

Algebra II 1.6C Homework. Solve each system by elimination. Check your answers.

$$1. \begin{cases} x + 5y + 5z = -10 \\ x + y + z = 2 \\ x + 2y + 3z = -3 \end{cases}$$

$$2. \begin{cases} x + y + z = 3 \\ 2x - y + 2z = 6 \\ 3x + 2y - z = 13 \end{cases}$$

3. Monica has \$1, \$5, and \$10 bills in her wallet that are worth \$96. If she had one more \$1 bill, she would have just as many \$1 bills as \$5 and \$10 bills combined. She has 23 bills total. How many of each denomination does she have?

Write the system of equations represented by each matrix.

$$4. \left[\begin{array}{ccc|c} 2 & 5 & 0 & 13 \\ -3 & 1 & 2 & 6 \\ 4 & 0 & -3 & 5 \end{array} \right]$$

$$5. \left[\begin{array}{cc|c} 2 & 1 & -7 \\ 0 & 4 & 9 \end{array} \right]$$

$$6. \left[\begin{array}{ccc|c} 6 & 4 & -2 & 17 \\ 1 & -5 & 2 & -10 \\ 0 & 3 & -1 & 0 \end{array} \right]$$

Solve the system of equations. You may use any method (matrix if you have a GC).

$$7. \begin{cases} 4x - y = 10 \\ -2x + 5y = 4 \end{cases}$$

$$8. \begin{cases} x - 2y + 3z = 18 \\ 9x + 2y - z = -2 \\ -6x - y + 2z = 4 \end{cases}$$

$$9. \begin{cases} 3x - 4y + z = 15 \\ -2x - 6y + 3z = 4 \\ 2x + 2y - 2z = -1 \end{cases}$$

10. Suppose the movie theater you work at sells popcorn in three different sizes. A small costs \$2, a medium costs \$5, and a large costs \$10. On your shift, you sold 250 total containers of popcorn and brought in \$1726. You sold twice as many large containers as small ones.

- How many of each popcorn size did you sell?
- How much money did you bring in from selling small size containers?

11. The following matrix shows the prices passengers on an airline flight paid for a recent ticket and how many passengers were on that flight. Some passengers paid full price for their tickets, and some bought their tickets during a half-price sale. How many passengers bought each price of ticket?

$$\left[\begin{array}{cc|c} 1 & 1 & 100 \\ 120 & 240 & 20,160 \end{array} \right]$$

12. **Error Analysis** Your friend says that the matrix below represents the system of equations. What error did your friend make? What is the correct system of equations?

$$\left[\begin{array}{ccc|c} 4 & 0 & -1 & 4 \\ -3 & 2 & -2 & -2 \\ 1 & -3 & -2 & -6 \end{array} \right] \quad \begin{cases} 4x + y - z = 4 \\ -3x + 2y - 2z = -2 \\ x - 3y - 2z = -6 \end{cases}$$