

NAME : NASRULLAH

ID # : 7870

SUBJECT : PROBABILITY & STATISTICS

SUBMITTED TO : ANWAR SHAMIM

MODULE : 5th

SECTION : B

DATE : 19th Aug, 2020

Q1.

7870

1

Sol: largest value = 10
Smallest value = 0

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

Take 5 classes of equal stepsize thus,

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

$$\boxed{h = 2}$$

Class Weight	Class boundaries	Mid-Point	Tally	Frequency (f)	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	

Median: Even number so

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

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

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

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

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

Mode:

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

$$l = 2.5, f_m = 25, f_1 = 13, f_2 = 10, h = 2$$

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

$$\boxed{M = 3.38}$$

UN-GROUPED DATA DISTRIBUTION:

7870 2

Number	Frequency	Cumulative 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	
Σ	50		

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

$$\text{thus } \frac{n}{2} = \frac{50}{2}$$

$$\text{Median} = 25$$

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
Total $\Sigma =$		50	

DECILES:

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

$$\begin{aligned}
 D_1 &= l + \frac{h}{f} \left(\frac{n}{10} - c.f \right) \\
 &= 5 + \frac{4}{13} \left(\frac{50}{10} - 3 \right) \\
 &= 5 + 0.31 (5-3)
 \end{aligned}$$

$$D_1 = 5.62$$

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

$$D_2 = l + \frac{h}{f} \left(\frac{2n}{10} - c.f \right) = 9 + \frac{4}{6} \left(\frac{2 \times 50}{10} - 22 \right) = 1$$

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

$$D_3 = l + \frac{h}{f} \left(\frac{3n}{10} - c.f \right) = 13 + \frac{4}{10} \left(\frac{3 \times 50}{10} - 32 \right) = 6.2$$

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

$$D_4 = l + \frac{h}{f} \left(\frac{4n}{10} - c.f \right) = 17 + \frac{4}{5} \left(\frac{4 \times 50}{10} - 37 \right) = 3.4$$

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

$$D_5 = l + \frac{h}{f} \left(\frac{5n}{10} - c.f \right) = 21 + \frac{4}{3} \left(\frac{5 \times 50}{10} - 40 \right) = 1$$

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

$$D_6 = l + \frac{h}{f} \left(\frac{6n}{10} - c.f \right) = 29 + \frac{4}{3} \left(\frac{6 \times 50}{10} - 48 \right) = 5$$

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

$$D_7 = l + \frac{h}{f} \left(\frac{7n}{10} - c.f \right) = 33 + \frac{4}{2} \left(\frac{7 \times 50}{10} - 50 \right) = 3$$

QUARTILES:

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

$$Q_1 = l + \frac{h}{f} \left(\frac{n}{4} - c.f \right) = 9 + \frac{4}{6} (12.5 - 22) = 2.67$$

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

$$Q_2 = l + \frac{h}{f} \left(\frac{2n}{4} - c.f \right) = 21 + \frac{4}{5} (25 - 37) = 11.4$$

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

$$Q_3 = l + \frac{h}{f} \left(\frac{3n}{4} - c.f \right) = \text{Not applicable due to range exceeding class boundaries.}$$

(A) Random statistics:-

The field of mathematics, probability and 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 and the calculation of probabilities of the events.

(B) Inferential statistic:-

inferential statistic is the branch of statistics through which we collect the data, analysis the data, summarized the data, interpret the data and tabulate the data to get precise. ~~the~~ result in non-numerical form.

(C) **Descriptive statistics**:- Descriptive statistics defined as;

The collection of data analysis tubulation of data at last we get a precise result in numerical form called Descriptive statistics.

(D) **Sources of primary data**:-

- ⇒ Direct personal investigation
- ⇒ Indirect investigation
- ⇒ Interview method
- ⇒ Collection through enumerators
- ⇒ Questioner method
- ⇒ Collection through local source
- ⇒ Computer interview method

(E) Nominal scale:- It can be defined 8

as;

The classification of observation into mutually exclusive.

Qualitative classes is said to be nominal scale.

For example:-

- Student are classified as male and female, we may use number '1' and '2'.

- Rainfall may be classified as heavy, moderate and light.

we may use number '1' and '3'

The number when they are only identify

the categories. In this scale no

particular is used.