**ASSIGNMENT (2020-21)**

**CLASS - X SUBJECT – MATHEMATICS**

 **CH- 9(APPLICATIONS OF TRIGONOMETRY)**

1. The angles of elevation and depression of the top and bottom of a light-house from the top of a building 60 m 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.

1. As observed from the top of a light-house, 100 m above sea level, the angle of depression of a ship sailing directly towards it, changes from 30° to 45°. Determine the distance travelled by the ship during the period of observation.
2. . From the top of a cliff 50 m high, the angles of depression of the top and bottom of a tower are observed to be 30° and 45° respectively. Find the height of the tower.
3. From a building 60 m high, the angle of depression of the top and bottom of a lamp post are 30° and60° respectively. Find the distance between the lamp post and building. Also find the difference of height between lamp post and building.
4. A man on the top of a vertical 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?
5. The angle of elevation of a jet plane from a point A on the ground is 60°. After a flight of 15seconds, the angle of elevation changes to 30°. If the jet plane is flying at a constant height of1500 m, find the speed of the jet plane.
6. An aeroplane flying horizontally 1 km above the ground is observed at an elevation of 60°. After 10 seconds, its elevation is observed to be 30°. Find the speed of the aeroplane in km/hr.
7. A balloon is connected to metrological ground station by a cable of length of 215 m inclined at 60$°$ to horizontal. Determine the height of the balloon from the ground. Assume that there is no slack in the cable.
8. The length of string between kite and point on the roof of the building 10 m high is 180 m. if the string makes an angle $θ$ with the ground level such that tan$θ= \frac{4}{3}$. How high is the kite from ground.
9. A ladder rests against a wall at an angle $α$ to the horizontal. When its foot is pulled away from the wall through a distance $a$, it slides a distance $b$ down the wall and makes an angle $β$ with the horizontal. Show that $\frac{a}{b}=\frac{cosα-cosβ}{sinα-sinβ}$