

**APPLIED MATHEMATICS · CHAPTER 2**

# Algebra — Sets, Relations & Functions, Sequences & Series

A 1-page guide for parents · 90-second read.

**EXPECTED MARKS****16 marks****TIME TO MASTER****Strong hrs****HELPLINE****70330 05444****WHAT THIS CHAPTER IS, IN PLAIN ENGLISH**

This is the second chapter of your child's Class 11 Applied Mathematics book, and it builds the algebraic vocabulary the rest of the course depends on. It has three parts. SETS is the language of grouping — a 'set' is just a well-defined collection of objects, and the chapter teaches how to combine sets (union, intersection), draw Venn diagrams, and — the most exam-useful skill — count overlapping groups, e.g. 'in a class of 40, how many like at least one of cricket or football?'. RELATIONS AND FUNCTIONS formalises the idea of a rule that turns one quantity into another — the 'function' is the single most important object in all of higher mathematics, and this is where it is properly defined, along with its inputs (domain) and outputs (range). SEQUENCES AND SERIES is about patterns of numbers: arithmetic progressions (add a fixed amount each step — like a fixed monthly saving) and geometric progressions (multiply by a fixed factor each step — like compound interest or population growth), including the surprising result that an unending sum like  $8 + 4 + 2 + 1 + \dots$  can add up to a finite number (16). The maths is mostly clean formula-work; the skill is choosing the right formula and translating a word problem into it.

**5 QUESTIONS TO ASK YOUR CHILD**

- How many subsets does a set with 3 elements have, and why is it  $2^3$ ?
- What is the difference between a 'relation' and a 'function'?
- In the sequence 2, 6, 18, 54, ..., what kind of progression is it, and what is the 6th term?
- Why can the infinite sum  $8 + 4 + 2 + 1 + \dots$  add up to a finite number, and what is it?
- In a class of 40, 25 like cricket and 20 like football and 10 like both — how many like neither?

**WEAK-SPOT INDICATORS**

- If your child says a 3-element set has '3 subsets' instead of  $2^3 = 8$ , the power-set rule is misunderstood.
- If they cannot tell a function from a relation (one input must give exactly one output), the central idea of the chapter is missing.
- If they use the arithmetic-progression sum formula on a geometric progression, the heaviest-weighted sub-topic will go wrong.
- If they forget to subtract the overlap in a Venn problem and get a total bigger than the class, the inclusion-exclusion idea hasn't landed.

**WHEN TO WORRY — AND WHAT TO DO**

If, after attempting one question from each part (a sets/Venn count, a domain-range question, and an AP and a GP sum), your child gets fewer than three correct, schedule one focused 60-90 minute revision session. This chapter rewards formula-drill, not abstract reasoning — fifteen

minutes practising the AP and GP formulas plus the inclusion-exclusion rule usually closes most of the gap.

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