Wada Nirmiti Education Society's

GURUKUL GLOBAL SCHOOL

WORKSHEET

SUB: Maths **LESSON: 9 – SOME APPLICATIONS OF TRIGONOMETRY** **STD: X**

NAME: _____ ROLL No: _____ DATE:

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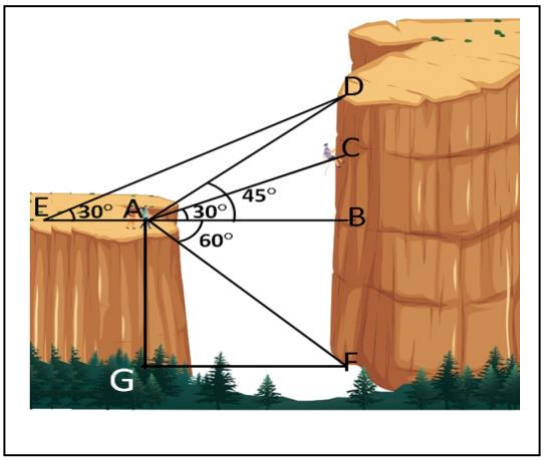
1. A ladder is placed along a wall of a house such that its upper end is touching the top of the wall. The foot of the ladder is 2 m away from the wall and the ladder is making an angle of 60° with the level of the ground. Determine the height of the wall.
2. A vertical tower stands on a horizontal plane and is surmounted by a vertical flag staff of height 5 meters. At a point on the plane, the angles of elevation of the bottom and the top of the flag staff are respectively 30° and 60°. Find the height of the tower.
3. The angle of elevation of the top of a tower from a point A on the ground is 30°. On moving a distance of 20 meters towards the foot of the tower to a point B the angle of elevation increases to 60°. Find the height of the tower and the distance of the tower from the point A.
4. An observer, 1.5 m tall, 28.5 m away from a tower 30 m high. Determine the angle of elevation of the top of the tower from his eye.
5. The shadow of a tower standing on level ground is found to be 40 m longer when Sun's altitude is 30° than when it was 60°. Find the height of the tower.
6. Friends Forever: Ramu and Somu are best friends. One day Ramu had to go overseas for higher studies by ship. Two ships C and D are on either side of a light house AB in such a way that the ships and the light house are in the same straight line. Ramu standing on the deck of ship C which is 10 m above the water level, waves to Somu standing on the top of the light house at an angle of elevation of 30°. Distance between Ramu and Somu is 100 m. Somu observes ship D at an angle of depression of 60°.(Use √3 = 1.73).

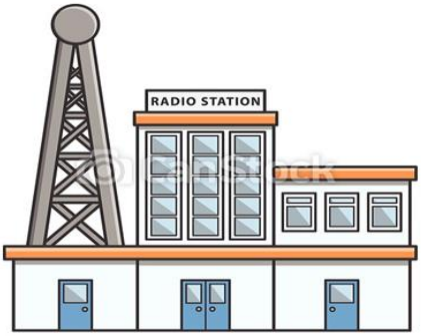
   i. Draw a neat labelled figure to show the above situation diagrammatically.
   ii. Find the height of the light house.
   iii. Find the distance between the ships.
   iv. Find the distance between Somu and the ship D.

7. Trekking : Himalyas trekking club has just hiked to the point A on the south rim of a large canyon, when they spot a climber at point C, trying to reach the point D at the top of the northern rim. The distance AB between the northern and southern walls of the canyon is 150m. The hikers observe an angle of depression of 60° to the bottom F of the north face. The angle of elevation of the climber and the top of the northern rim were found to be 30° and 45°. (Use $\sqrt{3}$= 1.7)



   i. How high is the southern rim AG of the canyon?
   ii. How high is the northern rim FD?
   iii. How much more should the climber climb to reach the top?
   iv. The hikers move to the point E on the southern face such that E, A and B are on a straight line. Now they observe the angle of elevation of the point D to be 30°. Find the distance AE.

8. Radio frequency towers are backbone of wireless communication. A radio station tower is supported by 2 wires from the point O on the ground to the points A and B on the tower. Distance between the base of the tower and point O is 36m. From the point O, the angle of elevation of the point B is $30°$ and the angle elevation of the point A is $45°$.



Based on the above information answer the following questions

   i. Draw a neat labelled diagram to show the above situation.
   ii. Find the height of point B.
   iii. Find the length of the wire from the point O to the point A.
   iv. Find the length of the wire from the point O to point B.