

Matrix Applications

1. A pet store currently has German shepherd, Husky, and Lab puppies of both sexes. The table below shows how many of each type are available.

	Male	Female
German Shepherd	6	4
Husky	2	0
Lab	3	4

a. Write this table as a matrix
 2×3 M $\begin{bmatrix} GS & H & L \\ 6 & 2 & 3 \\ 4 & 0 & 4 \end{bmatrix}$ vs.

3×2 $\begin{bmatrix} M & F \\ GS & 6 & 4 \\ H & 2 & 0 \\ L & 3 & 4 \end{bmatrix}$

b. Write a matrix that shows the total number of puppies of each breed.

$\begin{bmatrix} 6 & 4 & 10 \\ 2 & 0 & 2 \\ 3 & 4 & 7 \end{bmatrix}$ 3×3

c. Suppose during a week, the pet store sells 4 German shepherds, 1 Husky, and 2 Lab puppies. Write a matrix to represent this information.

3×1 $\begin{bmatrix} GS \\ H \\ L \end{bmatrix} \begin{bmatrix} 4 \\ 1 \\ 2 \end{bmatrix}$

2. The daily sales at various fast food restaurants in various cities are shown in the table below.

City	McPizza	Burger Hut	QuikSubs
Greensboro	\$ 30,000	\$ 23,400	\$ 26,000
Raleigh	\$ 8,600	\$ 12,400	\$ 10,900
Chapel Hill	\$ 24,200	\$ 21,100	\$ 17,400

a. Write a matrix to organize the sales data.

$\begin{bmatrix} 30K & 23.4K & 26K \\ 8.6K & 12.4K & 10.9K \\ 24.4K & 21.1K & 17.4K \end{bmatrix}$ 3×3

b. What are the dimensions of this matrix?

3×3

c. What number is a_{31} ?

$= \$24,200$

d. In which city does Burger Hut sell more food than its competitors?

~~Greensboro~~

OR Raleigh.

3. Write a matrix to organize the information about a video store's movies. Label each row and column.

Comedy: 25 new releases, 215 regular selections
 Drama: 30 new releases, 350 regular selections
 Horror: 26 new releases, 180 regular selections

3×2

$\begin{bmatrix} NR & RS \\ C & 25 & 215 \\ D & 30 & 350 \\ H & 26 & 180 \end{bmatrix}$

