

CLASS 10 — MATHEMATICS

Chapter: Statistics

Practice Worksheet | CBSE Pattern

Maximum Marks: 40

Time Allowed: 1 hour 30 minutes

Name: _____

Class/Section: _____ Date: _____

General Instructions:

1. All questions are compulsory.
2. Read each question carefully before answering.
3. Show complete working for questions requiring calculations or proofs.
4. Select only one option for each MCQ.
5. Marks for each question are indicated alongside the question.
6. Write mathematical steps clearly and use appropriate notation.

This paper has 21 questions in five sections: A (Q1-Q10, 1 mark each), B (Q11-Q15, 2 marks each), C (Q16-Q19, 3 marks each), D (Q20, 4 marks) and E (Q21, case study, 4 marks). Show your working tables wherever required.

SECTION A

Multiple Choice Questions — Q1 to Q10 carry 1 mark each.

- Q1.** The class mark of the class interval 10 – 25 is **[1 mark]**
- (A) 15 (B) 17.5
(C) 12.5 (D) 35

- Q2.** For a distribution, the mean is 20 and the median is 22. Using the empirical relationship, the mode is **[1 mark]**
- (A) 24 (B) 21
(C) 26 (D) 18

- Q3.** The modal class of the following distribution is **[1 mark]**

Class	0 – 10	10 – 20	20 – 30	30 – 40
Frequency	5	8	12	7

- (A) 0 – 10 (B) 10 – 20
(C) 20 – 30 (D) 30 – 40
- Q4.** In the formula $\text{Mode} = l + \frac{f_1 - f_0}{2f_1 - f_0 - f_2} \times h$, f_0 is the frequency of **[1 mark]**
- (A) the modal class
(B) the class preceding the modal class
(C) the class succeeding the modal class
(D) the median class

- Q5.** The median class of the following distribution is [1 mark]

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	6	9	12	8	5

- (A) 10 - 20 (B) 20 - 30
(C) 30 - 40 (D) 40 - 50
- Q6.** In the step-deviation method, the assumed mean is 45, the class size is 10, $\Sigma f_i u_i = 10$ and $\Sigma f_i = 50$. The mean of the distribution is [1 mark]
- (A) 47 (B) 45.2
(C) 55 (D) 46
- Q7.** While computing the mean of grouped data, we assume that the frequencies are [1 mark]
- (A) evenly distributed over all the classes
(B) centred at the class marks of the classes
(C) centred at the upper limits of the classes
(D) centred at the lower limits of the classes
- Q8.** For a moderately skewed distribution, the mode is 24.5 and the mean is 29.75. The approximate median is [1 mark]
- (A) 28 (B) 27.125
(C) 26 (D) 30

In Q9 and Q10, a statement of Assertion (A) is followed by a statement of Reason (R). Choose the correct option.

- Q9. Assertion (A):** The median of grouped data can be found using the cumulative frequencies of the classes. [1 mark]
Reason (R): The median class is the class whose cumulative frequency is greater than and nearest to $n/2$.
- (A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.
- Q10. Assertion (A):** The mode of grouped data is always equal to the class mark of the modal class. [1 mark]
Reason (R): The modal class is the class with the highest frequency.
- (A) Both Assertion (A) and Reason (R) are true, and Reason (R) is the correct explanation of Assertion (A).
(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).
(C) Assertion (A) is true, but Reason (R) is false.
(D) Assertion (A) is false, but Reason (R) is true.

SECTION B

Very Short Answer Questions — Q11 to Q15 carry 2 marks each.

Q11. Find the mean of the following distribution using the direct method. **[2 marks]**

Marks	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
No. of students	5	8	12	10	5

Q12. Find the mode of the following data. **[2 marks]**

Class	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
Frequency	5	8	14	9	4

Q13. Find the median of the following distribution. **[2 marks]**

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	5	9	15	10	6

Q14. The mean of the following distribution is 25. Find the value of p . **[2 marks]**

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	5	p	10	6	4

Q15. The following table gives a 'less than' cumulative frequency distribution. Write the frequency distribution and find the mode. **[2 marks]**

Marks less than	10	20	30	40	50
No. of students	4	10	24	32	36

SECTION C

Short Answer Questions — Q16 to Q19 carry 3 marks each.

- Q16.** The daily wages of 50 workers in a factory are given below. Find the mean daily wage using the step-deviation method. **[3 marks]**

Wages (₹)	100 – 120	120 – 140	140 – 160	160 – 180	180 – 200
No. of workers	12	14	8	6	10

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- Q17.** The median of the following distribution is 35 and the total frequency is 50. Find the values of x and y . **[3 marks]**

Class	0 – 10	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60
Frequency	4	x	10	12	y	5

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- Q18.** The ages (in years) of 70 patients admitted to a hospital on a day are given below. Find the mean and the mode of the data. **[3 marks]**

Age	10 – 20	20 – 30	30 – 40	40 – 50	50 – 60	60 – 70
No. of patients	7	12	20	16	9	6

Q19. The mean of the following distribution is 24.5 and the total frequency is 60. Find the missing frequencies f_1 and f_2 .

[3 marks]

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	8	f_1	20	f_2	7

SECTION D

Long Answer Question — Q20 carries 4 marks.

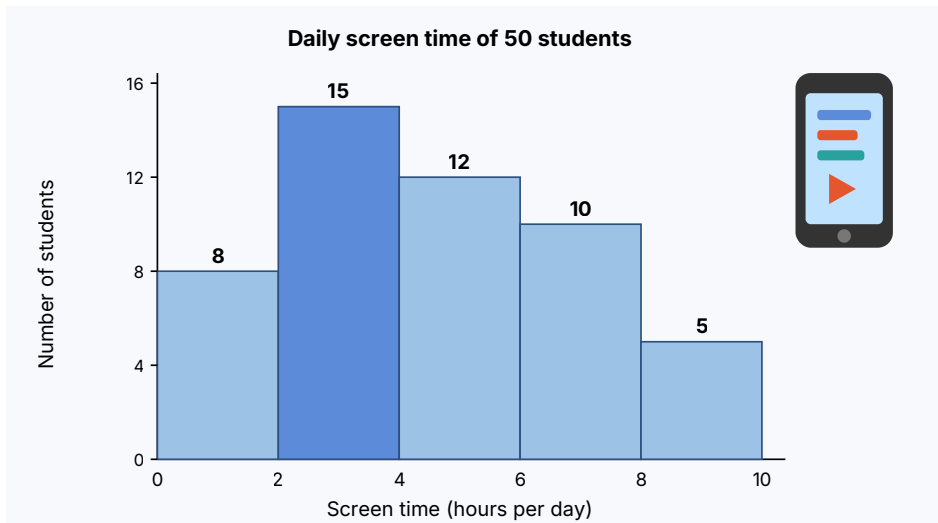
- Q20.** The marks obtained by 50 students in a test are given below. Find **[4 marks]** the mean, the median and the mode of the data. Also check whether the empirical relation $3 \text{ Median} = \text{Mode} + 2 \text{ Mean}$ holds approximately.

Marks	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70	70 - 80
No. of students	5	9	15	12	7	2

SECTION E

Case Study Based Question — Q21 carries 4 marks.

- Q21.** A school surveyed 50 students about their daily screen time (time spent on phones, tablets and TV). The results are shown in the histogram. **[4 marks]**



Based on the above information, answer the following questions:

- (i) Write the modal class of the data. **[1 mark]**

- (ii) Write the median class of the data. **[1 mark]**

- (iii) Find the mean daily screen time of the students. **[2 marks]**

— End of Question Paper —