QB365

Important Questions - Some Applications of Trigonometry

10th Standard CBSE

Maths

Reg.No. : | | | | | | |

Time : 01:00:00 Hrs

Total Marks : 50

Section - A

1) The height of a tower is 10m.The height of its shadow when sun's altitude is 45^0 , is **1**

2) A tower stands vertically on the ground.From a point on the ground, which is 100m away from the foot of the tower, the angle of elevation of the top of the tower is found to be 60^0, then the height of the tower is **1**

3) The length of the shadow of a tree 10 high, when the sun's elevation is 30^0 , is **1**

4) If height of a tower and distance of the point of observation from its foot, both are increased by 50%, then angle of elevation of its top..... **1**

5) If the horizontal distance between the two trees 20m and 28m high is 15m, then distance between their tops is..... **1**

6) At some time of the day the length of the shadow of a tower is equal to its height. Find the sun's altitude at that time. **1**

7) The height of the lighthouse is h m. The angles of depression of two ships on opposite sides of this lighthouse are observed to be $30^\circ \ and \ 45^\circ$. Then, find the distance between the two ships. **1**

8) Find the length of the string of a kite flying at 100 m above the ground with the elevation of 60^o . **1**

9) If the angle of elevation of top of a tower from a point at a distance of 100 m from its foot is 60^o . then find the height of the tower. **1**

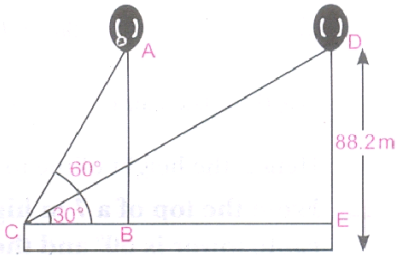
10) The angle of elevation of the top of a building 50m high, from a point on the ground is 45^0 .Find the distance of the point from foot of the building. **1**

Section - B

11) The angle of elevation of the top of a tower from a point on the ground, which is 30 m away from the foot of the tower is 30^o . Find the height of the tower. **2**

12) The angle of elevation of the top of a building from the foot of a tower is 30^o and the angle of elevation of the top of the tower from the foot of the building is 60^o. If the tower is 50 m high, find the height of the building. **2**

13) A 1.2 m tall girl spots a balloon moving with the wind in a horizontal line at a height of 88.2 m from the ground. The angle of elevation of the balloon from the eyes of the girl at any instant is 60^o . After sometime, the angle of elevation reduces to 30^o (see figure). Find the distance travelled by the balloon during the interval. **2**



14) A ladder, leaning against a wall, makes an angle of 60^o with the horizontal. If the foot of the ladder is 2.5 m away from the wall. find the length of the ladder. **2**

15) The angle of elevation of an aeroplane from a point A on the ground is 60^o . After a flight of 30 seconds, the angle of elevation changes to 30^o . If the plane is flying at a constant height of $3600\sqrt{3}$ m, find the speed in km/hr of the plane. **2**

16) The angle of elevation of the top of a tower from a point A on the ground is 30^o. On moving a distance of 20 meters towards the foot of the tower to a point B, the angle of elevation increases to 60^o . Find the height of the tower and distance of the tower from the point A. $(\sqrt{3} = 1.732)$ **2**

17) An aeroplane is at an altitude of 1200 m. Find that two ships are sailing towards it in the same direction. The angles of depression of the ships as observed from the aeroplane are 60° and 30° , respectively. Find the distance between both ships. **2**

18) A highway leads to the foot of 300 m high tower. An observatory is set at the top of the tower. It sees a car moving towards it with an angle of depression becomes 60°. **2**

(i) Find the distance travelled by the car during this time.

(ii) How this observatory is helpful to regulate the traffic on the highway?

19) A bridge on a river makes an angle of 45° with its edge. If the length along the bridge from one edge to the other is 150 m, then find the width of the river. **2**

20) There is a flag staff on a tower of height 20 m. At a point on the ground, the angles of elevation of the foot and top of the ground, the angles of elevation of the foot and top of the flag are 45° and 60° respectively. Find the height of the flag staff. **2**

Section - C

21) From the top of a building 60 m high, the angles of depression of the top and bottom of a vertical lamp post are observed to be 30^o and 60^o respectively. Find **5**

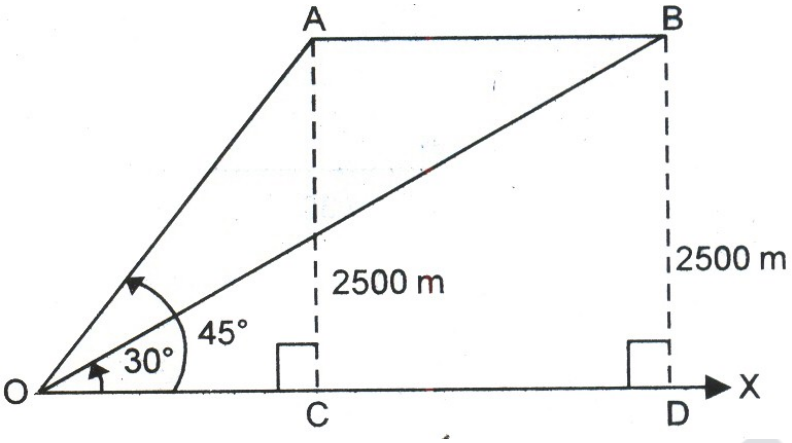
(i) The horizontal distance between the building and the lamp post.

(ii) The height of the lamp post, $\sqrt{3} = 1.732$.

22) The pilot of an aircraft flying horizontally at a speed of 1200 km/hr. observes that the angle of depression of a point on the ground changes from 30^o to 45^o in 15 seconds. Find the height at which the aircraft is flying. **5**

23) A tower subtends an angle α at a point A in the plane of its base and the angle of depression of the foot of the tower at a point b metres just above A is β. Prove that the height of tower is b tan $\alpha \cot \beta$. **5**

24) The angle of elevation of an aeroplane from a point on the ground is 45^0.After flying for 15 seconds, the angle of elevation changes to 30^0.If the aeroplane is flying at a constant height of 2500m, find the average speed of the aeroplane.



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