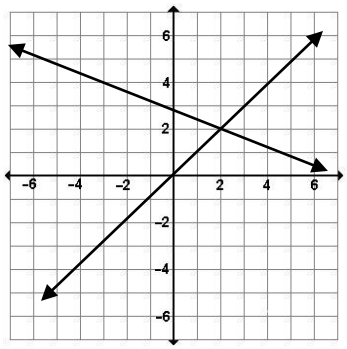
INTRODUCTION TO LINEAR SYSTEMS

Some problems are solved by graphing linear equations on the Cartesian Plane and finding where they cross (i.e., finding the point of intersection).
The **point of intersection** is called the **solution of a linear system of equations.**

State the solution of each of the following linear systems:



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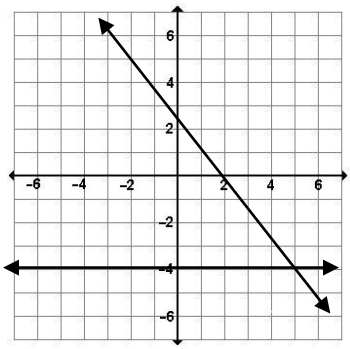

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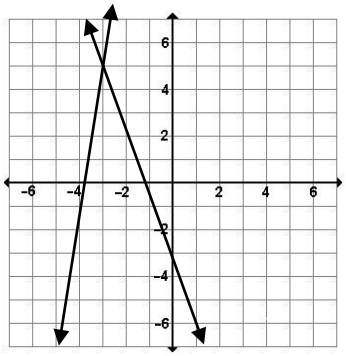

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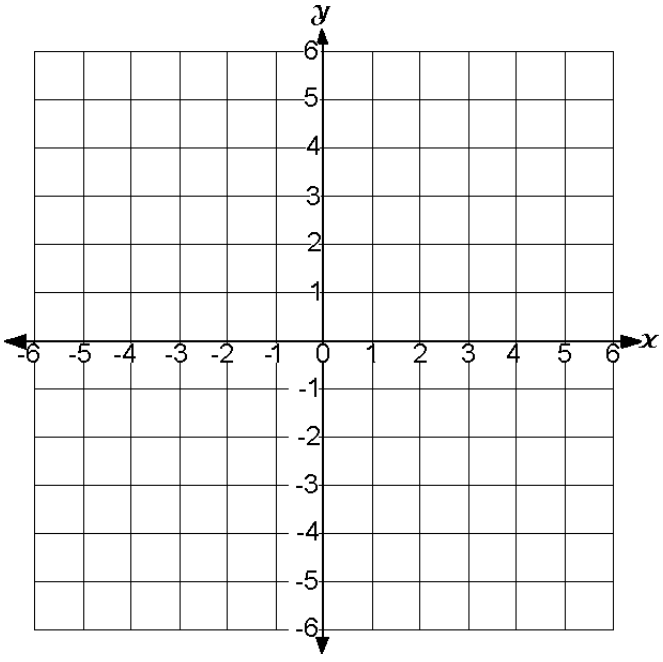
EXAMPLE: Solve the following linear system:

Both the Girl Guides and Boy Scouts are hiking through Algonquin Park.
The Girl Guides are travelling in a direction that is represented by the equation **y = 2x + 3.**
The Boy Scouts are travelling in a direction that is represented by the equation **y = –x – 3.**
Find the coordinates of the point where their paths will cross.



Step 1: Plot both equations on the graph.

Step 2: Find the point of intersection.

SOLVING LINEAR SYSTEMS BY GRAPHING

A **linear system** is represented by _____.

The **Point of Intersection** (_____) of the two lines is the _____ of a linear system of equations.

The **POI** _____ will make each equation _____ when the (___, ___) values are _____ into each equation.

You can **CHECK** to see if your solution is correct by _____ the solution back into your equations to see if the _____ of the equation equals the _____.

There are several ways to find the solution to a linear system of equations.

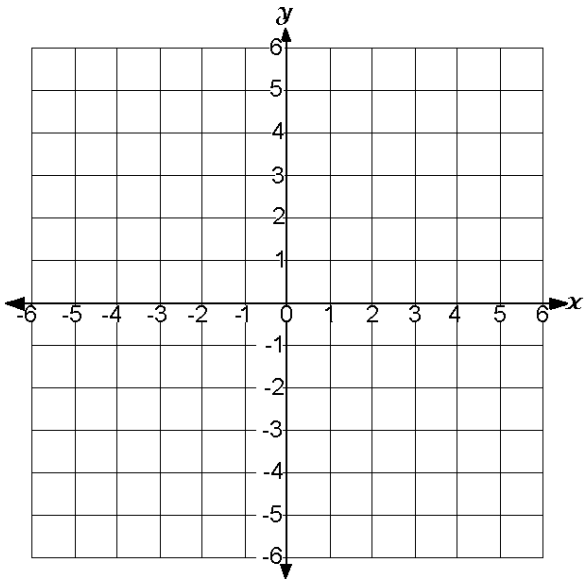
1) By _____
2) By _____
3) By _____

Let's begin with GRAPHING

Solve each linear system graphically.
Remember to rearrange the equations, if necessary, into the y = mx + b form first.

Example 1

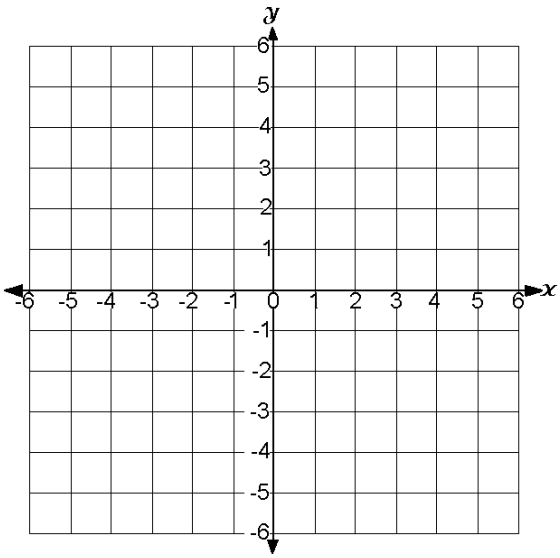
$x + y = 6$ and $2x - y = 0$



Check:

Example 2

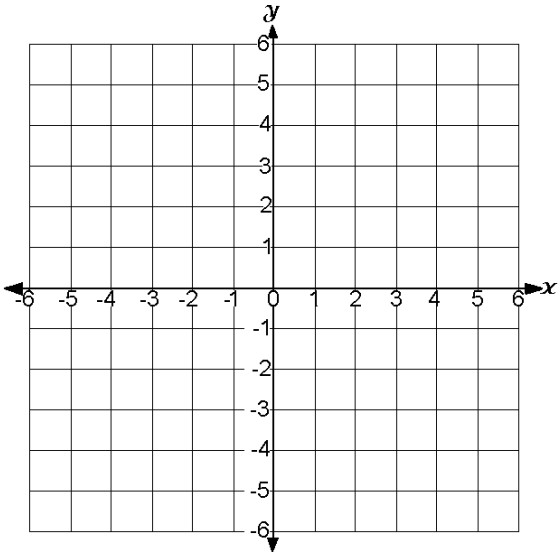
$y = x + 3$ and $3x + y + 1 = 0$



Check:

Example 3

$2y - 3x = 12$ and $-x + 4y = 4$



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