **FIND Y**

$$4x - 2(-3x + 2) = -14$$

$$4x + 6x - 4 = -14$$

$$10x - 4 = -14$$

$$+4 \quad +4$$

$$10x = -10$$

$$\frac{10x}{10} = \frac{-10}{10}$$

$$x = -1$$

$$y = -3x + 2$$

$$y = -3(-1) + 2$$

$$y = 3 + 2$$

$$y = 5$$

**$(-1, 5)$**

## Solving Systems by Elimination: Review

If you need help with these: Go to [lischwe.weebly.com](http://lischwe.weebly.com) and look at the lessons on November 29 and 30.

Solve by elimination. Use the back if necessary. Don't forget to find both x and y!!!

1)  $\begin{cases} x + 4y = 9 \\ 3x - 4y = 19 \end{cases}$  **FIND Y**  

$$\begin{array}{r} x + 4y = 9 \\ 3x - 4y = 19 \\ \hline 4x = 28 \\ x = 7 \end{array}$$
  

$$\begin{array}{r} x + 4y = 9 \\ 7 + 4y = 9 \\ -7 \quad -7 \\ \hline 4y = 2 \\ y = \frac{1}{2} \end{array}$$
  
**Answer:**  $(7, \frac{1}{2})$

2)  $\begin{cases} -x + 2y = -7 \\ 2x - 3y = 8 \end{cases}$  **FIND X**  

$$\begin{array}{r} -x + 2y = -7 \\ 2x - 3y = 8 \\ \hline -2x + 4y = -14 \\ 2x - 3y = 8 \\ \hline 7y = -22 \\ y = -\frac{22}{7} \end{array}$$
  

$$\begin{array}{r} -x + 2y = -7 \\ -x + 2(-\frac{22}{7}) = -7 \\ -x - \frac{44}{7} = -7 \\ -x = -7 + \frac{44}{7} \\ -x = -\frac{5}{7} \\ x = \frac{5}{7} \end{array}$$
  
**Answer:**  $(\frac{5}{7}, -\frac{22}{7})$

3)  $\begin{cases} 5x + 3y = -14 \\ 5x - 4y = 42 \end{cases}$  **FIND X**  

$$\begin{array}{r} 5x + 3y = -14 \\ 5x - 4y = 42 \\ \hline -7y = -56 \\ y = 8 \end{array}$$
  

$$\begin{array}{r} 5x + 3y = -14 \\ 5x + 24 = -14 \\ -5x - 24 = -14 \\ \hline -10 = -10 \\ x = 2 \end{array}$$
  
**Answer:**  $(2, 8)$

4) Farmer Ben has 22 animals – all are either ducks or cows. Each cow has 4 legs, each duck has 2 legs, and there are 56 legs all together. Write and solve a system to find out how many of each type of animal Farmer Ben has.

Make sure to check your answer. D = # of ducks  
C = # of cows

$$\begin{cases} D + C = 22 \\ 2D + 4C = 56 \end{cases}$$

**FIND D**

$$\begin{array}{r} D + C = 22 \\ 2D + 4C = 56 \\ \hline -2D - 2C = -44 \\ 2D + 4C = 56 \\ \hline -2C = -66 \\ C = 33 \end{array}$$

**16 ducks  
6 cows**

**FIND X**

$$\begin{array}{r} 2x + 6y = 22 \\ 2x + 6(2) = 22 \\ 2x + 12 = 22 \\ -12 \quad -12 \\ \hline 2x = 10 \\ x = 5 \end{array}$$

**(5, 2)**

6) Check your answer for one of the problems from #1-3 or 5 by plugging the numbers into **both** original equations.

**#3:**  $5x + 3y = -14$   
 $5(2) + 3(8) = -14$   
 $10 + 24 = -14$   
 $34 = -14$  ✓

$5x - 4y = 42$   
 $5(2) - 4(8) = 42$   
 $10 - 32 = 42$   
 $-22 = 42$  ✓