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QNO # 1

Pg # 1

Solution

$$\text{Largest value} = 10$$

$$\text{Smallest value} = 0$$

$$\text{Range "R"} = 10 - 0 = 10$$

So we will take five classes

$$h = \frac{10}{5} = 2 = 2.1$$

$$h = 2.1$$

P-T-O

<u>Class</u>	<u>class boundaries</u>	<u>class Marks</u>	<u>Tally</u>	<u>f</u>
0-2	-0.05 - 2.05	1	 	13
2.1-4.1	2.05 - 4.15	3.1	 	21
4.2-6.2	4.15 - 6.25	5.2	 	9
6.3-8.3	6.25 - 8.35	8.3	 	5
8.4-10.4	8.35 - 10.45	9.4		2
				$\Sigma 50$

No of child	Tally	f	c.f
0	1	1	1
1		4	5
2	 	8	13
3	 	14	27
4	 	7	34
5	 	5	39
6		4	43
7		4	46
8		3	48
9		2	49
10	-	1	50
		1	

data [Mode & Median]

$$\text{Mode} = \frac{1 + f_m - f}{C f_m - f + [f_m + f_2]} \times h \quad \text{--- (1)}$$

Putting values

$$M = 2.05 + \frac{(21-13)}{(21-13) + (21-9)} \times 2.1$$

$$M_{\text{de}} = 2.89 \approx 3$$

Median

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

$$M = 2.05 + \frac{2.1}{21} \left[\frac{50}{2} - 13 \right]$$

$$\text{Median} = 3.2 \approx 3$$

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Q no # 2

Pg # 04

Calculate Quartiles and deciles

(Given) Class	x	(Given) f	cf	Class boundaries
2-4	3	3	3	1-5
6-8 Q_1	7	13	16	5-9 $\rightarrow D_4$ $\rightarrow D_2 \text{ \& } D_3$
10-12	11	6	22	9-13 $\rightarrow D_4$
14-16 Q_2	15	10	32	13-17 $\rightarrow D_5 \text{ \& } D_6$
18-20	19	5	37	17-21 $\rightarrow D_7$
22-24	23	3	40	$\rightarrow D_8$ 21-25
26-28	27	5	45	$\rightarrow D_9$ 25-29
30-32	31	3	48	29-33
34-36	35	2	50	33-37

As we know

$$Q_1 = \left[\frac{n}{4} \right]^{\text{th}} \quad \therefore n = 50$$

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

So, the considered class is (6-8)

$$L = 5, \quad h = 4, \quad C.f = 3, \quad n = 50$$

As we know:-

$$Q_1 = L + \frac{h}{f} \left[\frac{n}{4} - C.f \right]$$

Putting values.

$$Q_1 = 5 + \frac{4}{13} \left[\frac{50}{4} - 3 \right]$$

$$Q_1 = 7.92$$

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Pg#06

Now $[Q_2]$

$$Q_2 = 2 \left[\frac{n}{4} \right]^{\text{th}}$$

$$Q_2 = 2 \left[\frac{50}{4} \right]^{\text{th}} = 25$$

Putting values in equation:-

$$Q_2 = 13 + \frac{4}{10} \left[\frac{2(50)}{4} - 22 \right]$$

$$Q_2 = 14.2$$

Now $[Q_3]$

$$Q_3 = 3 \left[\frac{n}{4} \right]^{\text{th}}$$

$$Q_3 = 3 \left[\frac{50}{4} \right]^{\text{th}}$$

$$Q_3 = 37.5$$

★ 37.5 is exceeding class limit

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Now for Deciles

[D₁]

Pg#07

As we know

$$D_1 = \left[\frac{n}{10} \right] \quad \because n = 50$$

$$D_1 = \frac{50}{10} = 5$$

Putting values in equation:-

$$D_1 = 5 + \frac{4}{13} \left[\frac{50}{10} - 3 \right]$$

$$D_1 = 5.61$$

[D₂] ∴

$$D_2 = 2 \left[\frac{n}{10} \right]$$

$$D_2 = 2 \left[\frac{50}{10} \right]$$

$$D_2 = 10$$

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Pg#08

Now putting values:-

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

$$D_2 = 7.17$$

[D₃]

$$D_3 = 3 \left[\frac{n}{10} \right]^{\text{th}}$$

$$D_3 = 3 \left[\frac{50}{10} \right] = 15$$

So putting values in equation.

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

$$D_3 = 8.69$$

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Pg# 9

$$D_4 = 4 \left[\frac{n}{10} \right]^{\text{th}}$$

$$D_4 = 4 \left[\frac{50}{10} \right] = 20^{\text{th}}$$

So putting values in equation.

$$D_4 = 9 + \frac{4}{6} \left[\frac{4(50)}{10} - 16 \right]$$

$$D_4 = 11.6$$

[D₅]

$$D_5 = 5 \left[\frac{50}{10} \right] = 25$$

Putting values

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

$$D_5 = 14.2$$

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 $[D_6]$

Pg #10

$$D_6 = 6 \left[\frac{n}{10} \right]^{\text{th}} = 6 \left[\frac{50}{10} \right]$$

$$D_6 = 30$$

Putting values

$$D_6 = 13 + \frac{4}{10} \left[\frac{6(50)}{10} - 22 \right]$$

$$D_6 = 16.2$$

 $[D_7]$

$$D_7 = 7 \left[\frac{n}{10} \right] = 7 \left[\frac{50}{10} \right]$$

$$D_7 = 35$$

Putting values

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

$$D_7 = 19.4$$

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Pg# 11

[D₈]

$$D_8 = 8 \left[\frac{n}{10} \right] = 8 \left[\frac{50}{10} \right]$$

$$D_8 = 40$$

Putting values

$$D_8 = 25 + \frac{4}{3} \left[\frac{8(50)}{10} - 37 \right]$$

$$D_8 = 25$$

[D₉]

$$D_9 = 9 \left[\frac{n}{10} \right] = 9 \left[\frac{50}{10} \right] = 45$$

Now putting values

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

$$D_9 = 29$$

Define the following

Random Statistics

It can be defined as, the fields of mathematics, probability and Statistics use formal definition of randomness. In statistics, a random variable is an assignment of a numerical value to each possible outcome of an event space. This association facilitates the identification and the calculation of probabilities of the event.

(b) inferential statistics

Inferential Statistics is the branch of Statistics through which we collect the data analysis. The data summarize the data and tabulate the data to get precise result in non-numerical form.

(e) Nominal Scale

It can be defined as, The classification of observation into mutually exclusive quantitative class is said to be nominal scale.

for instance :-

Students are classified as male and female. We may use 1 (no) & 2 (no).

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Pg#14

Rain may be classified as heavy, moderate and light.

We may use no 1 and 3

The number when they are only identify the categories. In this case no particular is used.

(C) Descriptive statistics

It can be defined as, The collection of data, analysis of data, interpretation of data, tabulation of data at we get a precise result in numerical form called descriptive statistics.

(d) Sources of primary data

- a) Direct personal investigation
- b) In - direct investigation
- c) Interview method
- d) Collection through Enumerator
- e) Questioner method
- f) Collection through local sources.
- g) Computer interview method.

