

☠ *Note: Give this supplement when the exercise below is about to begin.* ☠



Objective: Solving Systems Graphically

Homework SY2 – The Doctor’s Graphing Systems Extravaganza

Do Now: Find slope and y-intercepts of these linear equations.

1. $y = -\frac{3}{4}x + 10$

2. $y = 12x$

3. $2y = 4x + 1$

Exam Prep: Which could be a line perpendicular to the line $y = -4x - 10$?

A) $y = 4 - 2x$

B) $2y = 2x - 10$

C) $y = 4x + 12$

D) $y = \frac{1}{4}x + 9$

Special message from The Doctor... There are three methods to solve systems of equations. The first is graphing. It seems simple but relies heavily on prior knowledge of slope. The other two methods (substitution and elimination) are an Algebraic approach.

Recall from the previous lesson... A system of equations is a set of two or more equations with the same variables. If the system has a solution, it would be a coordinate common to all the equations in the system.

Example: $y = x + 4$ and $y = -2x + 10$

Solution: (2, 6)

Discussion: How do you think we would find the solution?

This solution can be found by graphing or using Algebra. We will explore both.

To solving a system by graphing, graph the system of equations to find where they intersect.

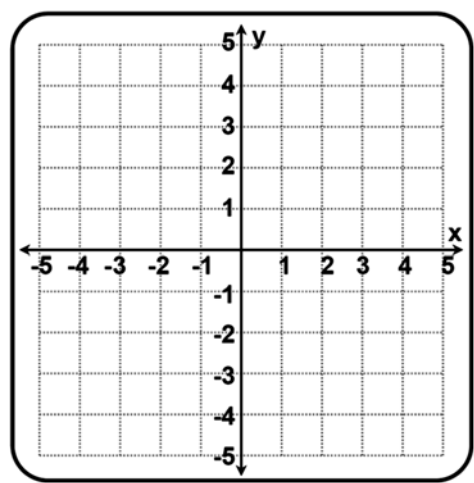
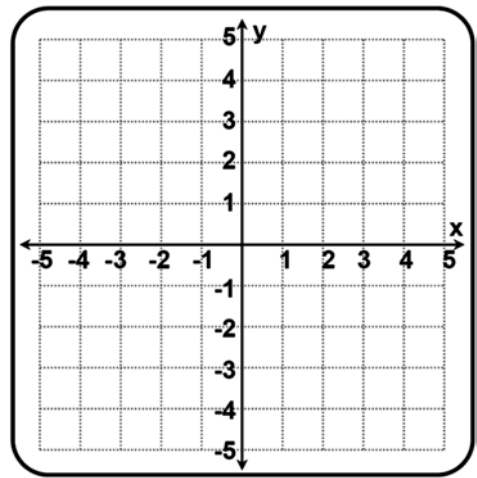
$y = 2x - 3$ $y = x - 1$

$m =$ $m =$
 $b =$ $b =$

Solution: (,)

Substitute to Check

$y = 2x - 3$ $y = x - 1$
 $y = 2() - 3$ $y = () - 1$
 $y =$ $y =$



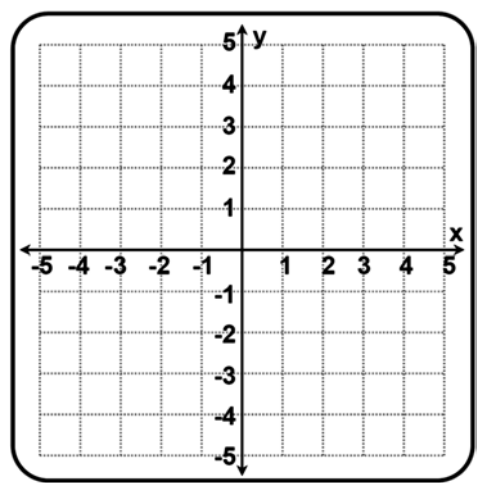
Practice: Solve by graphing using the slope and y-intercept

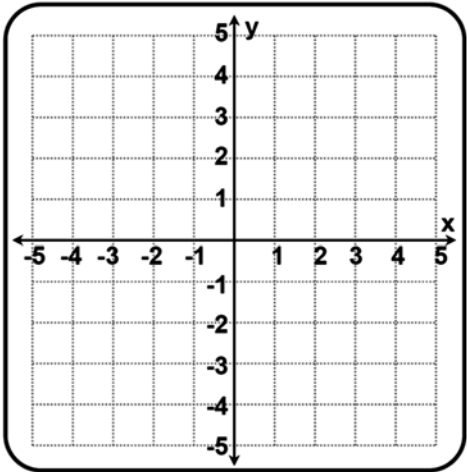
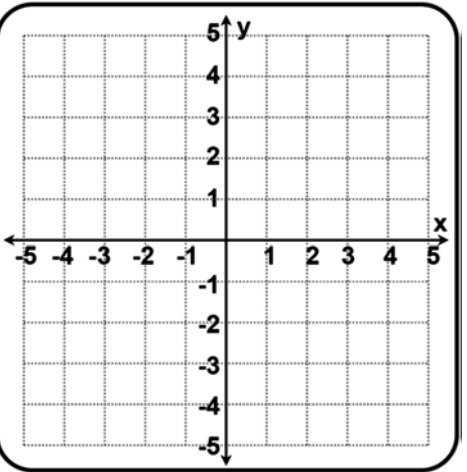
A) $y = x + 5$ $y = -4x$

← Graph to the Left

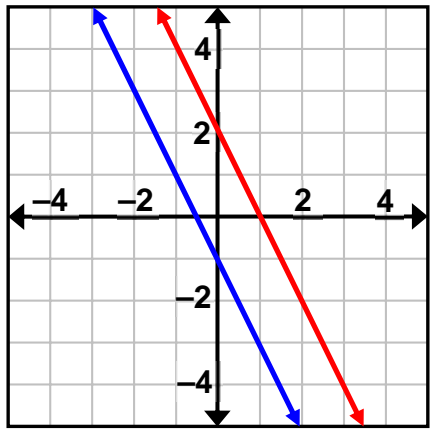
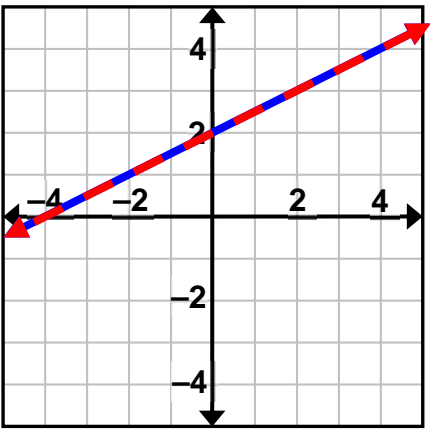
B) $y = -\frac{1}{2}x + 4$ $y = 2x - 1$

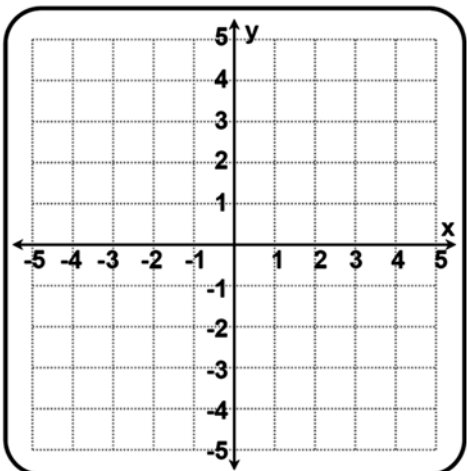
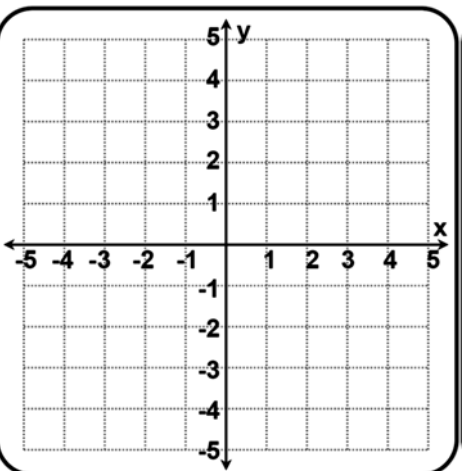
Graph to the Right →



	<p>Practice: Solve by graphing using the slope and y-intercept</p> <p>C) $y = -\frac{3}{2}x + 5$ $y = -1$</p> <p style="text-align: center;">← Graph to the Left</p>	
	<p>D) $y = x$ $y = 2x - 3$</p> <p style="text-align: center;">Graph to the Right →</p>	

Special Systems Cases: Not Just for Graphing Systems (NORMALLY THERE IS ONE SOLUTION FOR LINEAR SYSTEMS)

No Solution	Infinitely Many Solutions
<p>This occurs when the graphs of the equations are <u>parallel</u>. Look for them to have equal slope (m) values.</p>	<p>This occurs when the graphs of the equations are the <u>same line</u>. These equations are multiples of each other.</p>
	
<p style="text-align: center;">Example</p> <p style="color: red;">$y = -2x + 2$</p> <p style="color: blue;">$y = -2x - 1$</p> <p style="text-align: center;">$m = -2$ ($y = mx + b$)</p>	<p style="text-align: center;">Example</p> <p style="color: red;">$4y = 2x + 8$</p> <p style="color: blue;">$y = \frac{1}{2}x + 2$</p> <p style="text-align: center;">Multiples (x4)</p>

	<p>Practice: Solve by graphing using the slope and y-intercept</p> <p>E) $y = \frac{1}{4}x + 1$ $y = \frac{1}{4}x - 2$</p> <p style="text-align: center;">← Graph to the Left</p>	
	<p>F) $y = -x + 3$ $y + 3x - 2 = 2x + 1$</p> <p style="text-align: center;">Graph to the Right →</p>	

