Unit 13 · Statistics

WORKSHEET

Full marks 33.5

Name _____ Class _____ Roll no. _____ Date _____ Marks _____ / 33.5

1 Key words [2.5]

Match each word in Column A with its meaning in Column B. Write the letter in the box. One meaning in Column B is not needed. Each match carries 0.5 mark.

Column A		Column B
1. mid-value	☐	**a.** the number of values up to a class's upper limit
2. cumulative frequency	☐	**b.** the value that occurs most often
3. median	☐	**c.** half the sum of a class's lower and upper limits
4. mode	☐	**d.** the middle value of data arranged in order
5. first quartile	☐	**e.** the difference between the largest and the smallest value
		f. the value with a quarter of the data below it

2 Multiple choice [5]

Choose the correct option for each of the following questions.

i. What is the mid-value of the class 40–60? [1]

a. 20 **b.** 50

c. 60 **d.** 100

ii. In a continuous series, the first quartile is which item? [1]

a. the $\left(\frac{N+1}{4}\right)$th **b.** the $\left(\frac{N}{4}\right)$th

c. the $\left(\frac{N}{2}\right)$th **d.** the $\left(\frac{3N}{4}\right)$th

iii. If $\Sigma fm = 1500$ and $N = 40$, what is the mean? [1]

a. 1460 **b.** 60

c. 37.5 **d.** 26.7

iv. The cumulative frequencies of the classes 0–10, 10–20, 20–30, 30–40, 40–50 are 5, 12, 25, 33, 40. Which is the median class? [1]

a. 10–20 **b.** 20–30

c. 30–40 **d.** 40–50

v. With an assumed mean of 50, $\Sigma fd = -60$ and $N = 20$. What is the mean? [1]

a. 53 **b.** 47

c. 50 **d.** −3

3 Very short answers [3]

Write very short answers to the following questions.

a. In the formula $M_o = L + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$, what does f_0 stand for? [1]

b. Find the median of 7, 3, 9, 4, 12, 6. [1]

c. Find the mode of 4, 6, 4, 7, 6, 4, 9. [1]

4 Short answers [6]

Write short answers to the following questions.

a. Sita found the median of this table like this: "$N = 50$, so the median is the $\frac{50 + 1}{2} = 25.5$th item, in 20–30, and $M_d = 20 + \frac{25.5 - 30}{15} \times 10 = 17$." Find her two mistakes and find the median. [2]

Marks	0–10	10–20	20–30	30–40	40–50
Students	6	9	15	12	8

b. Explain why the short-cut method, $\overline{X} = A + \frac{\Sigma fd}{N}$, gives the same mean whatever assumed mean A you choose. [2]

c. The mean of 5 numbers is 18. When one number is removed, the mean of the other four is 16. Which number was removed? **[2]**

5 Problems **[15]**

Solve. Show your working.

a. Find the mean pocket money of these students by the short-cut method. **[3]**

Pocket money a week (Rs)	0–100	100–200	200–300	300–400	400–500
Students	5	12	18	10	5

Answer:

b. Find the median pocket money of the same students. **[3]**

Answer:

c. Find the modal pocket money of the same students. **[3]**

Answer:

d. Find Q_1 and Q_3. **[3]**

Marks	10–20	20–30	30–40	40–50	50–60
Students	4	8	14	10	4

Answer: _____

e. The median of this table is 22. Find x. **[3]**

Marks	0–10	10–20	20–30	30–40	40–50
Students	5	x	10	8	4

Answer: _____

6 Think **[2]**

Think, then answer.

In a village the mean yearly income of a family is Rs 4,50,000 but the median is Rs 2,50,000. Which describes a typical family better? What makes the mean so much higher?

7 Activity: Letters in names

(not marked)

Count the letters in the first names of 20 classmates (in English letters). Fill in the table.

Letters	Tally	Frequency	Cumulative frequency
3 or fewer			
4			
5			
6			
7			
8 or more			

What is the mode? What is the median? Are they the same?