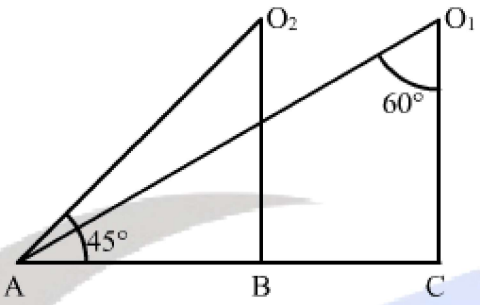
1. In Figure, what are the angles of depression from the observing positions O_1 and O_2 of the object at A ?



2. The tops of two towers of height x and y, standing on level ground, subtend angles of 30° and 60° respectively at the centre of the line joining their feet, then find x: y. [CBSE 2015]

3. The angle of elevation of the top of a tower at a point on the ground is 30°. What will be the angle of elevation, if the height of the tower is tripled? [CBSE 2015]

4. AB is a pole of height $6\,m$ standing at a point B and C D is a ladder inclined at angle of 60° to the horizontal and reaches upto a point D of pole. If $AD = 2.54\,m$, find the length of the ladder. (Use $\sqrt{3} = 1.73$) [CBSE 2016]

5. An observer, $1.7\,m$ tall, is $20\sqrt{3}\,m$ away from a tower. The angle of elevation from the eye of an observer to the top of tower is 30°. Find the height of the tower. [CBSE 2016]

6. The shadow of a tower standing on a level ground is found to be $40\,m$ longer when the Sun's altitude is 30° than when it was 60°. Find the height of the tower. (Given $\sqrt{3} = 1.732$) (CBSE 2019)

7. As observed from the top of a $100\,m$ high light house from the sea-level, the angles of depression of two ships are 30° and 45°. If one ship is exactly behind the other on the same side of the light house, then find the distance between the two ships. (Use $\sqrt{3} = 1.732$) (CBSE 2018)

8. The angle of elevation of an aeroplane from a point A on the ground is 600°. After a flight of 30 seconds, the angle of elevation changes to 30°. If the plane is flying at a constant height of $3600\sqrt{3}$ meters, then find the speed of the aeroplane.
(CBSE 2019)

9. A ladder 15 metres long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, find the height of the wall. (NCERT EXEMPLAR)

10. A vertical tower stands on a horizontal plane and is surmounted by a vertical flag-staff. At a point on the plane 70 metres away from the tower, an observer notices that the angles of elevation of the top and bottom of the flag-staff are respectively 60° and 45°. Find the height of the flag-staff and that of the tower. (CBSE 2014)

11. Two points A and B are on the same side of a tower and in the same straight line with its base. The angles of depression of these points from the top of the tower are 60° and 45° respectively. If the height of the tower is $15\,m$, then find the distance between these points. (CBSE 2017)

12. The angle of elevation of the top of the building from the foot of the tower is 30° and the angle of the top of the tower from the foot of the building is 60°. If the tower is $50\,m$ high, find the height of the building. (NCERT, CBSE 2012, 15, 17)

13. From a point on a bridge across a river the angles of depression of the banks on opposite side of the river are 30° and 45° respectively. If bridge is at the height of $30\,m$ from the banks, find the width of the river. (NCERT)

14. The angle of elevation of the top of a hill at the foot of a tower is 60° and the angle of elevation of the top of the tower from the foot of the hill is 30°. If the tower is $50\,m$ high, what is the height of the hill? (CBSE 2006C, 13)

15. Two boats approach a light house in mid-sea from opposite directions. The angles of elevation of the top of the light house from two boats are 30° and 45° respectively. If the distance between two boats is $100\,m$, find the height of the light house.
(CBSE 2014)

16. At a point $A, 20\,m$ above the level of water in a lake, the angle of elevation of a cloud is 30°. The angle of depression of the reflection of the cloud in the lake, at A is 60°. Find the distance of the cloud from A. (CBSE 2015)

17. Two ships are approaching a lighthouse from opposite directions. The angles of depression of the two ships from the top of the lighthouse are 30° and 45°. If the distance between the two ships is $100\,m$, then find the height of the lighthouse. (Use $\sqrt{3} = 1.732$) (CBSE 2014)

18. The angles of depression of the top and bottom of a 12 m tall building from the top of multi-storey building are 30° and 60°, respectively. Find the height of the multi-storey building. (CBSE 2013)

19. From an aeroplane vertically above a straight horizontal plane, the angles of depression of two consecutive kilometre stones on the opposite sides of the aeroplane are found to be α and β. Show that the height of the aeroplane is $\frac{\tan\alpha \cdot \tan\beta}{\tan\alpha + \tan\beta}$.

(CBSE 2004)

20. A man standing on the deck of a ship, which is $10\,m$ above the water level, observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill as 30°. Calculate the distance of the hill from the ship and the height of the hill. (CBSE 2004, 2005, 2006)