

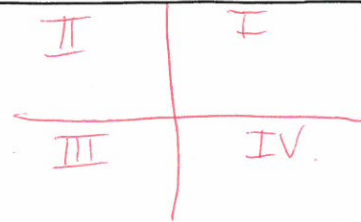
Answer Key

Name: _____
Date: _____

Systems of Equations 02
(alt)

How to find the coordinates of a point where 2 lines meet.

- Make both equations look like : ' $y = ax + b$ '
- Make both equations *equal* to each other
- Solve for 'x'
- Plug the value of 'x' back into one of the two equations and solve for 'y'



1) Solve for 'x'.

a) $3x + 4 = 6x - 8$

$$\begin{aligned} \textcircled{1} \quad 3x - 6x &= -8 - 4 \\ -3x &= -12 \\ \frac{-3x}{-3} &= \frac{-12}{-3} \\ x &= 4 \end{aligned}$$

$\textcircled{2}$

$$\begin{aligned} y &= 3x + 4 \\ y &= 3(4) + 4 \\ y &= 16 \end{aligned} \quad (4, 16)$$

c) $-8x + 20 = 2x - 48$

$$\begin{aligned} \textcircled{1} \quad -8x - 2x &= -48 - 20 \\ -10x &= -68 \\ \frac{-10x}{-10} &= \frac{-68}{-10} \\ x &= 6.8 \end{aligned} \quad (6.8, -34.4)$$

$$\textcircled{2} \quad y = -8x + 20$$

$$y = -8(6.8) + 20 \quad y = -34.4$$

e)

f)

b) $7x + 19 = 3x - 7$

$$\begin{aligned} \textcircled{1} \quad 7x - 3x &= -7 - 19 \\ 4x &= -26 \\ \frac{4x}{4} &= \frac{-26}{4} \\ x &= -6.5 \end{aligned}$$

$$\textcircled{2} \quad y = 7x + 19$$

$$y = 7(-6.5) + 19 \quad y = -26.5$$

$$(-6.5, -26.5)$$

d) $11x + 7 = -15x - 32$

$$\begin{aligned} \textcircled{1} \quad 11x + 15x &= -32 - 7 \\ 26x &= -39 \\ \frac{26x}{26} &= \frac{-39}{26} \\ x &= -1.5 \end{aligned}$$

$$\textcircled{2} \quad y = 11x + 7$$

$$y = 11(-1.5) + 7$$

$$y = -9.5$$

$$(-1.5, -9.5)$$

2) What are the coordinates of the point where the following two lines meet?

Equation 1: $y = 2x + 6$

Equation 2: $y = 6x - 8$

$$\begin{aligned} \textcircled{1} \quad 2x + 6 &= 6x - 8 \\ 2x - 6x &= -8 - 6 \\ -4x &= \frac{-14}{-4} \\ x &= 3.5 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad y &= 2x + 6 \\ y &= 2(3.5) + 6 \\ y &= 13 \end{aligned}$$

Answer (3.5 , 13)

3) What are the coordinates of the point where the following two lines meet?

Equation 1: $y = 5x + 9$

Equation 2: $y = 3x - 14$

$$\begin{aligned} \textcircled{1} \quad 5x + 9 &= 3x - 14 \\ 5x - 3x &= -14 - 9 \\ 2x &= \frac{-23}{2} \\ x &= -11.5 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad y &= 5x + 9 \\ y &= 5(-11.5) + 9 \\ y &= -48.5 \end{aligned}$$

Answer (-11.5 , -48.5)

4) What are the coordinates of the point where the following two lines meet?

Equation 1: $2y = -4x + 16$

Equation 2: $-10x + 5y + 80 = 0$

$$y = -2x + 8$$

$$\begin{aligned} -2x + y + 16 &= 0 \\ y &= 2x - 16 \end{aligned}$$

$$\begin{aligned} \textcircled{1} \quad -2x + 8 &= 2x - 16 \\ -2x - 2x &= -16 - 8 \\ -4x &= \frac{-24}{-4} \\ x &= 6 \end{aligned}$$

$$\begin{aligned} \textcircled{2} \quad 2y &= -4x + 16 \\ 2y &= -4(6) + 16 \\ 2y &= -8 \\ y &= -4 \end{aligned}$$

Answer (6 , -4)