Tenth Mathematics

Statistics

1. **Marks obtained in Summative Assessment – II by 75 students of Class X in Mathematics are given below.**

Marks	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70	70 – 80	80 – 90	90 – 100
No. of Students	2	6	12	14	18	10	8	5

   Find the Mean of the marks of the class students.

Procedure: As the method of finding Mean is not mentioned in the question you can find it by any one of the three methods.

   (1) Direct Method

   (2) Assumed Mean Method

   (3) Step Deviation Method

▸ Table for finding the Mean by Step – deviation Method.

Marks	No. of Students(f_i)	x_i	$d_i = x_i - a$	$u_i = \dfrac{x_i - a}{h}$	$f_i u_i$
20–30	2				
30–40	6				
40–50	12				
50–60	14				
60–70	18				
70–80	10				
80–90	8				
90–100	5				
Total	$\Sigma f_i = 75$				$\Sigma f_i u_i =$

▸ Complete the above table by finding class marks (x_i) $d_i = x_i - a$, i.e., deviation of 'a' from each of the x_i's where 'a' is one among the x_i's preferably from the classes $50 - 60$ or $60 - 70$.

▸ Find $u_i = \dfrac{x_i - a}{h}$

where h is the class of size i.e.,

10 finally find the column of $f_i u_i$

▸ $\bar{x} = a + \left(\dfrac{\Sigma f_i u_i}{\Sigma f_i}\right) \times h$

Substitute the values from the table and simplify to get the mean of the marks of the class students.

▸ Usually, when the values of x_i's and f_i's are smaller we prefer to find Mean of the grouped data by Direct Method. If the values of x_i's and f_i's are larger where finding their product $f_i x_i$ is time consuming Assumed Mean Method is preferred. If all the d_i's have a common factor then the Step-deviation Method is convenient to use.

2. Fill in the missing values in the following frequency distribution table.

Class Intervals	Frequency	Cumulative Frequency
0 – 10	?	4
10 – 20	5	9
20 – 30	8	?
30 – 40	?	?
40 – 50	15	44
50 – 60	10	?
60 – 70	?	60

Procedure: ▸ In the above frequency distribution table cumulative frequencies are given along with the class – intervals and frequencies.

▸ For the class '0 – 10' frequency and cumulative frequency values are equal.

▸ After finding cumulative frequency of the class '20 – 30', you cannot proceed further as both frequency and cumulative frequency are missing for the class 30 – 40.

▸ Check whether you can get cumulative frequency of class 30 – 40 from the frequency and cumulative frequency of class 40 – 50. i.e., 44 – 15 = ?

▸ Proceed similarly to find the remaining values.

1. **The formula to find Median of a grouped data is...?**

    A) $l + \left[\dfrac{\dfrac{n}{2} - CF}{f}\right] \times h$ B) $h + \left[\dfrac{\dfrac{n}{2} - CF}{f}\right] \times l$

    C) $l + \left[\dfrac{\dfrac{n}{2} - f}{CF}\right] \times h$ D) $h + \left[\dfrac{\dfrac{n}{2} - f}{CF}\right] \times l$

    Ans: A

2. **The Mode marks of a class in Maths is 56. What can be inferred from this information?**

    A) The average marks of the class is 56.

    B) Most of the students in the class scored 56 marks.

    C) The middle most mark of the class is 56.

    D) None of the above   *Ans: B*

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