



Centurion
UNIVERSITY
Shaping Lives...
Empowering Communities...

SESSION-16, 17, 18 & 19

MEASURES OF CENTRAL TENDENCY OR LOCATION

- **Median**
 - Middle value when sorted in order of magnitude
 - 50th percentile

- **Mode**
 - Most frequently-occurring value

- **Mean**
 - Average



EXAMPLE

A large department store collects data on sales made by each of its salespeople. The number of sales made on a given day by each of **20 salespeople is shown on the next slide. Also, the data has been sorted in magnitude.**



EXAMPLE : (CONTINUED) - SALES AND SORTED SALES

<u>Sales</u>	<u>Sorted Sales</u>
9	6
6	9
12	10
10	12
13	13
15	14
16	14
14	15
14	16
16	16
17	16
16	17
24	17
21	18
22	18
18	19
19	20
18	21
20	22
17	24



EXAMPLE – MEDIAN (DATA IS USED FROM EXAMPLE)

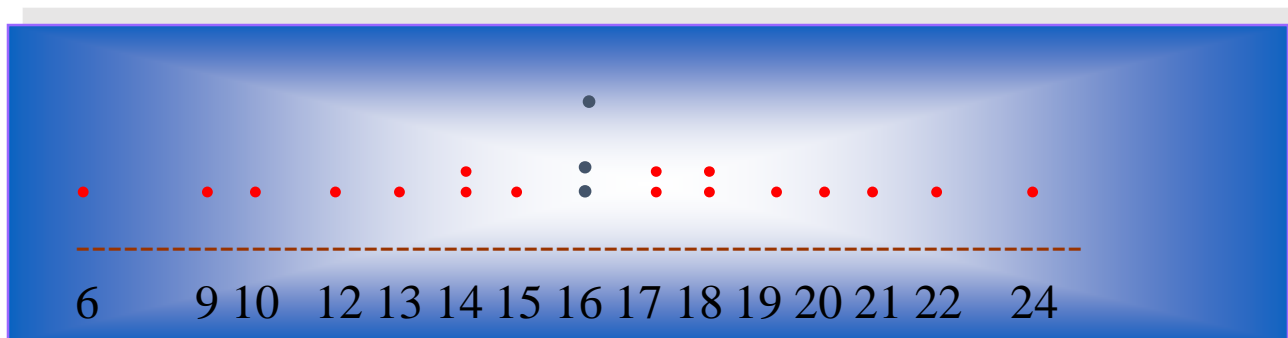
<u>Sales</u>	<u>Sorted Sales</u>
9	6
6	9
12	10
10	12
13	13
15	14
16	14
14	15
14	16
16	16
17	16
16	17
24	17
21	18
22	18
18	19
19	20
18	21
20	22
17	24

← **Median**

The **median** is the middle value of data sorted in order of magnitude. It is the 50th percentile.



EXAMPLE - MODE (DATA IS USED FROM EXAMPLE)



Mode = 16

The **mode** is the most frequently occurring value. It is the value with the **highest frequency**.



ARITHMETIC MEAN OR AVERAGE

The **mean** of a set of observations is their average - the sum of the observed values divided by the number of observations.

Population Mean

$$\mu = \frac{\sum_{i=1}^N x}{N}$$

Sample Mean

$$\bar{x} = \frac{\sum x}{n}$$



EXAMPLE – MEAN (DATA IS USED FROM EXAMPLE)

Sales

9
6
12
10
13
15
16
14
14
16
17
16
24
21
22
18
19
18
20
17

$$\bar{x} = \frac{\sum_{i=1}^n x}{n} = \frac{317}{20} = 15.85$$