

# CHAPTER TEST: STATISTICS

Mathematics | Class IX (2026/STATIS/09/003)

Time: 1.5 Hours

Max. Marks: 40

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## General Instructions:

- All questions are compulsory.
- Section A contains 8 MCQs of 1 mark each.
- Section B contains 4 questions of 2 marks each.
- Section C contains 3 questions of 3 marks each.
- Section D contains 2 questions of 5 marks each.
- Use of calculators is strictly prohibited.

## Section A: Multiple Choice Questions (8 Marks)

1. The class mark of a class interval is 42. If the class size is 10, the upper and lower limits are:
  - (a) 47 and 37
  - (b) 42 and 32
  - (c) 37 and 47
  - (d) 40 and 50
2. If the mean of  $x_1, x_2, x_3, \dots, x_n$  is  $\bar{x}$ , then the mean of  $5x_1, 5x_2, 5x_3, \dots, 5x_n$  is:
  - (a)  $\bar{x} + 5$
  - (b)  $5\bar{x}$
  - (c)  $\bar{x}/5$
  - (d)  $5 - \bar{x}$
3. The width of each of five continuous classes in a frequency distribution is 5 and the lower class limit of the lowest class is 10. The upper class limit of the highest class is:
  - (a) 15
  - (b) 25
  - (c) 35
  - (d) 40
4. In a frequency distribution, the frequency of a class interval 0-10 is 5, 10-20 is 8, and 20-30 is 7. The cumulative frequency of the class 10-20 is:
  - (a) 5
  - (b) 13

- (c) 20  
(d) 8
5. A data set has a mean of 20. If every observation is decreased by 2, the new mean will be:
- (a) 20  
(b) 22  
(c) 18  
(d) 40
6. For drawing a histogram, if class intervals are not continuous, we subtract  $d/2$  from lower limit and add  $d/2$  to upper limit, where  $d$  is:
- (a) Lower limit  
(b) Class mark  
(c) Difference between two consecutive limits  
(d) Class frequency
7. The mean of first five multiples of 7 is:
- (a) 21  
(b) 28  
(c) 14  
(d) 35
8. The difference between the maximum and minimum values of an observation is called:
- (a) Frequency  
(b) Class size  
(c) Range  
(d) Mean

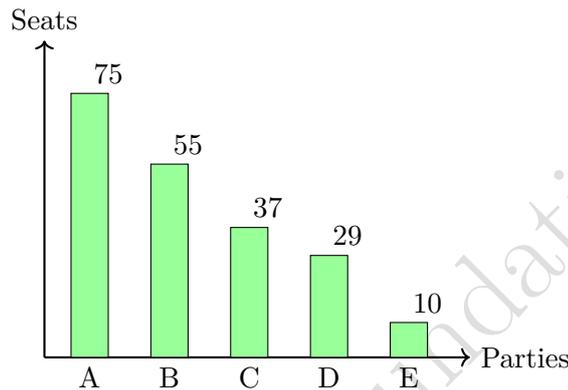
**Section B: Very Short Answer Questions (8 Marks)**

1. The mean of 5 observations is 15. If the mean of first three observations is 14 and that of last three is 17, find the third observation.
2. Convert the following inclusive class intervals into exclusive (continuous) form: 10-19, 20-29, 30-39, 40-49.
3. Find the class marks of the classes 15.5-20.5 and 100-150.
4. If  $\sum_{i=1}^n (x_i - 5) = 20$  and  $\sum_{i=1}^n (x_i - 8) = -10$ , find the value of  $n$  and the mean  $\bar{x}$ .

### Section C: Short Answer Questions (9 Marks)

- Given below is the data of heights (in cm) of 15 students of a class: 140, 145, 150, 140, 148, 150, 145, 140, 152, 145, 150, 148, 145, 140, 148. Prepare a frequency distribution table and find the mean height.
- Represent the following data using a bar graph:

Political Party	A	B	C	D	E
Seats Won	75	55	37	29	10



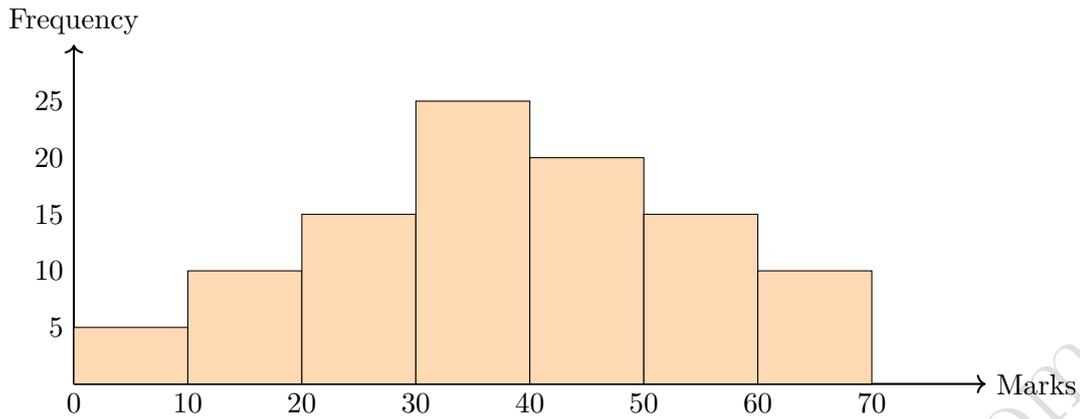
- If the mean of the following data is 20.2, find the missing frequency  $p$ :

$x$	10	15	20	25	30
$f$	6	8	$p$	10	6

### Section D: Long Answer Questions (10 Marks)

- Draw a histogram to represent the following distribution of marks obtained by 100 students:

Marks	Number of Students
0-10	5
10-20	10
20-30	15
30-40	25
40-50	20
50-60	15
60-70	10



2. Using the Assumed Mean Method, calculate the mean age of 50 teachers from the following data (Assume  $A = 40$ ):

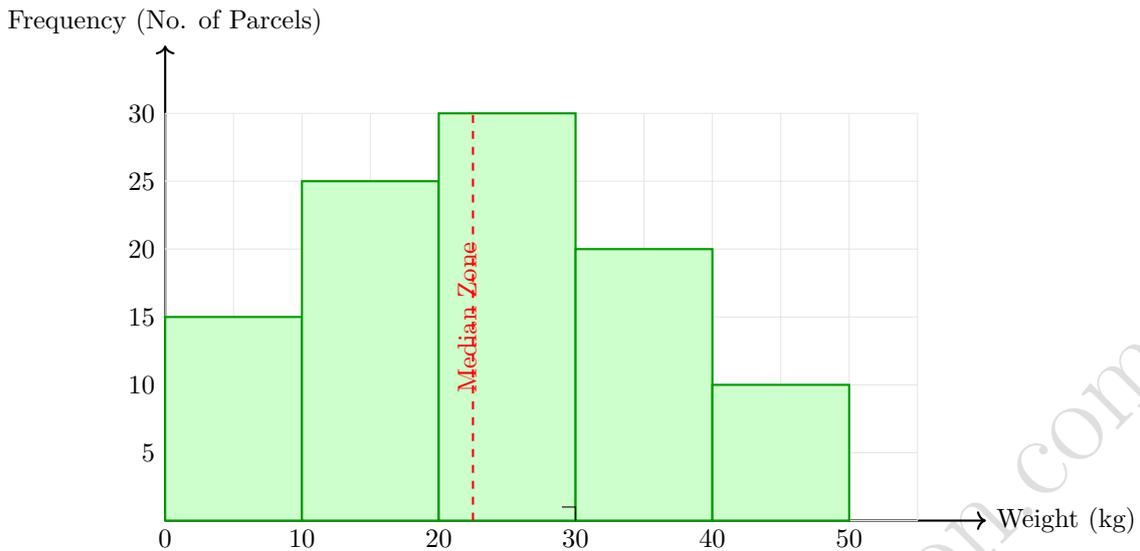
Age ( $x_i$ )	25	30	35	40	45	50
Number of Teachers ( $f_i$ )	4	8	12	10	9	7

Find the deviation  $d_i = x_i - A$  for each observation and hence calculate  $\bar{x} = A + \frac{\sum f_i d_i}{\sum f_i}$ .

## Section E

### Case Study

At a high-capacity regional logistics hub, the operations manager conducted a comprehensive audit of package weights to optimize the automated sorting conveyor system. A random sample of 120 parcels was selected, and their masses were recorded to the nearest kilogram. The initial survey indicated that the parcel weights were distributed across several continuous intervals, ranging from lightweight envelopes to heavy industrial components. This data is crucial for determining the power consumption of the machinery, which is directly proportional to the mean weight of the processed load. To identify the most common weight category, the manager requested a professional histogram. This visual tool will help engineers determine if the sorting belts require reinforcement for the modal weight class, ensuring that the hub maintains its peak operational efficiency without any mechanical failures during peak hours.



### Multiple Choice Questions

1. According to the audit data represented in the histogram, which class interval has the highest frequency of parcels?

- A) 10 – 20 kg
- B) 20 – 30 kg
- C) 30 – 40 kg
- D) 0 – 10 kg

2. What is the class mark of the interval that would require the most reinforcement based on the frequency of parcels?

- A) 20 kg
- B) 25 kg
- C) 30 kg
- D) 15 kg

3. If the manager decides to combine the first two intervals (0–10 and 10–20) into a single category, what will be the frequency of this new combined class?

- A) 15
- B) 25
- C) 40
- D) 30

4. In a distribution where the class intervals are 0–10, 10–20, 20–30, etc., in which interval will a parcel weighing exactly 20 kg be included?

- A) 10 – 20 kg
- B) 20 – 30 kg
- C) Both intervals
- D) It is excluded from the histogram

5. If the mean weight of the 120 parcels is 24.5 kg, and the hub adds one heavy industrial component weighing 85.5 kg, how will the new mean compare to the old one?

- A) The mean will decrease.
- B) The mean will stay exactly the same.
- C) The mean will increase.
- D) The mean will become the median.

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