

**Section 7.2 Systems of Linear Equations in Two Variables**

**Objective:** In this lesson you learned how to solve a system of equations by elimination and how to use systems of equations to model and solve real-life problems.

Course Number

Instructor

Date

**Important Vocabulary**

Define each term or concept.

**Method of elimination****Equivalent systems****Consistent system****Inconsistent system****I. The Method of Elimination** (Pages 499–500)

List the steps necessary for solving a system of equations using the method of elimination.

***What you should learn***

How to use the method of elimination to solve systems of linear equations in two variables

The operations that can be performed on a system of linear equations to produce an equivalent system are:

- (1)
- (2)
- (3)

**Example 1:** Describe a strategy for solving the system of linear equations using the method of elimination.

$$\begin{cases} 3x + y = 9 \\ 4x - 2y = -1 \end{cases}$$

**Example 2:** Solve the system of linear equations using the method of elimination.

$$\begin{cases} 4x + y = -3 \\ x - 3y = 9 \end{cases}$$

## II. Graphical Interpretation of Two-Variable Systems

(Pages 501–503)

If a system of linear equations has two different solutions, it must have \_\_\_\_\_ solutions.

For a system of two linear equations in two variables, list the possible number of solutions the system can have and give a graphical interpretation of the solutions.

***What you should learn***  
How to interpret graphically the numbers of solutions of systems of linear equations in two variables

If a contradictory statement such as  $9 = 0$  is obtained while solving a system of linear equations using the method of elimination, then the system has \_\_\_\_\_.

If a statement that is true for all values of the variable, such as  $0 = 0$ , is obtained while solving a system of linear equations using the method of elimination, then the system has \_\_\_\_\_.

**Example 3:** Is the following system consistent or inconsistent?  
How many solutions does the system have?

$$\begin{cases} x - 3y = 2 \\ -4x + 12y = 8 \end{cases}$$

### III. Applications of Two-Variable Linear Systems

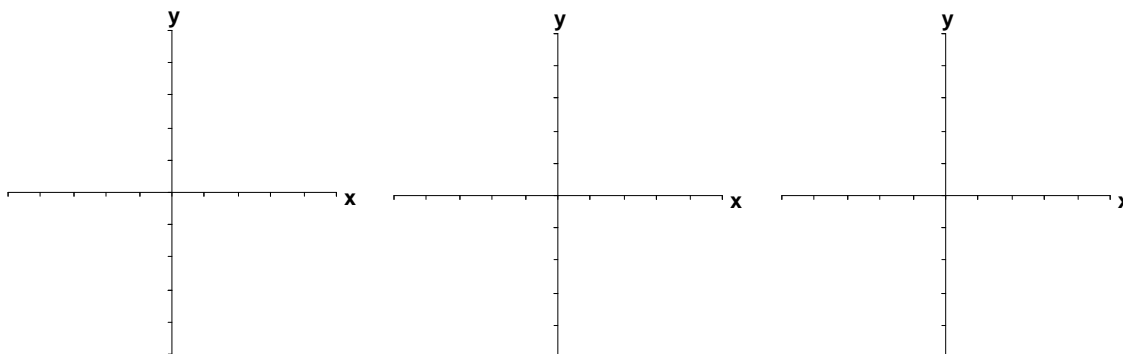
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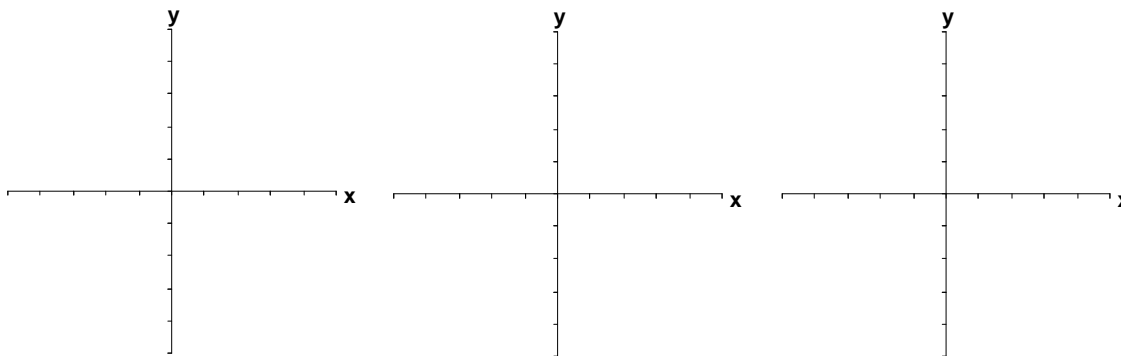
When may a system of linear equations be an appropriate mathematical model for solving a real-life application?

*What you should learn*  
How to use systems of equations in two variables to model and solve real-life problems

Give an example of a real-life application that could be solved with a system of linear equations.

#### Additional notes



**Additional notes****Homework Assignment**

Page(s)

Exercises