

MATHEMATICS · CHAPTER 1

Sets

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

EXPECTED MARKS

A well-prepared student should comfortably score 5-6 of this chapter's marks

TIME TO MASTER

6-8 hrs

HELPLINE

70330 05444

WHAT THIS CHAPTER IS, IN PLAIN ENGLISH

Sets is the very first chapter of Class 11 Mathematics and the grammar of all higher maths. A 'set' is simply a well-defined collection of objects — the days of the week, the prime numbers below 20, the points of a line. Your child learns to describe a collection two ways (by listing its members, or by stating the rule its members obey), to compare collections (is one contained inside another? do two collections have exactly the same members, or just the same number of members?), and to combine collections using union (everything in either), intersection (only what's common), difference and complement. They also meet a beautiful counting idea: a collection of n objects has exactly 2^n possible sub-collections. The chapter finishes with a practical tool — given how many people like tea, coffee and both, work out how many like neither — which is the single most-tested skill. None of it requires heavy calculation; it rewards careful reading and neat Venn-diagram drawing.

5 QUESTIONS TO ASK YOUR CHILD

- What is the difference between writing a set in 'roster' form and 'set-builder' form? Give one example of each.
- How many subsets does a set with 4 elements have, and why is the answer 2^4 ?
- Is the empty set a subset of every set? Is $\{0\}$ the same as the empty set?
- If 30 people like tea, 25 like coffee and 10 like both, how many like at least one of the two?
- Can you state De Morgan's two laws and draw the Venn diagram for the complement of $A \cup B$?

WEAK-SPOT INDICATORS

- Confuses \in (element of) with \subset (subset of), e.g. writes $1 \subset A$ instead of $1 \in A$.
- Thinks the empty set, $\{0\}$ and the number 0 are the same thing.
- Forgets the $-n(A \cap B)$ correction in the union-cardinality formula, so survey answers come out too big.
- Says $\{1,2,3\}$ and $\{a,b,c\}$ are 'equal' when they are only 'equivalent' (same size, different members).

WHEN TO WORRY — AND WHAT TO DO

If your child cannot, unprompted, (a) write the power set of a 3-element set including the empty set and the whole set, and (b) solve a simple tea-and-coffee survey problem with the $n(A \cup B)$ formula, they will routinely lose 4-5 of this chapter's marks AND struggle in the next chapter

(Relations and Functions), which assumes fluency with sets. These two skills are mechanical and reward a few 10-minute daily drills far more than re-reading the text.

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