

MATHEMATICS · CHAPTER 3

Trigonometric Functions

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

EXPECTED MARKS**10 marks****TIME TO MASTER****14-16 hrs****HELPLINE****70330 05444****WHAT THIS CHAPTER IS, IN PLAIN ENGLISH**

This chapter takes the right-triangle sin/cos/tan your child learnt in Class 10 and EXPANDS them to work for ANY angle — positive, negative, larger than 90° , even multiples of 360° . The tool that makes this possible is the UNIT CIRCLE: a circle of radius 1 centred at the origin. As the angle sweeps around the circle, sin and cos read off the y- and x-coordinates of the moving point. The chapter also introduces 'radians' (a more natural way of measuring angles than degrees), the famous identity $\sin^2 + \cos^2 = 1$, and formulas like $\sin(A+B)$. Trigonometry is THE language of waves, oscillations, and rotations — everything in Class 12 calculus and Physics builds on it. Expect 8-10 marks per board paper.

5 QUESTIONS TO ASK YOUR CHILD

- Convert 60° to radians. (Should give $\pi/3$.)
- What is the arc length of a 1-radian arc on a circle of radius 7 cm? (7 cm.)
- If $\sin x = 1/2$ and x is in the second quadrant, what is $\cos x$? ($-\sqrt{3}/2$.)
- Why does $\sin(A+B) \neq \sin A + \sin B$? Give an example.
- What's the period of $\sin x$? And of $\tan x$?

WEAK-SPOT INDICATORS

- Plugs θ in degrees into $s = r\theta$ — gets wrong arc length.
- Forgets quadrant sign when extracting cos from $\sin^2 + \cos^2 = 1$.
- Believes $\sin(A+B) = \sin A + \sin B$.
- Cannot recall $\sin 30^\circ$, $\cos 30^\circ$, $\sin 45^\circ$ without looking up.
- Mixes the general solutions of $\sin x = \sin \alpha$ and $\cos x = \cos \alpha$.

WHEN TO WORRY — AND WHAT TO DO

If after 8 hours of practice your child still cannot find arc length given r and angle (in degrees), or cannot deduce $\cos x$ when given $\sin x$ and the quadrant, call our helpline. These are bread-and-butter 2-3 mark questions for board.

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