

Module 7 Lesson 4

Math Lab: Properties of Linear Systems

Purpose

You will determine the effect that adding, subtracting, and multiplying linear equations within a linear system has on the solution to the system.

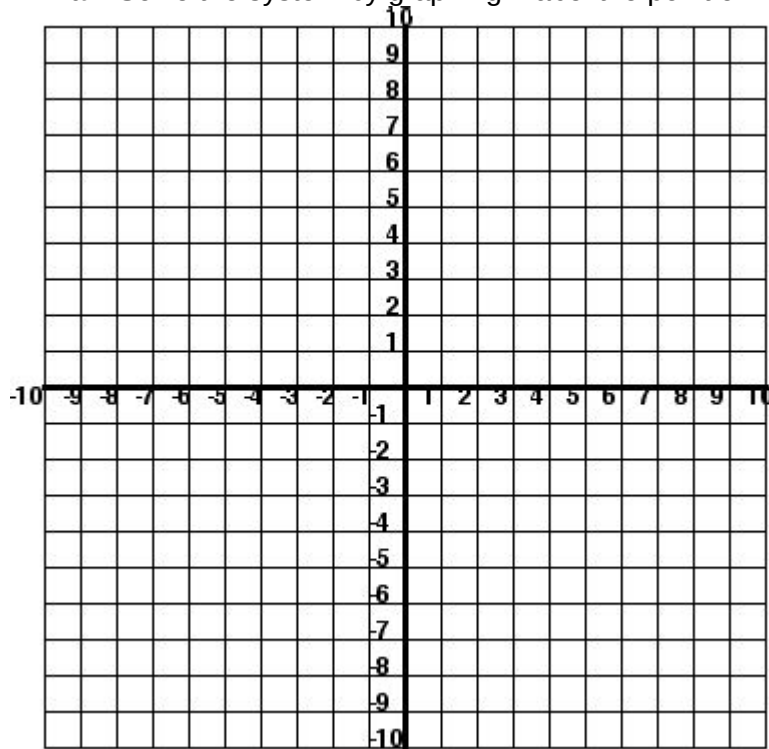
Analysis

1. Consider the following linear system.

$$2x + 3y = 18$$

$$4x - y = 8$$

- a. Solve the system by graphing. Label the point of intersection



- b. Form a new equation by adding the two equations.
- c. Graph the new equation on the same set of axes as the original system. What do you notice?
- d. Form a new equation by subtracting the two equations.

- e.** Graph the new equation on the same set of axes as the other equations. What do you notice?
 - f.** Select one of the equations in the original linear system. Form a new equation by multiplying this equation by a factor of 2.
 - g.** Isolate y . Graph the resulting equation. What do you notice?
- 2.a.** In questions 1.b. and 1.c., you formed two new equations. What would be the solution to the linear system consisting of the two new equations?
- b.** How do you know? Explain why.
- 3.** How does multiplying the terms of an equation by a common factor affect the graph?
- 4.** What purpose is there for adding, subtracting, or multiplying the equations of a linear system?