

Mathematics - IX

Chapter 9 - Application of Trigonometry

(Heights & Distances)

Introduction:

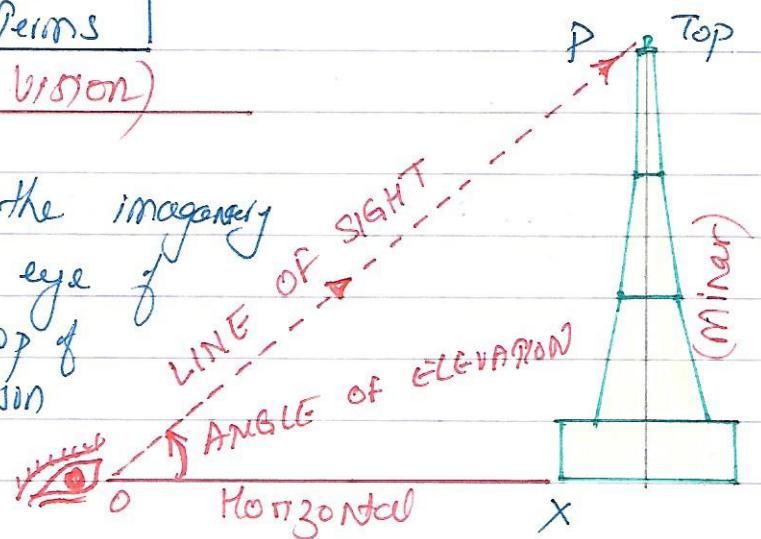
Ancient astronomers have used trigonometry to calculate the distance from the earth to the stars. Maps are with the help of the knowledge of trigonometry. Trigonometry is used in everyday life around us.

Sometimes it may not be easily possible to measure with a measuring tape the height of a big tree, apartment, tower, the width of a river and the distance between a ship and the light house. We can determine these with the knowledge of trigonometry.

Basic Terms

(a) Line of Sight (Line of vision)

The line of sight is the imaginary line drawn from the eye of the observer to the top of a minar, when a person is looking at the top of the minar.

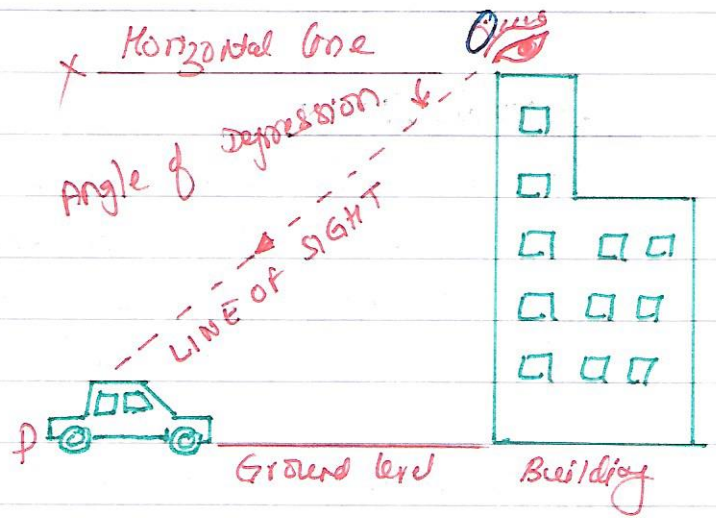


(b) Angle of Elevation

Let P be the position of an object above the horizontal line OX , where O is the position of the eye of an observer looking upward at the object. Then, $\angle XOP$ is called the angle of elevation.

(c) Angle of Depression

Let P be the position of an object below the horizontal line OX , where O is the position of the eye of an observer looking downward at the object, then $\angle XOP$ is called the angle of depression.

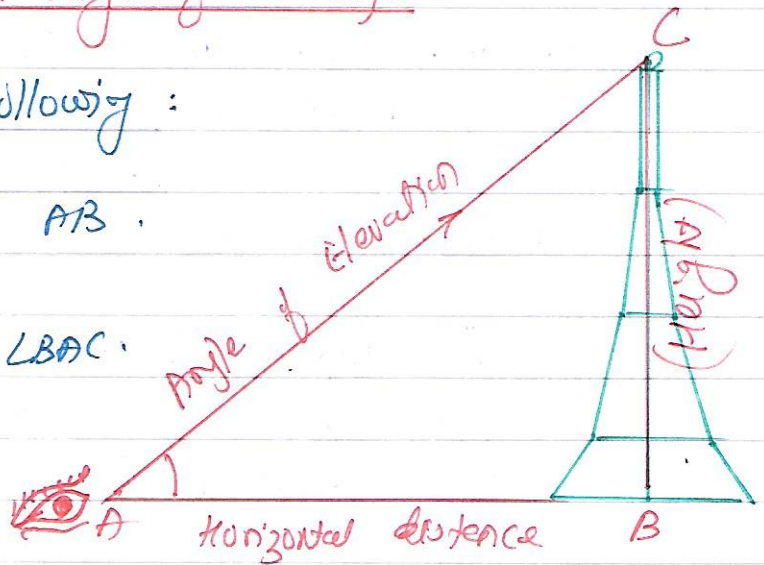


d) Working rule to find the height of the object

We should know the following:

Step 1: Horizontal distance AB .

Step 2: Angle of Elevation $\angle BAC$.



A Theodolite is

on the Principal measuring angles

Surveying instrument, which is used of trigonometry, is used for with a rotating telescope.