Date:

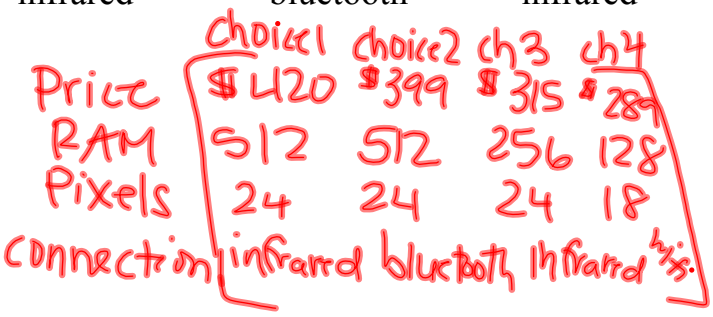
Chapter: Chapter 4:1 - Introduction to Matrices

Objectives: Organize data into matrices
Use matrix row and column operations to analyze data

Notes:

Julie is shopping for a new smart phone and discovers that many different options are available. She wants to be able to easily compare the options, so she decides to organize the data in a matrix. Organize the following data in a matrix.

Choice 1	Choice 2	Choice 3	Choice 4
$420	$399	$315	$289
512 RAM	512 RAM	256 RAM	128 RAM
24 pixels	24 pixels	24 pixels	18 pixels
infrared	bluetooth	infrared	wi-fi

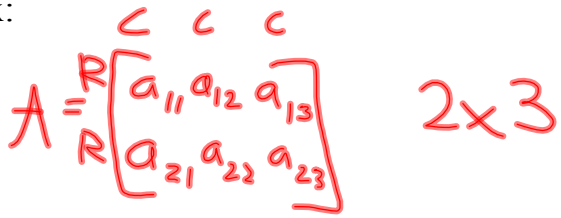


*__Matrix__ = Rectangular arrangement of variables and/or constants in rows and columns enclosed in brackets.

*__Element__ = Each value in a matrix.

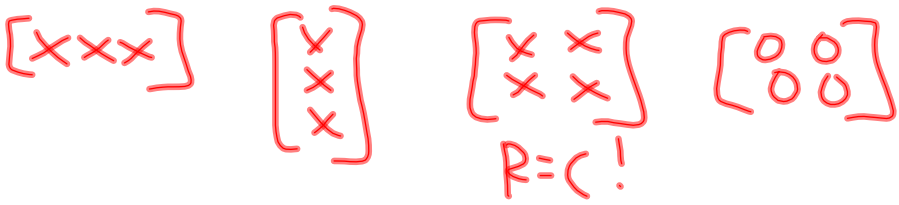
*__Dimensions__ = # of rows and columns in a matrix; always RxC!!! (horizontal, vertical)

-Ex:



Four Types of Matrices

1) Row 2) Column 3) Square 4) Zero



*__Equal Matrices__ = Same dimensions and corresponding elements are equal.

Examples:

Ex. 1

Use $A = \begin{bmatrix} 10 & -8 \\ -2 & 19 \\ 6 & -1 \end{bmatrix}$ to answer the following:

a) State the dimensions

3x2

b) Find the value of b_{32}

-1

Ex. 2

The figure shows the prices of small, medium, and large subs.

	Small	Medium	Large
Ham	$3.50	$5.50	$8.00
Meatball	$4.00	$6.50	$9.00
Turkey	$3.75	$6.00	$8.75
Roast Beef	$3.25	$5.00	$7.75

a) Organize the data in a matrix listing subs from least to most expensive.

	Roast	Ham	Turkey	Meatball
SM	3.25	3.50	3.75	4.00
MD	5.00	5.50	6.00	6.50
LG	7.75	8.00	8.75	9.00

b) State the dimensions

3x4

c) Find the value of a_{21}

$5.00

Ex. 3

The table displays some of the US Census Data.

Latino Popularion in Millions

Age	Male	Female
0-19	7.1	6.6
20-39	6.8	5.9
40-59	3.2	2.2
60+	1.1	1.4

a) Organize the data in a matrix

	Male	Female
0-19	7.1	6.6
20-39	6.8	5.9
40-59	3.2	2.2
60+	1.1	1.4

b) Add the elements in the columns and interpret.

column 1 = 18.2

column 2 = 16.1

c) Add the elements in the rows and interpret.

row 1 = 13.7

row 2 = 12.7

row 3 = 5.4

row 4 = 2.5

d) Find the average of the rows and columns. Is it meaningful?

column 1 = 4.55

column 2 = 4.03

row 1 = 6.85

row 3 = 1.35

row 4 = 0.62

Homework:

Average (+13) --> p. 188 (#9-21)

Advanced (+20) --> p. 189 (#22-37, 41-44)