Class 10 Application of Trigonometry [Height and Distance] Test paper-02

1. The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 9.5 meter away from the wall. Find the length of the ladder.

Answer: 19m

2. If the length of the shadow cast by a pole be times the length of the pole, find the angle of elevation of the sun.

Answer: 30°

3. A tree is broken by the wind. The top stuck the ground at an angle of 30° and at a distance of 30 m from the root. Find the total height of the tree.

4. A circus artist is climbing from the ground along a rope stretched from the top of vertical pole and tied at the ground level 30°. Calculate the distance covered by the artist in climbing to the top of the pole.

Answer: 24 m

5. A person standing on the bank of a river observes that the angle of elevation of the top of a tree standing on the opposite bank is 60°. When he was 40 m away from the bank he finds that the angle of elevation to be 30°. Find: (i) The height of the tee , (ii) The width of the river, correct up to two decimal places.

Answer: (i) 34.64m (ii) 20m

6. An aeroplane when flying at a height of 4000 m from the ground passes vertically above another aeroplane at an instant when the angles of elevations of two planes to a same point on the ground are 60° and 45° respectively. Find the vertical distance between the areoplane at that at that instant.

Answer: 1693.34 m

7. The angle of elevation of the top of the hill at the foot of a tower is 60° and the angle of elevation of the top of tower from the foot of hill is 30°. If the tower is 50 m high, what is the height of the hill..

Answer: 150 m

8. There is a small island in the middle of a 100 m wide river and a tall tree stands on the island. Let P and Q be points directly opposite each other on the two banks, and in line with the tree. If the angles of elevation of the top the tree from P and Q respectively are 30° and 45°, find the height of the tree.

9. Two pillars of equal heights are on either sides of a roadway, which is 150 m wide. The angles of elevation of the top of pillars are 60° and 30° at a point on the roadway between the pillars. Find the position of the point between the pillars and the height of each pillar.

Answer: 64.95m

10. At the foot of mountain, the elevation of its peak is 45°. After ascending 1 km towards the mountain up an inclination of 30°, the elevation changes to 60°. Find the height of mountain.

Answer: 1.366 km

11. From the top of the building 15m high, the angle of elevation of the top of a tower is found to be 30°. From the bottom of the same building, the angle of elevation of the top of tower is found to be 30°. Find the height of the tower and the distance between the tower and the building.

Answer: 22.5m, 12.975m

12. A fire in a building B is reported on the telephone to two fire stations P and Q, 10 km apart from each other on a straight road. P observes that the fire is at angle of 60° to the road and Q observe that it is an angle of 45° to the road. Which station should send its team and how much this team has to travel?

Answer: P, 7.32km

13. The shadow of a flagstaff is three times as long as the shadow of the flagstaff when the sunrays meet the ground at an angle of 60°. Find the angle between the sunrays and the ground at the time of long shadow.

Answer: 30°

14.From a point in the cricket ground, the angle of elevation of a vertical tower is found to be θ at a distance of 200m from the tower. On walking 125 m towards the tower the angle of elevation becomes 2θ. Find the height of tower. (100m)

15. A boy standing on the ground and flying a kite with 75 m of string at an elevation of 45°. Another boy is standing on the roof of 25 m high building and is flying his kite at an elevation of 30°. Both the boys are on the opposite side of the two kites. Find the length of the string that the second boy must have, so that the kites meet.(56.05 m)

16. As observed from the top of light house, 100m high above the sea level, the angle of depression of a ship, sailing directly towards it, changes from 30° to 45°. Determine the distance traveled by the ship during the period of observation. Answer: 73.2m

17. An aeroplane at an altitude of 200 m observes the angle of depression of opposite points on two banks of a river to be 45° and 60°. Find the width of the river. (315.4m)

18. From the top of a cliff 150m 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 side of cliff. (ii) on the opposite sides of the cliff.

Answer: (i) 173.2m (ii) 346.4m]

19. A man standing on the deck of a ship, which is 10m above the water level, observe 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.

Answer: 17.3m, 40m].

20. The angle of elevation and depression of the top and the bottom of a light house from the top of the building, 60m high, are 30° and 60° respectively. Find (i) The difference between the heights of the light house and the building (ii) Distance between the light house and the building.

Answer: (i) 20m, (ii) 34.64m

21.A pole 5m high is fixed on the top of a tower. The angle of elevation of the top of the pole observed from Point 'A' on the ground is 60° and the angle of depression of the point 'A' from the top of tower is 45°. Find the height of tower.

Answer: 6.83m

22. Man on a cliff observes a boat at an angle of depression of 30° which is approaching the shore to the point immediately beneath the observer with a uniform speed. Six minutes later, the angle of depression of the boat is found to be 60°. Find the time taken by the boat to reach the shore.

Answer: 9 minutes

23. A man on the top of a vertical observation tower observes a car moving at a uniform speed coming directly towards it. If it takes 12 minutes for the angle of depression to change from 30° to 45°, how soon after this will the car reach the observation tower. Give your answer correct to nearest seconds.

Answer: 16 min. 24 sec