

Matrix Word Problems

Team A scored 4 three-point baskets, 22 two-point baskets, and 7 one-point baskets in a game versus team B. Team B scored 8 three-point baskets, 18 two-point baskets and 12 one-point baskets in the game. Write a 2 X 3 matrix that organizes this data. Let team A be row 1, team B be row 2, three-pointers be column 1, two-pointers be column 2, and one-pointers be column 3.

Basketball Data

	three-pointers	two-pointers	one-pointers
Team A	4	22	7
Team B	8	18	12

A company offers medical, vision, and dental insurance to its employees. The annual employee costs for this year and next year are described in the following matrices. Use the matrices to write a matrix that shows the monthly changes from this year to next year. Round to the nearest penny.

	This Year		Next Year	
	Single	Family	Single	Family
Medical	725.52	2243.64	780.36	2352.28
Vision	29.76	220.08	35.24	236.12
Dental	57.36	198.36	46.78	172.88

Next Year Matrix - This Year Matrix

$$\begin{bmatrix} S & F \\ 780.36 & 2352.28 \\ 35.24 & 236.12 \\ 46.78 & 172.88 \end{bmatrix} - \begin{bmatrix} S & F \\ 725.52 & 2243.64 \\ 29.76 & 220.08 \\ 57.36 & 198.36 \end{bmatrix}$$

monthly  $\rightarrow \frac{1}{12}$

$$\begin{bmatrix} S & F \\ 54.84 & 108.04 \\ 5.48 & 16.04 \\ -10.58 & -25.48 \end{bmatrix} \rightarrow \begin{matrix} \text{Single} & \text{Family} \\ \text{Medical} & 4.57 & 9.05 \\ \text{Vision} & 0.46 & 1.34 \\ \text{Dental} & -0.88 & -2.12 \end{matrix}$$

The school stores from the middle school and the high school each submit an inventory list for the year. Each sweatshirt costs \$15, each T-shirt costs \$9, and each pennant costs \$5. Use matrix multiplication to find the total cost of the inventory for each school store.

Middle School: 61 sweatshirts, 63 T-shirts, and 74 pennants

High School: 58 sweatshirts, 71 T-shirts, and 92 pennants

Remember to set up the matrices so that the columns of the inventory matrix match the rows of the cost matrix.

Write the inventory and the cost in matrix form.

Inventory Matrix

Cost Matrix

	Sweatshirt	T-shirt	Pennant
Middle School	61	63	74
High School	58	71	92

	Dollars
Sweet-shirt	15
T-shirt	9
Pennant	5

Total cost

MS	1852
HS	1969

Total cost for the Middle school is \$1852, and total cost for the high school is \$1969.

Attendance for the first three football games of the season is described in the table. Adult tickets sold for \$5.00. Student tickets sold for \$2.50. Use matrix multiplication to find the revenue for each game.

	Adults	Students
Game 1	320	150
Game 2	290	175
Game 3	350	220

Game 1 - \$1975.00  
 Game 2 - \$1887.50  
 Game 3 - \$2300.00

# of Tickets Sold

Cost

Adults                  Students

Dollars

Total Revenue  
Dollars

Game 1	320	150
Game 2	290	175
Game 3	350	220

Adults	5.00
Student	2.50

Game 1	1975
Game 2	1887.5
Game 3	2300