Solving Systems of Equations

A "system" of equations is a set of equations that you deal with all together at once.

For example, the following two equations make up a system:

$$\begin{cases} y = x + 1 \\ y = -2x + 4 \end{cases}$$

you need the same # of equations as there are unknowns in order to solve.

To solve a system of equations, you must find a solution for x and y that satisfies all of the equations.

Start by graphing both equations on the same grid.
Next, find the **intersection point** (place where the two lines cross).
This is the point that is a solution to both equations.

$$\begin{cases} y = x + 1 \\ y = -2x + 4 \end{cases}$$

$y = x + 1$

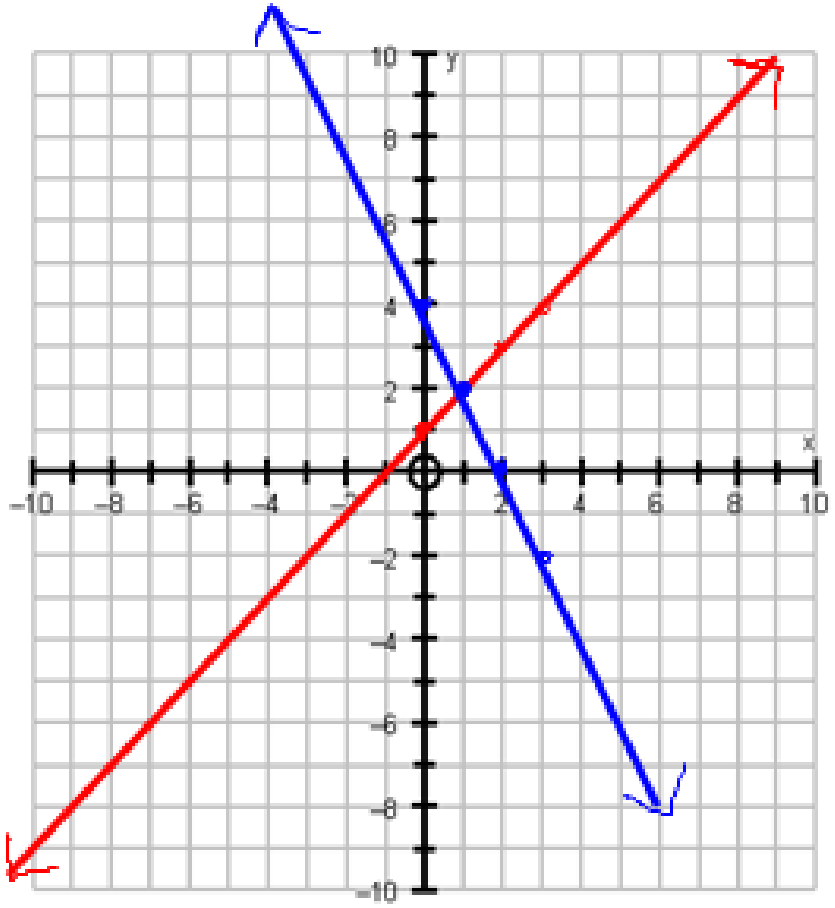
slope $\frac{1}{1}$ $\frac{\text{rise}}{\text{run}}$

y int (0, 1)

$y = -2x + 4$

slope $\frac{-2}{1}$ $\frac{\text{rise}}{\text{run}}$

y int (0, 4)



P.O.I (1, 2)

Point of Intersection

(1, 2)

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

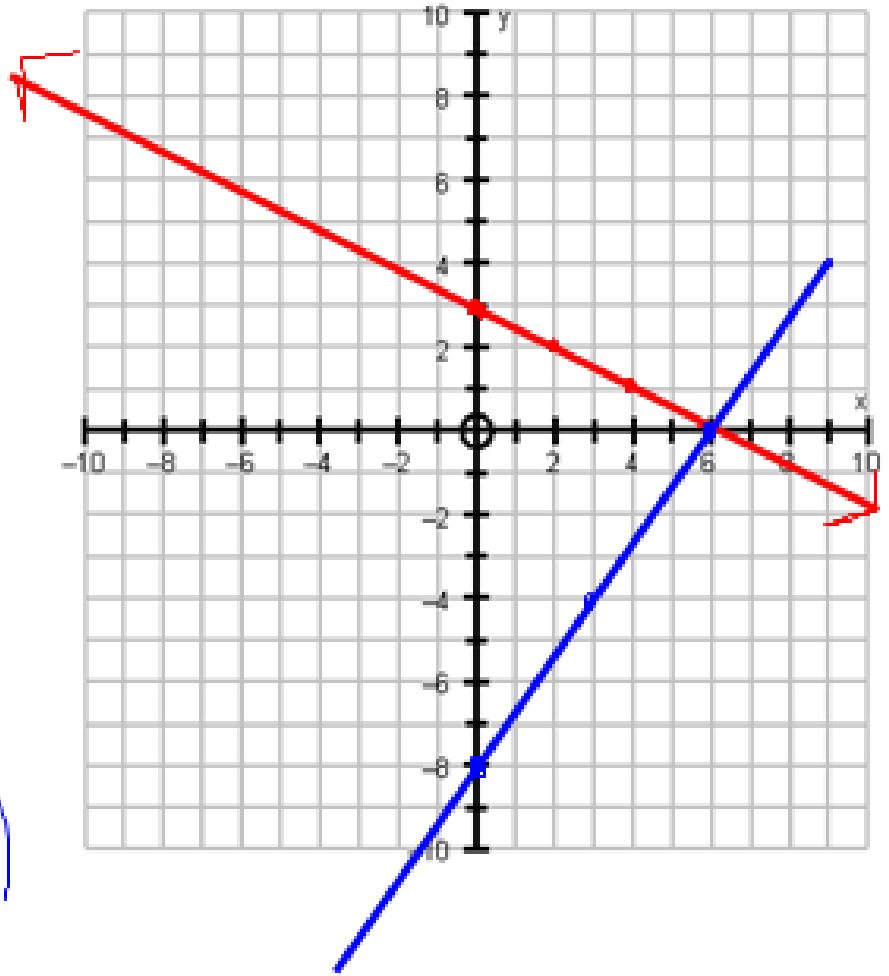
$y = \frac{4}{3}x - 8$

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

slope $-\frac{1}{2}$ y int $(0, 3)$

$y = \frac{4}{3}x - 8$

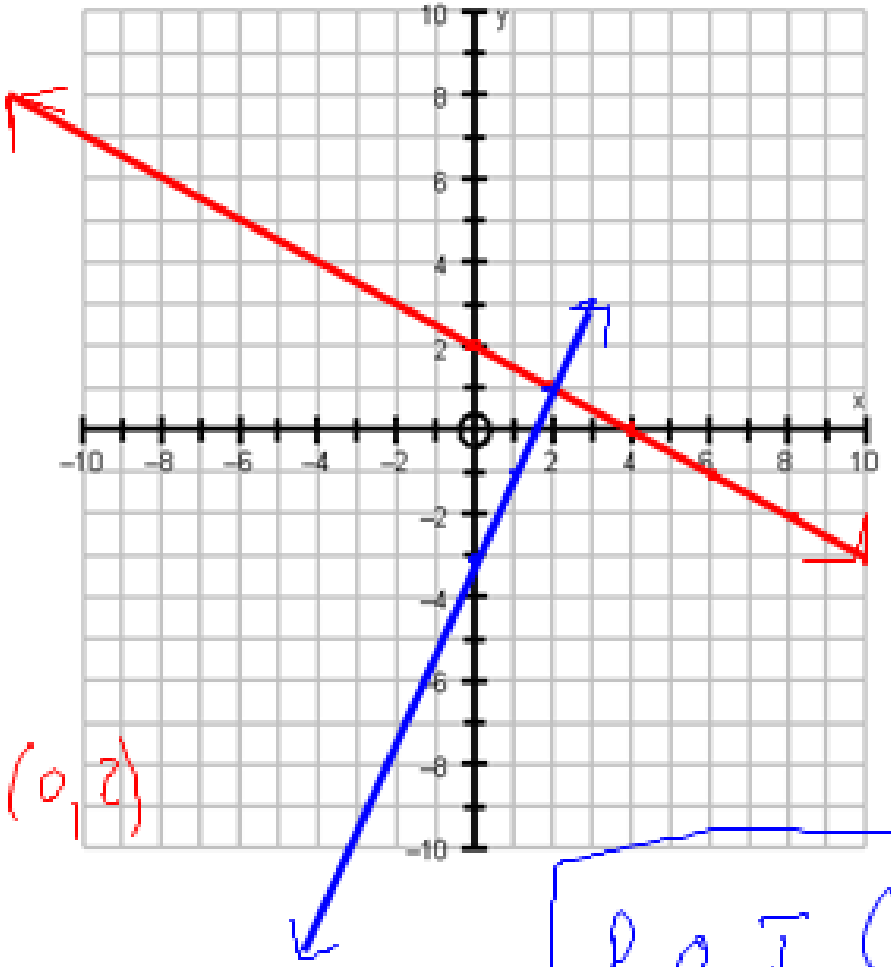
slope $\frac{4}{3}$ y int $(0, -8)$



P. O. I (6, 0)

① $x + 2y = 4$

② $2x - y - 3 = 0$



① $x + 2y = 4$

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

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

slope $-\frac{1}{2}$ y int $(0, 2)$

② $2x - y - 3 = 0$

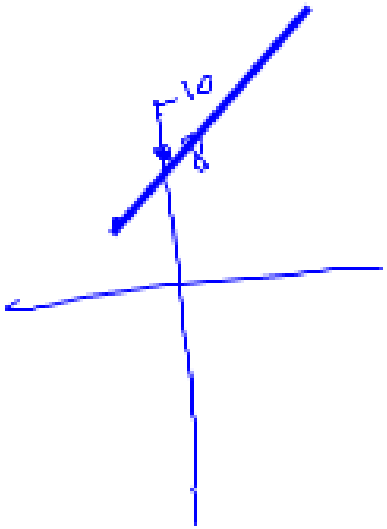
$\frac{-y}{-1} = \frac{-2x + 3}{-1}$

$y = 2x - 3$

slope $\frac{2}{1}$ y int $(0, -3)$

P. O. I $(2, 1)$

HW: Worksheet on graphing and study for Probe (5E1,2,3 and graphing)



$y = \frac{3}{2}x + 8$

$-\frac{3}{=2}$

$y + x = 3$ (x) (x) → not allowed to write like this! Looks like an exponent.

$y + x - x = 3 - x$

$y = 3 - x$