

Systems of Equations ... All Methods

Definition: A Linear System is a set of two linear equations.

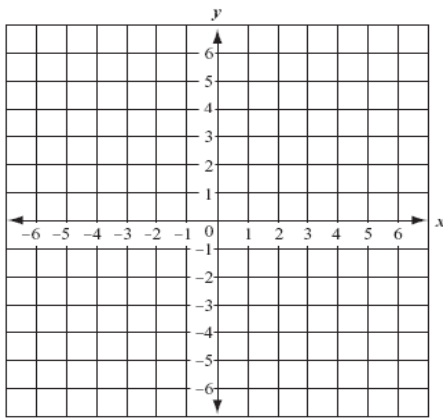
Example: $y = -2x$ and $y = x + 3$

- 1) Does the point (0, 4) make either equation true? Substitute it in and find out.
- 2) Does the point (2, 5) make either equation true? Explain.
- 3) Does the point (-1, 2) make either equation true? Explain.

If a point works in **both** equations of a linear system, then that point must be the **SOLUTION** to the linear system. When you solve a linear system you find that one point makes both equations true.

- 4) What point is the solution to the system above? _____

Plot **both** equations in the same coordinate plane below. $y = -2x$ and $y = x + 3$



- 5) At what point do the two lines intersect? _____ Compare this with your answer for #4...

An ordered pair that makes a linear equation TRUE is called a _____.

The point that the two lines _____ is the solution to the system!

To solve a system of linear equations, the ordered pair must work for _____ equations!

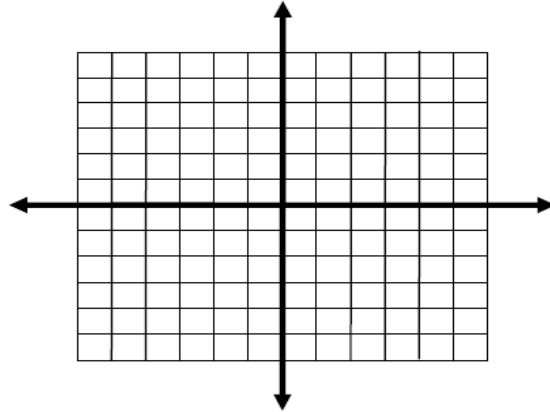
Systems of Equations ... All Methods

Steps for Solving a Linear System Using Graphing:

1. Put the equations in slope-intercept or standard form.
2. Graph each equation on the same coordinate system.
3. Locate the point of intersection and write it down.
4. Verify that the point makes both equations true!!

Example: $y = 2x$

$y = -x + 3$

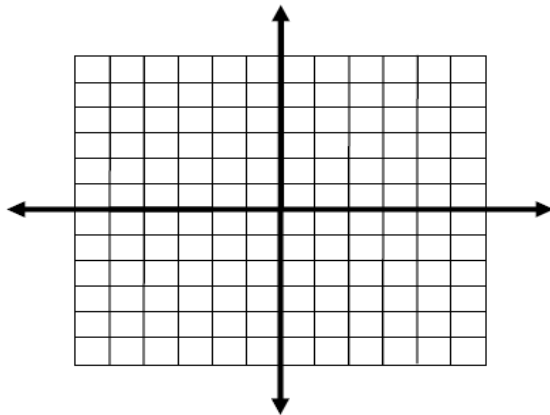


Point _____

Verify:

Example: $y - 2x = -4$

$y = x - 2$



Point _____

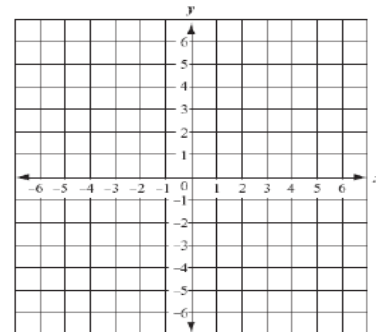
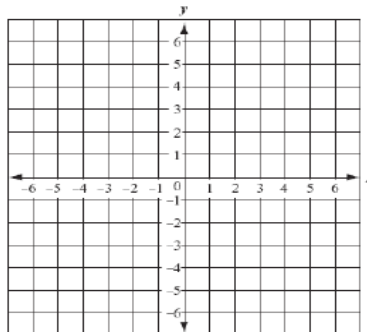
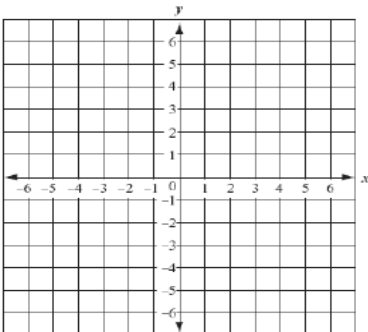
Verify:

Try these:

1. $y = -x + 5$
 $y = x + 1$

2. $2x - y = 2$
 $x = 3$

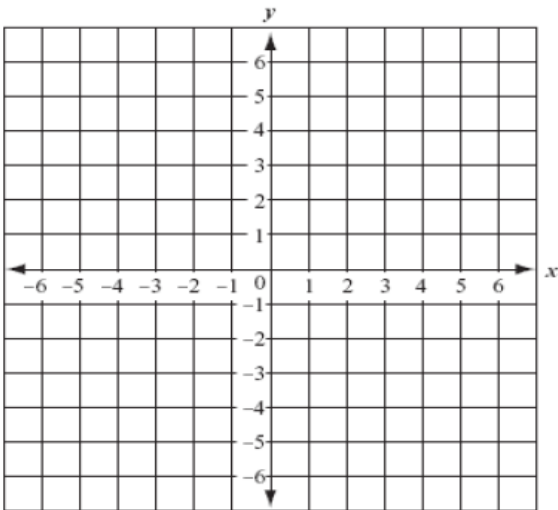
3. $2x + y = 2$
 $x - y = 4$



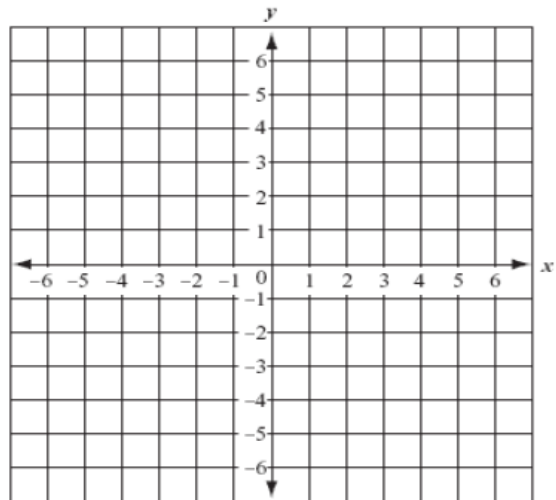
Systems of Equations ... All Methods

Solve these linear systems by graphing.

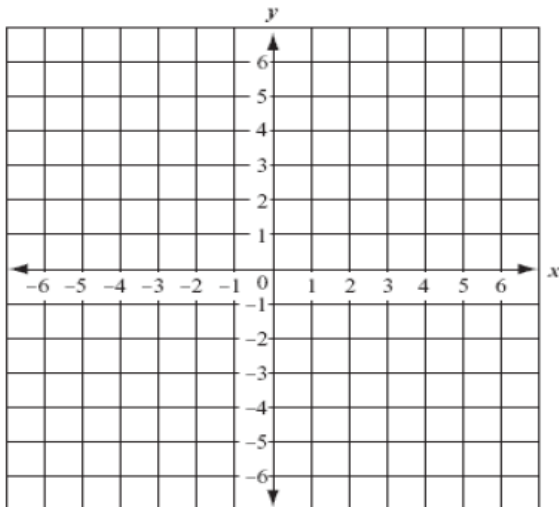
1) $y = -x + 3$ and $y = 2x - 6$



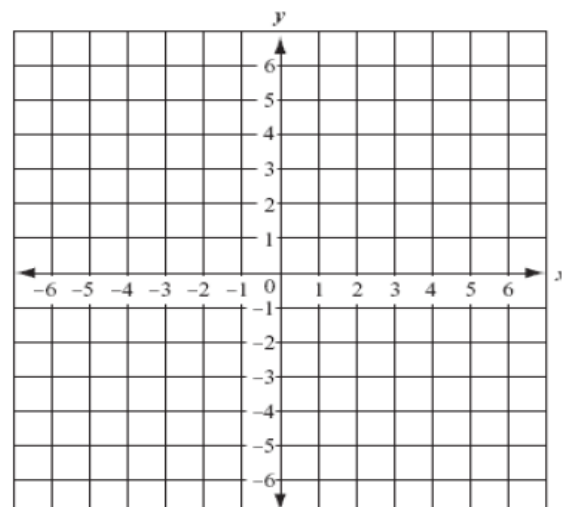
2) $y = -x + 3$ and $y = x + 1$



3) $x - y = 2$ and $x + y = -6$



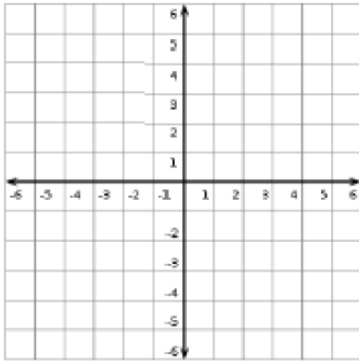
4) $x + y = -2$ and $7x - 4y = 8$



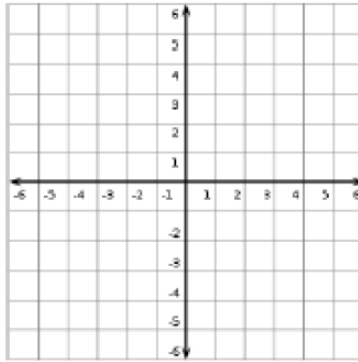
Systems of Equations ... All Methods

Solve each system of equations by graphing.

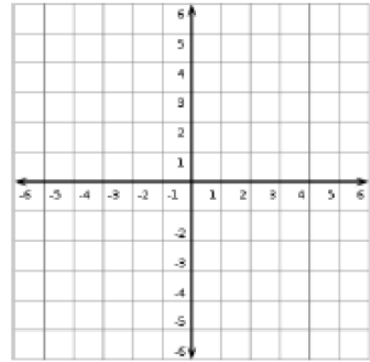
1. $x + y = 5$
 $x - y = 1$



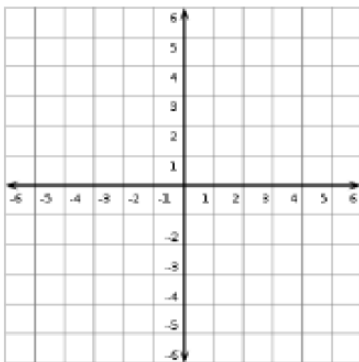
2. $4x - 2y = -8$
 $y = 2x + 4$



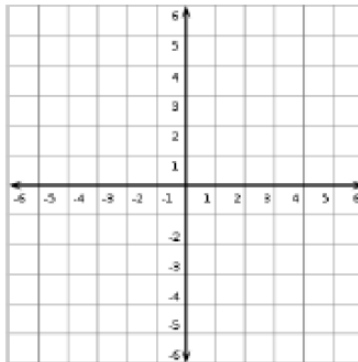
3. $y = -3x + 2$
 $y = 2x - 3$



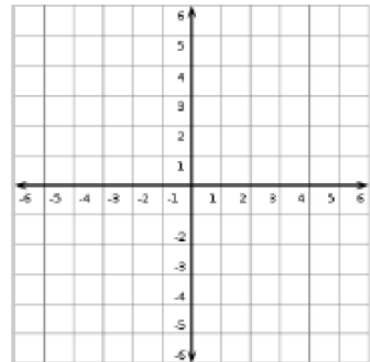
4. $y = -\frac{3}{2}x + 1$
 $y = \frac{1}{2}x - 3$



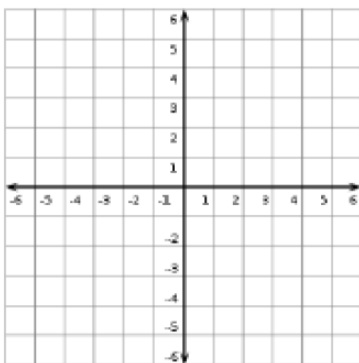
5. $4x - 6y = 12$
 $2x + 2y = 6$



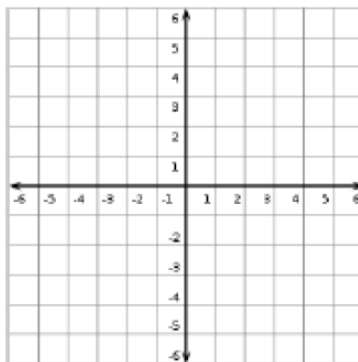
6. $y = 3$
 $x - y = -4$



7. $y = \frac{1}{3}x + 2$
 $y = -x - 2$



8. $4x + 6y = -12$
 $2x + 3y = 6$



9. $y = -\frac{1}{2}x + 4$
 $y = \frac{3}{2}x$

