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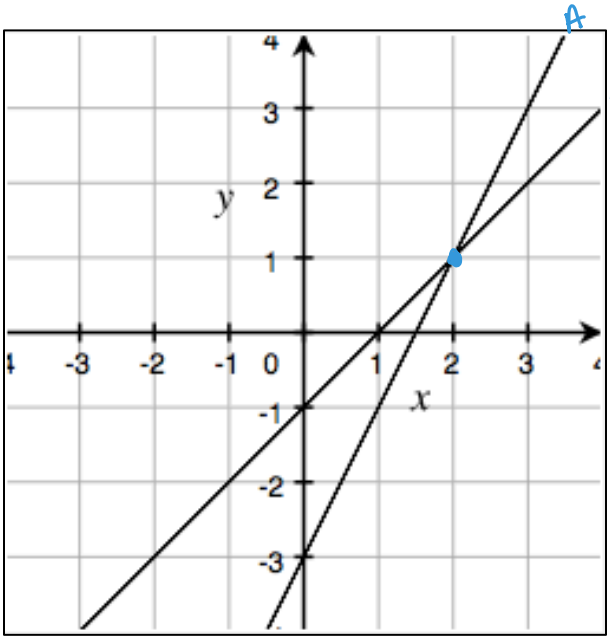
LEARNING OBJECTIVE: We will identify the solution to systems of linear equations by graphing. (G8M4L22).

CONCEPT DEVELOPMENT:

A solution to a system of linear equations is an ordered pair (x, y). On a coordinate plane, this is where the graphs of the two linear equations intersect.

Example:



$L_A \rightarrow y = 2x - 3$

$L_B \rightarrow y = x - 1$

Solution $(2,1)$

$x = 2$

$y = 1$

$(2, 1)$

After we graph our equations, we MUST check our answers by verifying that the point of intersection is indeed a solution to each equation in the system.

$y = 2x - 3$

$1 \stackrel{?}{=} 2(2) - 3$

$1 = 4 - 3$

$1 = 1$

$y = x - 1$?

$1 \stackrel{?}{=} 2 - 1$

$1 = 1$

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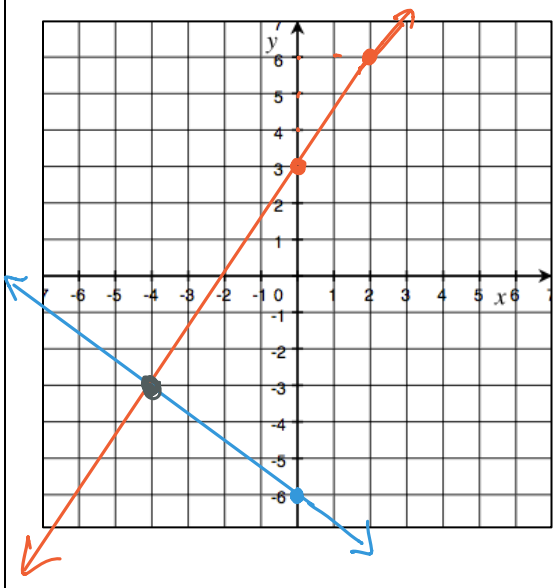
Guided Practice:

Steps to Solving Systems of Equations by Graphing

1. Graph each equation on the same coordinate plane.
2. The solution is the point of intersection.
3. Check your answers by verifying that the point of intersection is a solution to each equation in the system.

$$\begin{cases} y = -\frac{3}{4}x - 6 \\ y = \frac{3}{2}x + 3 \end{cases}$$



Solution: $(-4, -3)$

Check:

$y = -\frac{3}{4}x - 6$

$-3 \stackrel{?}{=} -\frac{3}{4}(-4) - 6$

$-3 = 3 - 6$

$-3 \checkmark -3$

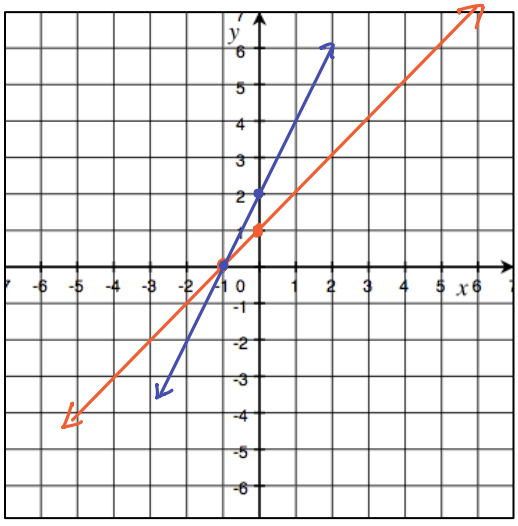
$y = \frac{3}{2}x + 3$

$-3 \stackrel{?}{=} \frac{3}{2}(-4) + 3$

$-3 \stackrel{?}{=} -6 + 3$

$-3 \checkmark -3$

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



Solution: $(-1, 0)$

Check:

$y = x + 1$

$0 \stackrel{?}{=} -1 + 1$

$0 \checkmark 0$

$y = 2x + 2$

$0 \stackrel{?}{=} 2(-1) + 2$

$0 \stackrel{?}{=} -2 + 2$

$0 \checkmark 0$

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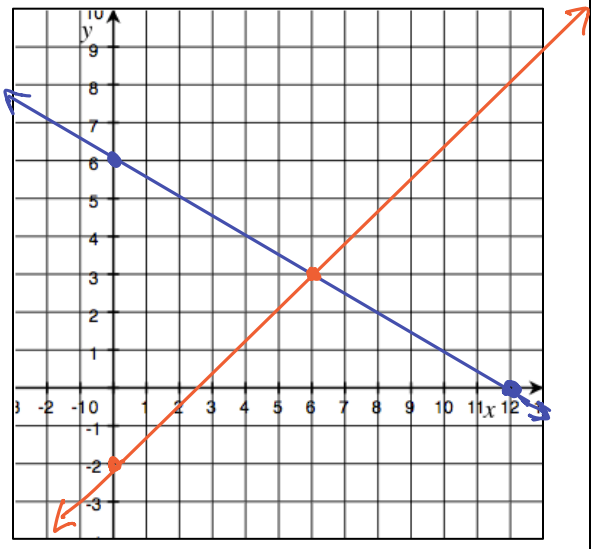
Steps to Solving Systems of Equations by Graphing

1. Graph each equation on the same coordinate plane.
2. The solution is the point of intersection.
3. Check your answers by verifying that the point of intersection is a solution to each equation in the system.

$\begin{cases} x + 2y = 12 \\ y = \frac{5}{6}x - 2 \end{cases}$ $y = -\frac{1}{2}x + 6$



Solution: $(6, 3)$

Check:

$x + 2y = 12$

$6 + 2(3) \stackrel{?}{=} 12$

$6 + 6 = 12$

$12 \checkmark 12$

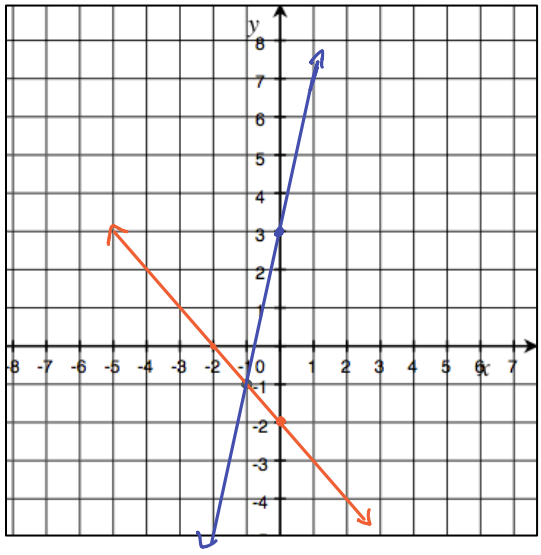
$y = \frac{5}{6}x - 2$

$3 \stackrel{?}{=} \frac{5}{6}(6) - 2$

$3 = 5 - 2$

$3 \checkmark 3$

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



Solution: $(-1, -1)$

Check:

$x + y = -2$

$-1 + (-1) = -2$

$y = 4x + 3$

$-1 \stackrel{?}{=} 4(-1) + 3$

$-1 = -4 + 3$

$-1 \checkmark -1$

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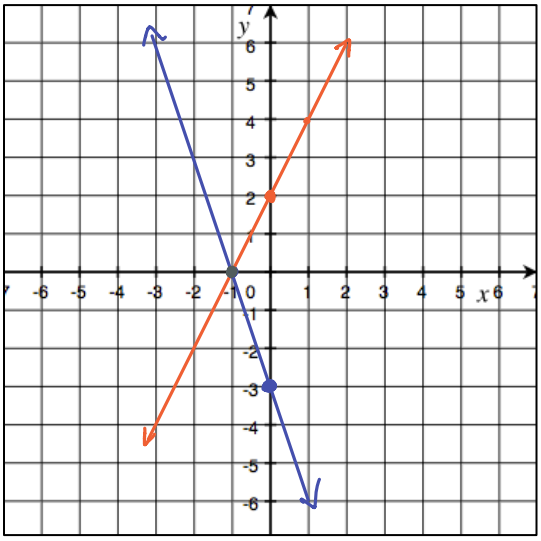
Steps to Solving Systems of Equations by Graphing

1. Graph each equation on the same coordinate plane.
2. The solution is the point of intersection.
3. Check your answers by verifying that the point of intersection is a solution to each equation in the system.

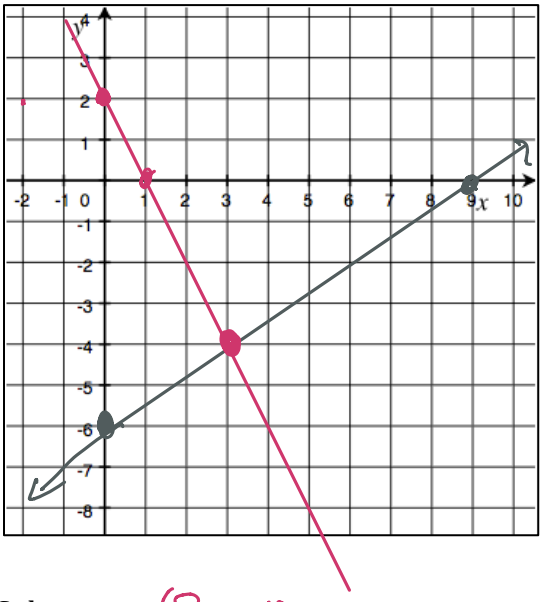
$\begin{cases} 3x + y = -3 \\ 2x - y = -2 \end{cases}$ $y = -3x - 3$ $y = 2x + 2$



Solution: $(-1, 0)$

Check:

$\begin{cases} 2x - 3y = 18 \\ 2x + y = 2 \end{cases}$ $y = -2x + 2$



Solution: $(3, -4)$

Check:

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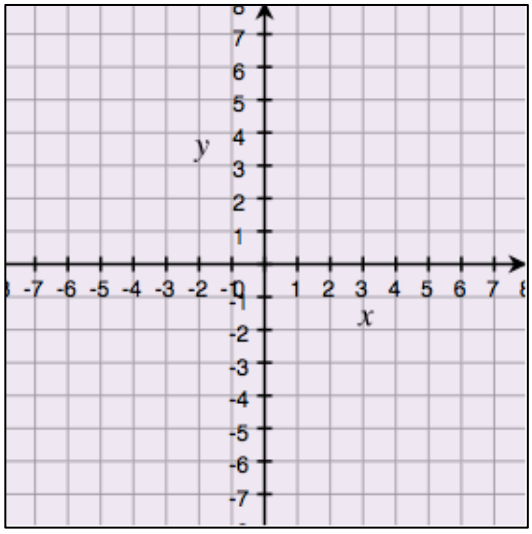
Independent Practice:

Provide the Problem set as independent practice…Page S. 152 and graph paper.

Activating Prior Knowledge:

You can graph each equation on the same coordinate plane:

$y = -\frac{4}{3}x + 6$ $y = x - 1$ 	$y = 2x - 1$ $y = -\frac{1}{2}x + 4$ Graph on your white boards

Closure:

Write two different systems of equations with $(1, -2)$ as the solution.

Teacher Notes:

Map to Lesson 25 in ENY Module 4 Grade 8
Homework is 6 questions handed out in class.