

Name: \_\_\_\_\_

**Lesson 6.4 – Solving Systems**

System =

Solving =

**Examples:** Determine whether the ordered pair is a solution to the linear system.

a) 
$$\begin{array}{l} 3x + y = 11 \\ x - 2y = 6 \end{array} \quad (4, -1)$$

b) 
$$\begin{array}{l} 3x + y = 11 \\ x - 2y = 6 \end{array} \quad (-1, 1)$$

**Assignment:**

Determine whether the ordered pair is a solution to the linear system.

a)  $3x + y = 17$       (5, 2)  
 $2x + 3y = 17$

b)  $2x + y = 11$       (3, 5)  
 $3x + 2y = 19$

c)  $x + 2y = -2$       (2, -4)  
 $2x + 5y = 23$

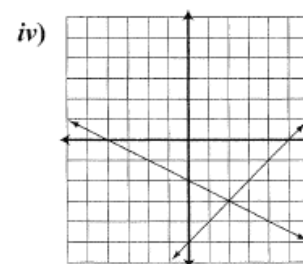
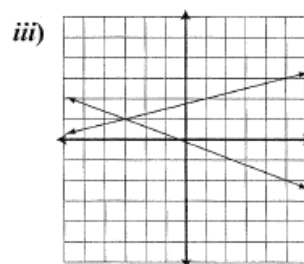
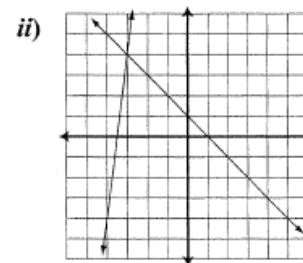
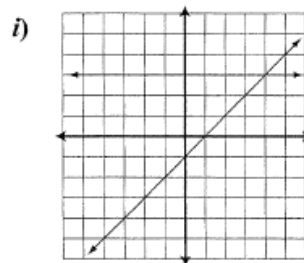
d)  $4x = 72 - y$       (6, -2)  
 $3x = -7y - 4$

e)  $-2y = x + 10$       (-6, -2)  
 $3x = 6y - 6$

f)  $x = 2$       (3, 2)  
 $y = 3$

Match each system of linear equations with its solution.

- a) (-3, 4)      \_\_\_\_\_
- b) (2, -3)      \_\_\_\_\_
- c) (-3, 1)      \_\_\_\_\_
- d) (4, 3)      \_\_\_\_\_



- a) no    b) yes    c) no    d) no    e) yes    f) no  
 a) ii    b) iv    c) iii    d) i

### Solving a Linear System Graphically:

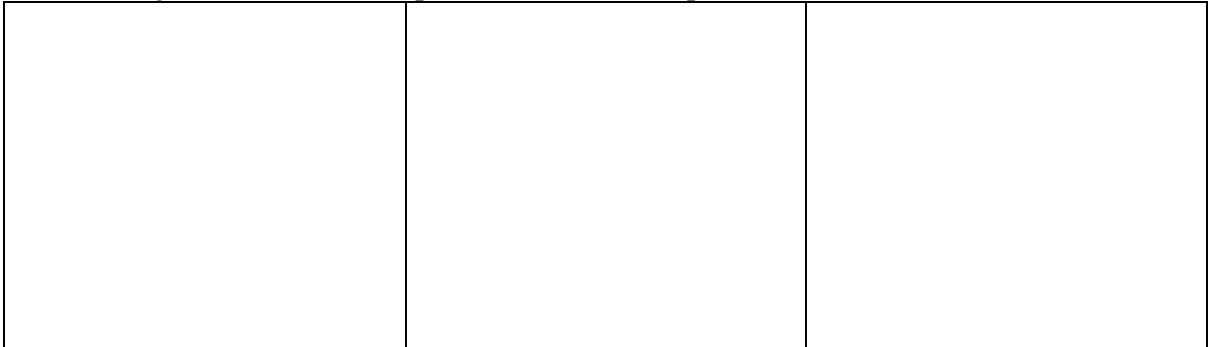
**STEP #1** Re-write each equation in slope-intercept form:  $y = mx + b$

**STEP #2** Graph both equations on the same grid.

**STEP #3** The solution to the system of equations is the ordered pair  $(x,y)$  of the point of intersection.

**STEP #4** Verify your answer by substituting the ordered pair into the original system to see if that point satisfies both equations.

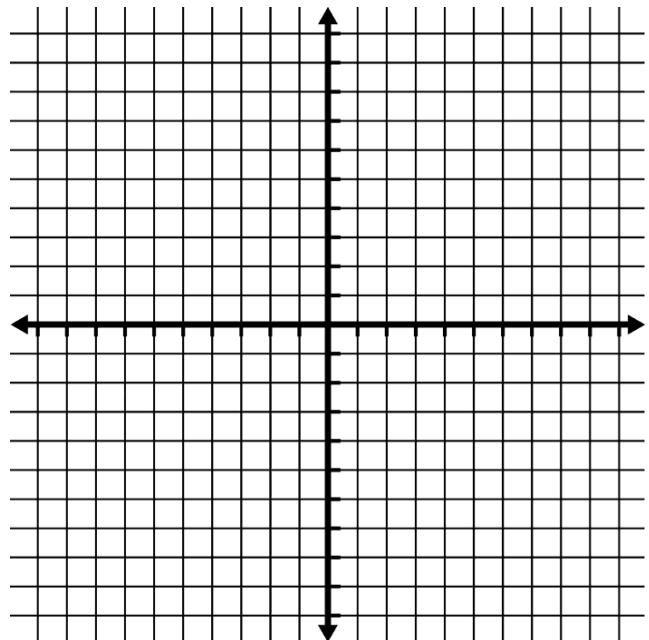
**A linear system with two equations has three possibilities**



**Example #1** Solve the following system of equations

$$y = \frac{1}{2}x + 2$$

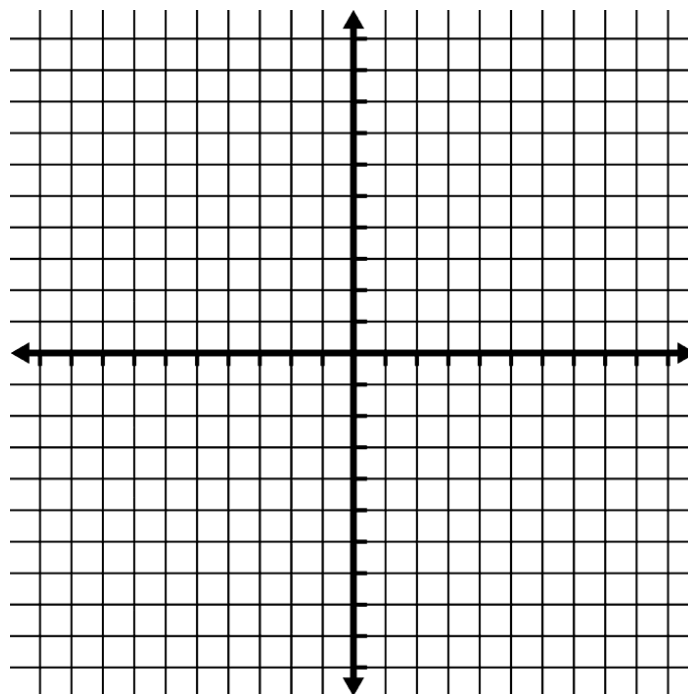
$$y = -x + 2$$



**Example #2** Solve the following system of equations

$$2x - y = 3$$

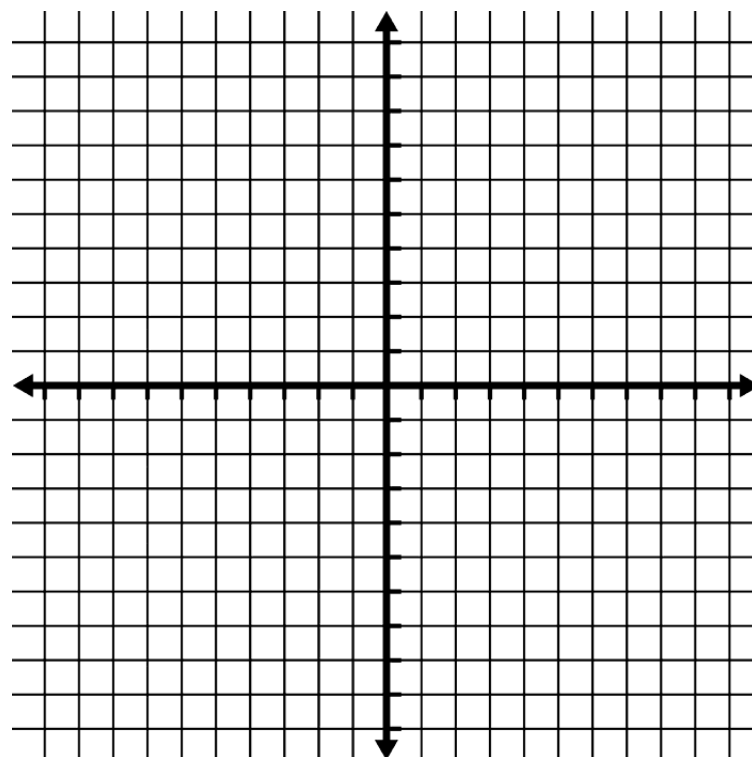
$$-4x + 2y = 4$$



**Example #3** Solve the following system of equations

$$y = -x + 3$$

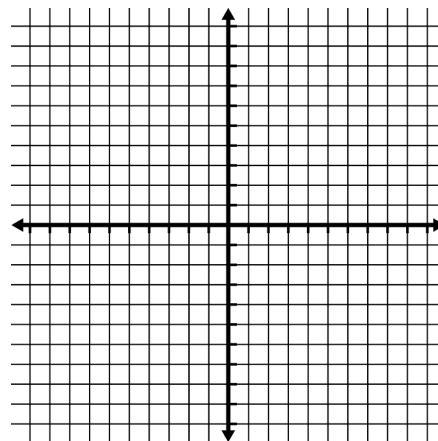
$$2x + 2y = 6$$



**Assignment:**

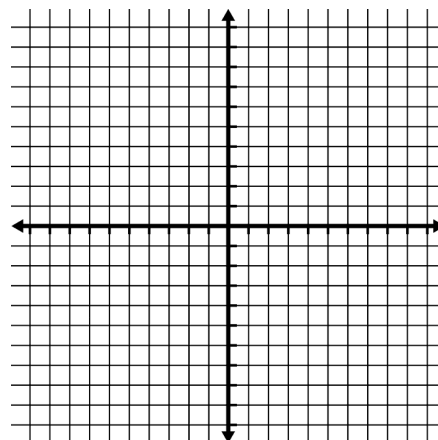
$$2x - y = 3$$

$$x + y = 3$$



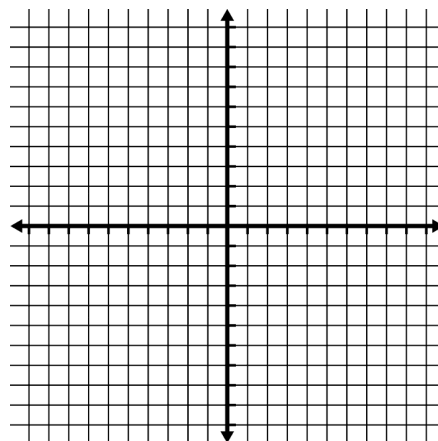
$$x + 2y = -4$$

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



$$y = 2x - 4$$

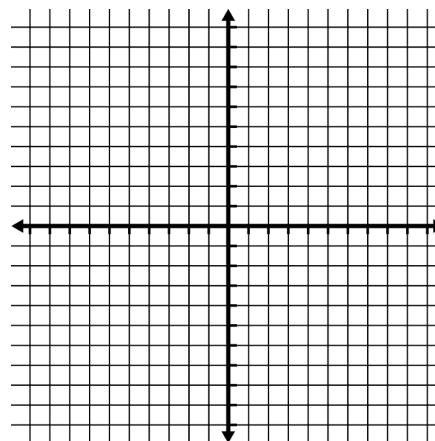
$$x - \frac{1}{2}y = 2$$



**Assignment:**

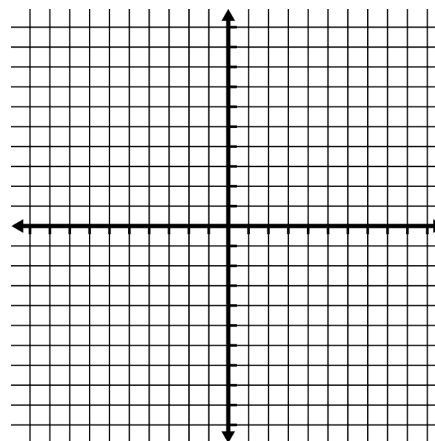
$$x + y = -5$$

$$-2x + y = 1$$



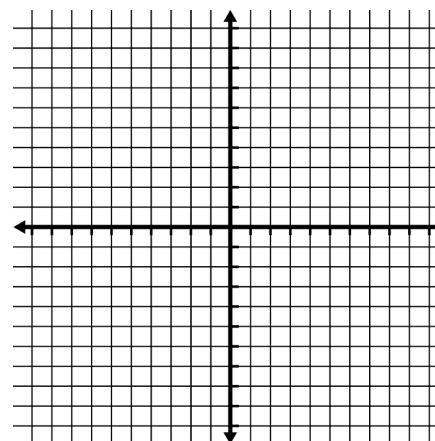
$$2x - 3y = -1$$

$$4x - y = 3$$



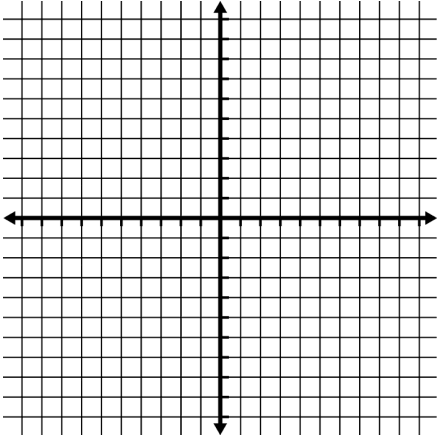
$$x - \frac{y}{2} = -3$$

$$\frac{x}{3} - y = -1$$

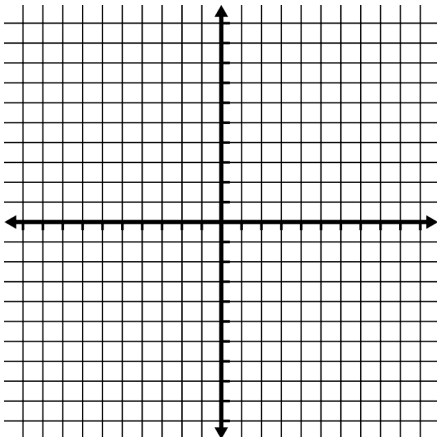


**Assignment:**

$x = 4$   
 $3x - 2y = 6$



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



**Answer Key**

- a) (2,1)   b) no solution   c) infinite solutions   d) (-3,-3)   e) (1,1)   f) (-3,0)   g) (4,3)   h) (-1,-2)

**Practice Quiz:**

1) Determine whether the ordered pair is a solution to the linear system.

a) 
$$\begin{array}{l} 3x + y = 11 \\ x - 2y = 6 \end{array} \quad (4, -1)$$

2) Solve the following system of equations. Show your work

$$x - 2y = -8$$

$$y - x = 6$$

