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Question: 1

Ans:- part: a

* ~~total~~ mean consumption for vegetable

$$\text{So mean for men} = \frac{204 + 259 + 266 + 317}{4} \Rightarrow 261.5$$

$$\text{mean for women} = \frac{178 + 235 + 266 + 304}{4} \Rightarrow 245.75$$

* Mean consumption for wheat

$$\text{for men} = \frac{79 + 114 + 197 + 253}{4} \Rightarrow 160.7$$

$$\text{for women} = \frac{56 + 118 + 141 + 180}{4} \Rightarrow 123.7$$

* Standard Deviation for veget...

$$\text{S.D for men} = 0.9 \sqrt{1308} \Rightarrow 32.5$$

$$\text{S.D for women} = 0.8 \sqrt{1540} \Rightarrow 31.3$$

* S.D in case of fruits ⁽³⁾

$$\text{S.D for men} = 0.5 \sqrt{1308} \Rightarrow 18.08$$

$$\text{" women} = 0.4 \sqrt{1540} \Rightarrow 15.6$$

* S.D for Meat

$$\text{for men} = 0.4 \sqrt{1308} \Rightarrow 14.4$$

$$\text{for women} = 0.3 \sqrt{1540} \Rightarrow 11.7$$

* S.D for Milk

$$\text{for men} = 0.3 \sqrt{1308} \Rightarrow 10.8$$

$$\text{for women} = 0.3 \sqrt{1540} \Rightarrow 11.7$$

* overall mean consumption of Rice

$$= \frac{(\text{mean group } P_1)(N_1) + (\text{mean group } P_2)(N_2)}{(N_1)(N_2)}$$

Now put the value

So

P.T.O

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$$\frac{1308 \times 261.5 + 1540 \times 245.75}{2848}$$

$$= 252.9$$

Part: b

In the table the wheat, root, flour and vegetable have very low amount for both men and women in Q₃ and Q₄ But it also clear from the table that in Q₁ and Q₂ the amount is ~~high~~ So those who consume more milk, root, vegetable and wheat flour than those who eat fresh vegetable

Part: c

When the consumption of rice falls for both men and women, as fresh

P.T.O

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vegetable consumption rises
it is the only food group
to show this pattern.

* Part: d

diagram for fish

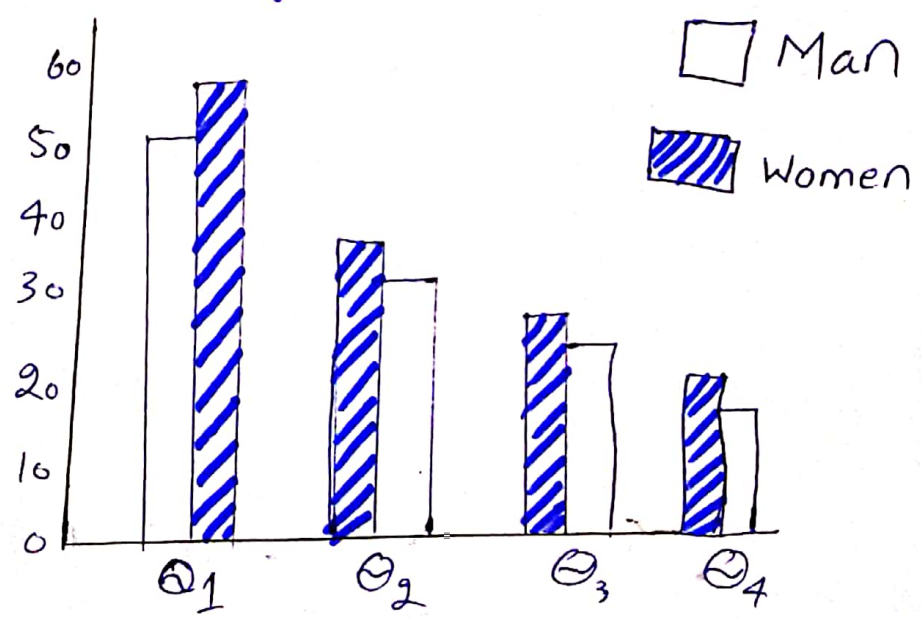
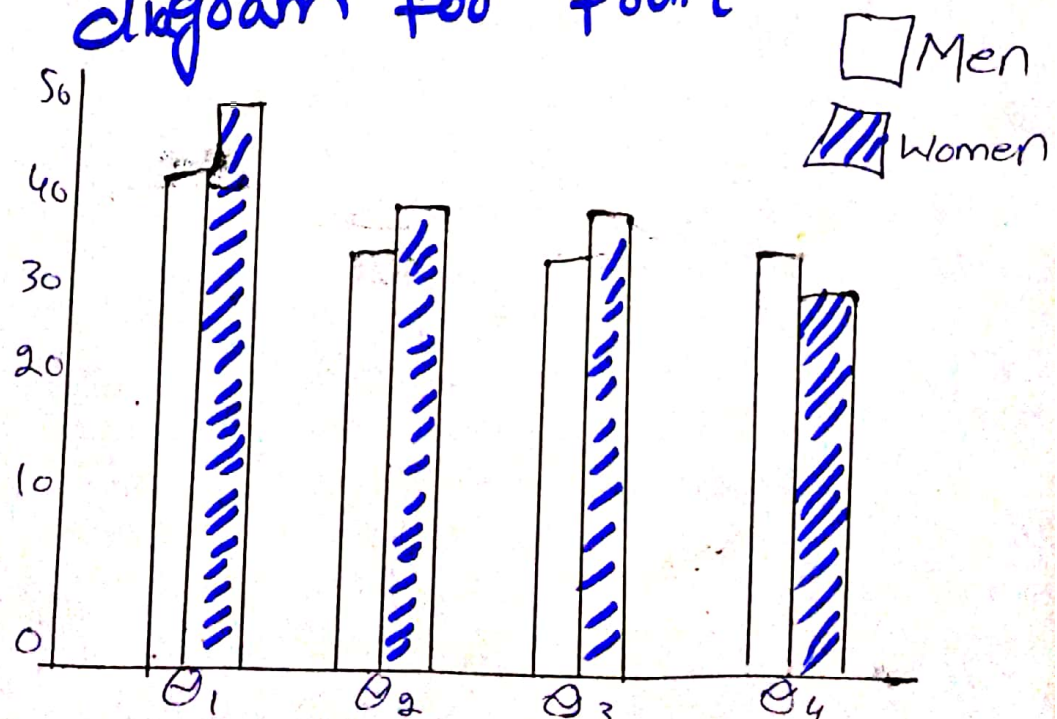


diagram for fruit



Part 'e'

6

Divide men figure of main food groups by 1.2 and multiply Women figure by 1.2 to obtain

	Men	Women
Fresh veg	170	178
Fruit	26	28
Rice	306	315
w. flour	66	56
Meat	58	48
Fish	19	19

There is no very large difference in pattern consumption but men eat more meat and wheat flour. While women eat more fresh vegetable fruit and rice.

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Part : f

Standard deviation = S.E $\times \sqrt{n}$

By using above formula the
value of standard deviation
of men is more than women
wheat flour vegetable, fruit,
wheat flour, whole grain.



Q2 Part: a

The Purpose of census is to count the entire population of a country and individual at location where they actually live, census count the number of living in the home. their age, sex and race, it helps in the forming and important base for planning Policy development and decreasing humbling.

Part: b

In census each and every unit of population is studied in the sampling. the census refer to Periodic collection of

P.T.O

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information about the population
from the entire population.

it is more suitable to
use census method if
population is sum in nature

The census survey is much
bigger in population compare
to sample survey census
survey takes more time

However it is margin for
error in sample survey which
census survey is more correct.

Part: C

obviously not having
a full response rate to
the census is problem for
the accuracy of census as
insufficient data will be

P.T.O

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Collected to know about
Population and of following
base for planning and
Policy development.

Part 'D'


Ironic response to
the census by public
signify their into wadd
attitude to the Survey
and their carelessness in
following accurate data.

Questions of these type
are invalidated with such
abuse ResonSES

Part 'e'

Not all of the population
in a internet friendly so may

P.T.O

(10) 
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Part 'e'

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P.T.O

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The response rate might be less other area of concern are cost Pressure.

Part 'f':

There may be additional concern about security of information when it is supplied online additional information held by government agencies is unlikely to be complete record matching in combining data basis is a notorious problem.

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Q 3: Part 2

find the given
Data by the help
of this table

class	f
20 - 24	1
25 - 29	3
30 - 34	5
35 - 39	8
40 - 44	5
45 - 49	2
50 - 54	0
55 - 59	1

class	no. of obs	x_i	$f_i x_i$	f_i/x_i	$\log x_i$	$f \log x_i$	$x - \bar{x}$	$(x - \bar{x})^2$	$f(x - \bar{x})^2$
20-24	1	22	22	0.046	1.34	1.34	-14.8	219.04	219.04
25-29	3	27	81	0.12	1.43	4.29	-9.8	96.04	288.12
30-34	5	32	160	0.15	1.50	7.5	-4.8	23.04	115.2
35-39	8	37	296	0.21	1.56	12.48	0.2	0.04	0.32
40-44	5	42	210	0.11	1.62	8.1	5.2	27.04	135.2
45-49	2	47	94	0.04	1.67	3.34	10.2	104.04	208.04
50-54	0	52	0	0	1.71	0	15.2	231.04	0
55-59	1	57	57	0.017	1.75	1.75	20.2	408.04	408.04
Total	25		920	0.693		38.8			1373.96

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* A.M.:-
↙

as we know that

$$A.M(x) = \frac{\sum f x}{N}$$

Put the value

So

$$A.M = \frac{\sum f x}{25} = 920 = 36.8$$

So Ans is 36.8

* G.M.:-
↙

formula for G.M is

$$\text{Antilog} \left(\frac{\sum f \log x}{\sum f} \right)$$

the value is given in
the above table So

Put the value

Then

$$\text{Antilog} \left(\frac{38.924}{25} \right)$$

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Antilog (1.557)

take antilog so Ans is

$$Cr.M = 36.05$$

* H.M:-

formula for H.M is

$$H.M = \frac{\sum p}{\sum (P/2)}$$

Put the value

$$H.M = \frac{25}{0.708}$$

Ans is 35.311

* Median:-

the mid value of a data set is called

P.T.O

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So

$$\text{Median} = \left[\left(\frac{n}{2} \right) + 1 \right] \text{th}$$

$$= \left[\frac{25}{2} + 1 \right] \text{th}$$

$$= \left[\frac{26}{2} \right] \text{th}$$

Median = 13th, integer } a data set

* Mode

the value of x

corresponding to the maximum
frequency, 8 is 37

So Mode is 37

* Range:-
↪

the formula of
Range is Maxi-Minim

So it is clear from
the table that Minimum
value is 20, while Maximum
value is 59. So
Put the value in
formula

$$\text{Range} = 59 - 20$$

So

$$\text{Range} = 39$$

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* M.D :-

the formula of mean
Deviation is $\frac{\sum f|x - \bar{x}|}{\sum f}$

$$\bar{x} = \frac{\sum fx}{\sum f}$$

Put the value

$$\bar{x} = \frac{920}{25} = 36.800$$

$$M.D = \frac{\sum f|x - \bar{x}|}{\sum f}$$

$$M.D = \frac{136.800}{25}$$

$$M.D = 5.475$$

P.T.O

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* Quartile Deviation:-

For Q.D first we find out the Q_1 and Q_3

So as we know that

$$Q_1 = \frac{N}{4} \Rightarrow \frac{20}{4} = 5$$

$$Q_1 = L_1 + \frac{N/4 - cf}{L} \times i$$

Put the value

$$Q_1 = 30 + \frac{5-4}{5} \times 8$$

$$Q_1 = 81.600$$

Now we find Q_3

P.T.O

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$$Q_3 = \frac{3N}{4} = \frac{3 \times 25}{4} \Rightarrow 18.750$$

Put the value then

$$Q_3 = 40 + \frac{18.750 - 17}{5} \times 8$$

$$Q_3 = 40 + 2.800$$

$$Q_3 = 42.800$$

Now we find the Q.D

So $Q.D = \frac{Q_3 - Q_1}{2}$

$$Q.D = \frac{42.800 - 81.600}{2}$$

$$Q.D = -19.400$$

* Variance:-

$$V = \frac{\sum f(x - \bar{x})^2}{\sum f - 1}$$

P.T.O

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Put the value from
the table

$$V = \frac{1108.320}{25-1}$$

So

$$V = 4.618$$

* S.D :-

$$S.D = \sqrt{\frac{\sum f(x-\bar{x})^2}{\sum f - 1}}$$

Put the value So

$$S.D = \sqrt{\frac{1108.320}{25-1}}$$

$$S.D = \sqrt{46.180}$$

$$S.D = 6.796$$

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* Coefficient of Variation:-

$$C \text{ of } v = \frac{S.D}{A.M} \times 100$$

Put the value

$$C \text{ of } v = \frac{6.796}{36.8} \times 100$$

$$C \text{ of } v = 18.467$$

* Quartiles:-

$$Q = L + \frac{h}{f} \left(\frac{n \times i}{4} - C.F \right)$$

in case of Q_1

$$Q_1 = L + \frac{h}{f} \left(\frac{n \times 1}{4} - C.F \right)$$

1st we have to calculate the quartile class.

P.T.O

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Quartile class = Size of $\frac{i(n+1)}{4}$ th term

class containing Q_1 = Size of $\frac{1(25+1)}{4}$ th

Q_1 = Size of 7th item

$$Q_1 = 29.5 - 34.5$$

$$Q_1 = L + \frac{h}{f} \left(\frac{n+1}{4} - C.F \right)$$

$$Q_1 = 29.5 + \frac{0.5}{0.5} \left(\frac{25+1}{4} - 0.4 \right)$$

$$Q_1 = 29.5 + 1(2.25)$$

$$Q_1 = 31.75$$

Now we find Q_3

$$\text{which} = L + \frac{h}{f} \left(\frac{n \times 3}{4} - C.F \right)$$

1st we complete the class

having ' Q_3 '

P.T.O

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\therefore class containing $\bar{Q}_3 =$ size of $\frac{3(n+1)}{4}$ th

class containing $\bar{Q}_3 =$ size of $\frac{3(25+1)}{4}$ th

class containing $\bar{Q}_3 =$ size of "20 th" item.

So

$$\bar{Q}_3 = 39.5 - 44.5$$

$$\bar{Q}_3 = L + \frac{h}{f} \left(\frac{n \times 3}{4} - 17 \right)$$

$$\bar{Q}_3 = 39.5 + 1(1.75)$$

$$= 41.25$$

Now we find the \bar{Q}_2

So

$$\bar{Q}_2 = \bar{Q}_3 - \bar{Q}_1$$

Put the value of \bar{Q}_3 and \bar{Q}_1

$$\bar{Q}_2 = 41.25 - 31.75$$

$$\bar{Q}_2 = 9.5$$

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* Decile:-

Decile from 1 to 10

$$* D_1 = \frac{1 \times (n+1)}{10}$$

is we know that

$$n = 8$$

So

$$D_1 = \frac{1 \times (8+1)}{10}$$

$$D_1 = 0.9$$

$$* D_2 = \frac{2 \times (n+1)}{10}$$

Put the value

$$D_2 = \frac{2 \times (8+1)}{10}$$

$$D_2 = 1.8$$

P.T.O

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*

$$D_3 = \frac{3(n+1)}{10}$$

$$D_3 = \frac{3(8+1)}{10}$$

$$D_3 = 2.7$$

*

$$D_4 = \frac{4 \times (n+1)}{10}$$

$$D_4 = \frac{4(8+1)}{10}$$

$$D_4 = 3.6$$

*

$$D_5 = \frac{5 \times (n+1)}{10}$$

$$D_5 = \frac{5(8+1)}{10}$$

$$D_5 = 4.5$$

P.T.O

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$$* D_6 = \frac{6(n+1)}{10}$$

$$D_6 = \frac{6(8+1)}{10}$$

$$D_6 = 5.4$$

$$* D_7 = \frac{7(n+1)}{10}$$

$$D_7 = \frac{7(8+1)}{10}$$

$$D_7 = 6.3$$

$$* D_8 = \frac{8(n+1)}{10}$$

$$D_8 = \frac{8(8+1)}{10}$$

$$D_8 = 7.2$$

P.T.O

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$$* D_9 = \frac{9 \times (n+1)}{10}$$

$$D_9 = \frac{9 \times (8+1)}{10}$$

$$D_9 = 8.1$$

$$* D_{10} = \frac{10 \times (n+1)}{10}$$

$$D_{10} = \frac{10 \times (8+1)}{10}$$

$$D_{10} = 9$$

* Percentile:-

$$P = 1\% \times 8 = 0.01 \times 8 = 0.08$$

$$P_{10} = \frac{10}{100} \times 8$$

$$P_{10} = 0.8$$

P.T.O.

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$$P_{25} = \Theta_1 = \frac{25}{100} \times 8$$

$$P_{25} = 2$$

$$P_{50} = \Theta_2 = \frac{50}{100} \times 8$$

$$P_{50} = 4$$

$$P_{75} = \frac{75}{100} \times 8$$

$$P_{75} = 6$$

$$P_{100} = \frac{100}{100} \times 8$$

$$P_{100} = 8$$

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* Skewness:-

$$J = \frac{\text{Mean} - \text{mode}}{\text{S.D}}$$

Put the value

$$= \frac{36.8 - 37}{7.41}$$

$$\text{Skewness} = -0.03$$

Part 'b' 30

The following table show all description about the Ungroup Data

X	\bar{x}	$x - \bar{x}$	$(x - \bar{x})^2$	$\frac{1}{x}$	$\frac{1}{x^2}$	log
20	39	-19	361	$\frac{1}{20}$	0.05	1.301
24	39	-15	225	$\frac{1}{24}$	0.04	1.381
25	39	-14	196	$\frac{1}{25}$	0.04	1.398
29	39	-10	100	$\frac{1}{29}$	0.03	1.462
30	39	-9	81	$\frac{1}{30}$	0.033	1.477
34	39	-5	25	$\frac{1}{34}$	0.028	1.531
35	39	-4	16	$\frac{1}{35}$	0.028	1.544
39	39	0	0	$\frac{1}{39}$	0.025	1.591
40	39	1	1	$\frac{1}{40}$	0.025	1.609
44	39	5	25	$\frac{1}{44}$	0.022	1.643
45	39	6	36	$\frac{1}{45}$	0.022	1.653
49	39	10	100	$\frac{1}{49}$	0.020	1.690
50	39	11	121	$\frac{1}{50}$	0.02	1.699
54	39	15	225	$\frac{1}{54}$	0.018	1.732
55	39	16	256	$\frac{1}{55}$	0.018	1.740
59	39	20	400	$\frac{1}{59}$	0.016	1.771
Total			2168		0.687	25.215

(31)

* Range:-

$$X = 20, 24, 25, 29, 30, 34, 35, 39, 40, 44, \dots, 59$$

As we know that

$$\text{Range} = X_{\text{max.}} - X_{\text{Min}}$$

So the maximum value is 59
and minimum value is 20

$$\text{Then Range} = 59 - 20 = 39$$

$$\text{Range} = 39$$

* Arithmetic Mean:-

The value of \bar{x} is given
in the table

$$\bar{x} = \frac{\sum X}{N}$$

Put the value

So

$$\bar{x} = \frac{632}{16}$$

P.T.O

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$$A.M = 39.5$$

* Quartile:

first we find Q_1

So the formula as

$$i \cdot \left(\frac{N+1}{4}\right) \Rightarrow 1 \left(\frac{16+1}{4}\right) = 4.25$$

$$Q_1 = 4^{\text{th}} + 0.25(5^{\text{th}} - 4^{\text{th}})$$

$$Q_1 = 29 + 0.25(30 - 29)$$

$$= 29 + 0.25(1)$$

$$Q_1 = 29.25$$

$Q_2 = ?$

$$Q_2 = 2 \left(\frac{16+1}{4}\right) = 8.5$$

$$Q_2 = 8^{\text{th}} + 0.5(9^{\text{th}} - 8^{\text{th}})$$

P.T.O

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$$\theta_2 = 39 + 0.5(40 - 39)$$

$$\theta_2 = 39 + 0.5(1)$$

$$\theta_2 = 39.5$$

$$\theta_3 = ?$$

$$\theta_3 = 3 \left(\frac{16+1}{4} \right) = 12.75$$

$$\theta_3 = 12^{\text{nd}} + 0.75(13^{\text{nd}} - 12^{\text{nd}})$$

$$\theta_3 = 49 + 0.75(50 - 49)$$

$$\theta_3 = 49.75$$

* $\theta \cdot D$::
↙

the formula is

$$\theta \cdot D = \frac{\theta_2 - \theta_1}{2}$$

$$\theta \cdot D = \frac{49.75 - 29.25}{2}$$

P.T.O

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$$\sigma \cdot D = 10.25$$

* S.D

$$S.D = \sqrt{\frac{\sum (x - \bar{x})^2}{n}}$$

$$\text{total } x = 632$$

$$\text{So Mean} = \frac{632}{16} = 39.5$$

as we know that

$$(x - \bar{x})^2 = 2168$$

$$n = 16$$

Put the value in formula

$$S.D = \sqrt{\frac{2168}{16}}$$

$$S.D = 11.64$$

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* Variance:-

as we know that

$$\frac{\sum (x - \bar{x})^2}{n}$$

$$\sum (x - \bar{x})^2 = 2168$$

$$n = 16$$

Put the value

$$S^2 = \frac{\sum (x - \bar{x})^2}{n}$$

$$V = \frac{2168}{16}$$

$$V = 135.5$$

* H.M.:-

$$H.M = \frac{n}{\sum \frac{1}{x}}$$

$$n = 16$$

$$\sum \frac{1}{x} = 0.687$$

4.1...

36

$$H.M = \frac{16}{0.687}$$

$$H.M = 23.28$$

* Mean:-

Mean = add and divide

So Put the value

$$M = \frac{20+24+25+29+30+34 \dots \dots \dots 59}{16}$$

$$M = \frac{639}{16}$$

$$M = 39.5$$

* Median:-

for finding Median

Arrange the number
in the order of increasing

P.T.O

these numbers which is

20, 24, 25, 29, 30, 34, 35, 39, 40, 44, 45, 49
50, 54, 55, 59

$$\text{Middle value} = \frac{39 + 40}{2} = \frac{79}{2}$$

$$M = 39.5$$

* Gr. M.:-

$$\sum \log x = 25.215$$

$$\text{Gr. M} = \text{Antilog} \left[\frac{\sum \log x}{n} \right]$$

$$\text{Antilog} = \frac{25.215}{16}$$

" =

$$\text{Gr. M} = 37.6$$

* Mode:-

Mode is that value which is repeated more time in the table have no value which is repeated So there is no Mode.

* Decile:-

$$D = \frac{k}{10} (n+1)$$

find D_1 to D_{10} So we first find D_1

$$D_1 = \frac{1}{10} (16+1)$$

Now

$$D_1 = \frac{1}{10} (17)$$

$$D_1 = \frac{17}{10}$$

$$D_1 = 1.7$$

39

$$D_1 = 24$$

$$D_2 = \frac{2}{10} (16+1)$$

$$D_2 = 3.4$$

$$D_2 = 25$$

$$D_3 = \frac{3}{10} (16+1)$$

$$D_3 = 5.1$$

$$D_3 = 30$$

$$D_4 = \frac{4}{10} (16+1)$$

$$D_4 = 6.8$$

$$D_4 = 35$$

$$D_5 = \frac{5}{10} (16+1)$$

$$D_5 = 8.5$$

$$D_5 = 39$$

* Percentile:

$$\frac{P}{100} (n+1)$$

$$Q_1 = 25^{\text{th}}$$

$$\text{So } \frac{25}{100} (16+1) \Rightarrow 4.25$$

Put the value of 4 and 5 ~~th~~ digits from the table which is 29 and 30

$$\frac{29 + 30}{2} = \frac{59}{2} \Rightarrow 29.5$$

$$Q_1 = 29.5$$

$$Q_2 = 50^{\text{th}}$$

$$\frac{50}{100} (16+1) = 8.5$$

$$\frac{39 + 40}{2} = \frac{79}{2} \Rightarrow 39.5$$

$$Q_2 = 39.5$$