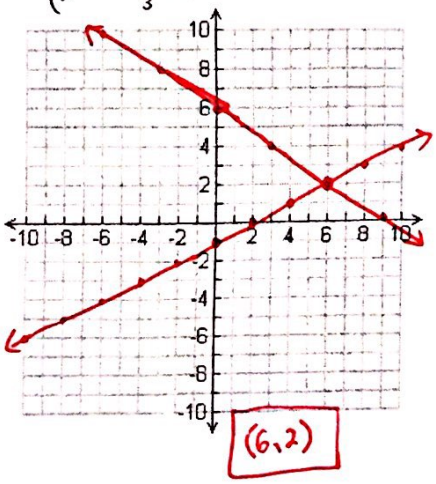
Solving Systems by Graphing: Review

If you need help with these: Go to **lischwe.weebly.com** and look at the lesson on November 28.

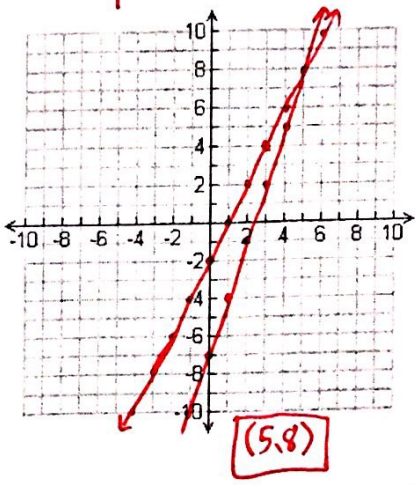
Solve the system by graphing.

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



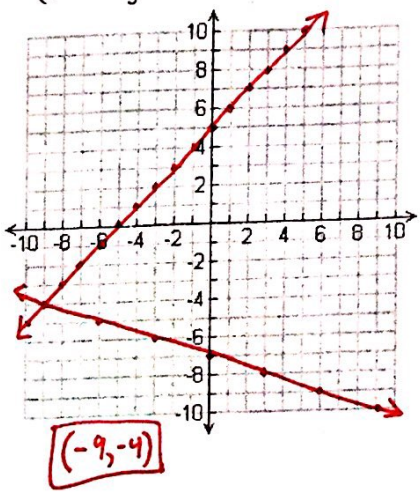
(6, 2)

2) $\begin{cases} y = 2x - 2 \\ y = 3x - 7 \end{cases}$



(5, 8)

3) $\begin{cases} y = \frac{1}{1}x + 5 \\ y = -\frac{1}{3}x - 7 \end{cases}$

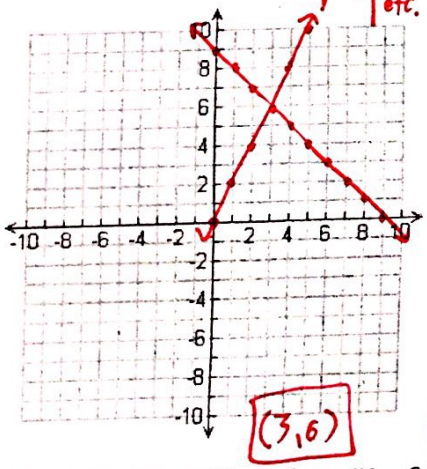


(−9, −4)

4) $\begin{cases} x + y = 9 \\ y = 2x \end{cases}$ → $y = 9 - x$

x	y
0	9
1	8
2	7
3	6

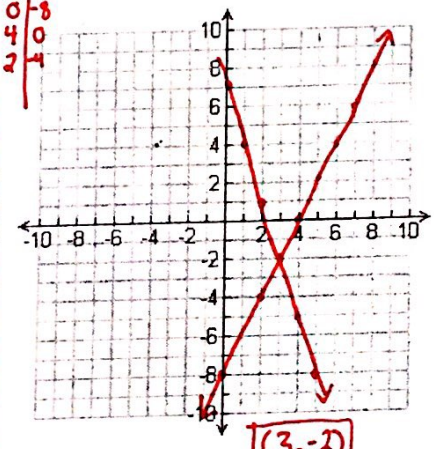
etc.



(3, 6)

5) $\begin{cases} -4x + 2y = -16 \\ y = -3x + 7 \end{cases}$ → $y = -8 + 2x$

x	y
0	−8
4	0
2	−4



(3, −2)

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.

a) Write a system of equations. $\begin{cases} y = 60x + 20 \\ y = -30x + 560 \end{cases}$

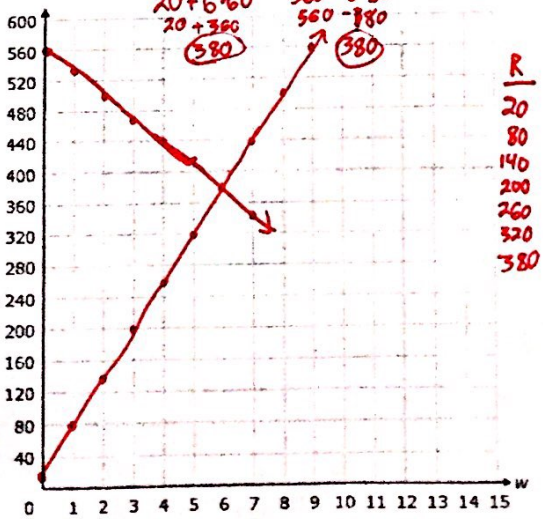
b) Graph them and find the intersection. (6, 380)

c) Explain what the numbers in your solution represent. After 6 weeks, they both have $380.

d) Check your answer.

$20 + 6 \cdot 60$
$20 + 360$
380

$560 - 6 \cdot 30$
$560 - 180$
380



R	K
20	560
80	530
140	500
200	470
260	440
320	410
380	380

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

#2

$8 = 2 \cdot 5 - 2$
$8 = 10 - 2$
$8 = 8$ ✓

$9 = 3 \cdot 5 - 7$
$8 = 15 - 7$
$8 = 8$ ✓

#4

$3 + 6 = 9$
$9 = 9$ ✓

$6 = 2(3)$
$6 = 6$ ✓

#5

$-4(3) + 2(-2) = -16$
$-12 - 4 = -16$
$-16 = -16$ ✓

$-2 = -3(3) + 7$
$-2 = -9 + 7$
$-2 = -2$ ✓

Solving Systems by Substitution: Review

If you need help with these: Go to **lischwe.weebly.com** and look at the lessons on November 29 and 30.

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

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

$-x+10=6x+59$
$+x \quad +x$
$10=7x+59$
$-59 \quad -59$
$\frac{-49}{7}=\frac{7x}{7}$
$-7=x$

$y=-(-7)+10$
$y=7+10$
$y=17$
$(-7,17)$

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

$x-2(3x)=15$
$x-6x=15$
$\frac{-5x}{-5}=\frac{15}{-5}$
$x=-3$

$y=3(-3)$
$y=-9$
$(-3,-9)$

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

$5y-12+3y=12$
$8y-12=12$
$+12 \quad +12$
$\frac{8y}{8}=\frac{24}{8}$
$y=3$

$x=5(3)-12$
$x=15-12$
$x=3$
$(3,3)$

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

$-3x+5(x-6)=0$
$-3x+5x-30=0$
$2x-30=0$
$+30 \quad +30$
$\frac{2x}{2}=\frac{30}{2}$
$x=15$

$y=15-6$
$y=9$
$(15,9)$

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.

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

$M=4(20)$
$M=80$

$4W+W=100$
$5W=100$
$W=20$

80 Men
20 Women

Women: W
Men: W W W W
$=100$

6) $\begin{cases} y = \frac{3}{2}x \\ y = -1x + 10 \end{cases}$ $\frac{3}{2}+1$ $\frac{3}{2}+\frac{2}{2}=\frac{5}{2}$

$\frac{3}{2}x=-1x+10$
$+1x \quad +1x$
$\frac{5}{2}x=10$
$\frac{2}{5}\cdot\frac{5}{2}x=\frac{10}{1}\cdot\frac{2}{5}$
$x=\frac{20}{5}$
$x=4$

$y=-1(4)+10$
$y=-4+10$
$y=6$
$(4,6)$

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

$4x-2(-3x+2)=-14$
$4x+6x-4=-14$
$10x-4=-14$
$+4 \quad +4$
$\frac{10x}{10}=\frac{-10}{10}$
$x=-1$

$y=-3(-1)+2$
$y=3+2$
$y=5$
$(-1,5)$

Solving Systems by Elimination: Review

If you need help with these: Go to **lischwe.weebly.com** and look at the lessons on December 1st and 4th.

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

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

$4x=28$
$\frac{4x}{4}=\frac{28}{4}$
$x=7$

$7+4y=9$
$-7 \quad -7$
$\frac{4y}{4}=\frac{2}{4}$
$y=\frac{1}{2}$
$(7,\frac{1}{2})$

2) $\begin{cases} -x + 2y = -7 \\ 2x - 3y = 8 \end{cases}$ $\rightarrow$ $-2x+4y=-14$ $\rightarrow$ $2x-3y=8$

$1y=-6$

$2x-3(-6)=8$
$2x+18=8$
$-18 \quad -18$
$\frac{2x}{2}=\frac{-10}{2}$
$x=-5$
$(-5,-6)$

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

$7y=-56$
$\frac{7y}{7}=\frac{-56}{7}$
$y=-8$

$5x-4(-8)=42$
$5x+32=42$
$5x=10$
$x=2$
$(2,-8)$

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.

$4c+2d=56$ $\rightarrow$ $4c+2d=56$
$-2(c+d=22)$ $\rightarrow$ $-2c-2d=-44$

$\frac{2c}{2}=\frac{12}{2}$
$c=6$

$6+d=22$
$d=16$

6 cows
16 ducks

check
$4(6)+2(16)=56$
$24+32=56$
$56=56$ ✓

5) $\begin{cases} 2x + 6y = 22 \\ 3x - 4y = 7 \end{cases}$ $\rightarrow$ $6x+18y=66$ $\rightarrow$ $-6x+8y=-14$

$\frac{26y}{26}=\frac{52}{26}$
$y=2$

$2x+6(2)=22$
$2x+12=22$
$2x=10$
$x=5$
$(5,2)$

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

#1

$7+4(\frac{1}{2})=9$
$7+2=9$
$9=9$ ✓

$3(2)-4(\frac{1}{2})=19$
$2-2=19$
$19=19$ ✓