22/03/2021

Section - C

Mean, Mode, Median quartiles, percentiles deciles.

Measures of Central Tendency

Average :→ Single value

	Attribute	TT marks
$16\bar{X}_1$	A	T_1
$15\bar{X}_2$	B	T_2
$17\bar{X}_3$	C	f_1

Mean (15) Arithmetic

17

Median

Mode

20

200

Kitchen slabs

> 1.0 metre	30
> 2.0 metre	40
> 3.0 m	60
> 4.0	70

ARITHMETIC MEAN

Ungrouped data: $x_1, x_2, x_3, x_4, \ldots, x_n$

$$\bar{X} = \frac{x_1 + x_2 + x_3 + \cdots + x_n}{n}$$

$$= \frac{\sum x_i}{n} = \frac{\sum_{i=1}^{n} x_i}{n}$$

grouped data:

x_i Marks	f_i	$f_i x_i$
10	15	150
12	4	48
15	16	240
16	10	160
17	2	34
18	3	54
20	5	100
	N=55	786

$$\text{Mean} = \frac{\sum f_i x_i}{\sum f_i} = \frac{\sum f_i x_i}{N}$$

$$= \frac{786}{55} \checkmark$$

$$=$$

Direct

average Profit = ??

Profits (dollars)	No of companies	m	m	fm
200-400	500 ✓	300	300	150000
400-600	300	500	500	150000
600-800	280	1400	700	196000
800-1000	120	1800	900	108000
1000-1200	100	2200	1100	110000
1200-1400	80	2600	1300	104000
1400-1600	20	3000	1500	30000
	1400			848000

$$\bar{x} = 605.71$$

$$= \frac{\sum fm}{\sum f}$$

$$= \frac{848000}{1400}$$

$$= \frac{848000}{1400}$$

Short cut Method:

Pupils	f	m	$d = \left(\frac{m-A}{h}\right)$	fd
200 - 400	500	300	-3	-1500
400 - 600	300	500	-2	-600
600 - 800	280	700	-1	-280
800 - 1000	120	900 = A	0	0
1000 - 1200	100	1100	1	100
1200 - 1400	80	1300	2	160
1400 - 1600	20	1500	3	60
	1400			-2060

$$\bar{X} = A + \left(\frac{\Sigma fd}{\Sigma f} \times h\right)$$

$$= 900 + \left(\frac{-2060}{1400}\right) \times 200 \checkmark$$