**Class – X Chapter – 4 Some Application of Trigonometry**

1. The angle of elevation of the top of a building from the foot of the tower is 30o and the angle of elevation of the top of the tower from the foot of the building is 60o. If the tower is 50m high, then find the height of the building.
2. A pole cast a shadow of length 2$\sqrt{3}$m on the ground, when the Sun’s elevation is 60o. Find the height of the pole.
3. Find the length of the shadow on the ground of a pole of height 6m when the angle of elevation $Ɵ$ of the Sun is such that tan$Ɵ$ *= ¾.*
4. If the height and length of the shadow of a man are the same, then find the angle of elevation of the Sun.
5. A tower stands vertically on the ground. From a point on the ground which is 20m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60o. Find the height of the tower.
6. A tower stands near an airport. The angle of elevation $Ɵ$ of the tower from a point on the ground is such that its tangent is 5/12. Find the height of the tower, if the distance of the observer from the tower is 120m.
7. A ladder, leaning against a wall, makes an angle 0f 60o with the horizontal. If the foot of the ladder is 2.5m away from the wall, then find the length of the ladder.
8. A ladder 15m long just reaches the top of a vertical wall. If the ladder makes an angle of 60o with the wall, then find the height of the wall.
9. The angle of depression of car parked on the road from the top of a 150m high tower is 30o. Find the distance of the car from the tower.
10. The angle of depression of car standing on the ground, from the top of a 75m high tower is 30o. Find the distance of the car from the base of the tower.
11. If two poles of heights X m and Y m subtend angles of 30o and 60o respectively at the centre of a line joining their feet, then find the ratio of X: Y.
12. A peacock is sitting on the top of a tree. It observes a serpent on the ground making an angle of depression of 30o. The peacock catches the serpent in 12 sec. with the speed of 300m/min. What is the height of the tree?
13. A person standing on the bank of a river observes that the angle of elevation of the top of tree standing on the opposite bank is 60o. When he moves 40m away from the bank, he finds the angle of elevation to be 30o. Find the height of the tree and the width of the river. (Take, $\sqrt{3}$ = 1.732)
14. From the top of a hill, the angle of depression of two consecutive kilometre stones due East are found to be 30o and 45o. Find the height of the hill.
15. Two ships are there in the sea on either side of a lighthouse in such a way that the ships and the base of the lighthouse are in the same straight line. The angle of depression of two ships as observed from the top of the lighthouse are 60o and 45o. If the height of the lighthouse is 200m, then find the distance between the two ships.
16. From the top of a building 60m high, the angle of depression of the top and bottom of a tower are observed to be 45o and 60o respectively. Then, find the height of the tower. (Take, $\sqrt{3}$ = 1.732)
17. A man standing on the deck of a ship, which is 10m above the water level. He observes the angle of elevation of the top of a hill is 60o and the angle of depression of the base of the hill is 30o. Calculate the distance of the hill from the ship and height of the hill.
18. The angle of elevation of an aeroplane from a point on the ground is 45o. After flying for 15 sec, the angle of elevation changes to 30o. If the aeroplane is flying at a constant height of 2500m, then find the average speed of the aeroplane.
19. The angle of elevation of the top of a tower at a distance of 120m from a point A on the ground is 45o. If the angle of elevation of the top of a flagstaff fixed at the top of the tower, at A is 60o, then find the height of the flagstaff. (Take, $\sqrt{3}$ = 1.732)
20. The angle of elevation of the top of a building from the foot of the tower is 30o and the angle of elevation of the top of the tower from the foot of the building is 60o. If the tower is 60m high, then find the height of the building.

**ANSWERS**

1. 16$\frac{2}{3}$m
2. 6m
3. 8m
4. 45o
5. 20$\sqrt{3}$m
6. 50m
7. 5m
8. 7.5m
9. 150$\sqrt{3}$m
10. 75$\sqrt{3}$m
11. 1:3
12. 30m
13. Height of tree is 34.64m & width of river is 20m
14. $\frac{\sqrt{3+1}}{2}$ km
15. 315.48m
16. 25.36m
17. 10$\sqrt{3}$m & 40m
18. 439.2 km/h
19. 87.6m
20. 20m