

Statistics — CBSE Pattern Test 1

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

Test 1 — 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)

- The range of a data set is
 - the difference between the maximum and minimum values
 - the average of the values
 - the middle value
 - the most frequent value
- The range of the data 5, 8, 2, 11, 7 is
 - 9
 - 11
 - 6
 - 3
- Mean deviation about the mean is
 - $(\sum |x_i - \bar{x}|)/n$
 - $\sum (x_i - \bar{x})/n$
 - $\sum x_i/n$
 - $\sum x_i^2/n$
- Variance is defined as
 - the mean of the squared deviations from the mean
 - the mean of the deviations
 - the square root of the mean
 - the range squared
- Standard deviation is
 - the positive square root of the variance
 - the square of the variance
 - the mean of deviations
 - twice the variance
- The coefficient of variation is
 - $(\text{standard deviation}/\text{mean}) \times 100$
 - $(\text{mean}/\text{standard deviation}) \times 100$
 - $\text{variance} \times 100$
 - $\text{mean} \times 100$
- Distributions are usually compared using
 - the coefficient of variation

- (B) the mean only
 (C) the range only
 (D) the total
8. The range of the data 5, 8, 2, 11, 7 is
 (A) 9
 (B) 11
 (C) 6
 (D) 3
9. Define the range of a data set.
10. Write the formula for mean deviation about the median.

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

11. Name any three measures of dispersion.
12. Write the formula for mean deviation about the mean.
13. Define standard deviation.
14. Write the formula for the coefficient of variation.

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

15. Find the mean deviation about the mean of 6, 8, 10, 12.
16. Find the variance of 5, 10, 15.
17. Find the combined mean of two groups with $n_1 = 10$, $\bar{x}_1 = 20$ and $n_2 = 15$, $\bar{x}_2 = 30$.
18. Find the coefficient of variation given mean 50 and standard deviation 5.

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

19. Find the variance and standard deviation of 6, 8, 10, 12, 14.
20. Compare two distributions: A has mean 50, SD 5; B has mean 40, SD 8. Which is more consistent? Use the short-cut method with assumed mean 10 to find the variance of 6, 8, 10, 12, 14.

Answer Key (Marking Scheme)

- Q1 — (A) the difference between the maximum and minimum values. Q2 — (A) 9. Q3 — (A) $(\sum |x_i - \bar{x}|)/n$. Q4 — (A) the mean of the squared deviations from the mean.
- Q5 — (A) the positive square root of the variance. Q6 — (A) $(\text{standard deviation}/\text{mean}) \times 100$. Q7 — (A) the coefficient of variation. Q8 — (A) 9.
- Q9 — Maximum minus minimum.
- Q10 — $(\sum |x_i - \text{median}|)/n$.
- Q11 — Range, mean deviation, standard deviation (any three).
- Q12 — $(\sum |x_i - \bar{x}|)/n$.
- Q13 — The positive square root of the variance.
- Q14 — $(\text{SD}/\text{mean}) \times 100$.
- Q15 — 2.
- Q16 — $50/3$.

Q17 — 26.

Q18 — 10%.

Q19 — Variance 8, $SD \approx 2.83$.

Q20 — A (CV 10%) is more consistent than B (CV 20%); variance = 8 by short-cut method.