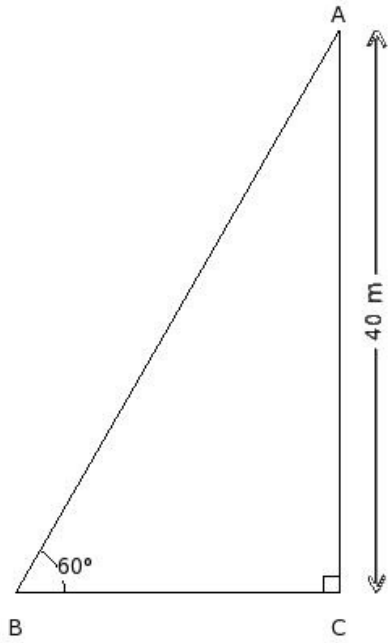
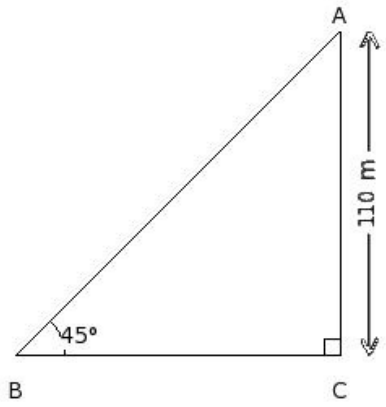
1. A radio tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the radio tower is found to be $60°$. If the height of the radio tower is 40 m, find the distance between the observation point and the top of the radio tower.



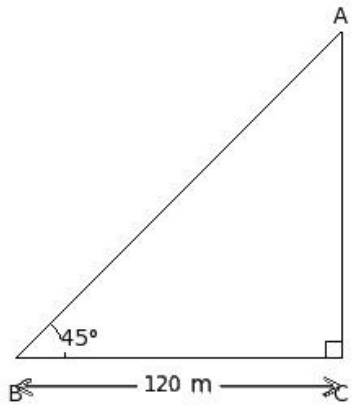
(i) $\frac{80}{3}$ m (ii) $\frac{80}{3}\sqrt{18}$ m (iii) 80 m (iv) $40\sqrt{2}$ m (v) $\frac{80}{3}\sqrt{3}$ m

2. A radio tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the radio tower is found to be $45°$. If the height of the radio tower is 110 m, find the distance between the observation point and the foot of the radio tower.



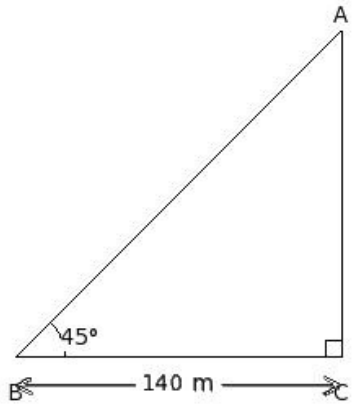
(i) 110 m (ii) 109 m (iii) 111 m (iv) 112 m (v) 107 m

3. A chimney stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the chimney is found to be $45°$. If the distance between the point and the foot of the chimney is 120 m, find the distance between the observation point and the top of the chimney.



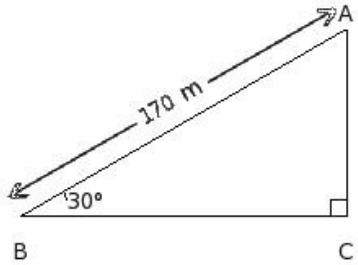
(i) $240\sqrt{3}$ m (ii) $120\sqrt{2}$ m (iii) $60\sqrt{12}$ m (iv) 240 m (v) 120 m

4. A chimney stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the chimney is found to be $45°$. If the distance between the point and the foot of the chimney is 140 m, find the height of the chimney.



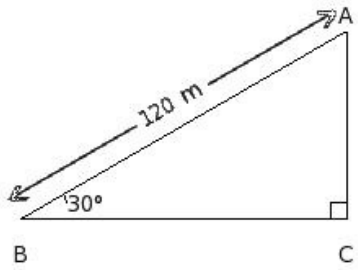
(i) 137 m (ii) 140 m (iii) 143 m (iv) 139 m (v) 141 m

5. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $30°$. If the distance between the point and the top of the tower is 170 m, find the height of the tower.



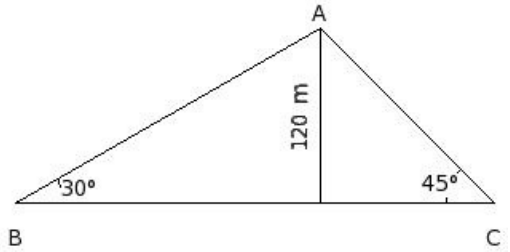
(i) 84 m (ii) 85 m (iii) 82 m (iv) 88 m (v) 86 m

6. A building stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the building is found to be 30°. If the distance between the point and the top of the building is 120 m, find the distance between the observation point and the foot of the building.



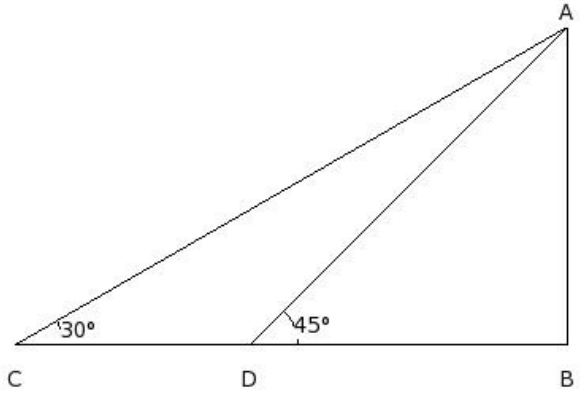
(i) $60\sqrt{18}$ m (ii) $90\sqrt{2}$ m (iii) 180 m (iv) $60\sqrt{3}$ m (v) 60 m

7. Two boys are on opposite sides of a tower of 120 m height. They measure the angle of elevation of the top of the tower as 30° and 45° respectively. Find the distance between the two boys.



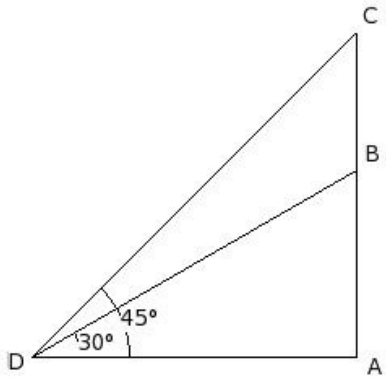
(i) $(2+\sqrt{3})$ m (ii) $(120\sqrt{18}+120\sqrt{6})$ m (iii) 28800 m (iv) $(180\sqrt{2}+60\sqrt{6})$ m (v) $(120\sqrt{3}+120)$ m

8. A person, walking 15 m from a point toward a flagpost , observes that its angle of elevation changes from 30° to 45°. Find the height of the flagpost .



(i) $(\frac{45}{4}\sqrt{2}+\frac{15}{4}\sqrt{6})$ m (ii) $\frac{225}{2}$ m (iii) $(2+\sqrt{3})$ m (iv) $(\frac{15}{2}\sqrt{3}+\frac{15}{2})$ m (v) $(\frac{15}{2}\sqrt{18}+\frac{15}{2}\sqrt{6})$ m

9. A flagstaff stands on the top of a building at a distance of 15 m away from the foot of building . The angle of elevation of the top of the flagstaff is 45° and the angle of elevation of the top of the building is 30°. Find the height of the flagstaff .



(i) $(2-\sqrt{3})$ m (ii) $(\frac{15}{2}\sqrt{6}-\frac{15}{2}\sqrt{2})$ m (iii) 150 m (iv) $(15-5\sqrt{3})$ m (v) $(15\sqrt{6}-5\sqrt{18})$ m

10. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\sin^{(-1)}(\frac{3}{4})$. If the height of the tower is 170 m, find the distance between the observation point and the top of the tower.

(i) 211.67 m (ii) 226.67 m (iii) 239.67 m (iv) 198.67 m (v) 240.67 m

11. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\cos^{(-1)}(\frac{5}{7})$. If the distance between the point and the top of the tower is 80 m, find the distance between the observation point and the foot of the tower.

(i) 54.14 m (ii) 60.14 m (iii) 57.14 m (iv) 62.14 m (v) 52.14 m

12. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\tan^{(-1)}(\frac{1}{2})$. If the distance between the point and the foot of the tower is 70 m, find the height of the tower.

(i) 38.00 m (ii) 40.00 m (iii) 30.00 m (iv) 35.00 m (v) 32.00 m

13. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\operatorname{cosec}^{(-1)}(\frac{3}{2})$. If the height of the tower is 30 m, find the distance between the observation point and the top of the tower.

(i) 50.00 m (ii) 45.00 m (iii) 42.00 m (iv) 48.00 m (v) 40.00 m

14. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\sec^{(-1)}(\frac{4}{3})$. If the distance between the point and the foot of the tower is 170 m, find the distance between the observation point and the top of the tower.

(i) 226.67 m (ii) 211.67 m (iii) 240.67 m (iv) 244.67 m (v) 223.67 m

15. A tower stands vertically on the ground. From a point on the ground, the angle of elevation of the top of the tower is found to be $\cot^{(-1)}(\frac{1}{4})$. If the distance between the point and the foot of the tower is 140 m, find the height of the tower.

(i) 553.00 m (ii) 576.00 m (iii) 560.00 m (iv) 578.00 m (v) 544.00 m

16. A tower stands vertically on the ground.

The height of the tower is $60\sqrt{3}$ m.

The distance between the observation point and its foot is 180 m.

Find the angle of elevation.

(i) 30° (ii) 90° (iii) 45° (iv) 60° (v) 75°

17. The upper part of a tree is broken into two parts without being detatched. It makes an angle of 45° with the ground. The top of the tree touches the ground at a distance of 50 m from the foot of the tree . Find the height of the tree before it was broken.

(i) 143.71 m (ii) 124.71 m (iii) 96.71 m (iv) 102.71 m (v) 120.71 m

18. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 30 m high. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are 45° and 60° respectively. Find the width of the river .

(i) 17.32 m (ii) 20.32 m (iii) 22.32 m (iv) 14.32 m (v) 12.32 m

19. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 130 m high. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are 30° and 45° respectively. Find the height of the other temple.

(i) 51.94 m (ii) 49.94 m (iii) 59.94 m (iv) 54.94 m (v) 57.94 m

20. An observer 1.4 m tall, is 100 m away from a tower . The angle of elevation of the top of the tower from her eyes is 45°. Find the height of the tower .

(i) 116.40 m (ii) 77.40 m (iii) 118.40 m (iv) 101.40 m (v) 84.40 m

21. Two poles of equal height are standing opposite to each other on either side of a road which is 15 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 30° respectively. Find the height of each pole and the distances of the point from the two poles .

(i) height = 5.5 m, distances away = 10.25 m, 2.75 m (ii) height = 7.5 m, distances away = 12.25 m, 4.75 m

(iii) height = 4.5 m, distances away = 9.25 m, 1.75 m (iv) height = 6.5 m, distances away = 11.25 m, 3.75 m

(v) height = 8.5 m, distances away = 13.25 m, 5.75 m

22. From the top of a light house which is 85 m high from the sea level, the angles of depression of two ships are 45° and 30°. If one ship is exactly behind the other on the same side of the light house , find the distance between the two ships.

(i) 57.21 m (ii) 65.21 m (iii) 67.21 m (iv) 62.21 m (v) 59.21 m

23. From the top of a 11 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°. Find the height of the cable tower.

(i) 49.00 m (ii) 39.00 m (iii) 44.00 m (iv) 41.00 m (v) 47.00 m

24. The angle of elevation of the top of a building from the foot of a tower is 30°. The angle of elevation of the top of the tower from the foot of the building is 45°. If the height of the tower is 35 m, find the height of the building .

(i) 20.21 m (ii) 23.21 m (iii) 25.21 m (iv) 17.21 m (v) 15.21 m

25. A flag is hoisted at the top of a building . From a point on the ground, the angle of elevation of the top of the flag staff is 45° and the angle of elevation of the top of the building is 30°. If the height of the building is 6 m, find the height of the flag staff .

(i) 6.39 m (ii) 4.39 m (iii) 3.39 m (iv) 5.39 m (v) 2.39 m

26. A flag is hoisted at the top of a building . From a point on the ground, the angle of elevation of the top of the flag staff is 60° and the angle of elevation of the top of the building is 30°. If the height of the flag staff is 14 m, find the height of the building .

(i) 7.00 m (ii) 8.00 m (iii) 5.00 m (iv) 9.00 m (v) 6.00 m

Assignment Key

1) (v)	2) (i)	3) (ii)	4) (ii)	5) (ii)	6) (iv)
7) (v)	8) (iv)	9) (iv)	10) (ii)	11) (iii)	12) (iv)
13) (ii)	14) (i)	15) (iii)	16) (i)	17) (v)	18) (i)
19) (iv)	20) (iv)	21) (iv)	22) (iv)	23) (iii)	24) (i)
25) (ii)	26) (i)				