Class 10 Mathematics – Chapter: Introduction to Trigonometry

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1. Introduction

Trigonometry deals with the relationship between the angles and sides of right-angled triangles.

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2. Trigonometric Ratios

For a right-angled triangle with angle θ\thetaθ:

- Opposite side: side opposite to θ\thetaθ
- Adjacent side: side next to θ\thetaθ (other than hypotenuse)
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Hypotenuse: longest side opposite right angle

The primary trigonometric ratios are:

$$\sin \theta = \frac{\text{Opposite}}{\text{Hypotenuse}}, \quad \cos \theta = \frac{\text{Adjacent}}{\text{Hypotenuse}}, \quad \tan \theta = \frac{\text{Opposite}}{\text{Adjacent}}$$
sinθ=HypotenuseOpposite,cosθ=HypotenuseAdjacent,tanθ=AdjacentOpposite

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3. Reciprocal Ratios

$$\csc \theta = \frac{1}{\sin \theta}, \quad \sec \theta = \frac{1}{\cos \theta}, \quad \cot \theta = \frac{1}{\tan \theta}$$
cscθ=sinθ1,secθ=cosθ1,cotθ=tanθ1

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4. Important Identities

$$\sin^2 \theta + \cos^2 \theta = 1$$
sin2θ+cos2θ=1

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5. Applications

- Finding sides or angles in right-angled triangles.
- Used in surveying, navigation, architecture, and physics.

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6. Important Exam Tips

- Remember definitions and formulas clearly.
- Practice problems with different angles.

- Use a calculator for values of trigonometric ratios if allowed.
- Draw diagrams for better understanding.