Solving a System Algebraically by **Elimination** (Addition)

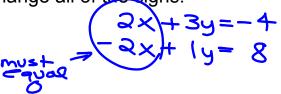
ex) 2x + 3y = -4+ y - 2x = 8

Steps:

1. Make sure the x, y and constant terms line up with each other (the equal sign should line up too!)

2x + 3y = -4-2x + 1y = 8

 Find the pair that are the same coefficient (could be either x or y). The signs should be <u>different</u>. If they are not, multiply one equation by -1 to change all of the signs.



3. Add the two equations together to eliminate one of the variables (x or y).

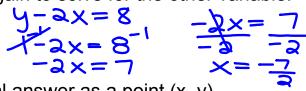
$$+ \frac{2x + 3y = -4}{-x + 1y = 8}$$

$$0 \quad 4y = 4$$

4. Use algebra to solve for the remaining variable.

$$\frac{x_{1}y_{2}}{4} = \frac{4}{4}$$
$$y = 1$$

5. Plug the variable back into one of the equations and use algebra again to solve for the other variable.



6. Write your final answer as a point (x, y).

 $\left(\frac{-7}{2}, 1\right)$

ex)
$$2x = 5y + 2$$

 $5y = x - 1$
 $2x = 5y + 2$
 $3x = 0$
 $y = 0$
 $(1, 0)$
ex) $5x - 2y = 5$
 $-x + 2y = 9$
 $4x = -1$
 $x = -1$
 $5y = -10$
 $3x - 6x = 2$
 $3x - 6x$