

Statistics — CBSE Pattern Test 2

Class 11 Maths · 90 minutes · 40 marks · Sections A–D with answer key · Narayan Gurukul Academy

Test 2 — CBSE Pattern (90 minutes, 40 marks)

Class 11 Maths · Statistics · Narayan Gurukul Academy (ClassApna)

General Instructions: (1) This paper has four sections — Section A (1×10), Section B (2×4), Section C (3×4) and Section D (5×2) — total 40 marks. Time allowed: 90 minutes.
(2) All questions are compulsory. No overall choice is given; internal choice, where allowed, is clearly marked.
(3) For MCQ questions choose the single correct option; for VSA answers write a single line.
(4) Take $g = 10 \text{ m/s}^2$. All symbols carry their usual meaning. Use of a calculator is not permitted.

Section A — MCQ & VSA ($10 \times 1 = 10$ marks)

- Measures of dispersion include
 - range, mean deviation, variance and standard deviation
 - mean, median and mode
 - only the mean
 - only the range
- The mean deviation about the mean of 2, 4, 6, 8 is
 - 1.5
 - 2
 - 5
 - 3
- In grouped data, x_i usually denotes the
 - midpoint of a class
 - lower limit
 - upper limit
 - frequency
- The variance of 2, 4, 6, 8 is
 - 5
 - $\sqrt{5}$
 - 25
 - 10
- The short-cut method for variance uses deviations from
 - an assumed mean
 - the median
 - the mode
 - zero
- The combined mean of two groups depends on
 - the means and sizes of the groups
 - only the means
 - only the sizes
 - the ranges
- A distribution with a lower coefficient of variation is
 - more consistent

- (B) more variable
 - (C) larger in mean
 - (D) smaller in range
8. The standard deviation has the same units as
- (A) the original data
 - (B) the variance
 - (C) the mean squared
 - (D) the number of items
9. Define variance.
10. What is an assumed mean?

Section B — Short Answer I ($4 \times 2 = 8$ marks)

11. Find the range of 5, 8, 2, 11, 7.
12. What does x_i denote in grouped data?
13. Write d_i for the step-deviation method.
14. Is the coefficient of variation a relative or absolute measure?

Section C — Short Answer II ($4 \times 3 = 12$ marks)

15. Find the standard deviation of 4, 6, 8, 10.
16. Find the mean deviation about the median of 3, 5, 7, 9.
17. Two groups have means 40 and 60 with sizes 20 and 30. Find the combined mean.
18. Distribution A: mean 60, SD 6. Find its coefficient of variation.

Section D — Long Answers ($2 \times 5 = 10$ marks)

19. Find the mean deviation about the mean for the data with classes 0–10, 10–20, 20–30 and frequencies 2, 3, 5.
20. Using the step-deviation method with $A = 25$ and $h = 10$, find the variance of the data with midpoints 15, 25, 35 and frequencies 2, 3, 5. Compare two distributions A (mean 50, SD 5) and B (mean 40, SD 8) using the coefficient of variation.

Answer Key (Marking Scheme)

- Q1 — (A) range, mean deviation, variance and standard deviation. Q2 — (A) 1.5. Q3 — (A) midpoint of a class. Q4 — (A) 5.
- Q5 — (A) an assumed mean. Q6 — (A) the means and sizes of the groups. Q7 — (A) more consistent. Q8 — (A) the original data.
- Q9 — The mean of the squared deviations from the mean.
- Q10 — A convenient central value chosen to simplify calculation.
- Q11 — 9.
- Q12 — Midpoint of a class.
- Q13 — $d_i = (x_i - A)/h$.
- Q14 — Relative.
- Q15 — $\sqrt{5}$.

Q16 — 2.

Q17 — 52.

Q18 — 10%.

Q19 — 6.8.

Q20 — Variance = 68 (step-deviation); A more consistent (CV 10% vs 20%).