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## CHAPTER 16

### PRESENTATION OF DATA IN TABULAR FORM

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### EXERCISE 16

ANSWER:1

STATISTICS :- It is branch of mathematics dealing with data collection, organization , analysis , interpretation and presentation . In applying statistics to, for example , a scientific , industrial or social problem. It is conventional to begin with a statistical population or a statistical model process to be studied.

Answer 2:-

Fundamental Characteristics of statistics :-

1. Statistics are aggregates of facts.
2. Statistics are numerically expressed.
3. Statistics are collected for a predetermined purpose.
4. Statistics are collected in a systemic manner.
5. Statistics must be comparable to each other.

Answer 3:-

Primary data

Primary Data are collected by the investigator himself with a definite plan in mind are known as primary data. These data are, therefore , highly reliable and relevant.

Secondary data

Secondary data collected by someone, other than the investigator are known as secondary data.

The primary data is more reliable because directly coming from the main source with recorded and verified .

Answer 4:-

- i. Variate:- the variate is a particular outcome of random variable , the random variate which are other outcomes of the same random variables might have different values.
- ii. Class Interval:- Class interval refers to the numerical width of any class in a particular distribution. In statistics, the data is arranged into different classes and the width of such class is called class interval. Class intervals are generally equal in width but this might not be the case always.
- iii. Class size:- Class size is the average number of students per class, calculated by dividing the number of students enrolled by the number of classes.
- iv. Class mark:- The class midpoint (or class mark) is a specific point in the center of the bins (categories) in a frequency distribution table; It's also the center of a bar in a histogram. It is defined as the average of the upper and lower class limits

- v. **Class limit:-** The lower class limit of a class is the smallest data value that can go into the class. The upper class limit of a class is the largest data value that can go into the class. Class limits have the same accuracy as the data values; the same number of decimal places as the data values
- vi. **True class limits:-**  
To find the upper limit of the first class, subtract one from the lower limit of the second class. Then continue to add the class width to this upper limit to find the rest of the upper limits. Find the boundaries by subtracting 0.5 units from the lower limits and adding 0.5 units from the upper limits.
- vii. **Frequency of a class:-** Class frequency refers to the number of observations in each class;  $n$  represents the total number of observations in the entire data set. For the supermarket example, the total number of observations is 200. The relative frequency may be expressed as a proportion (fraction) of the total or as a percentage of the total.
- viii. **Cumulative frequency of a class:-** Technically, a cumulative frequency distribution is the sum of the class and all classes below it in a frequency distribution. All that meAnswer is you're adding up a value and all of the values that came before it.

Answer 5:-

Blood groups	Frequency
A	9
B	6
AB	3
O	12
TOATL	30

Most common is the blood O.  
Rarest blood is the blood AB .

Answer 6:-

No. of heads	Frequency
0	6
1	10
2	9
3	5
Total	30

Answer 7:-

Class Interval	Frequency
0-2	11
2-4	17
4-6	9
6-8	3

Answer 8:-

Class interval	Frequency
0-5	10
5-10	13
10-15	5
15-20	3

(ii) 2 children watched TV for 15 or more hours.

Answer 9:-

Class Interval	Frequency
0-5	6
5-10	10
10-15	8
15-20	8
20-25	8

Answer 10:-

Class	Frequency
6-9	5
9-12	4
12-15	4
15-18	7
18-21	3
21-24	7

Answer 11:-

Class	Frequency
210-230	4
230-250	4
250-270	5
270-290	3
290-310	7
310-330	5

Answer12:-

Class	Frequency	Cumulative Frequency
30-40	4	4
40-50	6	10
50-60	3	13
60-70	5	18
70-80	9	27
80-90	6	33
90-100	2	35
100-110	3	38
110-120	2	40

Answer13:-

Class	Frequency	Cumulative Frequency
145-150	4	4
150-155	9	13
155-160	12	25
16-165	5	30

Answer14:-

Age(in years)	No. of patients
Below 20	90
Below 30	140
Below 40	200
Below 50	280
Below 60	330
Below 70	360

Answer15:-

Marks	Number of students
0-10	5
10-20	7
20-30	20
30-40	8
40-50	5
50-60	3

Answer 16:-

Marks	Numbers of students
0-10	17
10-20	5
20-30	7
30-40	8
40-50	13
50-60	10

Answer 17:-

Class	Frequency
0-10	8
10-20	5
20-30	12
30-40	35
40-50	24
50-60	16

Answer 18:-

Let the range can be calculated by :-

$$\text{Range} = (\text{maximum value}) - (\text{minimum value})$$

$$= 100 - 46 = 54$$

Answer 19:-

(i) Given, upper limit = 120

Lower limit = 90

Class marks =

$$\left( \frac{\text{upper limit} + \text{lower limit}}{2} \right) = \left( \frac{120 + 90}{2} \right) = \frac{210}{2} = 105$$

(ii) Let the lower limit of class be  $x$   
Then, its upper limit will be  $(x+6)$

Therefore,

$$\frac{x + (x+6)}{2} = 10$$

$$\Rightarrow 2x + 6 = 20$$

$$\Rightarrow 2x = 14$$

$$\Rightarrow x = 7$$

(iii) Given, lower limit = 10  
Frequency distribution = 5

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class
10-15
15-20
20-25
25-30
30-35

Hence, The upper limit is 35.

(iv) Class size =  $(20-15) = 5$

Let,

$$\frac{a + (a + 5)}{2} = 20$$

$$\Rightarrow 2a + 5 = 40$$

$$\Rightarrow 2a = 40 - 5$$

$$\Rightarrow a = \frac{35}{2} = 17.5$$

So, required class is 17.5 - 22.5

(v) According to given class, 20 is included in 20-30.

Answer 20:-

A = 15

B =  $35 - 15 = 20$

C =  $12 + 35 = 47$

D =  $50 - 47 = 3$

E =  $55 - 50 = 5$

F =  $55 + 5 = 60$

G = 60

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### MULTIPLE -CHOICE QUESTIONS

Answer1- (d)

$$\begin{aligned}\text{The class range} &= (\text{maximum limit} - \text{minimum value}) = (32-6) \\ &= 26\end{aligned}$$

Answer2 (b)  
class mark =

$$\frac{(100+120)}{2} = \frac{220}{2} = 110$$

Answer3 (b)

Clearly, 20 is included in 20-30

Answer4(b)

$$\text{Class size} = (20-15) = 5$$

Let,

$$\frac{a + (a + 5)}{2} = 20$$

$$\Rightarrow 2a + 5 = 40$$

$$\Rightarrow 2a = 40 - 5$$

$$\Rightarrow a = \frac{35}{2} = 17.5$$

So, required class is 17.5 – 22.5

Answer5(b)

Let the lower limit of class be x

Then, its upper limit will be (x+6)

Therefore,

$$\frac{a + (a + 6)}{2} = 10$$

$$\Rightarrow 2a + 6 = 20$$

$$\Rightarrow 2a = 14$$

$$\Rightarrow a = 7$$

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Answer 6(a)

Given, mid value is 42  
Class size = 10

Let the lower limit be  $x$ . then, upper limit =  $(x+10)$

$$\therefore \frac{x + (x+10)}{2} = 42$$

$$\Rightarrow 2x + 10 = 84$$

$$\Rightarrow 2x = 84 - 10 = 74$$

$$\Rightarrow x = 37$$

Therefore, lower limit = 37  
Upper limit = 47

Answer 7(a)

Given,  $m$  be midpoint  
 $U$  be upper limit

mc24

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$$m = \frac{l+u}{2}$$
$$\Rightarrow l = 2m - u$$

Answer 8(c)

Given, lower limit = 10  
Frequency distribution = 5

class
10-15
15-20
20-25
25-30
30-35

Hence, The upper limit is 35.

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Answer 9(c)

Given , L is lower class  
M is the mid-point

$$m = \frac{l+U}{2}$$
$$\Rightarrow l+U = 2m$$
$$\Rightarrow U = (2m - L)$$



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