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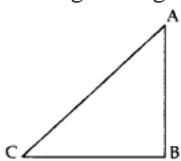
Revision Worksheet

Class X Session: 2021-2022

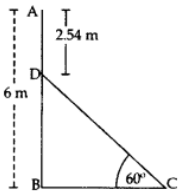
Chapter: Height and Distance

1. AB is a 6 m high pole and CD is a ladder inclined at an angle of 60° to the horizontal and reaches up to a point D of pole. If $AD = 2.54$ m, find the length of the ladder.
2. A ladder, leaning against a wall, makes an angle of 60° with the horizontal. If the foot of the ladder is 2.5 m away from the wall, find the length of the ladder.
3. An observer, 1.7 m tall, is $20\sqrt{3}$ m away from a tower. The angle of elevation from the eye of observer to the top of tower 30° . Find the height of tower.
4. The angles of depression of the top and bottom of a 50 m high building from the of a tower are 45° and 60° respectively. Find the height of the tower and the horizontal distance between the tower and the building.
5. A man standing on the deck of a ship, which is 10 m above water level, observer the angle of elevation of the top of a hill as 60° and the angle of depression of the base of hill as 30° . Find the distance of the hill from the ship and the height of the hill.
6. Two men on either side of a 75 m high building and in line with base of building observe the angles of elevation of the top of the building as 30° and 60° . Find the distance between the two men.
7. A 7 m long flagstaff is fixed on the top of a tower standing on the horizontal plane. From a point on the ground, the angles of elevation of the top and bottom of the flagstaff are 60° and 45°
8. An aeroplane, when flying at a height of 4000 m from the ground passes vertically above another aeroplane at an instant when the angles of elevation of the two planes from the same point on the ground are 60° and 45° respectively. Find the vertical distance between the aeroplanes at that instant.
9. A bird is sitting on the top of a 80 m high tree. From a point on the ground, the angles of elevation of the bird is 45° . The bird flies away horizontally in such a way that it remained at a constant height from the ground. After 2 seconds, the angle of elevation of the bird from the same point is 30° . Find the speed of flying of the bird.
10. The angles of elevation of the top of a tower from two points at a distance 4 m and 9 m from the base of the tower and in the same straight line with it are 60° and 30° respectively. Find the height of the tower.
11. The angle of elevation of the top Q of a vertical tower PQ from a point X on the ground is 60° . From a point Y, 40 m vertically above X, the angle of elevation of the top Q of tower is 45° . Find the height of the tower PQ and the distance PX.
12. As observed from the top of a light house, 100 m high above sea level, the angles of depression of a ship, sailing directly towards it, changes from 30° to 60° . Find the distance travelled by the ship during the period of observation.
13. From a point on the ground the angle of elevation of the top of a tower is observed to be 60° . From a point 40 m vertically above the first point of observation, the angle of elevation of the top of the tower is 30° . Find the height of the tower and its horizontal distance from the point of observation.
14. The tops of two towers of x and y, standing on level ground, subtend angles of 30° and 60° respectively at the centre of the line joining their feet, then find x : y
15. The angle of elevation of the top of a building from the foot of the tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 45° . If the tower is 30 m high, find the of the building.
16. The angle of elevation of aeroplane from a point A on the ground is 60° . After a flight of 15 seconds, the angle of elevation changes to 30° . If the aeroplane is flying at a constant height of $1500\sqrt{3}$ m, find the speed of the plane in Km/hr.
17. From the top of a tower of height 50 m, the angles of depression of the top and bottom of a pole are 30° and 45° respectively. Find how far the pole is from the bottom of a tower, the height of the pole.
18. From a point P on the ground the angle of elevation of the top of a tower is 30° and that of the top of the flagstaff fixed on the top of the tower, is 60° . If the length of the flagstaff is 5 m, find the height of the tower.
19. At a point A, 20 m above the level of water in a lake, the angle of elevation of a cloud is 30° . The angle of depression of the reflection of the cloud in the lake, at A is 60. Find the distance of the cloud from A.
20. Two poles of equal heights are standing opposite to each other on either side of the road which is 80 m wide. From a point P between them on the road, the angle of elevation of the top of a pole is 60° and the angle of depression from the top of another pole at a appoint P is 30° . Find the heights of the poles and the distance of the point P from the poles.
21. Two ships are there in the sea on either side of the light house in such a way that the ships and the light house are in the same straight line. The angles of depression of two ships as observed from the top of the light house are 60° and 45° . If the height of the light house is 200 m, find the distance between the two ships.
22. The angle of elevation of an aeroplane from a point on the ground is 60° . After a flight of 30 seconds the angle of elevation becomes 30° . If the aeroplane is flying at a constant height of $3000\sqrt{3}$ m, find the speed of the aeroplane.
23. Two ships are approaching a lighthouse from opposite directions. The angles of depression of the two ships from the top of the lighthouse are 30° and 45° . If the distance between the two ships is 100 m, find the height of the lighthouse.

24. The angles of elevation and depression of the top and the bottom of a tower from the top of a building, 60 m high, are 30° and 60° respectively. Find the difference between the heights of the building and the tower and the distance between them.
25. From the top of a 60 m high building, the angles of depression of the top and the bottom are 45° and 60° respectively. Find the height of the tower.
26. The angle of elevation of the top of tower at a distance of 120 m from a point A on the ground is 45° . If the angle of elevation of the top of a flagstaff fixed at the top of the tower, at A is 60° , then find the height of the flagstaff.
27. The angle of elevation of the top of a chimney from the foot of a tower is 60° and the angle of depression of the foot of the chimney from the top of the tower is 30° . If the height of the tower is 40 m, find the height of the chimney.
28. The horizontal distance between two poles is 15 m. The angle of depression of the top of first pole as seen from the top of second pole is 30° . If the height of the second pole is 24 m, find the height of the first pole.
29. As observed from the top of a 60 m high lighthouse from the sea-level, the angles of depression of two ships are 30° and 45° . If one ship is exactly behind the other on the same side of lighthouse, find the distance between the two ships.
30. The angles of elevation of the top of a tower from two points at a distance of 6 m and 13.5 m from the base of the tower and in the same straight line which are complementary. Find the height of the tower.
31. The angle of elevation of the top of a building from the foot of the tower is 30° and the angle of elevation of the top of the tower from the foot of the building is 60° . If the tower is 60 m high, find the height of the building.
32. From a point P on the ground, the angle of elevation of the top of a 10 m tall building is 30° . A flagstaff is fixed at the top of the building and the angle of elevation of the top of the flagstaff from point P is 45° . Find the length of the flagstaff and the distance of the building from the point P.
33. From the top of a 7 m high building, the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 30° . Determine the height of the tower.
34. The shadow of a tower standing on a level ground is found to be 20 m longer when the sun's altitude is 45° than when it is 60° . Find the height of the tower.
35. The angles of depression of two ships from the top of a lighthouse and on the same side of it are found to be 45° and 30° . If the two ships are 200 m apart, find the height of the lighthouse.
36. A kite is flying at a height of 45 m above the ground. The string attached to the kite is temporarily tied to a point on the ground. The inclination of the string with the ground is 60° . Find the length of the string assuming that there is no slack in the string.
37. The angles of depression of the top and bottom of a tower as seen from the top of a $60\sqrt{3}$ m high cliff are 45° and 60° respectively. Find the height of the tower.
38. From the top of a tower 50 m high, the angle of depression of the top of a pole is 45° and from the foot of the pole, the angle of elevation of the top of the tower is 60° . Find the height of the pole if the pole and the tower stand on the same plane.
39. From a window (9 m above the ground) of a house in a street, the angles of elevation and depression of the top and foot of another house on opposite side of the street are 30° and 60° respectively. Find the height of the opposite house and the width of the street.
40. A vertical pedestal stands on the ground and is surmounted by a vertical flagstaff of height 5 m. At a point on the ground, the angles of elevation of the bottom and the top of the flagstaff are 30° and 60° respectively. Find the height of the pedestal.
41. A man on the deck of a ship, 12 m above water level, observes that the angle of elevation of the top of a cliff is 60° and the angle of depression of the base of the cliff is 30° . Find the distance of the cliff from the ship and the height of the cliff.
42. The angle of elevation of a cloud from a point 60 m above a lake is 30° and the angle of depression of the reflection of the cloud in the lake is 60° . Find the height of the cloud from the surface of the lake.
43. A ladder 15 m long just reaches the top of a vertical wall. If the ladder makes an angle of 60° with the wall, then calculate the height of the wall.
44. In the given figure, a tower AB is 20 m high and BC, its shadow on the ground, is $20\sqrt{3}$ m long. Find the Sun's altitude.



45. In the figure, AB is a 6 m high pole and CD is a ladder inclined at an angle of 60° to the horizontal and reaches up to a point D of pole. If $AD = 2.54$ m. Find the length of the ladder.



46. A ladder, leaning against a wall, makes an angle of 60° with the horizontal. If the foot of the ladder is 2.5 m away from the wall, find the length of the ladder.
47. 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?
48. The angles of depression of two ships from the top of a light house and on the same side of it are found to be 45° and 30° . If the ships are 200 m apart, find the height of the light house.
49. A tower stands vertically on the ground. From a point on the ground 20 m away from the foot of the tower, the angle of elevation of the top of the tower is 60° . What is the height of the tower?
50. The angle of elevation of a ladder leaning against a wall is 60° and the foot of the ladder is 9.5 m away from the wall. Find the length of the ladder.
51. 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.
52. An electric pole is 10 m high. A steel wire tied to top of the pole is affixed at a point on the ground to keep the pole up right. If the wire makes an angle of 45° with the horizontal through the foot of the pole, find the length of the wire.
53. A kite is flying at a height of 75 metres from the ground level, attached to a string inclined at 60° to the horizontal. Find the length of the string to the nearest metre
54. An aeroplane takes off at an angle of 30° with the horizontal ground. Find the height of the aeroplane above the ground when it has travelled 184 m without changing direction.
55. The angle of elevation of the top of a vertical cliff from a point 15 m away from the foot of the cliff is 60° . Find the height of the cliff to the nearest metre.
56. The length of the shadow of a pillar is $1/\sqrt{3}$ times the height of the pillar. Find the angle of elevation of the sun.
57. A ship is at a distance of 200 m from a tall tower. What is the angle of depression (to the nearest degree) of the ship found by a man after climbing 50 m up the tower?
58. The top of a tall vertical palm tree having been broken by the wind struck the ground at an angle of 60° at a distance of 9 m from the foot of the tree. Find the original height of the palm tree.
59. A 10-m-height pole is kept vertical by a steel wire. The wire is inclined at an angle of 40° with the horizontal ground. If the wire runs from the top of the pole to the point on the ground where its other end is fixed, find the length of the wire.
60. A tower is 64 m tall. A man standing erect at a distance of 36 m from the tower observes the angle of elevation of the top of the tower to be 60° . Find the height of the man.
61. From the top of a tall building of height 24 m, the angle of depression of the top of another building is 45° whose height is 10 m. Find the distance between the two buildings.
62. A tower stands by the side of a river at P. On the other side of the river, Q is a point on the bank such that PQ is the width of the river. R is the point on the bank of Q such that P, Q and R are in the same straight line. If $QR = 5$ metre and angles of elevation of top of the tower from Q and R are 60° and 45° respectively, find the width of the river and the height of the tower.
63. The angles of depression of two boats on a river from the top of a pole 30 metres high on the bank of the river are 60° and 75° . If the boats are in line with the pole, find the distance between the boats to the nearest metre.
64. A man standing on a cliff observes a ship at an angle of depression 30° , approaching the shore just beneath him. Three minutes later, the angle of depression of the ship is 60° . How soon will it reach the shore?
65. A man on the bank of a stream of observes a tree on the opposite bank exactly across the stream. He finds the angle of elevation of the top of the tree to be 45° . On receding perpendicularly, a distance of 4 metre from the bank, he finds that the angle of elevation reduces by 15° . Is this information sufficient for the man to determine the height of the tree and the width of the stream? If so find them.
66. From the top of a light house the angles of depression of two ships on opposite sides of the light house were observed to be 60° and 45° . If the height of the light house is 100 m and the foot of the light house is in line with the ships, find the distance between the two ships.
67. From the top of a tower 40 m tall the angle of depression of the nearer of the two points P and Q on the ground on diametrically opposite sides of the tower is 45° . Find the angle of depression of the other point to the nearest degree if the distances of the two points from the base of the tower are in the ratio 1 : 2.
68. A vertical pole fixed to the ground is divided into two parts by a mark on it. Each of the parts subtends an angle 30° at a place on the ground.
- (i) Find the ratio of the two parts.
- (ii) If the place on the ground is 15 m away from the base of the pole, find the lengths of the two parts of the pole.



