

# CHAPTER TEST: STATISTICS

Mathematics | Class IX (2026/STATIS/09/001)

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 range of the data: 25, 18, 20, 22, 16, 6, 17, 15, 12, 30, 32, 10, 19, 8, 11, 20 is:
  - (a) 10
  - (b) 15
  - (c) 26
  - (d) 32
2. In a frequency distribution, the mid-value of a class is 10 and the width of the class is 6. The lower limit of the class is:
  - (a) 6
  - (b) 7
  - (c) 8
  - (d) 12
3. The mean of five numbers is 30. If one number is excluded, their mean becomes 28. The excluded number is:
  - (a) 28
  - (b) 30
  - (c) 35
  - (d) 38
4. In a histogram, the area of each rectangle is proportional to:
  - (a) The class mark of the corresponding class interval.
  - (b) The class size of the corresponding class interval.

- (c) The frequency of the corresponding class interval.  
(d) The cumulative frequency of the corresponding class interval.
5. The class mark of the class 90-120 is:
- (a) 90  
(b) 105  
(c) 115  
(d) 120
6. Which of the following is not a measure of central tendency?
- (a) Mean  
(b) Median  
(c) Mode  
(d) Standard Deviation
7. If the mean of  $x, x + 3, x + 5, x + 7, x + 10$  is 9, then the value of  $x$  is:
- (a) 4  
(b) 6  
(c) 5  
(d) 7
8. To draw a histogram for a frequency distribution with unequal class lengths, the frequency of a class is replaced by:
- (a) Cumulative frequency  
(b) Class mark  
(c) Adjusted frequency  
(d) Range

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

1. Find the mean of the first six prime numbers.
2. Define 'Primary Data' and 'Secondary Data' with one example each.
3. The mean of 10 observations was calculated as 40. It was later found that an observation '45' was misread as '15'. Calculate the correct mean.
4. If the class marks of a distribution are 47, 52, 57, 62, 67, 72, 77, find the class size and the first class interval.

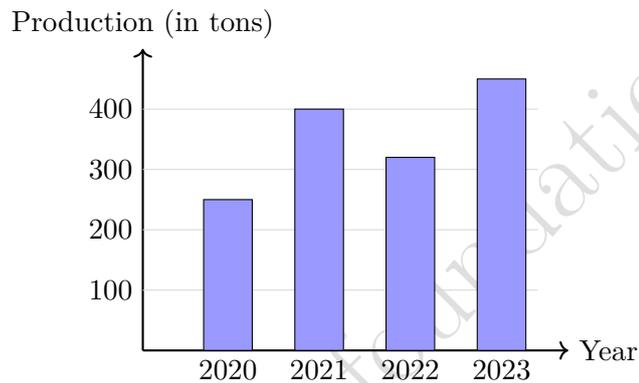
### Section C: Short Answer Questions (9 Marks)

1. The following data represents the number of children in 20 families: 1, 2, 2, 1, 2, 3, 3, 1, 2, 2, 3, 1, 2, 2, 4, 3, 2, 1, 1, 2. Prepare a discrete frequency distribution table.
2. Find the mean of the following distribution using the Direct Method:

$x_i$	5	10	15	20	25
$f_i$	7	k	8	4	5

If the mean of the data is 15, find the value of  $k$ .

3. Read the following bar graph and answer the questions that follow:



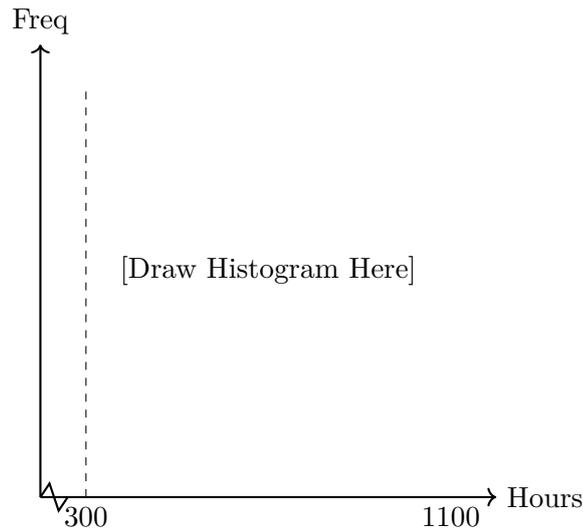
- (i) In which year was the production maximum?
- (ii) What is the difference in production between 2021 and 2020?
- (iii) Find the average production over the four years.

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

1. The following table gives the lifetime of 400 neon lamps:

Lifetime (in hours)	Number of lamps
300-400	14
400-500	56
500-600	60
600-700	86
700-800	74
800-900	62
900-1000	48

- (i) Represent the following information with the help of a histogram.
- (ii) How many lamps have a lifetime of more than 700 hours?



2. Calculate the mean marks of the following data using the Assumed Mean Method (Take  $A = 25$ ):

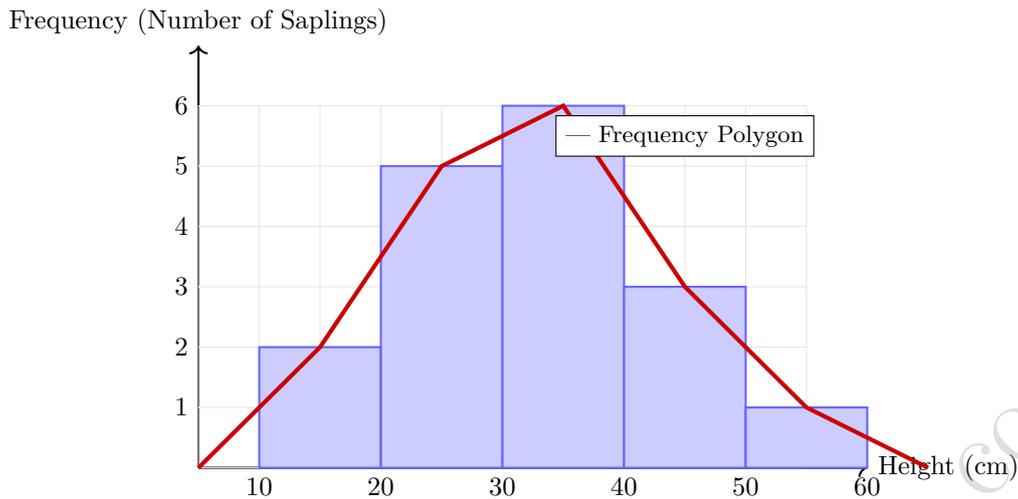
Marks ( $x_i$ )	Number of Students ( $f_i$ )
5	4
15	6
25	10
35	15
45	5

Verify your result using the Direct Method.

## Section E

### Case Study

In a burgeoning metropolitan area, the municipal corporation initiated the 'Urban Greenery Project' to evaluate the ecological health of five distinct residential sectors. Environmental scientists meticulously recorded the heights of 50 newly planted saplings in each sector to monitor growth patterns over six months. The resulting dataset revealed significant variances in height distributions, necessitating a structured statistical analysis to determine the effectiveness of the soil nutrients used. To visualize these trends, the researchers decided to construct a frequency polygon superimposed on a histogram, facilitating a direct comparison between different sectors. However, an anomaly was noted in Sector D, where the data appeared heavily skewed, challenging the standard measures of central tendency. Students must now organize this raw environmental data into continuous class intervals and calculate the representative growth metrics to assist the city council's future planning.



### Multiple Choice Questions

- In the provided graphical representation, what is the class mark of the modal class interval?
  - 30
  - 35
  - 40
  - 25
- If the height of every sapling in the dataset were increased by exactly 5 cm due to a measurement correction, how would the mean of the distribution change?
  - The mean remains unchanged.
  - The mean increases by 2.5 cm.
  - The mean increases by 5 cm.
  - The mean becomes five times the original value.
- Which statistical measure would be most affected by the "anomaly" and "skewed data" mentioned in Sector D of the case study?
  - Median
  - Mode
  - Mean
  - Range
- To construct the frequency polygon accurately, which specific value from each class interval must be plotted against the corresponding frequency?
  - The lower class limit

- B) The upper class limit
- C) The class size
- D) The class mark

5. If the total number of saplings analyzed in the histogram is  $N$ , and the data is arranged in ascending order, the median for this ungrouped data ( $N = 17$  in this sample) is the:

- A) 8<sup>th</sup> observation
- B) 9<sup>th</sup> observation
- C) Average of 8<sup>th</sup> and 9<sup>th</sup> observations
- D) 10<sup>th</sup> observation

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