

Worksheet Class X

Height and Distance (I.C.S.E.)

1. Choose the correct options:

- a. The ratio of the length of a rod and its shadow is  $1 : \sqrt{3}$ . The angle of elevation of the sun is
  - (a)  $30^\circ$
  - (b)  $45^\circ$
  - (c)  $60^\circ$
  - (d)  $90^\circ$
  
- b. The tops of two poles of height 20 m and 14 m are connected by a wire. If the wire makes an angle of  $30^\circ$  with horizontal, then the length of the wire is
  - (a) 12 m
  - (b) 10 m
  - (c) 8 m
  - (d) 6 m
  
- c. From the top of a cliff 25 m high the angle of elevation of a tower is found to be equal to the angle of depression of the foot of the tower. The height of the tower is
  - (a) 25 m
  - (b) 50 m
  - (c) 75 m
  - (d) 100 m
  
- d. If the angle of elevation of a cloud from a point 200 m above a lake is  $30^\circ$  and the angle of depression of its reflection in the lake is  $60^\circ$ , then the height of the cloud above the lake, is
  - (a) 200 m
  - (b) 500 m
  - (c) 30 m
  - (d) 400 m
  
- e. The tops of two poles of height 16 m and 10 m are connected by a wire of length  $l$  metres. If the wire makes an angle of  $30^\circ$  with the horizontal, then  $l =$ 
  - (a) 26
  - (b) 16
  - (c) 12
  - (d) 10

2. The length of shadow of a tower on the plane ground is  $\sqrt{3}$  times the height of the tower. Find the angle of elevation of sun?
  
3. A ladder 15 m long just reaches the top of a vertical wall. If the ladder makes an angle of  $60^\circ$  with the wall, then find the height of the wall?
  
4. The angle of depression of a car parked on the road from the top of a 150 m high tower is  $30^\circ$ . Find the distance of the car from the tower (in metres)?
  
5. A ladder makes an angle of  $60^\circ$  with the ground when placed against a wall. If the foot of the ladder is 2 m away from the wall, find the length of the ladder (in metres)?

6. An observer 1.5 m tall is 28.5 m away from a chimney. The angle of elevation of the top of the chimney from her eyes is  $45^\circ$ . What is the height of the chimney?
7. A Kite is Attached to a String. Find the Length of the String, When the Height of the Kite is 60 M and the String Makes an Angle  $30^\circ$  with the Ground
8. A Boy, 1.6 M Tall, is 20 M Away from a Tower and Observes The Angle of Elevation of the Top of the Tower to Be (I)  $45^\circ$ , (II)  $60^\circ$
9. The shadow of a tower standing on a level ground is found to be 40 m longer when the Sun's altitude is  $30^\circ$  than when it is  $60^\circ$ . Find the height of the tower.
10. A ladder 15 m long makes an angle of  $60^\circ$  with the wall. Find the height of the point where the ladder touches the wall.
11. The Angle of Elevation of the Top of a Tower is observed to Be  $60^\circ$ . at a Point, 30 M Vertically Above the First Point of Observation, the Elevation is Found to Be  $45^\circ$
12. If a tower 30 m high, casts a shadow  $10\sqrt{3}$  m long on the ground, then what is the angle of elevation of the sun?
13. An aero plane at an altitude of 200metres observes the angle of depression points on the two banks of a river to be 45 and 60. Find the width of the river.
14. A Man in a Boat Rowing Away from a Lighthouse 150 M High, Takes 2 Minutes to Change the Angle of Elevation of the Top of the Lighthouse from  $60^\circ$  to  $45^\circ$ . Find the Speed of the Boat.
15. The angle of elevation of the top of a building from the foot of the tower is  $30^\circ$  and the angle of elevation of the top of the tower from the foot of the building is  $60^\circ$ . If the tower is 50 m high, find the height of the building.
16. AB is a 6 m high pole and CD is a ladder inclined at an angle of  $60^\circ$  to the horizontal and reaches up to a point D of pole. If  $AD = 2.54$  m, find the length of the ladder, (use  $\sqrt{3} = 1.73$ )
17. If a pole 6 m high casts a shadow  $2\sqrt{3}$  m long on the ground, find the Sun's elevation.
18. The Angle of Elevation of the Top of a Tower from a Point on the Ground and at a Distance of 160 M from Its Foot, is Found to Be  $60^\circ$ . Find the Height of the Tower.
19. The angle of elevation of a cloud from a point 60m above a lake is  $30^\circ$  and the of depression of the reflection of the cloud in the lake is  $60^\circ$ .find the height of the cloud from the surface of the lake.
20. A tower stands vertically on the ground. From a point on the ground, which is 15 m away from the foot of the tower, the angle of elevation of the top of the tower is found to be  $60^\circ$ . Find the height of the tower.