**Solving Systems of Equations Graphically**

Two or more equations with the same variables form a system of equations. A solution to a system is any ordered pair (x,y) that makes each of the equations true. How do we find the solution graphically?

Solve the system of equations by graphing. Check your answer.

1. y = x – 3

y = −x – 1

Step 1: If need be solve each equation for y, to get into the form y = mx + b

Step 2: Identify the slope and y-intercept for each line

Step 3: Graph each line and label each line

Step 4: If need be check your solution by substituting the ordered pair into each equation.

Check solution:



The solution of a system of equations is the point where the two lines .

What do you notice about the slope of the lines?

Solve the system of equations by graphing. Check your answer.

1. y = x

y = −x + 3 Check solution:



These lines . The slopes are .

3. Solve the system of equations by graphing. Check your answer. BE CAREFUL!!!!

y = x - 2

y + 2x = 1

Check solution:

These lines .

Slopes are .

1. Solve the system of equations by graphing. Check your answer.

y = 2x – 1

y = 2x + 3 Check:



What do you notice about these lines?

What are the solutions? One, none, infinitely many

What do you notice about the slopes?

What do you notice about the y intercepts?

1. Solve the system of equations by graphing. Check your answer.

y = -2x

y - 5 = -2x

Check:



What do you notice about these lines?

What are the solutions? One, none, infinitely many

What do you notice about the slopes?

What do you notice about the y intercepts?

1. Solve the system of equations by graphing. Check your answer. BE CAREFUL!

y = −3x – 8

2y = −6x – 16

Check:



What do you notice about these lines?

What are the solutions? One, none, infinitely many

What do you notice about the slopes?

What do you notice about the y intercepts?

These lines are called lines.

1. Solve the system of equations by graphing. Check your answer.

y = x + 2

2y = x + 4 Check:



What do you notice about these lines?

What are the solutions? One, none, infinitely many

What do you notice about the slopes?

What do you notice about the y intercepts?

These lines are called lines.

|  |  |
| --- | --- |
| Types of Lines | Example |
| **Intersecting Lines** cross one another at a point.  **Slopes**  **Y intercepts**  **y = -x**  **y = 2x - 3**  Solutions: | http://mathbits.com/mathbits/studentresources/graphpaper/10x10.gif |
| **Parallel Lines** lie in the same plane and never intersect.  **Slopes**  **Y intercepts**  y = x + 2  y = x  Solutions: | http://mathbits.com/mathbits/studentresources/graphpaper/10x10.gif |
| **Coincident Lines** lie on top of one another.  **Slopes**  **Y intercepts**  y = -x -1  x + 3y = -3  Solutions: | http://mathbits.com/mathbits/studentresources/graphpaper/10x10.gif |

Does the line that passes through (0,2) and (5,5) intersect the line that passes through

(-10, -4) and (-5, -1)? If not are the two lines parallel or coincident?

**Solution**:

You are not given graph paper so what do you need to solve this problem?

Ask yourself…*what have we been looking at in terms of each of the systems we have been graphing?*

*What matters?*