MATHEMATICS · CHAPTER 1

Number Systems

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

EXPECTED MARKS	TIME TO MASTER	HELPLINE
A well-prepared student should comfortably score 8-9 of the 10 Unit-I marks. Below 5 is a red flag — almost always traceable to Class 8 fractions, square roots, or integer-exponent gaps.	**8-10 hrs**	**70330 05444**

WHAT THIS CHAPTER IS, IN PLAIN ENGLISH

Your child is widening their idea of 'number'. Until Class 8, numbers were fractions and whole numbers — all of which can be written as one whole number over another (these are called rational numbers). Now they meet irrational numbers like $\sqrt{2}$ and π, which go on forever after the decimal point without ever repeating, and which can never be written as a neat fraction. Together, rationals and irrationals make up the 'real numbers' that fill the entire number line with no gaps. The chapter teaches them to tell the two apart, to place them precisely on a number line using geometry, to do arithmetic with square-root expressions, and to clean up fractions that have a square root on the bottom (called 'rationalising'). It is the foundation chapter for all of Class 9 and 10 algebra.

5 QUESTIONS TO ASK YOUR CHILD

- What is the difference between a rational and an irrational number? Give one example of each.
- Is 0.333333... rational or irrational? Why?
- How do you 'rationalise' the fraction $1/(3+\sqrt{2})$? What do you multiply by?
- Is the product of $\sqrt{2}$ and $\sqrt{2}$ rational or irrational? (Trick — the answer is 2, which is rational!)
- Can you draw $\sqrt{5}$ exactly on a number line using a ruler and compass?

WEAK-SPOT INDICATORS

- Thinks every non-terminating decimal must be irrational (forgets that repeating decimals like 0.142857... are rational).
- Rationalises by multiplying by the square root instead of the conjugate.
- Adds the exponents when they should multiply, or vice versa, in laws-of-exponents questions.
- Marks $\sqrt{5}$ on the number line 'by eye' instead of using the Pythagoras-and-compass construction.

WHEN TO WORRY — AND WHAT TO DO

If your child cannot, unprompted, rationalise a simple fraction like $1/(2+\sqrt{3})$ and convert a repeating decimal like 0.bar(6) into a fraction, they will routinely lose 5-6 of this unit's 10 marks. These two procedures are mechanical and reward daily 10-minute practice far more than re-

reading the chapter. A child stuck here usually has a shaky Class 8 fractions-and-square-roots base that must be patched first.