NAME:- ASFANDYAR KHAN.

ROLL NO:- 7399

SUBJECT:- PROBABILITY AND STATISTICS

Q NO3 Discuss merits and demerits of median and geometric mean.

Ans GEOMETRIC MEANS:

Merits:

- It is rigidly defined and its value is precise figure
- It is based on all observation.
- It is capable of furthur algebric treatment.
- It is not much affected by fluctuation of sampling.
- It is not affected by extreme values.

Demerits:

- It cannot be calculated if any

one of the observation is negative or zero.

- Its calculation is rather difficult
- It is not easy to understand
- It may not coincide with any of observation.

MEDIAN:

MERITS:

- It is easily calculated and understood.
- It is located even when the value are not capable of quantitative measurment.
- It is not affected by extreme values. It can be computed even when a frequancy distributes involves 'open end' classes like thoes income and price.

- In a highly skewed distribution. median is an apropiate average to use.

Demerits:

- It is not rigorously defined.
- It is not capable of lending itself to furthur statistic treatment
- It necessitaties to arrangment of data into array. which can be tedious and time consuming. for a large body of data.

Q NO 1

Sol

A/x	B/y	C/z	x^2	y^2	z^2
12	3	5	144	9	25
15	13	14	225	169	196
6	43	36	36	2401	1296
73	102	105	5329	10404	11025
7	175	99	49	30625	9801
19	200	20	361	48400	400
199	204	15	39601	41616	225
36	139	96	1296	19321	9216
84	69	13	7056	4761	169
65	30	45	4225	900	2025
Σ 516	998	448	58322	158606	34,378

a): Better run getter

Arthimetic run getter:

$$\bar{x}_A = \frac{\Sigma x}{n}$$

$$= \frac{516}{10} \Rightarrow 51.6$$

Arthimetic mean of Batsman B.

$$\bar{x}_B = \frac{\Sigma x}{n}$$

$$\bar{x}_B = \frac{998}{10}$$

$$\bar{x}_B = 99.8$$

Arthimetic mean of batsman C.

$$\bar{x}_C = \frac{\Sigma x}{n}$$

$$= \frac{448}{10}$$

$$= 44.8$$

The batsman with more arthimetic mean is better run getter.

so batsman with more arithmetic mean of 99.8 is better run getter.

b) More consistent player.

→ Co-efficient of variation, C.V.

batsman: A

$$C.V = \frac{S}{\bar{x}} \times 100$$

Standard deviation of A

$$S = \sqrt{\frac{\Sigma x^2}{n} - \left(\frac{\Sigma x}{n}\right)^2}$$

$$S = \sqrt{\frac{58322}{10} - \left(\frac{516}{10}\right)^2}$$

$$S = \sqrt{5832.2 - 2662.56}$$

$$S = \sqrt{3169.64}$$

$$S = 56.29.$$

$$C.V \text{ of } A = \frac{S}{x_A} \times 100$$

$$= 109.08\%$$

→ C.V of B = $\frac{S_B}{\bar{x}_B} \times 100$

Standard deviation of B

$$S_B = \sqrt{\frac{\Sigma y^2}{n} - \left(\frac{\Sigma y}{n}\right)^2}$$

$$S_B = \sqrt{\frac{158606}{10} - \left(\frac{998}{10}\right)^2}$$

$$= \sqrt{15860.6 - 9960.04}$$

$$S_B = 76.81$$

C.V of B = $\frac{S_B}{\bar{x}_B} \times 100$

$$= \frac{76.81}{99.8} \times 100$$

$$= 76.96\%$$

→ C.V of C = $\frac{S_c}{\bar{x}_c} \times 100$

Standard deviation of C

$$S_c = \frac{\Sigma z^2}{n} - \left(\frac{\Sigma z}{n}\right)^2$$

$$= \sqrt{\frac{34378}{10} - \left(\frac{448}{10}\right)^2}$$

$$S_c = \sqrt{3437.8 - 2007.04}$$

$$S_c = \sqrt{1430.79}$$

$$S_c = 37.82$$

$$C.V \text{ of } C = \frac{S_c}{x_c} \times 100$$

$$= \frac{37.82}{44.8} \times 100$$

$$= 84.41\%$$

The bats with least co-efficient of variable is more consistant player so batsman B with C.V. 76.96 is more consistent player.

C) More variate player

A large valve of co-efficient

of variable indicates that it is more variated.

Hence C.V of A = 109.08%

so bats man.

A is more variate.