



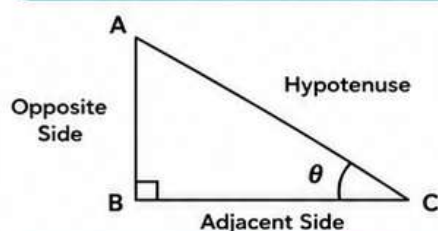
CLASS 10 REVISION CHEAT SHEET INTRODUCTION TO TRIGONOMETRY

Key Concepts, Formulas & Diagrams at a Glance

Chapter Snapshot

- ✓ **DEFINITION:** Trigonometry is the branch of mathematics that deals with the relationship between the sides and angles of a right triangle.
- ✓ **KEY FINDING:** Trigonometric ratios help us find unknown sides or angles in right-angled triangles.
- ✓ **SUPPORTING FACT:** Trigonometry is widely used in real-life areas like height & distance, navigation, surveying and engineering.

Trigonometric Ratios in a Right-Angled Triangle



$\sin \theta =$	$\frac{\text{Opposite Side}}{\text{Hypotenuse}}$
$\cos \theta =$	$\frac{\text{Adjacent Side}}{\text{Hypotenuse}}$
$\tan \theta =$	$\frac{\text{Opposite Side}}{\text{Adjacent Side}}$
$\operatorname{cosec} \theta =$	$\frac{\text{Hypotenuse}}{\text{Opposite Side}}$
$\sec \theta =$	$\frac{\text{Hypotenuse}}{\text{Adjacent Side}}$
$\cot \theta =$	$\frac{\text{Adjacent Side}}{\text{Opposite Side}}$

Trigonometric Ratios Table (0° to 90°)

θ	0°	30°	45°	60°	90°
$\sin \theta$	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
$\cos \theta$	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
$\tan \theta$	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	Not defined
$\operatorname{cosec} \theta$	Not defined	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1
$\sec \theta$	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	Not defined
$\cot \theta$	Not defined	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

Note: Not defined (∞) when denominator is zero.

Trigonometric Identities (Fundamental Identities Only)

- $\sin^2 \theta + \cos^2 \theta = 1$
- $1 + \tan^2 \theta = \sec^2 \theta$
- $1 + \cot^2 \theta = \operatorname{cosec}^2 \theta$

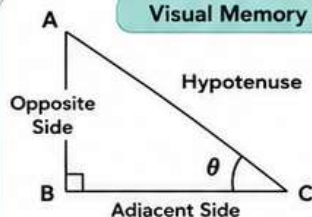
Smart Revision Tips & Common Mistakes

- **KEY FINDING:** Remember "SOH CAH TOA" for sin, cos, tan.
- **SUPPORTING FACT:** All ratios depend on the angle θ .
- **Common Mistakes:**
 - Interchanging sin, cos, tan.
 - Writing value without considering the quadrant (only valid for 0° to 90° here).
 - Forgetting "Not defined" when denominator is zero.
 - Always simplify $\sqrt{2}$, $\sqrt{3}$ values.

Board Exam Focus & Question Hotspots

- 1 **DEFINE:** Trigonometric ratios in a right-angled triangle.
- 2 **TABLE:** Remember values of trigonometric ratios for standard angles.
- 3 **IDENTITIES:** Apply fundamental identities in problems.
- 4 **APPLICATION:** Solve problems on heights & distances using trigonometry.
- 5 **EXAMPLE:** Find unknown sides/angles using trigonometric ratios.

Visual Memory Aid



SOH - CAH - TOA

$$\begin{aligned}\sin \theta &= \frac{O}{H} \\ \cos \theta &= \frac{A}{H} \\ \tan \theta &= \frac{O}{A}\end{aligned}$$

Where,
O = Opposite Side
A = Adjacent Side
H = Hypotenuse

Standard Values to Remember

$\sin 0^\circ = 0$	$\sin 30^\circ = \frac{1}{2}$	$\sin 45^\circ = \frac{1}{\sqrt{2}}$	$\sin 60^\circ = \frac{\sqrt{3}}{2}$	$\sin 90^\circ = 1$
$\cos 0^\circ = 1$	$\cos 30^\circ = \frac{\sqrt{3}}{2}$	$\cos 45^\circ = \frac{1}{\sqrt{2}}$	$\cos 60^\circ = \frac{1}{2}$	$\cos 90^\circ = 0$
$\tan 0^\circ = 0$	$\tan 30^\circ = \frac{1}{\sqrt{3}}$	$\tan 45^\circ = 1$	$\tan 60^\circ = \sqrt{3}$	$\tan 90^\circ =$ Not defined

Quick Formulas

- ✓ Use SOH CAH TOA to remember the ratios.
- ✓ Use identities to simplify expressions.
- ✓ Use the trigonometric ratios table for quick values.
- ✓ Always check the quadrant (0° to 90°).

Tips to Remember

- 💡 Draw the right-angled triangle first.
- 💡 Identify the given angle and side.
- 💡 Choose the correct ratio.
- 💡 Memorize standard values.
- 💡 Practice regularly.

Common Mistakes

- ⚠ Using wrong trigonometric ratio.
- ⚠ Forgetting "Not defined" cases.
- ⚠ Confusing opposite and adjacent sides.
- ⚠ Not simplifying $\sqrt{2}$ and $\sqrt{3}$ values.



KEY TAKEAWAY: Trigonometry helps us solve real-life problems using right-angled triangles and trigonometric ratios. Practice + Concepts = Success!