

Class 10 Application of Trigonometry [Height and Distance] Test paper-01

Q1 A ladder 15 m 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.

Answer: $7.5\sqrt{3}$

Q 2 A pole 12 m high casts a shadow $4\sqrt{3}$ m long on the ground. Find the angle of elevation .

Answer: 60°

Q 3 The angle of elevation of the top of a tower from a point on the ground is 30° if on walking 30m towards the tower, the angle of elevation becomes 60° . Find the height of the tower.

Answer: $15\sqrt{3}$

Q 4 An observer 1.5m tall is 20.5m away from a tower 22m high. Determine the angle of elevation of the top of the tower from the eye of the observer.

Answer: 45°

Q 5 An aero plane when flying at a height of 5000m from the ground passes vertically above another aero plane at an instant when the angles of the elevation of the two planes from the same point on the ground are 60° and 45° respectively. Find the vertical distance between the aero planes at the instant.

Answer: 2116.5m

Q 6 At a point on level ground, the angle of elevation of a vertical tower is found to be such that its tangent is $\frac{5}{12}$. On walking 192m towards the tower, the tangent of the angle of elevation is $\frac{3}{4}$. Find the height of the tower.

Answer: 180m

Q 7 The angle of elevation of the aero plane from a point on the ground is 60° . After 15 seconds flight, the angle of elevation changes to 30° . If the aero plane is flying at a height of $1500\sqrt{3}$ m . Find the speed of the plane

Answer: 200 m/s

Q 8 A man standing on the deck of a ship, which is 16m above the water level, observe the angle of elevation of the top of cliff as 60° and the angle of depression of the base of the cliff as 30° . Calculate the distance of the cliff from the ship and the height of the cliff.

Answer: ($16\sqrt{3}$ m, $h = 64$ m)

Q 9 If the angle of elevation of a cloud from a point h meters above a lake is α and the angle of depression of its reflection in the lake is β . Prove that the distance of the cloud from the point of observation is $\frac{2h \operatorname{Sec} \alpha}{\tan \beta - \tan \alpha}$

Q 10 A Vertical tower stands on a horizontal plane and is surmounted by a vertical flag staff of height h . At a point on the plane the angle of elevation of the bottom of flagstaff is α and that of the top of the flagstaff is β . Prove that the height of the tower is $\frac{(h \tan \alpha)}{\tan \beta - \tan \alpha}$

Q 11 From a point on the ground the angle of elevation of the bottom and top of a water tank kept at the top of 20m high tower are 45° and 60° . Find the height of the water tank.

Q 12 The horizontal distance between two towers is 140m and the angle of elevation of the top of the first tower when seen from the second tower is 30° . If the height of the second tower is 60m, find the height of the first tower.

Q 13. Upper part of a tree broken over by the wind makes an angle of 45° with the ground, and the horizontal distance from the foot of the tree to the point where the top of the tree touches the ground is 12m. Find the height of the tree before it was broken.

Q 14. From the top of a 7m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of the foot of the tower is 30° . Find the height of the tower.

Answer: 28m

Q 15. The angle of elevation of an areoplane from a point on the ground is 45° . After flight for 15 seconds the elevation changes to 30° . If the areoplane is flying at a height of 3000 m. Find the speed of the areoplane.