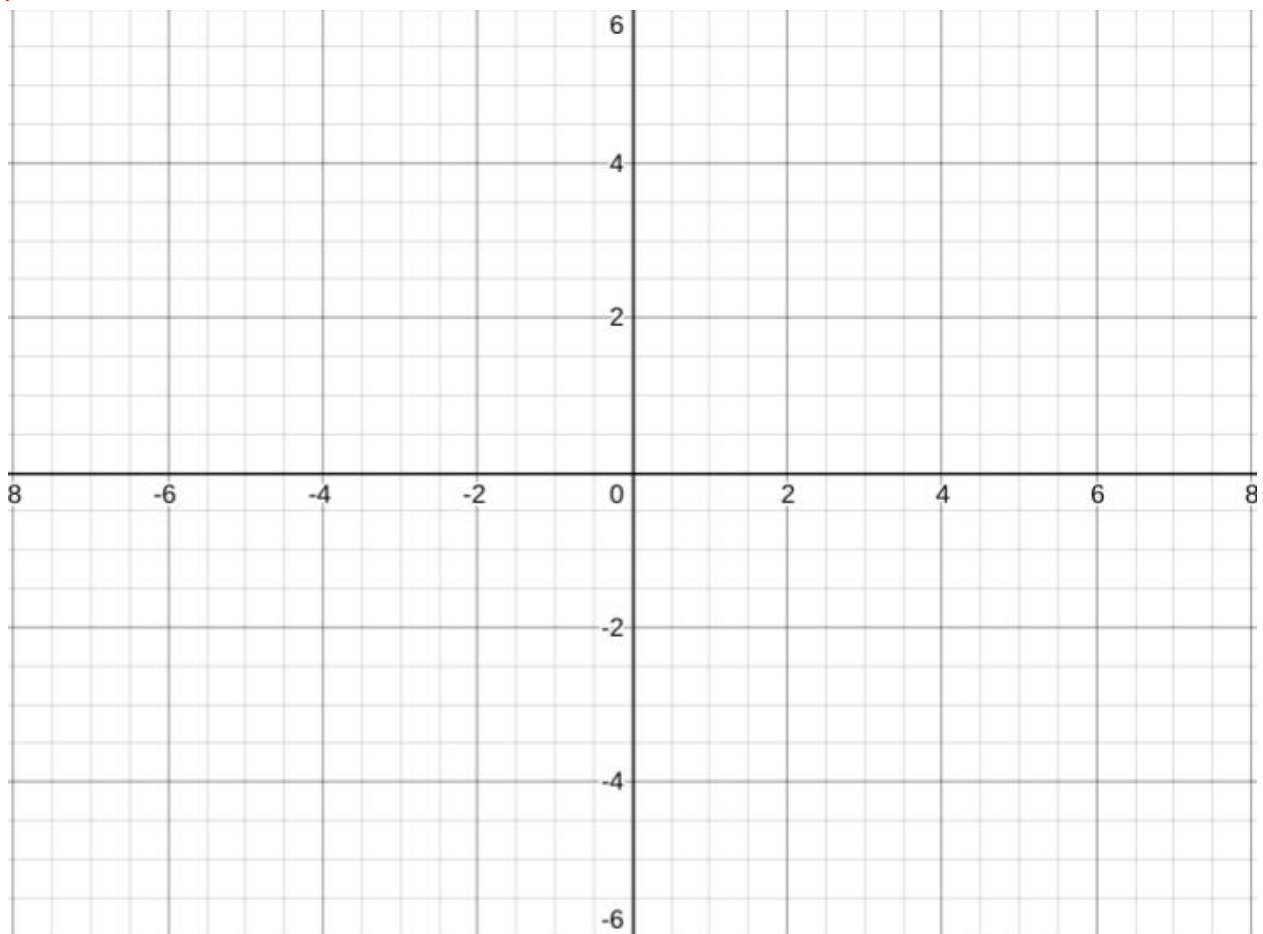**Complete the Pass:** Solving Systems by Graphing   **Math 8**

Have you ever watched a baseball game or ran to catch a football? When two lines intersect on a coordinate plane, the point where they cross is the solution to a system of equations. The equations share that coordinate pair! Today you will sketch some graphs to Complete the Pass and solve systems by graphing. Go out for a pass!

1. On the coordinate plane below, sketch the path of the runner and a different line for the path of the ball. (Do not worry, it doesn't have to be exact, just a sketch of the two paths and where they cross)

Note to designer, provide a blank coordinate plane, similar to the one shown below. You can even show an X where the "runner" starts and a target point where the runner should catch the pass

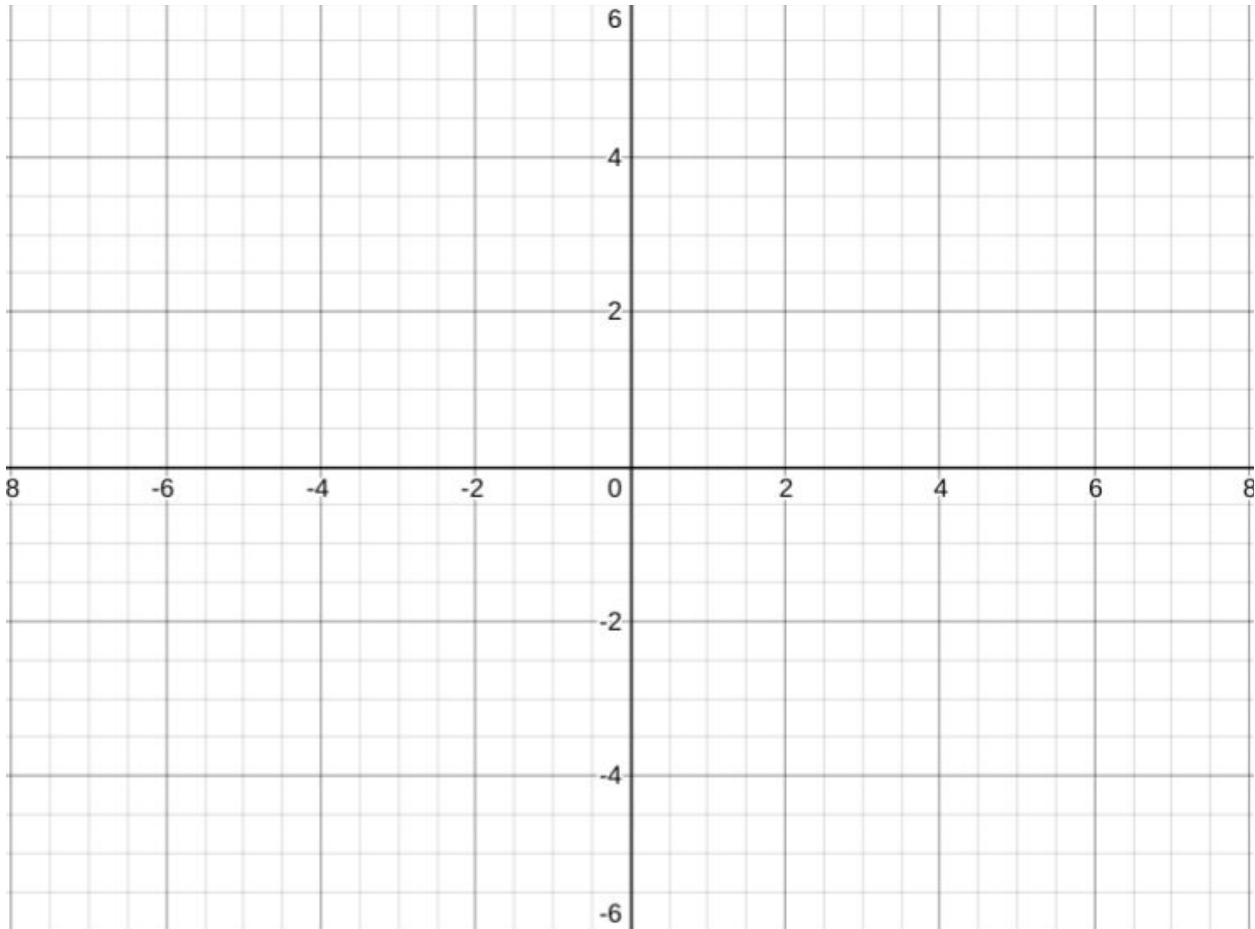2. In your own words, how would you describe a system of equations?

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3. On the following coordinate grid, graph the system:
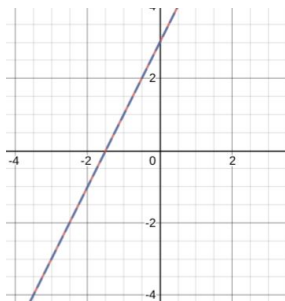
$$y=x+2 \text{ (blue)}$$
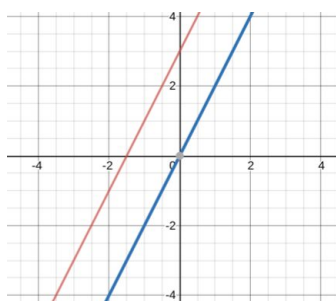$$y=-x+2 \text{ (red)}$$

4. What is the solution to this system?
5. For the following systems:
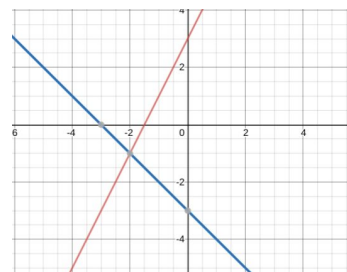   a. indicate which has
      i.   one solution,
      ii.   no solution, or
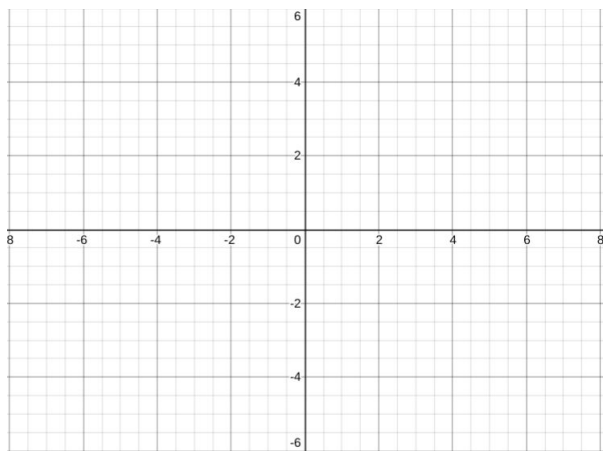   iii. infinite solutions

_____   _____   _____

Complete the Pass: Solving Systems by Graphing Activity

Work with your partner.
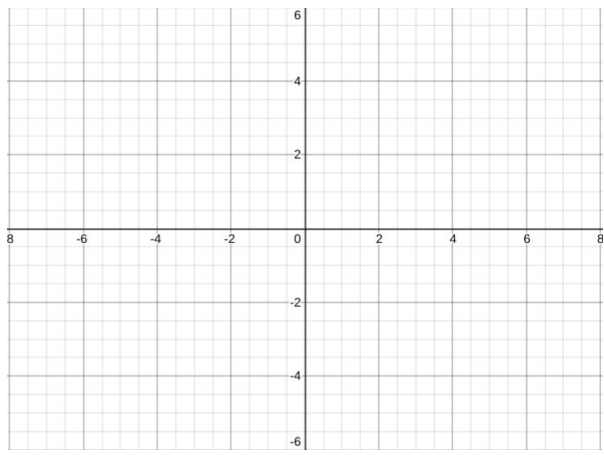
ROUND 1 - *Hit the Target, Make the Pass*
1. Graph the "Runner" Equation in BLUE. Choose at least 2 points or graph it with the y intercept and slope.
2. Mark the indicated "catching" coordinate with an X.
3. Choose from the 3 "Passer" Equations to find the line that solves the system.

Runner Equation: $y = x + 2$ Target : (2,4)	Passer Equations - graph and circle the best choice
	$y = x + 2$ $y = -x + 2$ $y = -x + 6$

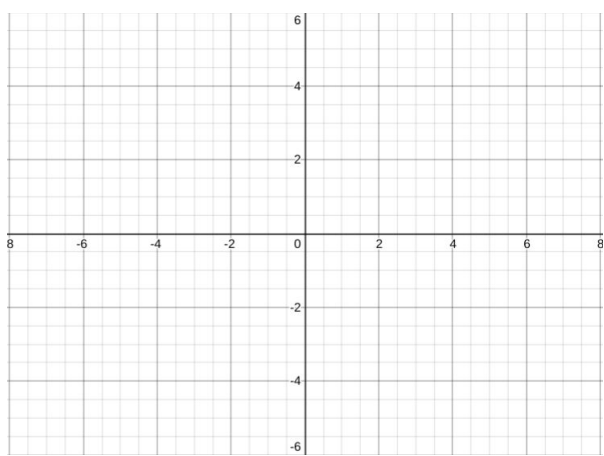| Runner Equation: $y = \frac{1}{2}x + 2$ Target : (4,5)	Passer Equations - graph and circle the best choice

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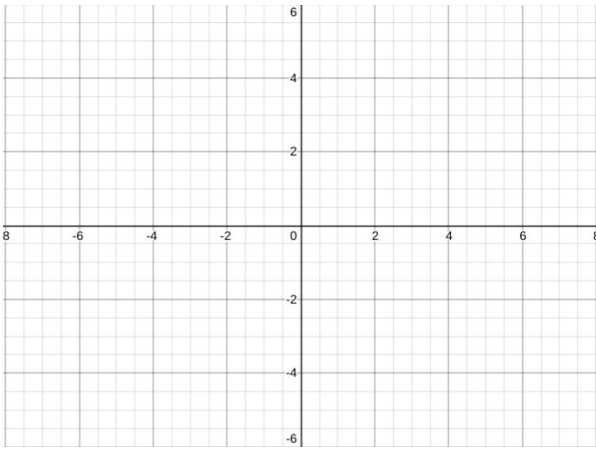|	
	y = 2x - 3 y= 2x + 1 y= -1/2x + 6

ROUND 2: Choose the BEST line to complete the pass
1. Draw the "runner" graph.
2. There is NO TARGET, you must choose the equation that will complete the pass within the coordinate plane provided.
3. Find the solution to the system of equations by graphing.
4. Check the coordinates to see that it is a solution to the equation.

Runner Equation: y = 3x -1	Passer Equations - graph and circle the best choice
	y= 3x + 2 y= -3x - 2 y= -1/3x + 4 Solution = _(_____)__

Complete the Pass: Solving Systems by Graphing   **Math 8**

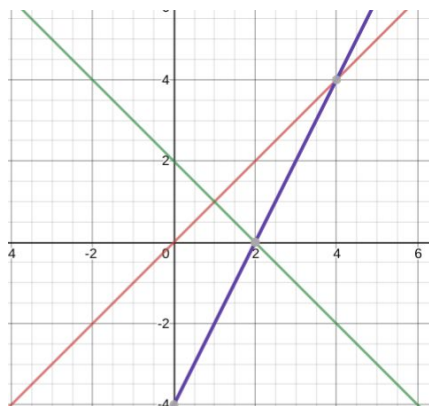| Runner Equation: 3x + 2y = 12	Passer Equations - graph and circle the best choice
	y= -3x + 4 y= x + 1 3x + 2y = 6 Solution = _(_____)__

Reflection and Practice

How do you know if there will be no solution? What does that mean about the lines and the equations of the lines?

Can you have 2 lines with a positive slope that cross or have one solution?

If one line has a positive slope and the other has a negative slope will that system always have only one solution?

Circle the solutions to the following system. Write the coordinate pairs. Label each line with the matching equation

$y = x$

_____

$y = -x + 2$

_____

$y = 2x - 4$