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Statistics — CBSE Class 10 Mathematics Chapter Test

FREE CHAPTER TEST · CLASS X · MATHEMATICS (041) · PATTERN OF THE CBSE SAMPLE QUESTION PAPER 2026-27

TIME ALLOWED	MAXIMUM MARKS	QUESTIONS	NAME / ROLL NO.
1½ hours	40	19 (A 10 · B 3 · C 2 · D 2 · E 2)	

GENERAL INSTRUCTIONS

Read the following instructions very carefully and strictly follow them:

1. This question paper contains 19 questions. All questions are compulsory.
2. This question paper is divided into five sections: A, B, C, D and E.
3. In Section A, Questions 1 to 8 are multiple choice questions (MCQs) and Questions 9 and 10 are assertion-reason based questions of 1 mark each.
4. In Section B, Q11–13 are very short answer (VSA) type questions, carrying 2 marks each.
5. In Section C, Q14–15 are short answer (SA) type questions, carrying 3 marks each.
6. In Section D, Q16–17 are long answer (LA) type questions, carrying 5 marks each.
7. In Section E, Q18–19 are case study based questions, carrying 4 marks each, with sub-parts of the values of 1, 1 and 2 marks.
8. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 1 question of Section C, 1 question of Section D and in the 2-mark sub-part of each question of Section E.
9. Use of calculators is not allowed.
10. This chapter test follows the section structure, question types and marks per question of the CBSE Class X Mathematics (Standard, 041) Sample Question Paper 2026-27, at half the length of the 80-mark board paper: 40 marks in 1½ hours.
11. The answer key and the marking scheme are at the end of this booklet. Attempt the paper in 1½ hours before you look at them.

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Chapter: Statistics · **Topics:** Mean of grouped data (three methods) · Median of grouped data · Mode of grouped data · Empirical relationship · Missing frequencies

SECTION A

This section comprises 10 questions of 1 mark each: 8 multiple choice questions (MCQs) and 2 assertion-reason based questions.

1. The class mark of the class 10–25 is 1

(A) 17.5 (B) 15

(C) 12.5 (D) 35

2. The empirical relationship between the three measures of central tendency is 1

(A) 3 Mean = Mode + 2 Median (B) 3 Median = Mode + 2 Mean

(C) 3 Mode = Mean + 2 Median (D) Mode = Mean − Median

3. For a distribution, the mean is 20 and the median is 22. Using the empirical relationship, the mode is 1

(A) 24 (B) 22

(C) 26 (D) 28

4. In the formula for the median of grouped data, cf stands for the 1

(A) frequency of the median class (B) total frequency

(C) class size (D) cumulative frequency of the class preceding the median class

5. The marks of 50 students are shown below. 1

Marks	0–10	10–20	20–30	30–40	40–50
Number of students	5	8	15	16	6

The modal class is

(A) 20–30 (B) 30–40

(C) 40–50 (D) 10–20

6. The mean of the first 10 natural numbers is 1

(A) 5 (B) 6

(C) 5.5 (D) 55

7. In the step-deviation method with assumed mean a = 25 and class size h = 10, the value of u for the class 40–50 is 1

(A) 2 (B) 20

(C) 4.5 (D) 1

8. For the distribution of marks in Question 5, the median class is 1

(A) 10–20 (B) 30–40

(C) 40–50 (D) 20–30

9. **Assertion (A):** For a distribution with mean 27 and median 28, the mode is 30. 1
Reason (R): Mode = 3 Median − 2 Mean.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

10. **Assertion (A):** The median of grouped data is always the mid-point of the median class. 1
Reason (R): The median class is the class whose cumulative frequency first becomes greater than or equal to n/2.

(A) Both Assertion (A) and Reason (R) are true and Reason (R) is the correct explanation of Assertion (A).

(B) Both Assertion (A) and Reason (R) are true, but Reason (R) is not the correct explanation of Assertion (A).

(C) Assertion (A) is true, but Reason (R) is false.

(D) Assertion (A) is false, but Reason (R) is true.

SECTION B

This section comprises 3 very short answer (VSA) type questions of 2 marks each.

11. (a) Find the mean of the distribution of marks given in Question 5 by the direct method. 2

OR

(b) Find the mean of the distribution of marks given in Question 5 by the assumed mean method, taking a = 25.

12. Find the median class and the modal class of the following distribution. 2

Marks	0–20	20–40	40–60	60–80	80–100
Number of students	6	9	14	11	10

13. The mean of the following distribution is 25. Find p. 2

Class	0–10	10–20	20–30	30–40	40–50
Frequency	4	p	10	6	5

SECTION C

This section comprises 2 short answer (SA) type questions of 3 marks each.

14. (a) Find the median of the distribution of marks given in Question 5. 3

OR

(b) Find the mode of the distribution of marks given in Question 5.

15. Find the mean daily wage of the workers by the step-deviation method. 3

Daily wage (₹)	200–240	240–280	280–320	320–360	360–400
Number of workers	10	15	12	8	5

SECTION D

This section comprises 2 long answer (LA) type questions of 5 marks each.

16. (a) The median of the following distribution of 50 observations is 32. Find x and y. 5

Class	0–10	10–20	20–30	30–40	40–50
Frequency	4	x	12	15	y

OR

(b) Find the mode and the median of the following distribution.

Marks	0–20	20–40	40–60	60–80	80–100	100–120
Number of students	8	22	40	50	30	10

17. The life-times of 200 batteries are given below. Find the mean life-time (by the step-deviation method) and the median life-time. 5

Life-time (hours)	100–150	150–200	200–250	250–300	300–350	350–400
Number of batteries	12	28	40	56	38	26

SECTION E

This section comprises 2 case study based questions of 4 marks each, with sub-parts of 1, 1 and 2 marks.

18. A survey of 50 students recorded their daily screen time.

Screen time (hours)	0–2	2–4	4–6	6–8	8–10
Number of students	8	12	16	10	4

(i) Find the modal class. [1]

(ii) Find the median class. [1]

(iii) Find the mean daily screen time. [2]

OR

(iii) Find the mode of the data. [2]

19. A hospital recorded the ages of 80 patients admitted during a week.

Age (years)	10–20	20–30	30–40	40–50	50–60	60–70
Number of patients	7	13	18	22	14	6

(i) Find the modal class. [1]

(ii) Find the mode. [1]

(iii) Find the median. [2]

OR

(iii) Find the mean age. [2]

END OF THE QUESTION PAPER

ANSWER KEY — SECTION A

Q1	Q2	Q3	Q4	Q5	Q6	Q7	Q8	Q9	Q10
(A)	(B)	(C)	(D)	(B)	(C)	(A)	(D)	(A)	(D)

MARKING SCHEME AND WORKED SOLUTIONS

Marks for each step are shown in brackets, as in the CBSE marking scheme. Any correct alternative method earns full marks.

Q1. Answer (A). (10 + 25)/2 = 17.5.

Q2. Answer (B). Mode = 3 Median − 2 Mean.

Q3. Answer (C). 3 × 22 − 2 × 20 = 26.

Q4. Answer (D). Median = l + ((n/2 − cf)/f) × h.

Q5. Answer (B). The highest frequency, 16, is in 30–40.

Q6. Answer (C). 55/10 = 5.5.

Q7. Answer (A). u = (45 − 25)/10 = 2.

Q8. Answer (D). n/2 = 25; cumulative frequencies 5, 13, 28, …: the first to reach 25 is that of 20–30.

Q9. Answer (A). 3 × 28 − 2 × 27 = 30, by R. Answer (A).

Q10. Answer (D). The median is found by the formula l + ((n/2 − cf)/f)h and need not be the mid-point: A is false, R is true. Answer (D).

Q11. (2 marks) Answer: 27.
(a) Class marks 5, 15, 25, 35, 45; Σfx = 25 + 120 + 375 + 560 + 270 = 1350. [1] Mean = 1350/50 = 27. [1]
OR (b) a = 25, d = −20, −10, 0, 10, 20: Σfd = −100 − 80 + 0 + 160 + 120 = 100. [1] Mean = 25 + 100/50 = 27. [1]

Q12. (2 marks) Answer: both 40–60.
n = 50, n/2 = 25; cumulative frequencies 6, 15, 29, …: median class 40–60. [1] Highest frequency 14: modal class 40–60. [1]

Q13. (2 marks) Answer: p = 8.
Σf = 25 + p; Σfx = 20 + 15p + 250 + 210 + 225 = 705 + 15p. [1] (705 + 15p)/(25 + p) = 25 gives 705 + 15p = 625 + 25p, p = 8. [1]

Q14. (3 marks) Answer: (a) 28; (b) 30 + 10/11 ≈ 30.91.
(a) n/2 = 25; cumulative frequencies 5, 13, 28, 44, 50; median class 20–30, with l = 20, cf = 13, f = 15, h = 10. [1½] Median = 20 + ((25 − 13)/15) × 10 = 20 + 8 = 28. [1½]
OR (b) Modal class 30–40: l = 30, f_1 = 16, f_0 = 15, f_2 = 6, h = 10. [1½] Mode = 30 + (16 − 15)/(32 − 15 − 6) × 10 = 30 + 10/11 ≈ 30.91. [1½]

Q15. (3 marks) Answer: ₹ 286.40.
x = 220, 260, 300, 340, 380; a = 300, h = 40; u = −2, −1, 0, 1, 2. [1] Σfu = −20 − 15 + 0 + 8 + 10 = −17, Σf = 50. [1] Mean = 300 + 40 × (−17/50) = 300 − 13.6 = ₹ 286.40. [1]

Q16. (5 marks) Answer: (a) x = 6, y = 13; (b) mode ≈ 66.67, median 64.
(a) 4 + x + 12 + 15 + y = 50, so x + y = 19. [1] Median 32 lies in 30–40: l = 30, cf = 16 + x, f = 15, h = 10. [1] 32 = 30 + ((25 − 16 − x)/15) × 10 [1], so 3 = 9 − x, x = 6 [1], y = 13. [1]
OR (b) Mode: modal class 60–80, l = 60, f_1 = 50, f_0 = 40, f_2 = 30, h = 20: 60 + (10/30) × 20 ≈ 66.67. [2½] Median: n = 160, n/2 = 80; cumulative frequencies 8, 30, 70, 120: class 60–80, cf = 70, f = 50: 60 + ((80 − 70)/50) × 20 = 64. [2½]

Q17. (5 marks) Answer: mean 264.5 h; median ≈ 267.86 h.
Mean: x = 125, 175, …, 375; a = 275, h = 50, u = −3 to 2. [1] Σfu = −36 − 56 − 40 + 0 + 38 + 52 = −42. [1] Mean = 275 + 50 × (−42/200) = 275 − 10.5 = 264.5 hours. [1]
Median: n/2 = 100; cumulative frequencies 12, 40, 80, 136: median class 250–300, cf = 80, f = 56. [1] Median = 250 + ((100 − 80)/56) × 50 = 250 + 1000/56 ≈ 267.86 hours. [1]

Q18. (4 marks) Answer: (i) 4–6; (ii) 4–6; (iii) 4.6 h, or 4.8 h.
(i) 4–6 (highest frequency 16). [1]
(ii) n/2 = 25; cumulative frequencies 8, 20, 36: 4–6. [1]
(iii)(a) Σfx = 8 + 36 + 80 + 70 + 36 = 230 [1]; mean = 230/50 = 4.6 hours. [1]
OR (iii)(b) 4 + (16 − 12)/(32 − 12 − 10) × 2 [1] = 4.8 hours. [1]

Q19. (4 marks) Answer: (i) 40–50; (ii) 43.33; (iii) 40.91, or 40.125.
(i) 40–50. [1]
(ii) 40 + (22 − 18)/(44 − 18 − 14) × 10 = 40 + 40/12 ≈ 43.33 years. [1]
(iii)(a) n/2 = 40; cumulative frequencies 7, 20, 38, 60: class 40–50, cf = 38, f = 22 [1]; 40 + (2/22) × 10 ≈ 40.91 years. [1]
OR (iii)(b) Σfx = 105 + 325 + 630 + 990 + 770 + 390 = 3210 [1]; mean = 3210/80 = 40.125 years. [1]

All questions are original and © Master Testing Agency. Free to download and use for personal practice; not for resale. Every answer in this paper was checked independently by computer in exact fractions from the tables themselves: the mean by all three methods, the median and mode by their formulas, and every unknown frequency by searching all values.