

Name: M. Omar Masood

Date:/...../20.....

ID: 14305

M. Masood

Q1: Construct a grouped frequency distribution table and cumulative frequency curve (ogive) for the observations

423, 369, 387, 411, 393, 394, 371, 377, 389, 409, 392, 408, 431, 401, 367, 391, 405, 382, 400, 381, 399, 415, 428, 422, 388, 372, 410, 419, 386, 390

Class interval	f	C.B	C.F <	C.F >
360 - 374	4	359.5 - 374.5	4	30
375 - 389	6	374.5 - 389.5	10	26
390 - 404	9	389.5 - 404.5	19	20
405 - 419	7	404.5 - 419.5	26	11
420 - 434	4	419.5 - 434.5	30	4
Totals	30			

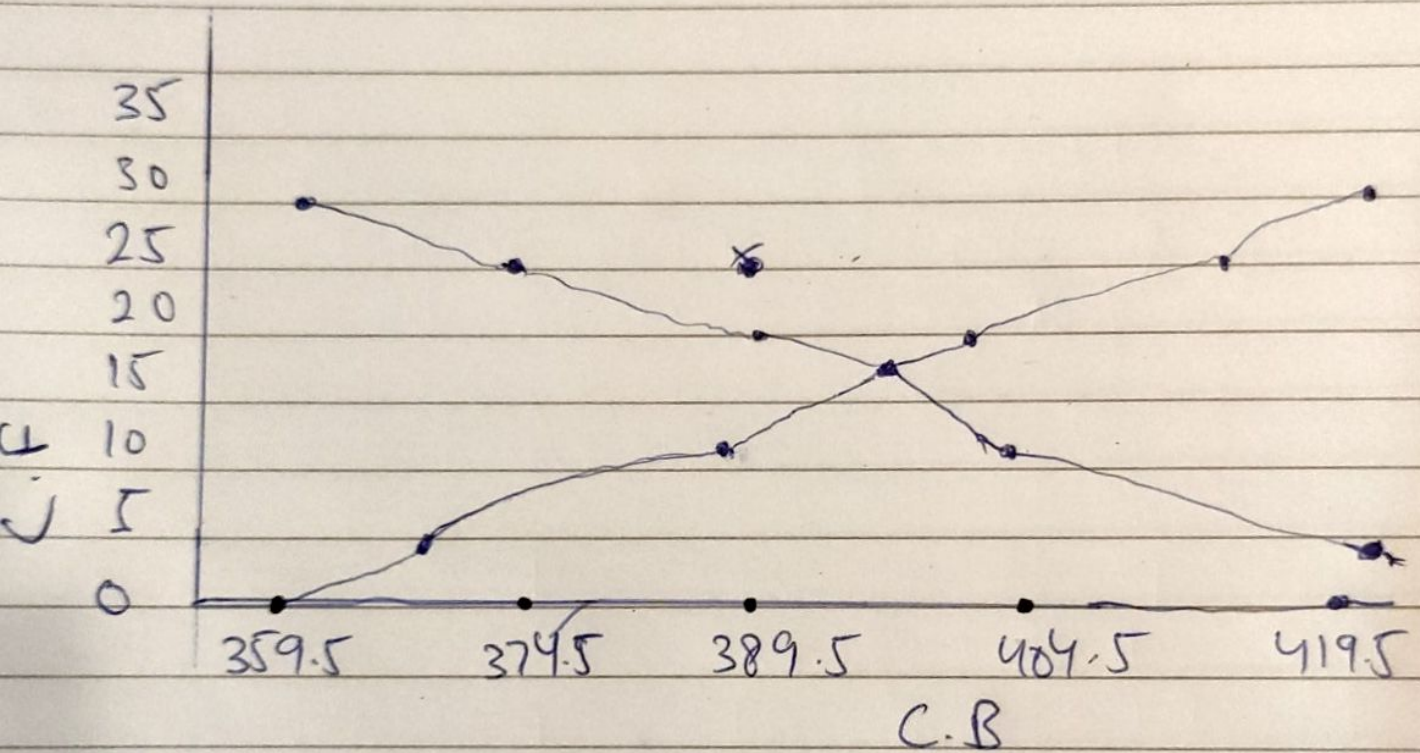
Now

$$C.B = \Delta = \text{LCI of 2}^{\text{nd}} \text{ class} - \text{UCI of 1}^{\text{st}} \text{ class}$$

$$= 375 - 374$$

$$= 1$$

$$C.B = \frac{\Delta}{2} \Rightarrow \frac{1}{2} = 0.5$$



Q No 2 Ans Calculate mean and Geometric mean.

423, 369, 387, 411, 393, 394, 371, 377, 389, 409, 392, 408, 431, 401, 313, 391, 405, 382, 400, 381, 399, 415, 428, 422, 396, 372, 410, 419, 386, 390.

Classes	f	C.B	\bar{x} midpoint	(f.m)	log x	f. log(x)
360-374	4	359.5-374.5	367	1468	2.56	10.24
375-389	6	374.5-389.5	382	2292	2.58	15.48
390-404	9	389.5-404.5	397	3573	2.59	23.31
405-419	7	404.5-419.5	412	2884	2.61	18.27
420-434	4	419.5-434.5	427	1708	2.63	10.52
Total	$\Sigma 30$ n=30					

$$\text{mean} = \frac{\Sigma(f \cdot x)}{\Sigma f}$$

$$= \frac{11925}{30}$$

$$\text{mean} = 397.5$$

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Geometric Mean :

$$G.M = \text{antilog} \left(\frac{\sum f \log(x)}{\sum f} \right)$$
$$= \text{Antilog} \left(\frac{77.82}{30} \right)$$

$$= \text{Antilog} (2.594)$$

$$G.M = 392.6$$

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Q No 3:- Define the following terms.

a) Population and Sample:-Sol Population:-

A population or a statistical population is a collection or set of all possible observations whether finite or infinite relevant to some characteristics of interest. A statistical population may be real such as the heights of all the college student or hypothetical such as all the possible outcome from the toss of a coin. The number of ~~(population \times \times is finite)~~ observation in a finite population is called the size of the population denoted by the letter "N".

Sample:-

A sample is a part or a subset of a population. The number of observations included in a sample is called the size of sample and is denoted by the letter "n". The information derived from a sample data is used to draw conclusion about the population.

QNo3 part (b)b) The Range:

The range, the difference between the largest value and the smallest value is the simplest ~~more~~ measure of variability in the data. The range is determined by only the two extreme data values. The variance (s^2) and the standard deviation (s) for example in $\{4, 6, 9, 3, 7\}$ the lowest value is 3 and the highest is 9, so the range is $9 - 3 = 6$. Range can also mean all the output values of a function.

c) The weighted Arithmetic Mean:-

The weighted arithmetic mean denoted by \bar{x}_w of a set of n value x_1, x_2, \dots, x_n with corresponding weight w_1, w_2, \dots, w_n is defined as

$$\bar{x}_w = \frac{x_1 w_1 + x_2 w_2 + \dots + x_n w_n}{w_1 + w_2 + \dots + w_n}$$

$$= \frac{\sum x_i w_i}{\sum w_i} \quad (i=1, 2, 3, \dots, n)$$