Mathematics — Ganita Manjari

Chapter 8 Test 8

Predicting What Comes Next: Exploring Sequences and Progressions

Class IX | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. Choose one option in A; show working in B–D.
2. No calculators. Give exact answers unless an approximation is requested.
3. Term positions start at 1 unless a stage number of 0 is explicitly given.

SECTION A

(5 questions × 1 mark = 5 marks)

1. Two sequences both start with 2 and 4. Must their third terms be equal?

(A) Yes, the third term must be 6
(B) No, one may continue as an AP and one as a GP
(C) Yes, the third term must be 8
(D) No sequence can start with 2 and 4

2. Why is a point with term position $n = 2.5$ excluded from the usual graph of a sequence indexed from 1?

(A) Its term value is too small
(B) All term values must be integers
(C) Positions are positive integers
(D) Graphs cannot show fractions

3. Why are square numbers 1,4,9,16, … not an AP?

(A) Their consecutive differences are not constant
(B) Their terms are positive
(C) There are infinitely many terms
(D) They have an explicit rule

4. Which GP has all its points on a horizontal straight line when term value is plotted against position?

(A) 1,2,4,8, …
(B) $1, -1, 1, -1, \ldots$
(C) 8,4,2,1, …
(D) 4,4,4,4, …

5. If an AP has common difference d, the subsequence $t_2, t_4, t_6, \ldots$ has common difference:

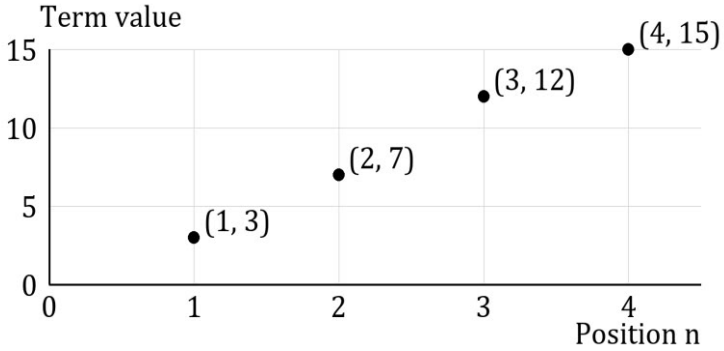
(A) d
(B) $2d$
(C) d^2
(D) $d + 2$

SECTION B

(4 questions × 2 marks = 8 marks)

6. A GP has first term 3 and common ratio 2. Find the first three terms and common ratio of the subsequence $t_2, t_4, t_6, \ldots$.

7. Four plotted points in figure are meant to represent the AP $t_n = 4n - 1$. One point is incorrect. Identify it and state the corrected point.



8. Subtract 1 from every term of the GP 2,4,8,16, …. Is the resulting sequence a GP? Justify.

9. Every term of the AP 5,8,11, … is multiplied by -2. Find the new first term and common difference.

SECTION C

(3 questions × 3 marks = 9 marks)

10. The AP 2,5,8, … and the GP 2,4,8, … start at position 1. Find every position among the first six at which their terms are equal.

11. The nth term of an AP is $a_n = 2n + 1$. Find an explicit expression for the sum S_n of its first n terms.

12. Classify each sequence in figure as an AP, a GP or neither. Give a difference or ratio calculation for each.

Sequence	First four terms
A	-2, 1, 4, 7
B	16, 8, 4, 2
C	1, 3, 6, 10

SECTION D

(1 application question × 3 marks = 3 marks)

13. Plan A saves ₹10 on Day 1 and ₹10 more each day. Plan B saves ₹2 on Day 1 and doubles the daily saving. Compare the daily amounts on Day 5 and the totals saved over Days 1–5.