

Unit 2 Lesson 15: Solving Systems by Elimination (Part 2)

1 Is It Still True? (Warm up)

Student Task Statement

Here is an equation: $50 + 1 = 51$.

1. Perform each of the following operations and answer these questions: What does each resulting equation look like? Is it still a true equation?
 - a. Add 12 to each side of the equation.
 - b. Add $10 + 2$ to the left side of the equation and 12 to the right side.
 - c. Add the equation $4 + 3 = 7$ to the equation $50 + 1 = 51$.
2. Write a new equation that, when added to $50 + 1 = 51$, gives a sum that is also a true equation.
3. Write a new equation that, when added to $50 + 1 = 51$, gives a sum that is a false equation.

2 Classroom Supplies

Student Task Statement

A teacher purchased 20 calculators and 10 measuring tapes for her class and paid \$495. Later, she realized that she didn't order enough supplies. She placed another order of 8 of the same calculators and 1 more of the same measuring tape and paid \$178.50.

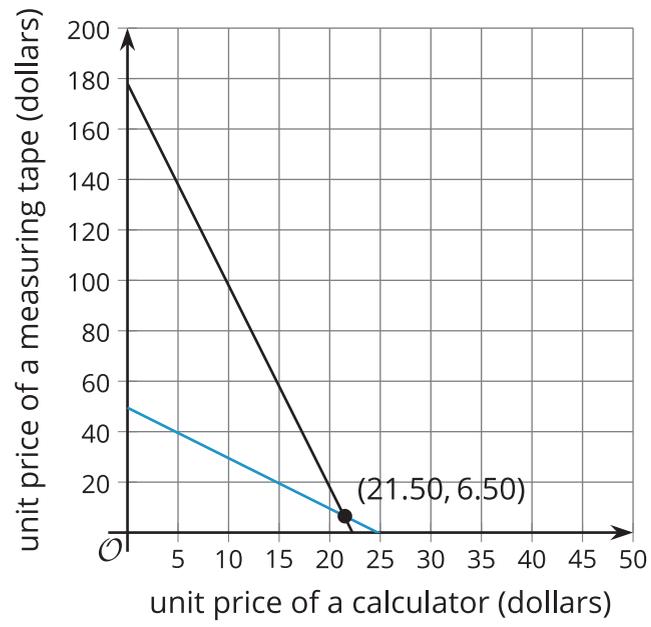
This system represents the constraints in this situation:

$$\begin{cases} 20c + 10m = 495 \\ 8c + m = 178.50 \end{cases}$$



1. Discuss with a partner:
 - a. In this situation, what do the solutions to the first equation mean?
 - b. What do the solutions to the second equation mean?
 - c. For each equation, how many possible solutions are there? Explain how you know.
 - d. In this situation, what does the solution to the system mean?
2. Find the solution to the system. Explain or show your reasoning.
3. To be reimbursed for the cost of the supplies, the teacher recorded: "Items purchased: 28 calculators and 11 measuring tapes. Amount: \$673.50."
 - a. Write an equation to represent the relationship between the numbers of calculators and measuring tapes, the prices of those supplies, and the total amount spent.
 - b. How is this equation related to the first two equations?
 - c. In this situation, what do the solutions of this equation mean?
 - d. How many possible solutions does this equation have? How many solutions make sense in this situation? Explain your reasoning.

Activity Synthesis



3 A Bunch of Systems

Student Task Statement

Solve each system of equations without graphing and show your reasoning. Then, check your solutions.

$$A \begin{cases} 2x + 3y = 7 \\ -2x + 4y = 14 \end{cases}$$

$$B \begin{cases} 2x + 3y = 7 \\ 3x - 3y = 3 \end{cases}$$

$$C \begin{cases} 2x + 3y = 5 \\ 2x + 4y = 9 \end{cases}$$

$$D \begin{cases} 2x + 3y = 16 \\ 6x - 5y = 20 \end{cases}$$