

Chapter 4

Section 1 Storing Data in Matrices

Adv. Alg.

What is a matrix?

Rectangular arrangement of objects, each called an element.

Plural: matrices

Info can be stored in matrices:

Inventory of athletic clothing owned by h.s. cross country team

	sweat pants	sweat shirts	shorts	brackets
small	9	10	8	row 1
medium	18	20	19	row 2
large	20	24	23	row 3
x large	11	11	12	row 4
↑ labels outside matrix	column 1	col. 2	col. 3	element in 4th row + 3rd column.

★ Dimensions of a matrix:

rows x columns

4 x 3

∴ we say this is a 4x3 matrix.

examples on next page. . .

ex1 The Matterhorn Co. produced 1500 trumpets + 1200 French Horns in September; 2000 trumpets + 1400 French Horns in Oct; + 900 trumpets + 700 french horns in Nov.

- a) Store the company's production in a matrix.
 b) What are the dimensions?

Sol: a) M_1

	Trumpets	French Horn
Sep	1500	1200
Oct	2000	1400
Nov	900	700

+ M_2

S	T	F.H.
1500	2000	900
1200	1400	700

b) M_1 is 3×2 M_2 is 2×3

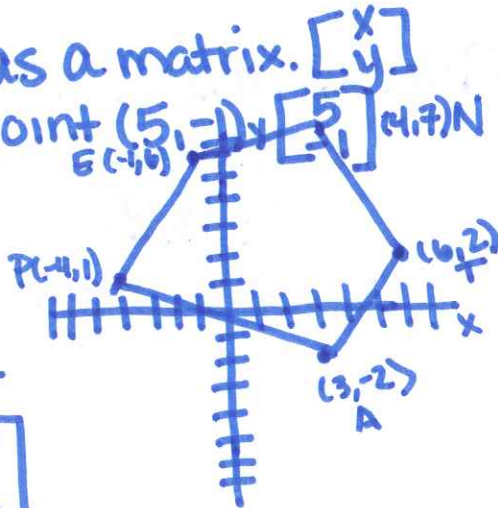
Note: Although both ways are acceptable to show data, these 2 matrices are not equal - they must have same dimensions and corresponding elements match up.

ordered pairs can be expressed as a matrix. $\begin{bmatrix} x \\ y \end{bmatrix}$
 (aka point-matrix) ie: point $(5, -1)$ $\begin{bmatrix} 5 \\ -1 \end{bmatrix}$ $(4, 7)$ N

- ex2** a) Write PENTA as a matrix
 b) Write NEPAT
 c) Are they equal?

a) $\begin{matrix} P & E & N & T & A \\ x & \begin{bmatrix} -4 & -1 & 4 & 6 & 3 \end{bmatrix} \\ y & \begin{bmatrix} 1 & 6 & 7 & 2 & -2 \end{bmatrix} \end{matrix}$

b) $\begin{matrix} N & E & P & A & T \\ x & \begin{bmatrix} 4 & -1 & -4 & 3 & 6 \end{bmatrix} \\ y & \begin{bmatrix} 7 & 6 & 1 & -2 & 2 \end{bmatrix} \end{matrix}$



c) Not equal b/c elements don't match up

Homework 4-1A (all)