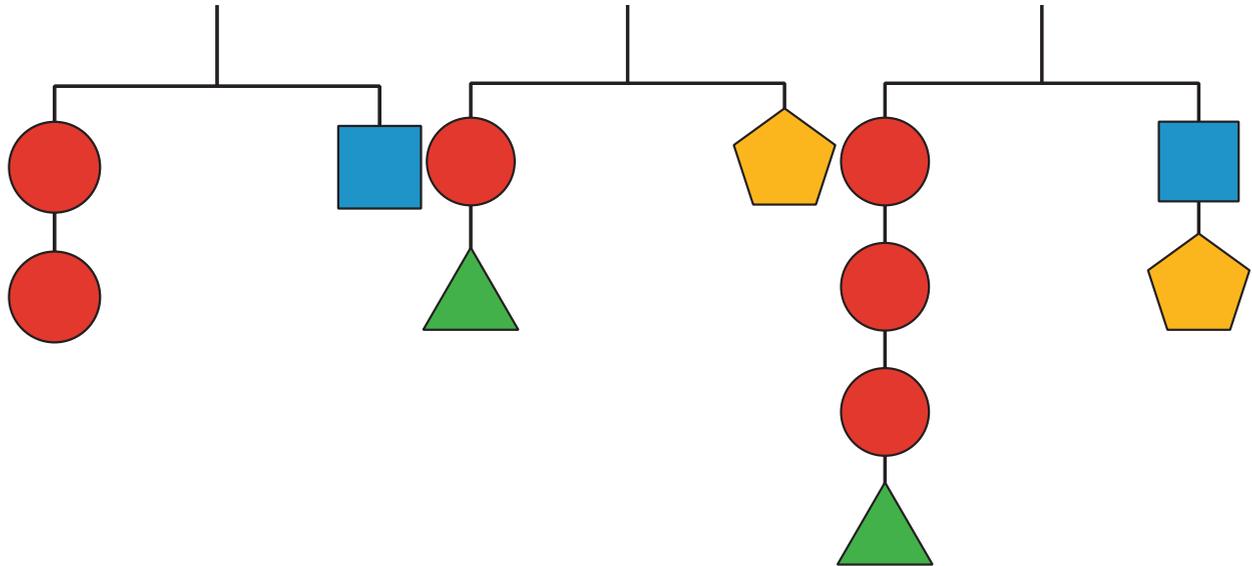# Unit 2 Lesson 14: Solving Systems by Elimination (Part 1)

1 Notice and Wonder: Hanger Diagrams (Warm up)

Student Task Statement

What do you notice? What do you wonder?

2 Adding Equations

Student Task Statement

Diego is solving this system of equations:

$$\begin{cases} 4x + 3y = 10 \\ \text{-}4x + 5y = 6 \end{cases}$$

Here is his work:

$$\begin{array}{r} 4x + 3y = 10 \\ \text{-}4x + 5y = 6 \quad + \\ \hline 0 + 8y = 16 \\ y = 2 \end{array}$$

$$\begin{aligned} 4x + 3(2) &= 10 \\ 4x + 6 &= 10 \\ 4x &= 4 \\ x &= 1 \end{aligned}$$

1. Make sense of Diego's work and discuss with a partner:

   a. What did Diego do to solve the system?

   b. Is the pair of x and y values that Diego found actually a solution to the system? How do you know?

2. Does Diego's method work for solving these systems? Be prepared to explain or show your reasoning.

   a. $\begin{cases} 2x + y = 4 \\ x - y = 11 \end{cases}$

   b. $\begin{cases} 8x + 11y = 37 \\ 8x + y = 7 \end{cases}$

3 Adding and Subtracting Equations to Solve Systems

Student Task Statement

Here are three systems of equations you saw earlier.

System A

$$\begin{cases} 4x + 3y = 10 \\ \text{-}4x + 5y = 6 \end{cases}$$

System B

$$\begin{cases} 2x + y = 4 \\ x - y = 11 \end{cases}$$

System C

$$\begin{cases} 8x + 11y = 37 \\ 8x + y = 7 \end{cases}$$

For each system:

1. Use graphing technology to graph the original two equations in the system. Then, identify the coordinates of the solution.

2. Find the sum or difference of the two original equations that would enable the system to be solved.

3. Graph the third equation on the same coordinate plane. Make an observation about the graph.