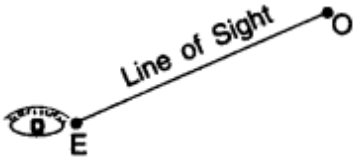


CBSE Class 10 Maths Notes Chapter 9 Some Applications of Trigonometry

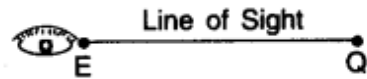
Line of Sight

When an observer looks from a point E (eye) at an object O then the straight line EO between the eye E and the object O is called the line of sight.



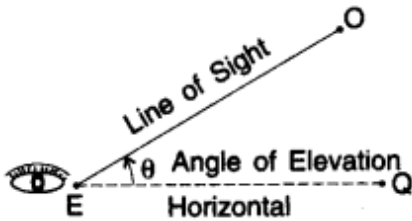
Horizontal

When an observer looks from a point E (eye) to another point Q which is horizontal to E, then the straight line, EQ between E and Q is called the horizontal line.



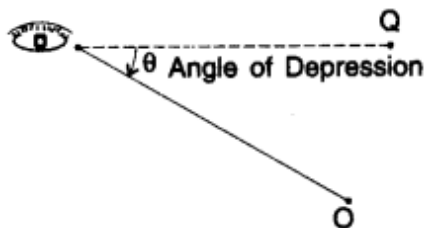
Angle of Elevation

When the eye is below the object, then the observer has to look up from the point E to the object O. The measure of this rotation (angle θ) from the horizontal line is called the angle of elevation.



Angle of Depression

When the eye is above the object, then the observer has to look down from the point E to the object. The horizontal line is now parallel to the ground. The measure of this rotation (angle θ) from the horizontal line is called the angle of depression.



How to convert the above figure into the right triangle.

Case I: Angle of Elevation is known

Draw OX perpendicular to EQ.

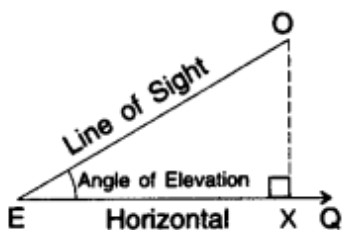
Now $\angle OXE = 90^\circ$

$\triangle OXE$ is a rt. \triangle , where

OE = hypotenuse

OX = opposite side (Perpendicular)

EX = adjacent side (Base)



Case II: Angle of Depression is known

(i) Draw OQ' parallel to EQ

(ii) Draw perpendicular EX on OQ'.

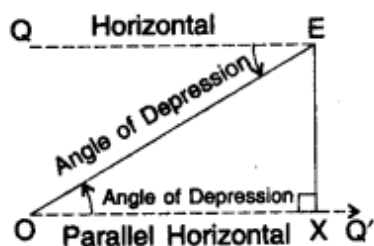
(iii) Now $\angle QEO = \angle EOX =$ Interior alternate angles

$\triangle EXO$ is an rt. \triangle . where

EO = hypotenuse

OX = adjacent side (base)

EX = opposite side (Perpendicular)



- Choose a trigonometric ratio in such a way that it considers the known side and the side that you wish to calculate.
- The eye is always considered at ground level unless the problem specifically gives the height of the observer.

The object is always considered as a point.

Some **P**eople **H**ave

$$\sin \theta = \frac{\textit{Perpendicular}}{\textit{Hypotenuse}}$$

Curly **B**lack **H**air

$$\cos \theta = \frac{\textit{Base}}{\textit{Hypotenuse}}$$

Turning **P**ermanent **B**lack.

$$\tan \theta = \frac{\textit{Perpendicular}}{\textit{Base}}$$