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Subject : Probability & Statistics.

Section : " B "

Submitted TO: Engr: Anwar JAHMIM.

Date : 19 Aug - 2020

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Q No # 1

Solution :

- ⇒ largest value = 10
- ⇒ smallest value = 0
- ⇒ Range = 10 - 0 = 10

⇒ Take 5 classes of equal step thus;

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

class Int	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	40
9 - 11	8.5 - 11.5	10		2	50
				50	

(i) Median :

Even number 50;

⇒  $\frac{n}{2} = \frac{50}{2} = 25$

$l = 2.5, h = 2, f = 25, C.F = 13$

P.T.O.

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

Put value:

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

$$\boxed{\text{Median} = 1.96}$$

ii  $\Rightarrow$  Mode:

$$M = \frac{l + f_m - f_1}{(f_m - f_1) + (f_m - f_2)} \times h$$

$$l = 2.5$$

$$f_m = 25$$

$$f_1 = 13$$

$$f_2 = 10$$

$$h = 2$$

Put value the above formula:

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

$$\boxed{\text{Mode} = 3.38}$$

## ⇒ Ungrouped data distribution:

Number :	Frequency	C.F	Tally
0	1	1	1
1	4	5	<del>    </del>
2	8	13	<del>    </del> <del>    </del>
3	14	27	<del>    </del> <del>    </del> <del>    </del>
4	7	34	<del>    </del>
5	5	39	<del>    </del>
6	4	43	
7	3	46	
8	2	48	
9	1	49	
10	1	50	
<u>Σ</u>	<u>50</u>		

⇒ In ungrouped data the highest frequency is (14) thus the number of children corresponding is (3) thus Mode = 3

⇒ Median

Since the data is even.

Thus: 
$$n/2 = 50/2$$

$Median = 25$

The End

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QNO 2 :Solution :

Classes	class boundaries	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
		$\Sigma f = 50$	

Quantiles:

$$Q_1 = \frac{n}{4}$$

Put value:

$$n = 50$$

$$= \frac{50}{4} \Rightarrow \boxed{12.5}$$

$\Rightarrow 12.5$  lies in 5-9 class boundary

So:

$$Q_1 = l + \frac{h}{f} \left( \frac{n}{4} - c \right)$$

Put the value:

$$\Rightarrow 5 + \frac{4}{13} \left( \frac{50}{4} - 3 \right)$$

P.T.O

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$$\Rightarrow 5 + 0.30 (12.5 - 3)$$

$$\Rightarrow 5 + 0.30 (9.5)$$

$$\boxed{Q_1 = 7.85}$$

Now

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

25 lies in 13 - 17 class boundary.  
So;

$$\Rightarrow Q_2 = L + \frac{h}{D} ( \frac{2n}{4} - C )$$

Put value :

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

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

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

$$= 13 + 1.2$$

$$\boxed{Q_2 = 14.2}$$

$$\Rightarrow Q_3 = \frac{3n}{4} \Rightarrow$$

$$\Rightarrow \frac{3 \times 50}{4} \Rightarrow \boxed{37.5}$$

$\Rightarrow 37.5$  lies in 21 - 25.

P.T.O

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So;

$$\Rightarrow Q_3 = Q + h/4 (3n/4 - c)$$

Put the value:

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

$$\Rightarrow 21 + 4/3 ( 37.5 - 37 )$$

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

$$\Rightarrow 21 + 0.67$$

$$\boxed{Q_3 \Rightarrow 21.67}$$

Deciles:

$$\Rightarrow D_1 = n/10$$

Put value

$$\boxed{n = 50}$$

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

$\Rightarrow$  5 lies in 5-9 class boundary:

∴ fence;

$$D_1 = Q + h/f (n/10 - c)$$

$$\Rightarrow 5 + 4/13 ( \frac{50}{10} - 3 )$$

$$\Rightarrow 5 + 4/13 ( 5 - 3 )$$

$$\Rightarrow 5 + 4/13 ( 2 ) \Rightarrow 5 + 0.61$$

$$\boxed{D_1 = 5.61}$$

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

$$\Rightarrow D_2 = 5 + \frac{4}{13} (10 - 3)$$

$$\Rightarrow 5 + 2.15$$

$$\boxed{D_2 = 7.15}$$

$\Rightarrow D_3 :$

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

$$\boxed{D_3 = 15}$$

15 lies in 5 - 9 class boundary.

Hence:

$$D_3 = 2 + \frac{h}{f} (3n/10 - c)$$

Put value:

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

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

$$\Rightarrow 5 + 0.307 (12)$$

$$\Rightarrow 5 + 3.69$$

$$\boxed{D_3 = 8.69}$$



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$$\Rightarrow D_4 = \frac{4n}{10}$$

$$= \frac{4 \times 50}{10} = \boxed{20}$$

$\Rightarrow$  20 lies in 9-13 class boundary.

Hence;

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

$$\Rightarrow D_4 = 9 + \frac{4}{6} ( \frac{4 \times 50}{10} - 16 )$$

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

$$= 9 + 2.67$$

$$\boxed{D_4 = 11.67}$$

$$\Rightarrow D_5 = \frac{5n}{10}$$

$$= \frac{5 \times 50}{10} = \boxed{25}$$

Hence;

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

Put value:

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

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

$$\boxed{D_5 = 14.2}$$

P.T.O

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$$\begin{aligned}\Rightarrow D_6 &= \frac{6n}{10} \\ &= \frac{6 \times 50}{10} = \boxed{30}\end{aligned}$$

$\Rightarrow$  30 lies in 13 - 17 class boundary;

Hence;

$$\begin{aligned}D_6 &= l + \frac{h}{f} ( \frac{6n}{10} - c ) \\ &= \text{Put value:} \\ &= 13 + \frac{4}{10} ( \frac{6 \times 50}{10} - 22 ) \\ &= 13 + \frac{4}{10} ( 30 - 22 ) \\ &= 13 + \frac{4}{10} ( 8 ) \\ &= 13 + 3.2\end{aligned}$$

$$\boxed{D_6 = 16.2}$$

$$\begin{aligned}\Rightarrow D_7 &= \frac{7n}{10} \\ &= \frac{7 \times 50}{10} = \boxed{35}\end{aligned}$$

Hence;

$$\begin{aligned}D_7 &= l + \frac{h}{f} ( \frac{7n}{10} - c ) \\ &= \text{Put value;} \\ &= 17 + \frac{4}{5} ( \frac{7 \times 50}{10} - 32 ) \\ &= 17 + \frac{4}{5} ( 35 - 32 )\end{aligned}$$

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

$$\Rightarrow 17 + 2.4$$

$$\boxed{D_7 = 19.4}$$

$$\Rightarrow D_8 = 8\frac{4}{10}$$

$$= \frac{8 \times 50}{10} = \boxed{40}$$

hence;

$$\begin{aligned} \Rightarrow D_8 &= l + \frac{h}{D} (8\frac{4}{10} - c) \\ &= 21 + \frac{4}{3} (8\frac{4}{10} - 37) \end{aligned}$$

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

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

$$\Rightarrow D_8 = 21 + 4$$

$$\Rightarrow \boxed{D_8 = 25}$$

$$\Rightarrow D_9 = l + \frac{h}{D} (9\frac{4}{10} - c)$$

= Put value:

$$\Rightarrow 25 + \frac{4}{5} (9\frac{4}{10} - 40)$$

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

$$= 25 + 4$$

$$\boxed{D_9 = 29}$$

End:

## Q NO # 3

(11)

### 1: Inferential Statistics:

⇒ Inferential Statistics is defined as:  
That the branch of Statistics through which we collect the data, analysis the data, summarize the data, interpretate the data & tabulate the data to get precise result in non-numerical form.

### 2: Descriptive Statistics:

⇒ It is used to analyze & 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.

### 3: Sources of Primary Data:

⇒ Sources of Primary data are following:

- (i) : Direct Personal investigation.
- (ii) : Indirect investigation.
- (iii) : Interview Method.
- (iv) : collection through Enumerators.
- (v) : Questioner Method.
- (vi) : collection through local sources.
- (vii) : Computer interview method.

### 4) Nominal Scale:

⇒ Nominal Scale is define as that;

⇒ "The classification of the Observation into mutually exclusive qualitative classes is said to be nominal scale".

Eg : ⇒ student are classified as male and female  
we may used number 1 & 2.  
etc.

IP.T.O

## 5: Random Statistics:

$\Rightarrow$  The fields of mathematics, Probability, & statistics use formal definitions 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 of the calculation of probabilities of events:

xxx

xxx

xxx

xxx

xxx

The - End.