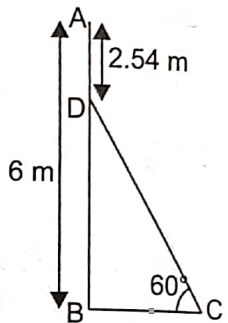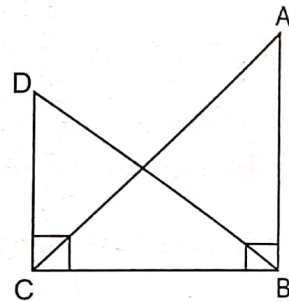# I. Very Short Answer Type Questions

1. In 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. (use $\sqrt{3} = 1.73$)
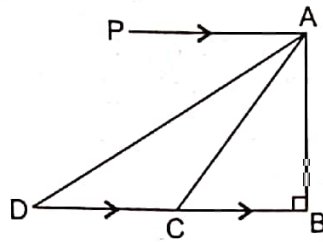
2. For the given figure, solve the following:
   (i) If $\angle ACB = 45°$, $\angle DBC = 30°$ and $BC = 40$ m, then find AB and DC.
   (ii) If $AB = 30$ m, $\angle ACB = 60°$ and $\angle DBC = 45°$; find CD.

3. In the given figure, AB = 10 m, ∠PAD = 45° and ∠PAC = 60°, find the length of CD.

4. 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.

5. 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 is 30°. Find the height of tower.
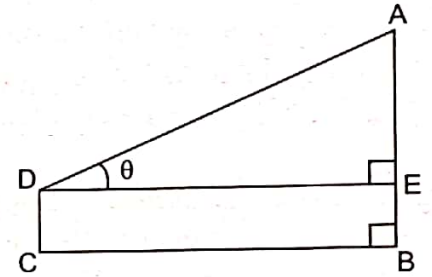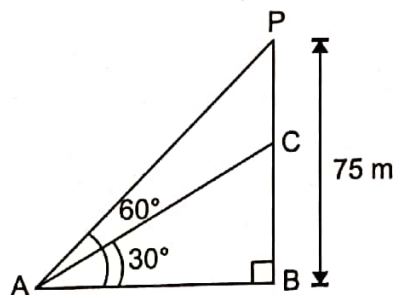
6. In the given figure, if
    (i) AB = 30 m, BC = 25 m and CD = 5 m, find the angle θ.
    (ii) BC = 20 m, CD = 4.5 m and angle θ = 60°, find the length of AB.
    (iii) AB = 40 m, CD = 8 m and angle θ = 30°, find the length of BC.

7. In the given figure if ∠PAD = 30°, ∠PAC = 45° and BC = 40 m, then find:
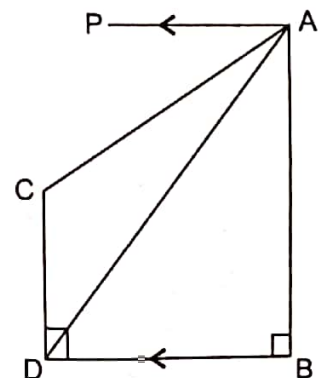   (i) AB   (ii) BD   (iii) CD.
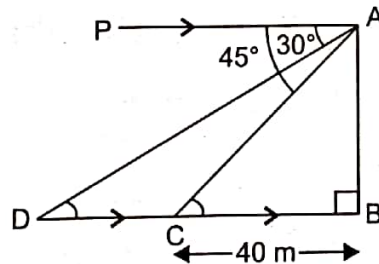

8. The tops of two towers of height x and y, standing on level ground, subtend angles of 30° and 60° respectively at the centre of the line joining their feet, then find x : y.

9. In the given figure, ∠PAB = 60° and ∠CAB = 30° and PB = 75 m. Find BC.

10. In the given figure, angle of depression, i.e. ∠PAD = 60° and angle of depression, i.e. ∠PAC = 45°. Find: (i) DC, if AB = 120 m   (ii) AB, if DB = 40 m

11. Find the values of x and y in each of the following:

(i)

(ii)

(iii)
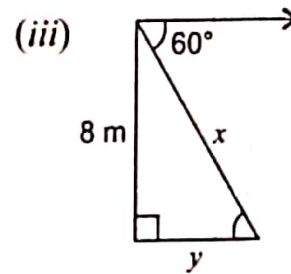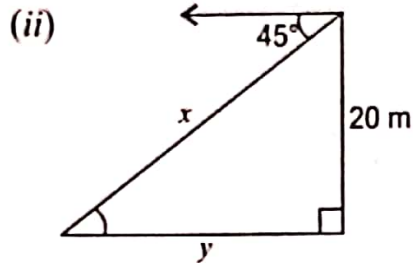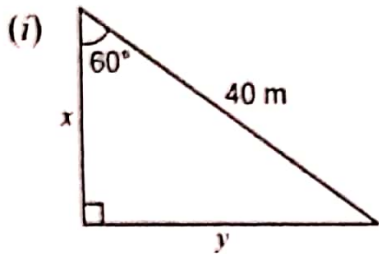
12. A pole casts a shadow of length $20\sqrt{3}$ m on the ground, when the sun's elevation is 60°. Find the height of the pole.

13. The given figure shows a 20 m long rope AC used by circus artist for climbing. The rope is tightly stretched and tied from the top of the vertical pole to the ground.

Find the height of the pole if the angle made by the rope with the ground level is 30°.
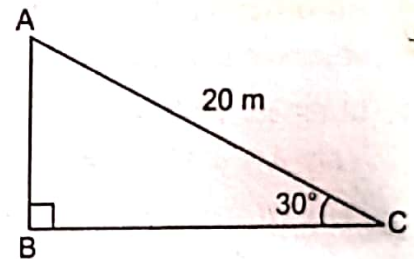
14. A kite is attached to a string. Assuming that there is no slack in the string, find the height of the kite above the level of the ground, if the length of the string is 54 m and it makes an angle of 30° with the ground.

15. A kite is attached to a string. Assume that there is no slack in the string. Find the length of the string if it makes an angle of 60° with the ground and the kite is at a height of 30 m above the level of the ground.

**16.** In the given figure, AB = 120 m, BC = 50 m and angle of depression $\angle$ PAD = 45°. Find the height of CD.
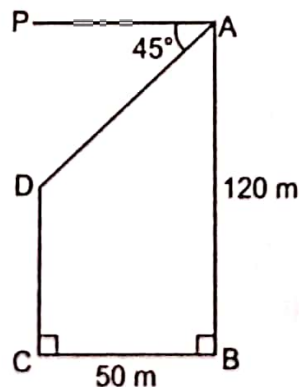
17. Find the sun's altitude when the height of a tower is $\sqrt{3}$ times of the length of its shadow.

**18.** At a particular time, sun's altitude is 30°. Find the length of the shadow of a 3.6 m high tower at that time.

19. In the given figure, BC is horizontal whereas AB and DC are vertical. If $\angle$ACB = 60°, $\angle$DBC = 30° and BC = 60 m, find AB – DC.
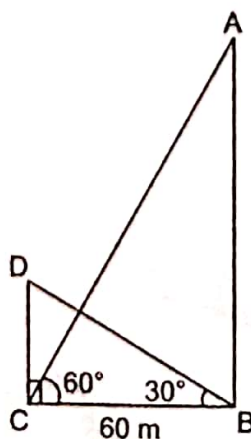
20. If the sun's altitude is 30°, what is the ratio between the length of a vertical rod and the length of its shadow?

21. If the ratio between the height of a vertical tower and the length of its shadow is $\sqrt{3} : 1$, what is the sun's altitude?

II. Short Answer Type Questions-I

22. A circus artist is climbing a 20 m long rope, which is tightly stretched and tied from the top of a vertical pole to the ground. Find the height of the pole, if the angle made by the rope with the ground level is 30° (see figure).
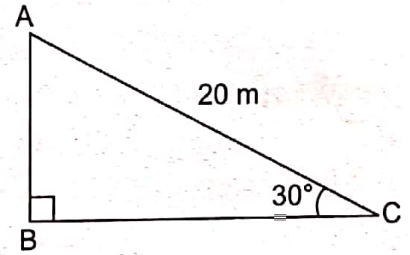
23. At 2 p.m., the height of a pole is $\sqrt{3}$ times the length of its shadow on the level ground. At the same time, what will be the length of the shadow of a 40 m high tower.

24. A bridge across a river makes an angle of 30° with the river bank. If the length of the bridge across the river is 60 m, find the width of the river.

25. From the top of a 60 m high building, the angles of depression of the top and the bottom of a tower are 45° and 60° respectively. Find the height of the tower. [Take $\sqrt{3} = 1.73$]

26. The shadow of a tower standing on a level ground is found to be 30 m longer when the sun's altitude is 30° than when it to 60°. Find the height of the tower.

27. In the given figure, $\angle ACE = 30°$, $\angle ADB = 45°$, CE = 12 m and CD = 10 m. Find AD.
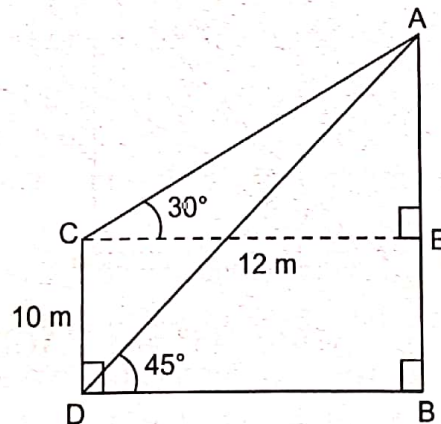
28. A ladder, 4 m in length, is resting against a wall and makes an angle of 30° with the ground. Find:
    (*i*) the height of the wall upto which the ladder reaches.
    (*ii*) the distance of the foot of ladder from the wall.

29. In the given figure, $\angle AEB = 45°$, $\angle CEB = 30°$ and ED = 8 m. Find AC and CD.