

KEY

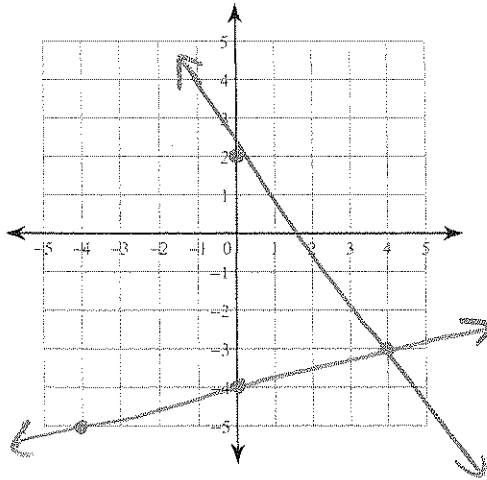
Unit 5 Review

Solve each system

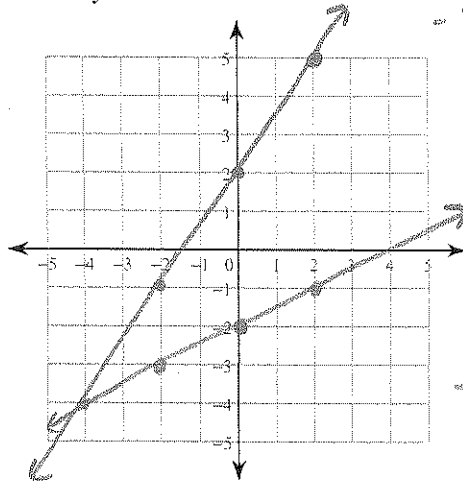
1) $y = \frac{1}{4}x - 4$

$y = -\frac{5}{4}x + 2$

(4, -3)



2) $3x - 2y = -4$
 $x - 2y = 4$



(-4, -4)

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

$$\begin{array}{r} x - 2y = 4 \\ -x = -x \\ \hline -2y = -x + 4 \\ \frac{-2y}{-2} = \frac{-x + 4}{-2} \\ y = \frac{1}{2}x - 2 \end{array}$$

Solve each system.

3) $8x + 6y = 23$
 $-8x - 6y = -22$

$0 = 1$

No Solution

5) $y = -3x + 9$
 $-54 + 3y = -36x$

$$\begin{array}{r} -54 + 3(-3x + 9) = -36x \\ -54 - 9x + 27 = -36x \\ -9x - 27 = -36x \\ +9x +9x \\ \hline -27 = -27x \\ -27 -27 \\ \hline 1 = x \end{array}$$

$$\begin{array}{l} y = -3(1) + 9 \\ y = -3 + 9 \\ y = 6 \end{array}$$

(1, 6)

$$\begin{array}{r} -1 \\ 4) \begin{array}{l} 8x + 4y = 24 \\ -2x + 4y = -26 \end{array} \rightarrow \begin{array}{l} -8x - 4y = -24 \\ -2x + 4y = -26 \end{array} \\ \hline -2(5) + 4y = -26 \\ -10 + 4y = -26 \\ +10 +10 \\ \hline 4y = -16 \\ \frac{4y}{4} = \frac{-16}{4} \\ y = -4 \end{array}$$

$$\begin{array}{r} -10x = -50 \\ \frac{-10x}{-10} = \frac{-50}{-10} \\ x = 5 \end{array}$$

(5, -4)

7) $6x - 2y = 30$
 $2(9x + 7y = -15) \rightarrow 18x + 14y = -30$

$$\begin{array}{r} 60x = 180 \\ \frac{60x}{60} = \frac{180}{60} \\ x = 3 \end{array}$$

$$\begin{array}{r} 6(3) - 2y = 30 \\ 18 - 2y = 30 \\ -18 = -18 \\ \hline -2y = 12 \\ \frac{-2y}{-2} = \frac{12}{-2} \\ y = -6 \end{array}$$

(3, -6)

$$7) \begin{aligned} x &= 3y - 2 \\ 2x - 2y &= 8 \end{aligned}$$

$$\begin{aligned} X &= 3(3) - 2 \\ X &= 9 - 2 \\ X &= 7 \end{aligned}$$

$$\boxed{(7, 3)}$$

$$\begin{aligned} 2(3y-2) - 2y &= 8 \\ 6y - 4 - 2y &= 8 \\ 4y - 4 &= 8 \\ +4 & \quad +4 \\ \hline 4y &= 12 \\ \frac{4y}{4} &= \frac{12}{4} \\ y &= 3 \end{aligned}$$

$$8) \begin{aligned} y &= 5x - 21 \\ -x - 3y &= 15 \end{aligned}$$

$$\begin{aligned} y &= 5(3) - 21 \\ y &= 15 - 21 \\ y &= -6 \end{aligned}$$

$$\boxed{(3, -6)}$$

$$\begin{aligned} -x - 3(5x - 21) &= 15 \\ -x - 15x + 63 &= 15 \\ -16x + 63 &= 15 \\ -63 & \quad -63 \\ \hline -16x &= -48 \\ \frac{-16x}{-16} &= \frac{-48}{-16} \\ x &= 3 \end{aligned}$$

- 9) The indoor climbing gym is a popular field trip destination. This year the senior class at High School A and the senior class at High School B both planned trips there. The senior class at High School A rented and filled 5 vans and 10 buses with 350 students. High School B rented and filled 5 vans and 13 buses with 437 students. Every van had the same number of students in it as did the buses. Find the number of students in each van and in each bus.

$$\begin{aligned} X - \text{vans} & \quad -1(5x + 10y = 350) \rightarrow -5x - 10y = -350 \\ Y - \text{buses} & \quad 5x + 13y = 437 \rightarrow 5x + 13y = 437 \end{aligned}$$

$$\boxed{\begin{array}{l} \text{vans hold } 12 \\ \text{buses hold } 29 \end{array}}$$

$$\begin{aligned} 3y &= 87 \\ y &= 29 \end{aligned}$$

$$\begin{aligned} 5x + 10(29) &= 350 \\ 5x + 290 &= 350 \\ -290 & \quad -290 \\ \hline 5x &= 60 \\ \frac{5x}{5} &= \frac{60}{5} \\ x &= 12 \end{aligned}$$

- 10) Beth and Ryan are selling cookie dough for a school fundraiser. Customers can buy packages of sugar cookie dough and packages of gingerbread cookie dough. Beth sold 5 packages of sugar cookie dough and 6 packages of gingerbread cookie dough for a total of \$78. Ryan sold 4 packages of sugar cookie dough and 1 package of gingerbread cookie dough for a total of \$32. What is the cost each of one package of sugar cookie dough and one package of gingerbread cookie dough?

$$\begin{aligned} X - \text{sugar} & \quad 5x + 6y = 78 \rightarrow 5x + 6y = 78 \\ Y - \text{gingerbread} & \quad -6(4x + y = 32) \rightarrow -24x - 6y = -192 \end{aligned}$$

$$\boxed{\begin{array}{l} \text{sugar cookies are } \$6 \\ \text{gingerbread are } \$8 \end{array}}$$

$$\begin{aligned} -19x &= -114 \\ \frac{-19x}{-19} &= \frac{-114}{-19} \\ x &= 6 \end{aligned}$$

$$\begin{aligned} 4(6) + y &= 32 \\ 24 + y &= 32 \\ -24 & \quad -24 \\ \hline y &= 8 \end{aligned}$$

- 11) Find the value of two numbers if their sum is 86 and their difference is 14.

$$\begin{aligned} X + Y &= 86 \\ X - Y &= 14 \end{aligned}$$

$$\frac{2x}{2} = \frac{100}{2} \quad x = 50$$

$$\begin{aligned} 50 + y &= 86 \\ -50 & \quad -50 \\ \hline y &= 36 \end{aligned}$$

The two #'s are 50 and 36

- 12) Steve went to Best Buy to purchase video games and CDs. He purchased a total of 9 items for \$127. If video games cost \$15 each and CDs cost \$13 each, how many of each did he buy?

$$\begin{aligned} X - \text{game} & \quad -13(x + y = 9) \rightarrow -13x - 13y = -117 \\ Y - \text{CD} & \quad 15x + 13y = 127 \end{aligned}$$

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

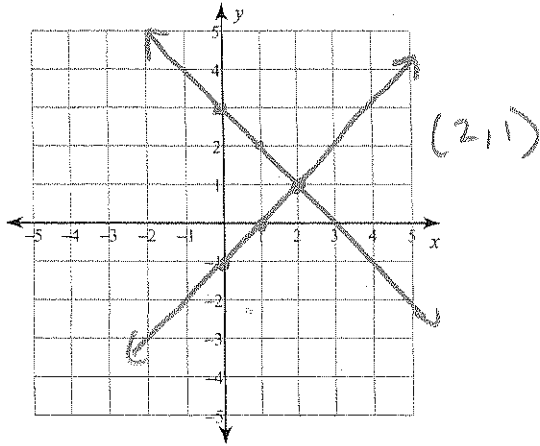
$$x = 5$$

$$\boxed{\begin{array}{l} 5 \text{ Games} \\ 4 \text{ CD's} \end{array}}$$

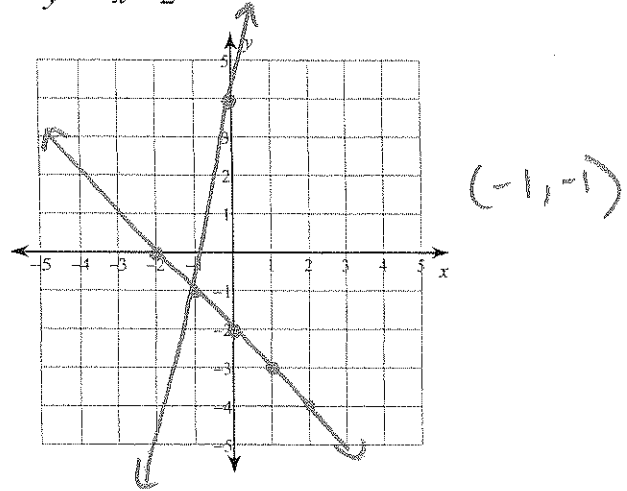
Solving by Graphing Recap

Solve each system by graphing.

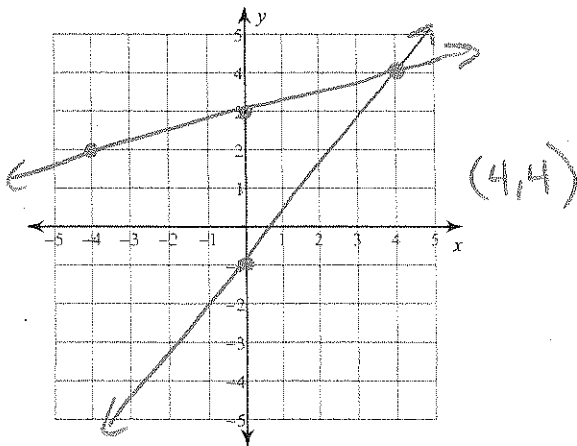
1) $y = x - 1$
 $y = -x + 3$



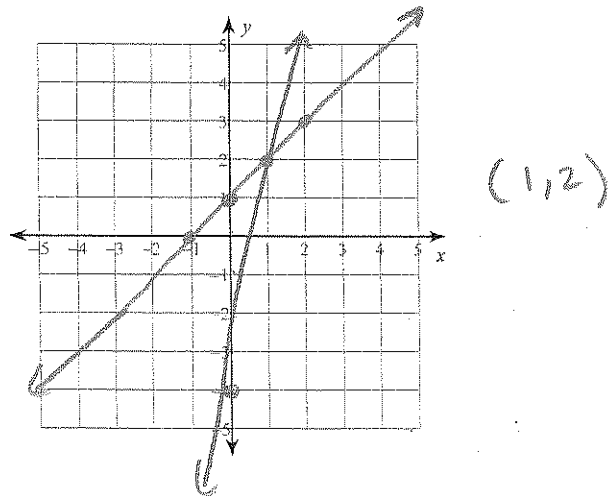
2) $y = 5x + 4$
 $y = -x - 2$



3) $y = \frac{5}{4}x - 1$
 $y = \frac{1}{4}x + 3$

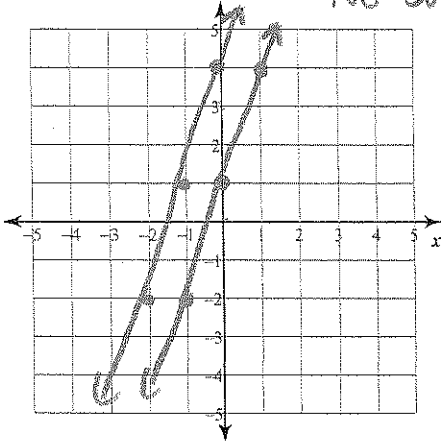


4) $y = x + 1$
 $y = 6x - 4$



5) $y = 3x + 1$
 $y = 3x + 4$

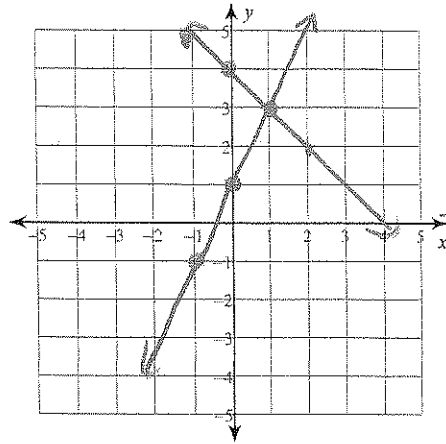
No Solution



6) $x + y = 4$
 $2x - y = -1$

(1, 3)

$$\begin{array}{r} x + y = 4 \\ -x \quad -y \\ \hline y = -x + 4 \end{array}$$

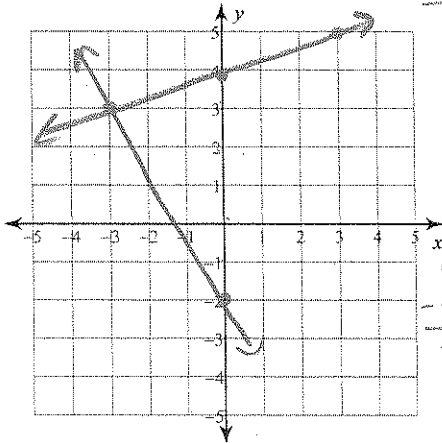


$$\begin{array}{r} 2x - y = -1 \\ -2x \quad -2x \\ \hline -y = -2x - 1 \\ \frac{-y}{-1} = \frac{-2x - 1}{-1} \\ y = 2x + 1 \end{array}$$

7) $x - 3y = -12$
 $5x + 3y = -6$

(-3, 3)

$$\begin{array}{r} x - 3y = -12 \\ -x \quad -x \\ \hline -3y = -x - 12 \\ \frac{-3y}{-3} = \frac{-x - 12}{-3} \\ y = \frac{1}{3}x + 4 \end{array}$$

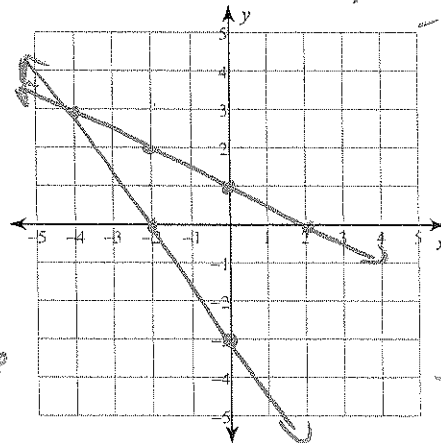


$$\begin{array}{r} 5x + 3y = -6 \\ -5x \quad -5x \\ \hline 3y = -5x - 6 \\ \frac{3y}{3} = \frac{-5x - 6}{3} \\ y = -\frac{5}{3}x - 2 \end{array}$$

8) $3x + 2y = -6$
 $x + 2y = 2$

(-4, 3)

$$\begin{array}{r} 3x + 2y = -6 \\ -3x \quad -3x \\ \hline 2y = -3x - 6 \\ \frac{2y}{2} = \frac{-3x - 6}{2} \\ y = -\frac{3}{2}x - 3 \end{array}$$

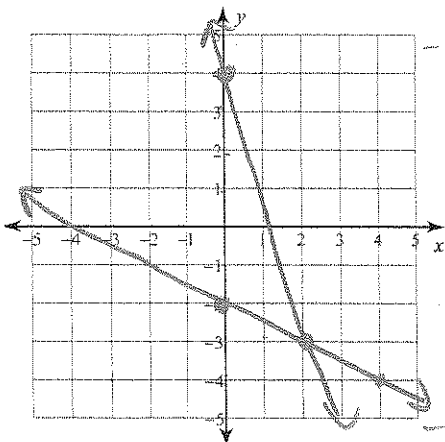


$$\begin{array}{r} x + 2y = 2 \\ -x \quad -x \\ \hline 2y = -x + 2 \\ \frac{2y}{2} = \frac{-x + 2}{2} \end{array}$$

9) $7x + 2y = 8$
 $x + 2y = -4$

(2, -3)

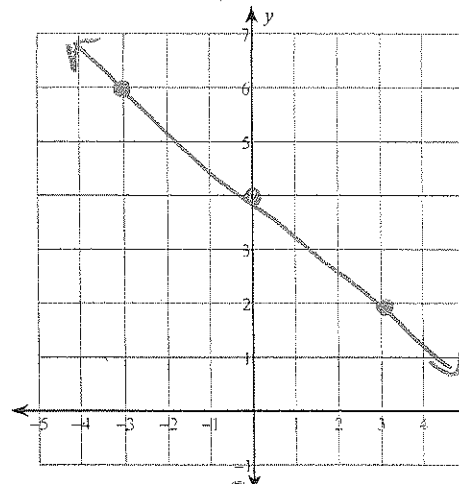
$$\begin{array}{r} 7x + 2y = 8 \\ -7x \quad -7x \\ \hline 2y = -7x + 8 \\ \frac{2y}{2} = \frac{-7x + 8}{2} \\ y = -\frac{7}{2}x + 4 \end{array}$$



$$\begin{array}{r} x + 2y = -4 \\ -x \quad -x \\ \hline 2y = -x - 4 \\ \frac{2y}{2} = \frac{-x - 4}{2} \\ y = -\frac{1}{2}x - 2 \end{array}$$

10) $2x + 3y = 12$
 $-4x - 6y = -24$

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



Infinite Solutions

$$\begin{array}{r} 2x + 3y = 12 \\ -2x \quad -2x \\ \hline 3y = -2x + 12 \\ \frac{3y}{3} = \frac{-2x + 12}{3} \\ y = -\frac{2}{3}x + 4 \end{array}$$

$$\begin{array}{r} -4x - 6y = -24 \\ +4x \quad +4x \\ \hline -6y = 4x - 24 \\ \frac{-6y}{-6} = \frac{4x - 24}{-6} \\ y = -\frac{2}{3}x + 4 \end{array}$$