

Arithmetic Progression

Chapter 10: Arithmetic Progression · Topic 1

Key Concept

The n th term of an AP is calculated as $a_n = a + (n-1)d$, where a is the first term, n is the term number, and d is the common difference.

The sum of the first n terms of an AP is $S_n = n/2 \times [2a + (n-1)d]$, useful for quickly finding totals without adding each term.

An AP can be identified by checking if the difference between consecutive terms remains constant throughout the sequence.

Arithmetic progressions have real-life applications, like calculating regular savings growth, seating arrangements, or simple interest calculations.

Quick Revision Notes

- AP: each term changes by a constant amount (common difference).
- n th term: $a_n = a + (n-1)d$.
- Sum of n terms: $S_n = n/2 \times [2a + (n-1)d]$.
- Common difference must stay constant.
- This identifies a sequence as an AP.
- Real-life uses: savings growth, seating, interest.
- AP formulas avoid manual term-by-term addition.
- Practice builds AP problem-solving skills.

Practice Questions

- 1 Find the 10th term of an AP with $a=3$, $d=4$.
- 2 Find the sum of the first 5 terms of an AP with $a=2$, $d=3$.
- 3 Check if 4,7,10,13 is an AP and find its common difference.
- 4 Discuss a real-life example of an AP.
- 5 Solve an AP word problem.
- 6 Explain the n th term formula in your own words.