

Do Now:

Solve for x

$$\frac{5x}{8} - 6 = -1$$

Solve for x:

$$-3x + 8 \geq 32$$

Solving Systems of Equations by Elimination:

- Goal is to get rid of one variable.
 - Pick one variable to eliminate
 - Get a positive and negative of the same coefficient
- Add the two equations
- Solve for BOTH x and y
- Write your answer as a coordinate pair (x, y)

$$\begin{cases} -5x + 12y = 8 & \text{eliminate } x \\ 5x - 3y = 22 & \text{plug in } y \end{cases}$$

$$\begin{array}{r} -5x + 12y = 8 \\ + 5x - 3y = 22 \\ \hline 9y = 30 \\ \frac{9y}{9} = \frac{30}{9} \\ y = \frac{10}{3} \end{array}$$

$$5x - 3\left(\frac{10}{3}\right) = 22$$

$$\begin{array}{r} 5x - 10 = 22 \\ +10 \quad +10 \\ \hline 5x = 32 \\ \frac{5x}{5} = \frac{32}{5} \\ x = \frac{32}{5} \end{array} \quad \left(\frac{32}{5}, \frac{10}{3}\right)$$

$$\begin{cases} 10x - 2y = 14 \\ -3x - 2y = -12 \end{cases}$$

$$\textcircled{1} \begin{cases} 12x - 4y = 8 \\ x + 4y = -3 \end{cases}$$

$$\textcircled{2} \begin{cases} -7x - 2y = -13 \\ x - 2y = 11 \end{cases}$$

Do Now:

Solve for x

$$\frac{-6x}{8} - 3 \geq 5$$

+3 +3

$$8\left(\frac{-6x}{8}\right) \geq (8)5$$

$$\frac{-6x}{-6} \geq \frac{64}{-6}$$

$$x \leq \frac{-32}{3}$$

Solve for x:

$$-5(x-8) + 2 \leq -3x + 8$$

$$-5x + 40 + 2 \leq -3x + 8$$

$$-5x + 42 \leq -3x + 8$$

+5x +5x

$$42 \leq 2x + 8$$

-8 -8

$$\frac{34}{2} \leq \frac{2x}{2}$$

$$17 \leq x$$

$$x \geq 17$$

$$8 \begin{cases} -5x + 11y = -3 \\ 3x - 8y = 24 \end{cases}$$

$$\begin{array}{r} -40x + \cancel{88y} = -24 \\ + \quad 3x - \cancel{8y} = 24 \\ \hline \end{array}$$

$$\frac{-37x}{-37} = \frac{0}{-37} \quad x=0$$

eliminate y (8)

multiply first equation by 8 $(0, -3)$

$$3(0) - 8y = 24$$

$$0 - 8y = 24$$

$$-8y = 24$$

$$y = -3 \frac{24}{-8} = \frac{24}{-8}$$

$$\begin{aligned} 7(2x - 6y &= -6) \\ 2(-7x + 8y &= -5) \end{aligned}$$

$$\begin{aligned} \cancel{14x} - 42y &= -42 \\ + \cancel{-14x} + 16y &= -10 \\ \hline -26y &= -52 \\ \frac{-26y}{-26} &= \frac{-52}{-26} \\ y &= 2 \end{aligned}$$

eliminate x (14) multiply first equation
by 7
multiply second equation by 2 (3, 2)

$$\begin{aligned} 2x - 6(2) &= -6 \\ 2x - 12 &= -6 \\ \frac{2x}{2} - \frac{12}{2} &= \frac{-6}{2} \\ x - 6 &= -3 \\ x &= 3 \end{aligned}$$

$$\begin{cases} 4(2x - 6y = -6) \\ 3(-7x + 8y = -5) \end{cases}$$

eliminate y (24) multiply first equation
multiply second equation by $\frac{3}{4}$

$$\begin{array}{r} 8x - 24y = -24 \\ + -21x + 24y = -15 \\ \hline \end{array}$$

$$\frac{-13x}{-13} = \frac{-39}{-13}$$

$$x = 3$$

Do Now:

$$-5x(3-8) + 2x \leq 6x - 8(2x+4) - 9$$

$$\underline{-15x + 40x + 2x} \leq \underline{6x - 16x - 32 - 9}$$

$$\begin{array}{r} 27x \leq -10x - 41 \\ +10x \quad +10x \end{array}$$

$$\hline \frac{37x}{37} \leq \frac{-41}{37}$$

$$x \leq \frac{-41}{37}$$

$$\begin{cases} 6x + 6y = -6 & \text{eliminate } y \text{ } (-6) \\ -6(5x + 1y = -13) & \text{multiply second equation by } -6 \end{cases}$$

$$\begin{array}{r} 6x + 6y = -6 \\ -30x - 6y = 78 \\ \hline -24x = 72 \\ \frac{-24}{-24} = \frac{72}{-24} \end{array} \quad x = -3$$

$$\boxed{(-3, 2)}$$

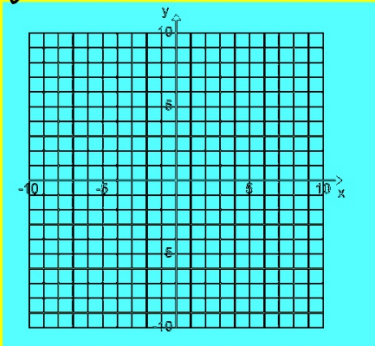
$$\begin{array}{r} 6(-3) + 6y = -6 \\ -18 + 6y = -6 \\ +18 \qquad +18 \\ \hline 6y = 12 \\ \frac{6y}{6} = \frac{12}{6} \\ y = 2 \end{array}$$

Do Now.

Solve for x and y

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

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



② $y = x + 8$
 $2x - 3y = 4$

③ $-6x - 6y = 6$
 $6x + 4y = 8$