Section 4.1 Solving Systems of Linear Equations by Graphing

Complete the outline as you view Video Lecture 4.1. Pause the video as needed to fill in the blanks. Then press Play to continue. Also, circle your answer to each numbered exercise.

Objective 1 Determine if an ordered pair is a solution of a system of equations in two variables

A system of linear equations consists of two or more linear equations.

A _____ of a system consists of an ordered pair that satisfies all equations of the system.

Determine if the given ordered pair is a solution of the following system of equations.

$$\begin{cases} 3x - y = 5 \\ x + 2y = 11 \end{cases}$$

Work with me.

1. Is $(3, 4)$ a solution**?**

Pause and work.

2. Is $(0, -5)$ a solution?

Play and check.

Objective 2 Solve a system of linear equations by graphing

To solve systems by graphing, look for points in common to the graphs of all equations.

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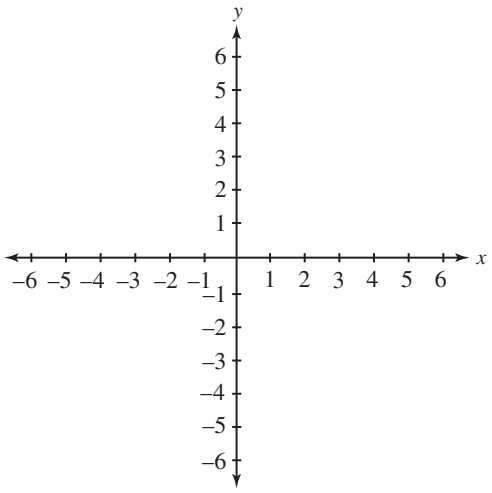
Solve the system of equation by graphing.

Work with me.

3. $\begin{cases} 2x + y = 0 \\ 3x + y = 1 \end{cases}$



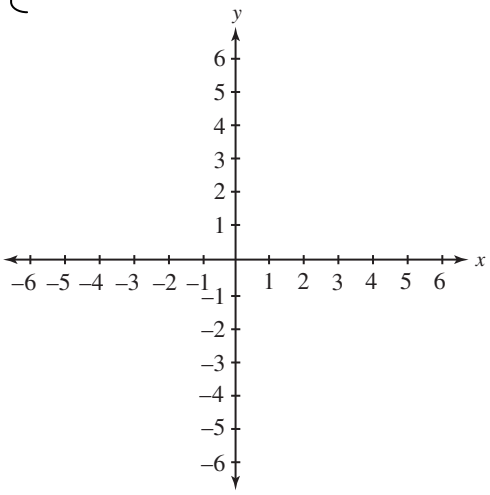
Intersecting lines have one point in common—the system has _____ _____.

If equations have different graphs: _____ _____
If a system has at least one solution: _____ _____

Solve the system of equations by graphing.

Pause and work.

4. $\begin{cases} x + y = 5 \\ x + y = 6 \end{cases}$



Play and check.

Parallel lines: No point in common—system has _____ _____.

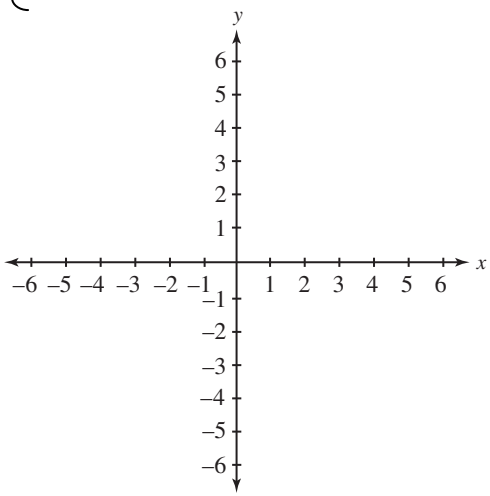
If two lines have the same slope, but different *y*-intercepts, the lines are _____.

No solution: inconsistent systems
Equations with different graphs: independent equations

Solve the system of equations by graphing.

Work with me.

5. $\begin{cases} 6x - y = 4 \\ \frac{1}{2}y = -2 + 3x \end{cases}$

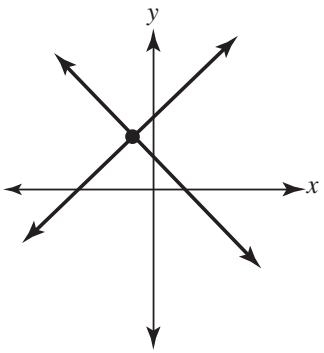


Same line—infinite number of points in common—the system has an _____ _____ of _____.

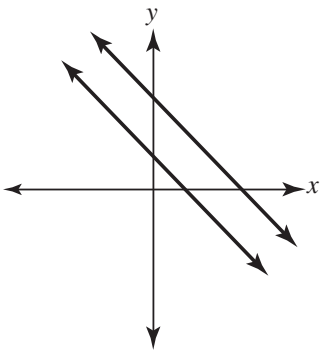
If the lines have the same slope in the same y-intercept, the lines are the _____.

Equations with the same graph: dependent equations
At least one solution: consistent systems

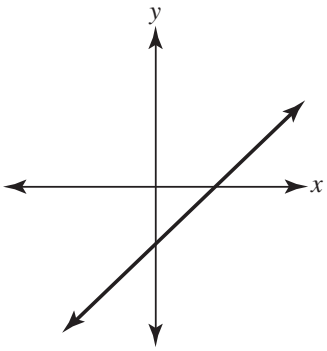
Review of graphing a system of equations



One point of intersection:
_____ _____
Consistent System
Independent Equations



Parallel lines:
_____ _____
Inconsistent system
Independent Equations



Same line:
_____ _____ of _____
Consistent System
Dependent Equations

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Objective 3 **Without graphing, determine the number of solutions of a system**

Determine the number of solutions for each system of equations.

Work with me.

6. $\begin{cases} 4x + y = 24 \\ x + 2y = 2 \end{cases}$

Work with me.

7. $\begin{cases} x + y = 4 \\ x + y = 3 \end{cases}$

Pause and work.

8. $\begin{cases} 6y + 4x = 6 \\ 3y + 3 = -2x \end{cases}$

Play and check.