INTERNATIONAL INDIAN SCHOOL BURAIDAH

Worksheet for the Academic Year 2023-24

CLASS: X   SUBJECT: MATHEMATICS   DATE:8-11-2023

LESSON:9 – SOME APPLICATIONS OF TRIGONOMETRY

Level 1:

1. A tower is $100\sqrt{3}$ m high. Find the angle of elevation if its top from a point 100meters away from its foot.   (Ans: 60°)
2. From the top of a building 60m high the angles of depression of the top and the bottom of a tower are observed to be 30° and 60°. Find the height of the tower.   (Ans: 40m)
3. If the angles of elevation of the top of the candle from two coins distant a cm and b cm (a>b) from its base and in the same straight line from it are 30° and 60°, then find the height of the candle   (Ans: $\sqrt{ab}$)
4. The shadow of a tower standing on a level ground is found to be 40m longer when Sun's altitude is 30°than when it was 60°. Find the height of the tower.   (Ans: $20\sqrt{3}$m)
5. Two vertical poles of different heights are standing 20m away from each other on the level ground. The angle of elevation of the top of the first pole from the foot of the second pole is 60°and the angle of elevation of the top of the second pole from the foot of the first pole is 30°. Find the difference between the heights of two poles. (Take $\sqrt{3}$ = 1.73)   (Ans: 23.07m)
6. Two points A and B are on the same side of the tower and in the same straight line with its base. The angles of depression of these points from the top of the tower are 60° and 45° respectively. If the height of the tower is 15m, then find the distance between these points.   (Ans: 6.340m)
7. The angles of depression of the top and bottom of a building 50meters high as observed from the top of the tower are 30°and 60° respectively. Find the height of the tower, and also the horizontal distance between the building and the tower.   (Ans: 75m,43.30m)
8. The angle of elevation of the top of hill from the foot of a tower is 60° and the angle of depression from the top of the tower to the foot of the hill is 30°.If the tower is 50m high, Find the height of the hill.   (Ans: 150m)

9. One observer estimates the angle of elevation to the basket of a hot air balloon to be 60°, while another observer 100m away estimates the angle of elevation to be 30°.Find
   1) the height of the basket from the ground?
   2) The distance of the basket from the first observer's eye?
   3) The horizontal distance of the second observer from the basket.

   (take √3 = 1.732)   (Ans: 1) 86.60m,2) 100m,3) 150m)

10. An aeroplane is at an altitude of 1200m.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?   (Ans: 1385.6m)

11. The angle of elevation of an aeroplane from a point A on the ground is 60°. After a flight of 30s, the angle of elevation changes to 30°. If the plane if flying at a constant height 3600√3, Find the speed of the aeroplane?

                                                    (Ans: 864km/h)

Level 2 :

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

13. A man on the deck of a ship is 10m above the water level. He observes that the angle of elevation of the top of a cliff is 45° and the angle of depression of the base is 30°.Calculate the distance of the cliff from the ship and the height of the cliff.   (Ans: 10√3,27.32m)

14. The lower window of a house is at a height of 2m above the ground and its upper window is 4m vertically above the lower window. At certain instant the angles of elevation of a balloon from these windows are observed to be 60° and 30° respectively. Find the height of the balloon above the ground.

                                                    (Ans: 8m)

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