MATHS WITHOUT GUESSWORK · BOARD BOOSTER

Arithmetic Progressions

LOCK THE SURE MARKS.
STRETCH FOR THE TOP.
PRACTISE THE BOARD WAY.

A board-exam practice companion for **CBSE Class 10 Mathematics**
Syllabus session 2026–27 · Standard (041)

🛡️ Secure Track | 🚀 Stretch Track | ~130 questions + 3 mini-mocks

Built around what the board actually tests

nth term	Sum	Apply
$a_n = a + (n-1)d$	$S_n = n/2\ [2a+(n-1)d]$	seats · savings · prizes

Original questions and solutions. Answers kept separate. Not a substitute for the NCERT textbook or your teacher.

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Arithmetic Progressions in the board paper

Know exactly how many marks are really at stake here — so you spend your effort where the paper pays.

◆ UNDERSTAND THE OFFICIAL NUMBER This chapter sits inside **Unit II — Algebra, worth 20 marks**, shared across four chapters — and it is one of the most **reliable score-givers** in the paper. Expect **4–6 marks**: an nth-term or sum question, plus very often a 4- or 5-mark word problem. CBSE publishes weightage per unit, not per chapter.

Where those marks usually fall (PYQ trend — based on past papers, not official)

Form it takes	Typical marks	What it tests
1–2 MCQ / Assertion-Reason	1–2	Common difference, a particular term, "is it a term?"
A VSA or SA	2–3	nth term, which term equals a value, sum of n terms, number of terms
A case study or a 5-mark LA	4–5	A word problem — seats, savings, installments, prizes, stacked logs

★ SPOT THE CLUE WHAT'S IN THE 2026–27 SCOPE The current syllabus keeps the **nth term**, the **sum of n terms**, and their **application in daily-life problems** — so word problems are fully examinable and are asked almost every year. There are **no geometric progressions** in Class 10.

Q7 The 4th term of an AP with a = 5, d = −3 is: A. −4 B. 4 C. −1 D. 14

1 GUIDED

Q8 The sum of the first n natural numbers is: A. n(n + 1) B. n(n + 1)/2 C. n^2 D. $n^2/2$

1 PART-GUIDED

Q9 1 + 2 + 3 + ... + 10 = A. 45 B. 55 C. 50 D. 100

1 GUIDED

Q10 The 20th term of 1, 4, 7, … is: A. 58 B. 61 C. 55 D. 60

1 GUIDED ★

Q11 Which term of 5, 8, 11, … is 50? A. 15th B. 16th C. 17th D. 14th

1 PART-GUIDED ★

Q12 The sum of the first n terms of an AP is: A. n/2[2a + (n − 1)d] B. n[a + (n − 1)d] C. (n/2)(a − l) D. n(a + l)

1 GUIDED ★

Q13 If a = 2 and d = 0, the 5th term is: A. 2 B. 0 C. 10 D. 7

1 PART-GUIDED

Q14 The next term of 1, −1, −3, −5, … is: A. −7 B. −6 C. 7 D. −8

1 GUIDED

Q15 The number of terms in 7, 13, 19, …, 205 is: A. 33 B. 34 C. 35 D. 32

1 PART-GUIDED ★

Q16 The first term of the AP with $a_n = 2n + 1$ is: A. 1 B. 2 C. 3 D. 5

1 PART-GUIDED

Q17 1 + 2 + 3 + ... + 100 = A. 5050 B. 5000 C. 4950 D. 10100

1 GUIDED

Q18 The common difference of $10, 7, 4, 1, \ldots$ is: A. 3 B. −3 C. −2 D. −1

1 GUIDED

Q19 The 15th term of $-3, -1, 1, \ldots$ is: A. 25 B. 27 C. 23 D. 29

1 PART-GUIDED

Q20 The sum of the first 20 odd numbers (1 + 3 + 5 + ...) is: A. 400 B. 420 C. 441 D. 200

1 INDEPENDENT ★

Q21 If a = 3 and the 8th term is 38, then d = A. 4 B. 5 C. 6 D. 7

1 PART-GUIDED

Q22 The middle term of the AP $1, 4, 7, \ldots, 37$ is: A. 17 B. 19 C. 21 D. 18

1 INDEPENDENT ★

Q23 The sum of the first n terms of $2, 4, 6, \ldots$ is: A. n^2 B. $n(n + 1)$ C. $2n$ D. $n(n - 1)$

1 PART-GUIDED

Q24 If $S_n = 3n^2 + 2n$, the first term is: A. 3 B. 5 C. 2 D. 8

1 INDEPENDENT ★

Q25 The 10th term of $2, 7, 12, \ldots$ is: A. 47 B. 52 C. 42 D. 45

1 GUIDED

Q26 The 4th term from the end of $3, 8, 13, \ldots, 253$ is: A. 238 B. 243 C. 248 D. 233

1 INDEPENDENT ★

Q27 If the 3rd term is 5 and the 7th term is 9, then d = A. 1 B. 2 C. 4 D. ½

1 PART-GUIDED

1 2 3 4 5 6 Secure

Very Short Answer (2-mark) set

Twenty-two 2-mark questions — nth terms, sums, and counts. Plug into the formula and state the answer.

V1 Find the common difference of 5, 9, 13, 17, … and write the next term.

2 GUIDED ★

V2 Find the 10th term of 3, 7, 11, …

2 GUIDED ★

V3 Which term of 3, 8, 13, … is 78?

2 PART-GUIDED ★

V4 Find the sum of the first 20 terms of 1, 3, 5, …

2 PART-GUIDED

V5 Find the first term if the 5th term is 19 and the common difference is 3.

2 GUIDED

V6 Find the 15th term of 21, 18, 15, …

2 GUIDED

V7 Is 68 a term of the AP 7, 10, 13, …? Justify.

2 INDEPENDENT ★

V8 Find the number of terms in 7, 13, 19, …, 205.

2 PART-GUIDED ★

V9 Find the sum: 2 + 4 + 6 + … + 100.

2 PART-GUIDED

Case studies (4-mark)

➤ CHOOSE THE METHOD EVERY CASE HIDES AN AP Each case gives a real situation, then sub-parts (1 + 1 + 2 marks). Read out the first term a and the common difference d, then use the nth-term formula for "which/what term" and the sum formula for "total".

C1 **Theatre seating.** A theatre has 20 seats in the first row, 22 in the second, 24 in the third, and so on.

- **(i)** Is this an AP? What is its common difference? (1)
- **(ii)** How many seats are in the 10th row? (1)
- **(iii)** How many seats are there in the first 10 rows? (2)

4 PART-GUIDED ★

C2 **Monthly savings.** A student saves ₹100 in the first month, ₹150 in the second, ₹200 in the third, and so on.

- **(i)** What is the common difference? (1)
- **(ii)** How much is saved in the 12th month? (1)
- **(iii)** How much is saved in a full year (12 months)? (2)

4 PART-GUIDED ★

Answer Key

Kept at the back on purpose — so a parent needn't teach. Model questions get full step-marked solutions; drills get the key steps, the answer, and the likely slip.

Section 6 — MCQ & Assertion-Reason

Q	Ans	Why
Q1	**A**	7 − 3 = 4.
Q2	**A**	$a_n = a + (n - 1)d$.
Q3	**A**	2 + 9(3) = 29.
Q4	**C**	3, 6, 9, 12 has constant difference 3; the others don't.
Q5	**B**	$a_n = 3n + 2 \Rightarrow$ coefficient of n is d = 3.
Q6	**A**	7 + 4(−2) = −1.
Q7	**A**	5 + 3(−3) = −4.
Q8	**B**	$n(n + 1)/2$.
Q9	**B**	10·11/2 = 55.
Q10	**A**	1 + 19(3) = 58.
Q11	**B**	$5 + (n - 1)3 = 50 \Rightarrow n = 16$.
Q12	**A**	$S_n = n/2[2a + (n - 1)d]$.
Q13	**A**	$d = 0 \Rightarrow$ every term equals a = 2.
Q14	**A**	$d = -2 \Rightarrow -5 - 2 = -7$.
Q15	**B**	(205 − 7)/6 + 1 = 34.

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- **HOTS and trickiest variations.** 15 questions
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