

Heights and Distances

Chapter 22: Heights and Distances · Topic 1

Key Concept

The angle of elevation is the angle looking upward from a horizontal line to an object, used to calculate heights of tall structures.

The angle of depression is the angle looking downward from a horizontal line, used when observing objects below eye level.

Using trigonometric ratios (usually tangent) with a known distance and angle, we can calculate unknown heights or distances.

This application of trigonometry is widely used in surveying, navigation, architecture, and various real-world measurement scenarios.

Quick Revision Notes

- Angle of elevation: looking upward from horizontal.
- Used to calculate heights of tall structures.
- Angle of depression: looking downward from horizontal.
- Used for objects below eye level.
- Tangent ratio commonly used with known distance and angle.
- This calculates unknown heights or distances.
- Applications: surveying, navigation, architecture.
- This is a practical trigonometry application.

Practice Questions

- 1 Calculate a building's height given an elevation angle and distance.
- 2 Discuss the difference between elevation and depression angles.
- 3 Solve a problem using the angle of depression.
- 4 Research how surveyors use these concepts.
- 5 Draw a diagram showing angle of elevation.
- 6 Explain heights and distances applications in your own words.