Name_____ Class _____ Date_____

3-6 Practice

Form G

Solving Systems Using Matrices

Identify the indicated element.

$$A=\left[\begin{array}{cc|c} 3 & 5 & 8 \\ 4 & 1 & 6 \end{array}\right] \qquad B=\left[\begin{array}{ccc|c} 0 & 6 & 3 & 2 \\ 4 & 5 & 1 & 13 \\ 2 & 2 & 0 & -10 \end{array}\right]$$

1. A_{13} **2.** B_{24} **3.** B_{12} **4.** A_{22}

5. B_{31} **6.** A_{21} **7.** B_{23} **8.** A_{11}

Write a matrix to represent each system.

9. $\begin{cases} 3x+y=-4 \\ -2x+4y=7 \end{cases}$ **10.** $\begin{cases} 6x=11 \\ -3x+4y=2 \end{cases}$ **11.** $\begin{cases} 4x-y+2z=10 \\ 5x+2y-3z=0 \\ x-3y+z=6 \end{cases}$

Write the system of equations represented by each matrix.

12. $\left[\begin{array}{ccc|c} 2 & 5 & 0 & 13 \\ -3 & 1 & 2 & 6 \\ 4 & 0 & -3 & 5 \end{array}\right]$ **13.** $\left[\begin{array}{cc|c} 2 & 1 & -7 \\ 0 & 4 & 9 \end{array}\right]$ **14.** $\left[\begin{array}{ccc|c} 6 & 4 & -2 & 17 \\ 1 & -5 & 2 & -10 \\ 0 & 3 & -1 & 0 \end{array}\right]$

Solve the system of equations using a matrix.

15. $\begin{cases} 4x-y=10 \\ -2x+5y=4 \end{cases}$ **16.** $\begin{cases} x-2y+3z=18 \\ 9x+2y-z=-2 \\ -6x-y+2z=4 \end{cases}$ **17.** $\begin{cases} 3x-4y+z=15 \\ -2x-6y+3z=4 \\ 2x+2y-2z=-1 \end{cases}$

Name_____ Class _____ Date_____

3-6 Practice (continued) *Form G*

Solving Systems Using Matrices

Graphing Calculator **Solve each system.**

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

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

20. $\begin{cases} 3x + 5z = -4 \\ -2x + y - 3z = 9 \\ -x - 2y + 9z = 0 \end{cases}$

21. 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.

a. How many of each popcorn size did you sell?

b. How much money did you bring in from selling small size containers?

22. **Open Ended** Write a matrix for a system of equations that does not have a unique solution.

23. 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?

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

24. **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?

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