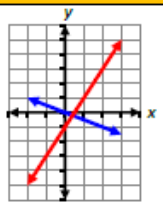
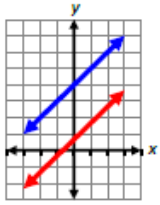
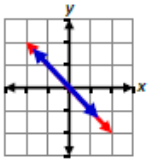
System of Linear Equations
(Number of Solutions)

Number of Solutions	Slopes and *y*-intercepts	Graph
One solution	Different slopes	
No solution	Same slope and different - intercepts	
Infinitely many solutions	Same slope and same *y*-intercepts	

System of Linear Equations
(Substitution)

$$\begin{cases} x + 4y = 17 \\ y = x - 2 \end{cases}$$

Substitute $x - 2$ for y in the first equation.

$$x + 4(x - 2) = 17$$

$$x = 5$$

Now substitute 5 for x in the second equation.

$$y = 5 - 2$$

$$y = 3$$

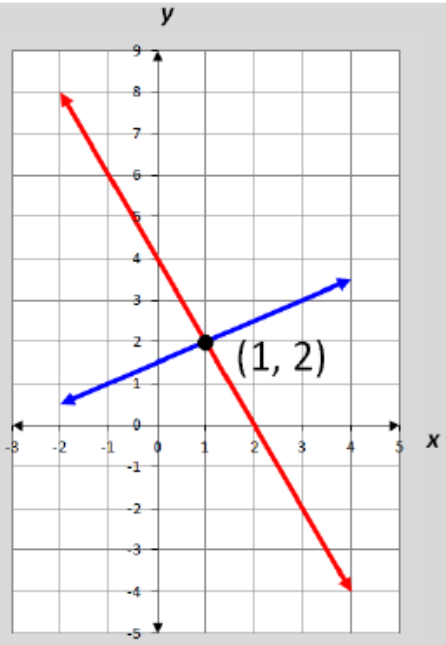
The solution to the linear system is (5, 3), the ordered pair that satisfies both equations.

System of Linear Equations

(Graphing)

$$\begin{cases} -x + 2y = 3 \\ 2x + y = 4 \end{cases}$$

The solution, (1, 2), is the only ordered pair that satisfies both equations (the point of intersection).



System of Linear Equations
(Elimination)

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

Add or subtract the equations to eliminate one variable

$$\begin{array}{r} -5x - 6y = 8 \\ +\ 5x + 2y = 4 \\ \hline -4y = 12 \\ y = -3 \end{array}$$

Now substitute -3 for y in either original equation to find the value of x, the eliminated variable.

$$-5x - 6(-3) = 8$$
$$x = 2$$

The solution to the linear system is (2,-3), the ordered pair that satisfies both equations.

System of Equations
(Linear – Quadratic)

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

The solutions, (-1,0) and (2,3), are the only ordered pairs that satisfy both equations (the points of intersection).