#Assignment #02

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Section:- 0
Serial :- 07

The data set of age is given as,

A = 23, 22, 21, 22, 21, 20, 21, 21, 22, 24, 24, 22, 21, 22, 22

So, n = 15.

Arithmetic mean:-

$$AM = \frac{\Sigma A_i}{n} = \frac{324}{15} = 21.60$$

Geometric mean:-

$$GM = (23 \times 22 \times 21 \times 22 \times 21 \times 20 \times 21 \times 21 \times 22 \times 22 \times 22 \times 21 \times 22 \times 22 \times 22)^{1/15}$$

$$= 21.58$$

Harmonic mean:- $$HM = \frac{n}{\Sigma \frac{1}{A_i}} = \frac{15}{\frac{1}{23}+\frac{1}{22}+\frac{1}{21}+\frac{1}{22}+\frac{1}{21}+\frac{1}{20}+\frac{1}{21}+\frac{1}{21}+\frac{1}{22}+\frac{1}{21}+\frac{1}{21}+\frac{1}{22}+\frac{1}{22}+\frac{1}{22}+\frac{1}{22}}$$

$$= \frac{15}{0.6953}$$

$$= 21.57$$

Median:- For Ascending Order Our Data set we get,

A = 20, 21, 21, 21, 21, 21, 22, 22, 22, 22, 22, 22, 22, 22, 23

So, Median = 22.

Mode:- In our data set we see that the maximum number of time we get the Age is 22.

So, Mode = 22

** Dispersion

Serial	Age	$\overline{Age}$	$Age_i - \overline{Age}$	$\lvert Age_i - \overline{Age} \rvert$	$(Age_i - \overline{Age})^2$
1	23		1.4	1.4	1.96
2	22		0.4	0.4	0.16
3	21		-0.6	0.6	0.36
4	22		0.4	0.4	0.16
5	21		-0.6	0.6	0.36
6	20	$= \frac{324}{15}$	1.6	1.6	2.56
7	21		-0.6	0.6	0.36
8	21	$= 21.6$	-0.6	0.6	0.36
9	22		0.4	0.4	0.16
10	22		0.4	0.4	0.16
11	22		0.4	0.4	0.16
12	22		0.4	0.4	0.16
13	21		-0.6	0.6	0.36
14	22		0.4	0.4	0.16
15	22		0.4	0.4	0.16
Total	324			9.2	7.6

(1) Mean Deviation:

$$MD = \frac{1}{n} \sum_{i=1}^{n} |Age_i - \overline{Age}|$$

$$= \frac{9.2}{15} = 0.6133$$

(2) Variance:

$$\sigma^2 = \frac{1}{n} \sum_{i=1}^{n} (Age_i - \overline{Age})^2$$

$$= \frac{7.6}{15} = 0.5067$$

(3) Standard deviation:-

$$SD = \sigma = \sqrt{0.5067}$$

$$= 0.7118$$

(4) Coefficient of Variation:-

$$CV = \frac{\sigma}{Age_i} \times 100\% = \frac{0.7118}{21.6} \times 100\%$$

$$= 3.29\%$$