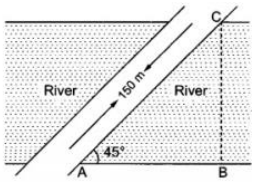
Ch-9 Some Applications of Trigonometry

1. If the angle of depression of an object from a 75 m high tower is 30^o, then what is the distance of the object from the tower?
2. 2 men are on opposite sides of a tower. They observe the angles of elevation of the top of the tower as 30^o and 45^o respectively. If the height of the tower is 100 m, then what is the distance between them?
3. If the ratio between the height and the length of the shadow of a pole is $\sqrt{3}$: 1, then what is the sun's altitude.
4. The angle of elevation of the top of a tower from a point on the ground at a distance of 30 m from its foot is 30^o. What is the height of the tower.
5. The angle of elevation of the top of a tower from a point 20 m away from the base is 45^o. Find the height of the tower.
6. Find the angle of elevation of the sun (sun's altitude) when the length of the shadow of a vertical pole is equal to its height.
7. A circus artist is climbing a 20 m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole if the angle made by the rope with the ground level is 30^o.
8. Form the top of a tower 50 m high the angles of depression of the top and bottom of a pole are observed to be 45^o and 60^o respectively. Find the height of the pole.
9. A bridge across a river makes an angle of 45^o with the river bank as shown in fig. If the length of the bridge across the river is 150 m, what is the width of the river?



10. If two towers of height h_1 and h_2 subtends angles of 60° and 30° respectively at the mid points of line joining their feet, find h1 : h2.
11. Find the length of kite string flying at 100 m above the ground with the elevation of 60^o.
12. A window in a building is at height of 10 m from the ground. The angle of depression of a point P on the ground from the window is 30^o. The angle of elevation of the top of the building from the point P is 60^o. Find the height of the building.
13. From the top of a tower of height 50 m, the angles of depression of the top and bottom of a pole are 30^o and 45^o respectively. Find –
    a. How far the pole is from the bottom of the tower?, and
    b. the height of the pole. (Use $\sqrt{3}$ = 1.732).
14. A path separates two walls. A ladder leaning against one wall rests at a point on the path. It reaches a height of 90 m on the wall and makes an angle of 60^o with the ground. If while resting at the same point on the path, it were made to lean against the other wall, it would have made an angle of 45^o with the ground. Find the height it would have reached on the second wall.
15. If a hexagon ABCDEF circumscribe a circle, prove that AB + CD + EF = BC + DE + FA.
16. A boy is standing on the ground and flying a kite with 100 m of string at an elevation of 30^o. Another boy is standing on the roof of a 20 m high building and is flying his kite at an elevation of 45^0. Both the boys are on opposite sides of both the kites. Find the length of the string that the second boy must have so that the two kites meet.

17. From the top of a hill, the angles of depression of two consecutive kilometre stones due east are found to be 45^o and 30^o respectively. Find the height of the hill.
18. An aeroplane is flying at a height of 300 m above the ground. Flying at this height the angle of depression from the aeroplane of two points on both banks of a river are 45^o and 30^o respectively. Find the width of the river.
19. The angle of elevation of a cloud from a point 60 m above a lake is 30^o and the angle of depression of the reflection of cloud in the lake is 60^o. Find the height of the cloud.