Applications of Trigonometry

Angle of Depression Exercise

- Q.1 A man on the deck of a ship is 16m above water level. He observes that the angle of elevation of the top of a cliff is 45^o and the angle of depression of the base is 30^o.
 Calculate the distance of the cliff from the ship and the height of the cliff.
- Q.2 From the top of a cliff 50 m high, the angles of depression of the top and bottom of a tower are observed to be 30° and 45° respectively. Find the height of the tower.
- Q.3 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 50m high, what is the height of the hill ?
- Q.4 A pole 5 m high is fixed on the top of a tower. The angle of elevation of the top of the pole observed from a point A on the ground is 60^o and the angle of depression of the point A from the top of the tower is 45^o. Find the height of the tower.
- Q.5 A bridge across a river makes an angle of 45° with the river bank. If the length of the bridge across the river is 200 metres, what is the breadth of the river?



CLASS 10

Q.6 The upper part of a tree broken by wind, falls to the ground without being detached.The top of the broken part touches the ground at an angle of 30° at a point 8 m from the foot of the tree. Calculate

(i) the height at which the tree is broken.

(ii) the original height of the tree.

- Q.7 As observed from the top of a 75 m high lighthouse 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 lighthouse, find the distance between the two ships.
- Q.8 From the top of a cliff 150 m high, the angles of depression of two boats are 60° and 30°. Find the distance between the boats, if the boats are
 - (i) on the same side of cliff.
 - (ii) on the opposite sides of the cliff.
- Q.9 In the adjoining figure, from the top of a building AB, 60 metres high, the angles of depression of the top and the bottom of a vertical lamp post CD are observed to be 30° and 60° respectively.
 - Find (i) the horizontal distance between AB and CD.

(ii) the height of the lamp post CD.



Q.10 The angles of depression of the top and the bottom of an 8 m tall building from the top of a multi-storied building are 30° and 45° respectively. Find the height of the multi-storied building and the distance between the two buildings.

ANSWER KEY

1.	27.712m; 43.712 m	
2.	21.13 m	
3.	150 m	
4.	6.83 m	
5.	141.4 m	
6.	(i) $\frac{8}{3}\sqrt{3}$ m;	(ii) 8√3m
7.	50/3 m	
8.	(i) 173.2 m ;	(ii) 346.4 m
9.	(i) 34.64 m ;	(ii) 40 m
10.	$4(3+\sqrt{3})$ m ; $4(3+\sqrt{3})$	