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(BE)(C)

Subject = probability & stastistic

Submitted
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$\frac{n^{th}}{2}$ term $= 50/2 = 25$

lower class boundry $= 1.5$

upper $= = = 3.5$

class boundry $h = 3.5 - 1.5 = 2$

$f = 22$

$C = 5$

put the value

$= 1.5 + \frac{2}{22}(25 - 5)$

$= 1.5 + \frac{20}{11}$

$= 1.5 + 1.82$

Median $= (3.32)$ group data.

⇒ Median of ungrouped data.

Arrange data in Ascending order.

0 1 1 1 1 2 2 2 2 2 2 2 2 3 3 3
3 3 3 3 3 3 3 3 3 3 4 4 4 4 4
4 4 5 5 5 5 5 6 6 6 6 7 7 7 8 8
9 10

Median $= n/2 = 50/2$

Median $= 25^{th}$ value $= \boxed{3}$

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

25 lies in 13-17 class boundry

so

$Q_2 = l + h/f \left(\frac{2n}{4} - c\right)$

$= 13 + 4/10 \left(\frac{2\times 50}{4} - 22\right)$

$= 13 + 4/10 \ (3)$

$Q_2 = 13 + 1.2$

$\boxed{Q_2 = 14.2}$

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

$= 37.5$ lies in 21-25 class boundry

so

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

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

$= 21 + 4/3 \ (0.5)$

$= 21 + 0.67$

$\boxed{Q_3 = 21.67}$

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

25 lies in 13-17 class boundry

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

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

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

$= 13 + 1.2$

$\boxed{D_5 = 14.2}$

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

30 lies in 13-17 class boundry

Hence

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

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

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

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

QNo #03 Define the following?

Ans

(a) Random statistics:-

The field of mathematics, probability, and statistics use formal definations of rendomness. In statistics, a random variable is an assignment of assignement of a numerical value to each possible outcome of an event space. this association facilities the identification and the calculation of probabilities of the events

(b) Inferential statistics:-

Using data ~~from~~ collected from small group to draw conclusion about a large group

eg A circket player wants to estimate his chanle of scoring based on his current season average.

(c) Descriptive statistics:-

The branch of statistics which deal with the concept and method concerned with collecting, summarizing, presenting and analyzing data.

eg A circket player wants to find his score average for the last 20 games.

(d) Source of primary data:-

(1) Direct personal Investigation .
(2) Indirect Investigation .
(3) Interview method .
(4) Collection through Enumerators .
(5) Questioner method .
(6) collection through local Sources .
(7) Compter Interview method .

(E) Normal Scale:-

It can be defined as the classification of the observation into mutually exclusive qualitative classes is called normal scale

e.g = , rainfall may be classified as heavy, moderate and light . we may use 1, 2, 3 to donate the three classes of rainfall.

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

45 lies in 25-29 (class boundry

Hence

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

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

$D_9 = 25 + 4/5 \left(45 - 40\right)$

$= 25 + 4/5 (5)$

$D_9 = 25 + 4$

$\boxed{D_9 = 29}$

$= 13 + 3.2$

$\boxed{D_6 = 16.2}$

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

35 lies in 17-21 class

Hence

$D_7 = l + \frac{4}{5}\left(\frac{7n}{10} - c\right)$

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

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

$= 17 + 2.4$

$\boxed{D_7 = 19.4}$

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

40 lies in 21-25 class boundry

Hence

$D_8 = l + \frac{4}{5}\left(\frac{8n}{10} - c\right)$

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

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

$D_8 = 21 + 4 \Rightarrow 25 \Rightarrow \boxed{D_8 = 25}$

(8)

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

15 lies in 5-9 class boundry

Hence $D_3 = l + \frac{h}{f}\left(\frac{3n}{10} - c\right)$

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

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

$D_3 = 5 + 3.69$

$\boxed{D_3 = 8.69}$

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

20 lies in 9-13 class boundry

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

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

$= 9 + \frac{4}{6}(4)$

$= 9 + 2.67$

$\boxed{D_4 = 11.67}$

Deciles :-

$\Rightarrow D_1 = n/10 \Rightarrow 50/10 = 5$

4 lies in 5-9 class boundry

Hence.

$D_1 = l + h/f \left(n/10 - c \right)$

$= 5 + 4/13 \left(50/10 - 3 \right)$

$= 5 + 4/13 \left(2 \right)$

$= 5 + 0.61$

$\boxed{D_1 = 5.61}$

$\Rightarrow D_2 = 2n/10 \Rightarrow 2 \times 50/10 = 10$

10 lies in 5-9

hence

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

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

$= 5 + 4/3 \left(7 \right)$

$= 5 + 2.15$

$\boxed{D_2 = 7.15}$

QNo # 02

The following is the distribution of per thousand employees in a certical factory.

classes	2-4	6-8	10-12	14-16	18-20	22-24	26-28	30-32
F	3	13	6	10	5	3	5	3

Calculation all Quartiles and deciles:

class	x	f	cf
2-4	3	3 →	3
6-8	17	13 ↙→	16
10-12	11	6	22
14-16	15	10	32
18-20	19	5	37
22-24	23	3	40
26-28	27	5	45
30-32	31	3	48
34-36	35	2	50

Quantiles

$$Q_1 = n/4 \Rightarrow 50/4 = 12.5$$

12.5 lies in 5-9 class boundry

So

$$Q_1 = l + h/f\,(n/4 - c)$$

$$= 5 + 4/13\,(50/4 - 3)$$

$$= 5 + .30\,(12.5 - 3)$$

$$= 5 + .30\,(9.5)$$

$$\boxed{Q_1 = 7.85}$$

⇒ Mode of ungrouped data:

Maximum number of the ungrouped data is called mode.

Mode = 3 → which is used 14 time

⇒ Mode of grouped data

Formula $= l + \frac{f_m - f_0}{2f_m - f_1 - f_0} \times 2$

$= \frac{1.5 + 22 - 5}{2(22) - 12 - 5} \times 2$

$= 1.5 + \frac{17}{27} \times 2$

Mode = 2.76.

(i) Ungrouped frequency distribution:-

By scanning the data, we find that the number of children born is a discrete variable and the range is small, so that the data can be conveniently sorted by taking the value of classes as 0, 1, 2, 3, 4, 5, 6, 7, 8, 9, 10. The frequency distribution is then constructed as

Number of born children	Tally	Frequency
0	I	1
1	IIII	4
2	IIII III	8
3	IIII IIII IIII	14
4	IIII II	7
5	IIII	5
6	IIII	4
7	III	3
8	II	2
9	I	1
10	I	1
		50

Part "B"

(v) Median for grouped data:-

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

Putting the value

Q No # 01

1) Grouped frequency distribution

By scanning the data, we find that the largest no of baby born is '10' and the smallest number is '0" so that the ~~average~~ rang is

Range = largest value - small value.

= 10 - 0

= 10

Suppose we take "6" classes of equal size So, the

width of equal class interval would be = 10/6 = 1.66 ⇒ (2)

Frequency distribution of number of children born.

class	class boundaries	Tally	Frequency
0-1	-0.5 - 1.5	𝍸	5
2-3	1.5 - 3.5	𝍸 𝍸 𝍸 𝍸 ||	22
4-5	3.5 - 5.5	𝍸 𝍸 ||	12
6-7	5.5 - 7.5	𝍸 ||	7
8-9	7.5 - 9.5	|||	3
10-11	9.5 - 11.5	|	1
			50