

## Lesson 15

## Solving Systems by Graphing

### Vocabulary:

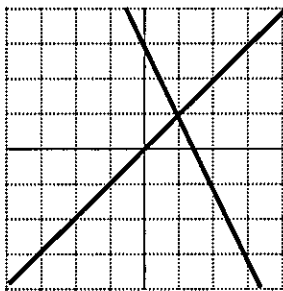
**System of Linear Equations:** two or more linear equations grouped together

**Solution of a System of Linear Equations:** any ordered pair that makes all equations in the system true.  
In the graph, any point at which the graphs intersect or touch.

**No Solution:** When the equations in a system are parallel, and/or do not intersect.

**Infinitely Many Solution:** When the graphs of two equations lie on top of each other, or the lines are really the same equation.

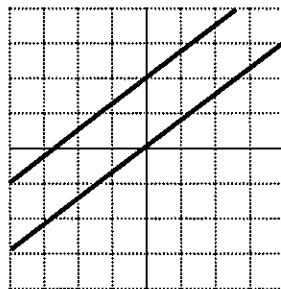
### Types of Linear Systems:



**Intersecting Lines**

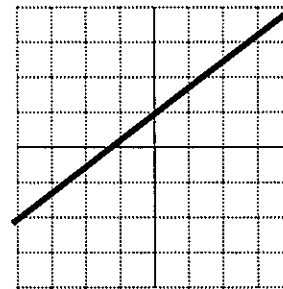
One Solution

$(x, y)$



**Parallel Lines**

No Solution



**Same Line**

Infinitely Many Solutions

$y = mx + b$

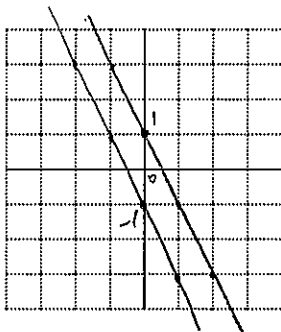
Examples: Solve by Graphing.

$y = mx + b$

1.  $\begin{cases} y = -2x + 1 & \textcircled{1} \\ y = -2x - 1 & \textcircled{2} \end{cases}$

$\textcircled{1} \quad m = -2$   
 $b = 1$

$\textcircled{2} \quad m = -2$   
 $b = -1$

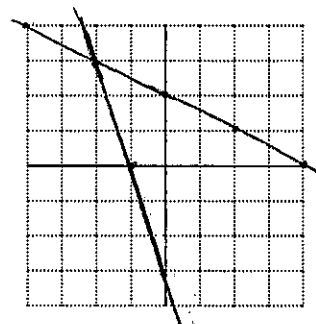


no solution  
parallel  
lines

2.  $\begin{cases} y = -\frac{1}{2}x + 2 & \textcircled{1} \\ y = -3x - 3 & \textcircled{2} \end{cases}$

$\textcircled{1} \quad m = -\frac{1}{2}$   
 $b = 2$

$\textcircled{2} \quad m = -3$   
 $b = -3$



$(-2, 3)$

$\textcircled{1} \quad 3 = -\frac{1}{2}(-2) + 2$

$3 = 1 + 2$

$3 = 3$

✓

$\textcircled{2} \quad 3 = -3(-2) - 3$

$3 = 6 - 3$

$3 = 3$

✓