SmartKalike

CBSE Class 10 · Maths

Statistics

10 most probable questions for Boards 2027

Q1. 1 mark · Multiple choice

Which of the following lists the measures of central tendency studied in statistics? (A) Mean, median and mode (B) Range, area and volume (C) Ogives, axes and scales (D) Frequency, class mark and interval.

Answer

(A) Mean, median and mode — these are measures of central tendency.

Q2. 2 marks · Short answer

Write the formula for the class mark of an interval with lower limit L and upper limit U.

Answer

The class mark represents the observations in an interval. It is the average of the upper and lower class limits: class mark = (U + L) ÷ 2.

Q3. 3 marks · Medium answer

In a frequency distribution, what does the frequency f_i corresponding to an observation x_i tell you?

Answer

1. The frequency f_i corresponding to observation x_i tells how many times that value occurs in the data. If f_i is zero, the observation does not occur.
2. The frequencies for all observations add up to the total number of observations. In calculating the mean, $f_i x_i$ gives the total contribution of all occurrences of x_i.

Q4. 4 marks · Long answer

Write the grouped-data median formula and explain the meanings of l, n, cf, f and h in it.

Answer

The median of grouped data is the value within the median class that divides the distribution into two halves.
1. Formula — Median = l + ((n/2 − cf)/f) × h. The formula estimates the median using the median class and its cumulative frequency.
2. Lower limit and total — l is the lower limit of the median class, and n is the total number of observations in the distribution. The value n/2 represents half the total number of observations.
3. Cumulative frequency and frequency — cf is the cumulative frequency of the class preceding the median class, and f is the frequency of the median class. The difference n/2 − cf gives the position of the median within that class.
4. Class size — h is the class size, assuming equal class sizes. The median class is the class whose cumulative frequency is greater than and nearest to n/2.

The formula locates the median within the interval containing the middle observation.

Q5. 5 marks · Long answer

For observations x_i with corresponding frequencies f_i, explain how the mean is calculated and state the formula using sigma notation.

Answer

The mean of a frequency distribution is the average value of its observations.
1. Each observation x_i occurs f_i times, so the total contribution of all its occurrences is $f_i x_i$.
2. Adding these contributions for all observations gives the total sum, $\Sigma f_i x_i$, while adding their frequencies gives the total number of observations, Σf_i.
3. Divide the total sum of observations by the total number of observations. The formula is $\bar{x} = \Sigma f_i x_i / \Sigma f_i$.
4. For grouped data, each class interval is represented by its class mark x_i, found by averaging its upper and lower class limits. This uses the assumption that the frequency is centred around the class midpoint.
Thus, the formula gives the exact mean for ungrouped data; for grouped data, the midpoint assumption makes the mean approximate.

Q6. 6 marks · Very long answer

Explain how class marks represent the observations in a grouped frequency distribution. Then describe the direct, assumed-mean and step-deviation methods for finding the grouped mean, giving the formula used in each method and explaining how the choice of assumed mean affects the result.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/statistics

Q7. 1 mark · Multiple choice

Which term describes the running total of frequencies in a distribution? (A) Class mark (B) Cumulative frequency (C) Modal class (D) Frequency polygon.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/statistics

Q8. 2 marks · Short answer

Define the mode of a set of observations in terms of frequency.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/statistics

Q9. 3 marks · Medium answer

For ungrouped observations arranged in ascending order, explain how to find the median when the number of observations is (i) odd and (ii) even.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/statistics

Q10. 4 marks · Long answer

Before using the grouped-data median formula, what condition must the class intervals satisfy? Explain why this condition is necessary, using the intervals 10–19 and 20–29 as an example.

Full answer on SmartKalike: https://smartkalike.com/cbse/class-10/maths/statistics

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