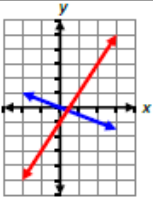
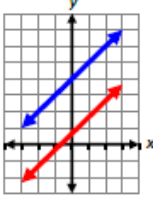
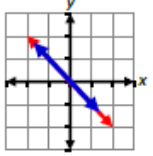


System of Linear Equations (Number of Solutions)

Number of Solutions	Slopes and y-intercepts	Graph
One solution	Different slopes	 A coordinate plane with x and y axes. Two lines are plotted: a red line with a positive slope and a blue line with a negative slope. They intersect at a single point in the first quadrant.
No solution	Same slope and different y-intercepts	 A coordinate plane with x and y axes. Two parallel lines are plotted: a blue line with a positive slope and a red line with a positive slope. They have the same slope but different y-intercepts, so they never intersect.
Infinitely many solutions	Same slope and same y-intercepts	 A coordinate plane with x and y axes. Two overlapping lines are plotted: a blue line with a negative slope and a red line with a negative slope. They have the same slope and the same y-intercept, so they overlap completely.

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.

$$y = 5 - 2$$

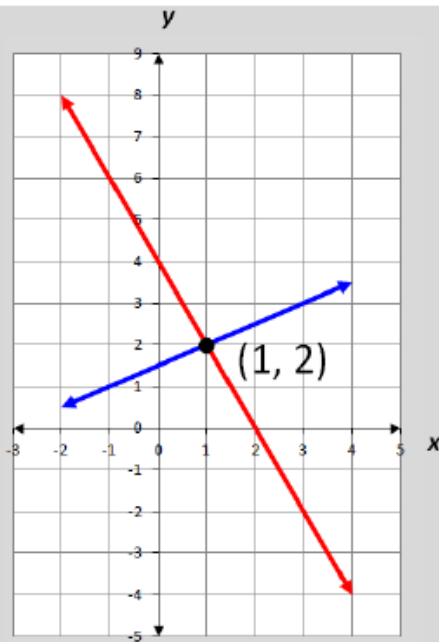
$$y = 3$$

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.

$$\begin{array}{r} -5x - 6(-3) = 8 \\ x = 2 \end{array}$$

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).

