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Q.No. 1

Grouped Frequency Distribution

Sol:

longest value = 10

Smallest value = 0

Range = $10 - 0 = 10$

Take 5 classes of equal step size

Thus,

$$h = \frac{10}{5} = 2$$

$$h = 2$$

Class width	Class boundary	Mid Point	Tally	Frequency	C.F
0-2	0.5-2.5	1.5		13	13
3-5	2.5-5.5	4	 	25	38
6-8	5.5-8.5	7	 	10	48
9-11	8.5-11.5	10		2	50
Total Σ				50	

1) Median

Even number so

$$\Rightarrow \frac{n}{2} = \frac{50}{2} = 25$$

$$l = 2.5, h = 2, f = 25, c.f = 13$$

$$= 1 + \frac{h}{f} \left(\frac{n}{2} - c.f \right)$$

$$= 1 + \frac{2}{25} (25 - 13)$$

$$\text{Median} = 1.96$$

Mode :-

$$M = L + \frac{f_m - f_1}{(f_m - f_1) + (f_m - f_m2)} \times h$$

$$l = 2.5, f_m = 25, f_1 = 13$$

$$f_2 = 10, h = 2$$

$$= 2.5 + \frac{25 - 13}{(25 - 13) + (25 - 10)} \times 2$$

$$M = 3.38$$

Ungrouped

Distribution

Number	Frequency	Comulative frequency	Tally
0	1	1	
1	4	5	
2	8	13	
3	14	27	
4	7	34	
5	5	39	
6	4	43	
7	3	46	
8	2	48	
9	1	49	
10	1	50	

In ungrouped data the highest frequency is 14 thus the number of children consistency

is 3 Thus

$$\text{Mode} = 3$$

⇒ Median

even since the data is

$$\text{Median} = \frac{25}{2}$$

Q2

Solution:-

Classes	Class boundary	Frequency (F)	Cumulative frequency (C.F)
2-4	1-5	3	3
6-8	5-9	13	16
10-12	9-13	6	22
14-16	13-17	10	32
18-20	17-21	5	37
22-24	21-25	3	40
26-28	25-29	5	45
30-32	29-33	3	48
34-36	33-37	2	50
		$\Sigma = 50$	

Quartiles.

$$Q_1 = \frac{n}{4} \Rightarrow \frac{50}{4} = 12.5$$

12.5 lies in 5-9 class boundary

$$\begin{aligned} Q_1 &= l + \frac{h}{f} \left(\frac{n}{4} - c \right) \\ &= 5 + \frac{4}{13} \left(\frac{50}{4} - 3 \right) \\ &= 5 + .30 (12.5 - 3) \\ &= 5 + .30 (9.5) = 7.85 \end{aligned}$$

$$Q_2 = \frac{2n}{4} \Rightarrow \frac{2 \times 50}{4} = 25$$

25 lies in 13-17 class boundary
so

$$Q_2 = l + \frac{h}{f} \left(\frac{2n}{4} - c \right)$$
$$= 13 + \frac{4}{10} \left(\frac{2 \times 50}{4} - 22 \right)$$

$$= 13 + \frac{4}{10} (25 - 22)$$

$$= 13 + \frac{4}{10} (3)$$

$$= 13 + 1.2$$

$$Q_2 = 14.2$$

$$Q_3 = \frac{3n}{4} \Rightarrow \frac{3 \times 50}{4} \Rightarrow 37.5$$

37.5 lies in 21-25 class boundary
so

$$Q_3 = l + \frac{h}{f} \left(\frac{3n}{4} - c \right)$$

$$= 21 + \frac{4}{3} \left(\frac{3 \times 50}{4} - 37 \right)$$

$$= 21 + \frac{4}{3} (37.5 - 37)$$

$$= 21 + \frac{4}{3} (0.5)$$

$$= 21 + 0.67$$

$$Q_3 = \cancel{21.67} 21.67$$

Deciles

$$D_1 = \frac{n}{10} \Rightarrow \frac{50}{10} = 4$$

4 lies in 5-9 class boundary
Hence

$$\begin{aligned} D_1 &= l + \frac{h}{f} \left(\frac{n}{10} - c \right) \\ &= 5 + \frac{4}{13} \left(\frac{50}{10} - 3 \right) \\ &= 5 + \frac{4}{13} (5 - 3) \\ &= 5 + \frac{4}{13} (2) \\ &= 5 + 0.61 \end{aligned}$$

$$D_1 = 5.61$$

$$D_2 = \frac{2n}{10} \Rightarrow \frac{2 \times 50}{10} \Rightarrow 10$$

Hence 10 lies in 5-9

$$D_2 = l + \frac{h}{f} \left(\frac{2n}{10} - c \right)$$

$$D_2 = 5 + \frac{4}{13} \left(\frac{2 \times 50}{10} - 3 \right)$$

$$D_2 = 5 + \frac{4}{13} (7)$$

$$D_2 = 5 + 2.15$$

$$D_2 = 7.15$$

$$D_3 = \frac{3n}{10} \Rightarrow \frac{3 \times 50}{10} = 15$$

15 lies in 5-9 class boundary

$$D_3 = 5 + \frac{4}{13} \left(\frac{4 \times 50}{10} - 3 \right)$$

$$D_3 = 5 + \frac{4}{13} (15 - 3)$$

$$D_3 = 5 + 0.307 (12)$$

$$D_3 = 5 + 3.69$$

$$\underline{D_3 = 8.69}$$

$$D_4 = \frac{4n}{10} \Rightarrow \frac{4 \times 50}{10} \Rightarrow 20$$

20 lies in 9-13 class boundary

$$\text{Hence } D_4 = l + \frac{h}{f} \left(\frac{4n}{10} - c \right)$$

$$D_4 = 9 + \frac{4}{6} (20 - 16)$$

$$D_4 = 9 + 2.67$$

$$\underline{D_4 = 11.67}$$

$$D_5 = \frac{5n}{10} = \frac{5 \times 50}{10} \Rightarrow 25$$

25 lies in 13-17 class boundary

$$\text{Hence } D_5 = l + \frac{h}{f} \left(\frac{5n}{10} - c \right)$$

$$D_5 = 13 + \frac{4}{10} \left(\frac{5 \times 50}{10} - 22 \right)$$

$$= 13 + \frac{4}{10} (25 - 22)$$

$$= 13 + \frac{4}{10} (3)$$

$$\underline{D_5 = 14.2.}$$

$$D_6 = \frac{6n}{10} \Rightarrow \frac{6 \times 50}{10} = 30$$

30 lies in 13-17 class boundary

Hence

$$D_6 = l + \frac{h}{f} \left(\frac{6n}{10} - c \right)$$

$$= 13 + \frac{4}{10} \left(\frac{6 \times 50}{10} - 22 \right)$$

$$= 13 + \frac{4}{10} (30 - 22)$$

$$= 13 + \frac{4}{10} (8)$$

$$= 13 + 3.2$$

$$\underline{D_6 = 16.2}$$

$$D_7 = \frac{7n}{10} \Rightarrow \frac{7 \times 50}{10} \Rightarrow 35$$

35 lies in 17-21 class boundary

Hence

$$D_7 = l + \frac{h}{f} \left(\frac{7n}{10} - c \right)$$

$$D_7 = 17 + \frac{4}{5} \left(\frac{7 \times 50}{10} - 32 \right)$$

$$D_7 = 17 + \frac{4}{5} (35 - 32)$$

$$= 17 + \frac{4}{5} (3)$$

$$= 17 + 2.4$$

$$\underline{D_7 = 19.4}$$

$$D_8 = \frac{8n}{10} = \frac{8 \times 50}{10} \Rightarrow 40$$

40 lies in 21-25 class boundary

$$D_8 = l + \frac{h}{6} \left(\frac{8n}{10} - c \right)$$

$$= 21 + \frac{4}{3} \left(\frac{8 \times 50}{10} - 37 \right)$$

$$= 21 + \frac{4}{3} (40 - 37)$$

$$= 21 + \frac{4}{3} (3)$$

$$= 21 + 4$$

$$\underline{D_8 = 25}$$

$$D_9 = \frac{9n}{10} \Rightarrow \frac{9 \times 50}{10} = \frac{450}{10} = 45$$

45 lies in 25-29 class boundary

Hence
$$D_9 = l + \frac{h}{8} \left(\frac{9n}{10} - c \right)$$

$$D_9 = 25 + \frac{4}{5} \left(\frac{9 \times 50}{10} - 40 \right)$$

$$D_9 = 25 + \frac{4}{5} (45 - 40)$$

$$D_9 = 25 + \frac{4}{5} (5)$$

$$D_9 = 25 + 4$$

$$\underline{\underline{D_9 = 29}}$$

Q No. 3

⇒ Random Statistics:

In the common parlance randomness is the apparent lack of pattern or predictability in events.

The fields of mathematics, Probability and Statistics use formula definitions of randomness. In

Statistics, a random variable is an assignment of a numeric value to each possible outcome of an event space.

⇒ Inferential Statistics:

Inferential Statistics is a branch of branch of statistics through which we collect data analysis the data, summarize the data

Interpretate ~~the~~ the data
and tabulate the data to
get precise result in non-numerical
form.

⇒ Sources of Primary data:-

- Direct Personal investigation
- Indirect investigation
- Interview method
- Collection through Enumerators
- Questioner method
- Collection through local sources
- Computer interview method.

Nominal Scale:-

It can be defined
as "the ~~call~~ ~~at~~ classification of the
observation into mutually exclusive
qualitative classes is ~~said~~ said to

to be nominal scale."

Example.

- i- Students are classified as male and female. we ~~may~~ may use numbers 1 & 2.
- ii- Rainfall may be classified as heavy, moderate and light. we may use 1, 2 & 3.

The numbers when they are used, only identify the categories. In this scale no particular order is used.

⇒ Descriptive Statistics:-

It is used to analyze and represent the data that have been previously collected. It includes frequency counts, ranges high & low scores or values, means, modes, median scores & standard deviations. Two important concepts

to understand :

- (i) variables
- (ii) Distribution.

THE END