OUR OWN HIGH SCHOOL, AL WARQA'A, DUBAI

GRADE: X – SOME APPLICATIONS OF TRIGONOMETRY

ASSIGNMENT : 1

1. A person observed the angle of elevation of the top of a tower to be 30°. He walked 50 m towards the foot of the tower along the level ground and found the angle of elevation of the top of the tower to be 60^0. Find the height of the tower.(Ans: 43.25 m)

2. The angle of elevation of the top of a tower PQ from a point X on the ground is 60^0. At a point Y, 40 m vertically above X, the angle of elevation of the top is 45^0. Calculate the height of the tower. (Ans: 94.6 m)

3. A person observes that the angle of elevation of an aeroplane flying horizontally at a height of 1 km above the ground and moving away from him is 60^0. After 10 seconds, its angle of elevation is found to be 30^0. Find the speed of the aeroplane in kilometers per hour. (Ans: 415.19 km/h)

4. A boy is standing on the ground and flying a kite with a string of length 150 m, at an angle of elevation of 30^0. Another boy is standing on the roof of a 25 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 (in metres), that the second boy must have so that the two kites meet. (Ans: 70.5 m)

5. A boy standing on a horizontal plane   finds a bird flying at a distance of 100 m from him at an elevation of 30^0. A girl standing on the roof of a 20 m tall building finds the angle of elevation of the same bird to be 45^0. Both the boy and the girl are on opposite sides of the bird. Find the distance of bird from the girl. (Ans: 42.3 m)

6. As observed from the top of a light house, 100 m high above the sea level, the angle of depression of a ship, sailing directly towards it , changes from 30^0 to 60^0. Determine the distance traveled by the ship during the period of observation. (Ans: 115.33 m)

7. A man standing the deck of a ship, which is 10 m above sea level, observes the angle of elevation of the top of a hill as 60^0 and angle of depression of the base of the hill as 30^0. Find the distance of the hill from the ship and height of the hill. (Ans: 17.3 m, 40 m)

ASSIGNMENT: 2

1. 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 60^0. When he moves 40 m away from the bank, he finds the angle of elevation to be 30^0. Find the height of the tree and the width of the river. (Ans: 34.6 m)

2. At a point on level ground, the angle of elevation of a vertical tower is found to be such that its tangent is $\dfrac{5}{12}$. On walking 192 m towards the tower the tangent of the angle of elevation is found to be $\dfrac{3}{4}$. Find the height of the tower.   (Ans: 180 m)

3. From the top of a church spire 96 m high the angles of depression of two vehicles on road, at the same level as the base of the spire and on the same side of it are x^0 and y^0, where $\tan x^0 = \dfrac{3}{4}$ and $\tan y^0 = \dfrac{1}{3}$. Calculate the distance between the vehicles. (Ans: 160 m)

4. The angle of elevation of an aeroplane from a point on the ground is 45^0. After a flight of 15 seconds, the elevation changes to 30^0. If the aeroplane is flying at a height of 3000 metres, find the speed of the aeroplane. (Ans: 525.6 km/h)

5. The angle of elevation of a cloud from a point 60 m above a lake is 30^0 and the angle of depression of the reflection of the cloud in the lake is 60^0. Find the height of the cloud from the surface of the lake. (Ans: 120 m)

6. From the top of a hill the angles of depression of two consecutive kilometer stones, due east are found to be 30^0 and 45^0 respectively. find the distance of the two stones from the foot of the hill. (Ans: 1.365 km, 2.365 km)

7. 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 30^0 to 60^0, how soon will the car reach the observation tower. (Ans: 6 minutes)

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