

Geometric Progression

Chapter 11: Geometric Progression · Topic 1

Key Concept

The n th term of a GP is calculated as $a_n = a \times r^{(n-1)}$, where a is the first term, r is the common ratio, and n is the term number.

The sum of the first n terms of a GP is $S_n = a(r^n - 1)/(r - 1)$ (for $r \neq 1$), useful for quickly finding totals.

A GP can be identified by checking if the ratio between consecutive terms remains constant throughout the sequence.

Geometric progressions have real-life applications, like compound interest growth, population growth, and radioactive decay calculations.

Quick Revision Notes

- GP: each term multiplied by a constant common ratio.
- n th term: $a_n = a \times r^{(n-1)}$.
- Sum formula: $S_n = a(r^n - 1)/(r - 1)$, $r \neq 1$.
- Common ratio must stay constant.
- This identifies a sequence as a GP.
- Real-life uses: compound interest, population growth.
- Radioactive decay also follows GP patterns.
- Practice builds GP problem-solving skills.

Practice Questions

- 1 Find the 5th term of a GP with $a=3$, $r=2$.
- 2 Find the sum of the first 4 terms of a GP with $a=1$, $r=3$.
- 3 Check if 5,10,20,40 is a GP and find its common ratio.
- 4 Discuss a real-life example of a GP.
- 5 Compare AP and GP with examples.
- 6 Explain the n th term formula for GP in your own words.