

Saitechinfo NEET-JEE Academy

Here is a concise overview of the key points in the topic of **Applications of Trigonometry** for Class 10 Mathematics:

Key Concepts and Applications

1. Angles of Elevation and Depression:

- **Angle of Elevation:** The angle between the horizontal line and the line of sight when looking up at an object.
- **Angle of Depression:** The angle between the horizontal line and the line of sight when looking down at an object.

2. Use of Right Triangles:

- Trigonometry applies to right-angled triangles where one angle is 90° .
- The basic trigonometric ratios — sine (sin), cosine (cos), and tangent (tan) — help calculate distances or heights when certain other values are known.

3. Trigonometric Ratios for Heights and Distances:

- **Sine** (sin) = Opposite side / Hypotenuse
- **Cosine** (cos) = Adjacent side / Hypotenuse
- **Tangent** (tan) = Opposite side / Adjacent side

4. Application Steps:

- Identify known values, such as the angle of elevation or depression, and either a distance or height.
- Use trigonometric ratios to set up equations based on these values to find the unknown distances or heights.

5. Common Applications in Real Life:

- Calculating the height of a building or tower by measuring the distance from the base and using the angle of elevation.
- Estimating the distance of an object from a point by using the angle of depression, like finding the distance of a boat from a cliff.
- Determining the height of mountains, the width of rivers, or even the height of an airplane above the ground.

6. Problem-Solving Tips:

- Draw a diagram to visualize the scenario.
- Label all known quantities and angles.
- Choose the appropriate trigonometric ratio based on the given data and solve for the unknown.

Trigonometry Applications - additional references

