Class 10 Mathematics: Statistics

Comprehensive Extra Questions for Exam Practice

General Instructions:

- This practice paper is designed based on the latest exam pattern for Class 10 Mathematics.
- **Section A** contains Multiple Choice Questions (1 mark each).
- **Section B** contains Short Answer Type Questions (2-3 marks each).
- **Section C** contains Long Answer Type Questions (4-5 marks each).
- **Section D** contains Case Study Based Questions.
- Use of calculators is not permitted. Show all working steps clearly.

Section A: Objective Type Questions (1 Mark Each)

1. If the empirical relationship between mean, median, and mode is given by $x \times \text{Median} = \text{Mode} + y \times \text{Mean}$, then what are the values of x and y?

(a) $x = 3, y = 2$
(b) $x = 2, y = 3$
(c) $x = 3, y = 1$
(d) $x = 1, y = 2$

2. The mean of the first 10 natural numbers is:

(a) 5.5
(b) 5.0
(c) 6.5
(d) 6.0

3. In a continuous frequency distribution, the median of the data is 24 and the mean is 26. What is the mode of the data?

(a) 20
(b) 22
(c) 28
(d) 25

4. The class mark of the class interval $35 - 55$ is:

(a) 40
(b) 45
(c) 50
(d) 20

5. While computing mean of grouped data, we assume that the frequencies are:

(a) evenly distributed over all the classes
(b) centred at the class marks of the classes
(c) centred at the lower limits of the classes
(d) centred at the upper limits of the classes

Section B: Short Answer Type Questions (2-3 Marks Each)

6. Find the mean of the first 10 prime numbers.

7. If the mean of the following distribution is 24, find the value of p.

Class	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50
Frequency	3	4	p	3	2

8. The median of the following observations arranged in ascending order is 25. Find x.

$$11, 13, 15, 19, x+2, x+4, 30, 35, 39, 46$$

9. Find the mode of the following frequency distribution:

Class Interval	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60	60 - 70
Frequency	14	21	27	25	15	8

Section C: Long Answer Type Questions (4-5 Marks Each)

10. The following distribution shows the daily pocket allowance of children of a locality. The mean pocket allowance is Rs. 18. Find the missing frequency f.

Daily Allowance (in Rs)	11 - 13	13 - 15	15 - 17	17 - 19	19 - 21	21 - 23	23 - 25
Number of Children	7	6	9	13	f	5	4

11. If the median of the distribution given below is 28.5, find the values of x and y.

Class Interval	Frequency
0 - 10	5
10 - 20	x
20 - 30	20
30 - 40	15
40 - 50	y
50 - 60	5
Total	**60**

12. Find the mean, median, and mode of the following data:

Class	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100	100 - 120	120 - 140
Frequency	6	8	10	12	6	5	3

13. The marks obtained by 100 students of a class in an examination are given below. Calculate the mean marks using the Step-Deviation Method.

Marks	0 - 10	10 - 20	20 - 30	30 - 40	40 - 50	50 - 60
No. of Students	12	18	27	20	17	6

Section D: Case Study Based Questions

14. Case Study 1: Health Check-up Camp

During a medical check-up of 35 students of a class, their weights were recorded as follows:

Weight (in kg)	Number of Students
Less than 38	0
Less than 40	3
Less than 42	5
Less than 44	9
Less than 46	14
Less than 48	28
Less than 50	32
Less than 52	35

Based on the above data, answer the following questions:

(i) Convert the given cumulative frequency distribution into a normal continuous frequency distribution table.

(ii) Find the median class of the given data.

(iii) Calculate the median weight of the students.

(iv) What is the lower limit of the modal class?

15. Case Study 2: Performance Analysis

A teacher recorded the performance of 50 students in a mathematics test (out of 100 marks). She created the following frequency distribution to analyze their performance:

Marks Obtained	0 - 20	20 - 40	40 - 60	60 - 80	80 - 100
Number of Students	5	12	18	10	5

Based on the table provided, answer the following:

(i) Find the mean marks obtained by the students.

(ii) How many students scored 60 marks or more?

(iii) Calculate the mode of the given data.