EduSahara™ Worksheet

Name : Chapter Based Worksheet

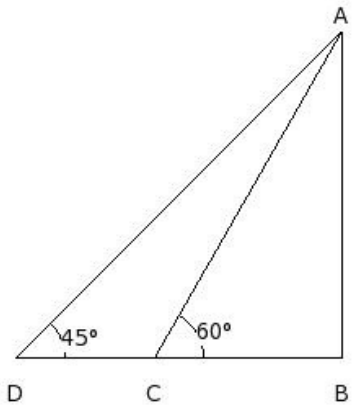
Chapter : Applications of Trigonometry

Grade : SSC Grade X

1. The angles of depression of two boats from the top of a cliff 110 m high are 45° and 30° respectively. Find the distance between the boats, if the boats are on the opposite sides of the cliff .

(i) 286.53 m (ii) 315.53 m (iii) 300.53 m (iv) 312.53 m (v) 273.53 m

2. The shadow of a vertical tower BA on a level ground is increased by 50 m, when the altitude of the sun changes from 60° to 45°. Find the height of the tower .



(i) 91.30 m (ii) 118.30 m (iii) 114.30 m (iv) 120.30 m (v) 140.30 m

3. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 90 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) 46.96 m (ii) 48.96 m (iii) 56.96 m (iv) 54.96 m (v) 51.96 m

4. A boy standing on a vertical cliff in a jungle observes two rest houses in line with him on opposite sides deep in the jungle below. If their angles of depression are 45° and 30° and the distance between them is 175 m , find the height of the cliff.

(i) 64.06 m (ii) 59.06 m (iii) 69.06 m (iv) 61.06 m (v) 67.06 m

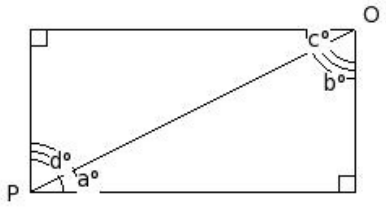
5. A man 1.5 m tall stands at a distance of 6.5 m from a lamp post and casts a shadow of 8.7 m on the ground. Find the height of the lamp post .

(i) 0.62 m (ii) 2.62 m (iii) 4.62 m (iv) 1.62 m (v) 3.62 m

6. From the top of a light house which is 70 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.

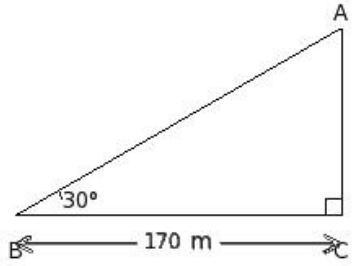
(i) 46.23 m (ii) 48.23 m (iii) 56.23 m (iv) 51.23 m (v) 54.23 m

7. If P is the point of observation and the observed object is at point O, which of the following angles represent the angle of elevation ?



(i) ∠d (ii) ∠a (iii) ∠b (iv) ∠c

8. 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 30°. If the distance between the point and the foot of the radio tower is 170 m, find the height of the radio tower.



(i) $\frac{170}{3}\sqrt{3}$ m (ii) $85\sqrt{2}$ m (iii) $\frac{170}{3}$ m (iv) 170 m (v) $\frac{170}{3}\sqrt{18}$ m

9. 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 60 m from the foot of the tree . Find the height of the tree before it was broken.

(i) 117.85 m (ii) 150.85 m (iii) 144.85 m (iv) 170.85 m (v) 139.85 m

10. Two poles of equal height are standing opposite to each other on either side of a road which is 10 m wide. From a point between them on the road, the angles of elevation of the top of the poles are 60° and 45° respectively. Find the height of each pole and the distances of the point from the two poles .

(i) height = 4.34 m, distances away = 4.34 m, 1.66 m (ii) height = 7.34 m, distances away = 7.34 m, 4.66 m

(iii) height = 6.34 m, distances away = 6.34 m, 3.66 m (iv) height = 8.34 m, distances away = 8.34 m, 5.66 m

(v) height = 5.34 m, distances away = 5.34 m, 2.66 m

11. A man in a boat rowing away from a lighthouse 45 m high, takes 2.5 min to change the angle of elevation of the top of the lighthouse from 60° to 45°. Find the speed of the boat.

(i) 8.13 m/sec (ii) 7.13 m/sec (iii) 0.13 m/sec (iv) 2.13 m/sec (v) 1.13 m/sec

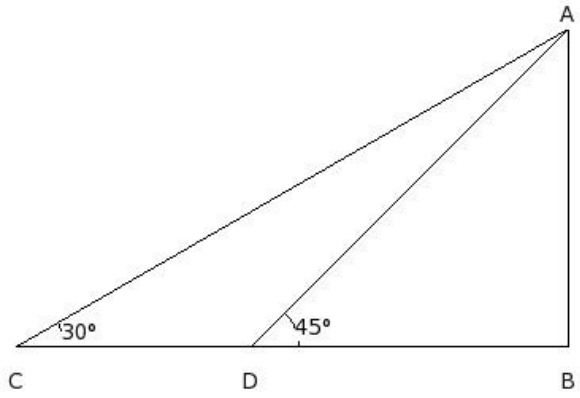
12. From a point 90 m away from a vertical cliff, the angles of elevation of the top and the foot of a vertical pillar at the top of the cliff are 60° and 45° respectively. Find the height of the pillar.

(i) 60.89 m (ii) 70.89 m (iii) 65.89 m (iv) 68.89 m (v) 62.89 m

13. The angles of depression of two boats from the top of a cliff 190 m high are 60° and 30° respectively. Find the distance between the boats, if the boats are on the same side of the cliff .

(i) 219.39 m (ii) 235.39 m (iii) 201.39 m (iv) 212.39 m

14. A person, walking 40 m from a point toward a flagpost , observes that its angle of elevation changes from 30° to 45°. Find the height of the flagpost .

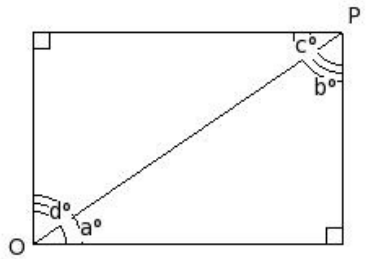


(i) $(2+\sqrt{3})$ m (ii) 800 m (iii) $(30\sqrt{2}+10\sqrt{6})$ m (iv) $(20\sqrt{3}+20)$ m (v) $(20\sqrt{18}+20\sqrt{6})$ m

15. A man on the top of a vertical observation tower observes a car moving at a uniform speed coming directly towards him. If it takes 8 min for the angle of depression to change from 30° to 45°, how soon after this, will the car reach the observation tower?

(i) 10 min 56 sec (ii) 8 min 53 sec (iii) 11 min 57 sec (iv) 9 min 55 sec (v) 12 min 58 sec

16. If P is the point of observation and the observed object is at point O, which of the following angles represent the angle of depression ?

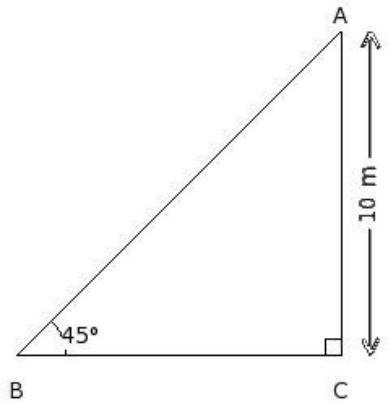


(i) ∠d (ii) ∠a (iii) ∠b (iv) ∠c

17. From a point 70 m away from a vertical cliff, the angles of elevation of the top and the foot of a vertical pillar at the top of the cliff are 60° and 30° respectively. Find the height of the cliff.

(i) 35.42 m (ii) 40.42 m (iii) 43.42 m (iv) 45.42 m (v) 37.42 m

18. 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 10 m, find the distance between the observation point and the top of the radio tower.



(i) $5\sqrt{12}$ m (ii) $10\sqrt{2}$ m (iii) 10 m (iv) $20\sqrt{3}$ m (v) 20 m

19. 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 30 m, find the height of the building .

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

20. There are two temples one on each bank of a river, just opposite to each other. One of the temples is 20 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 height of the other temple.

(i) 9.45 m (ii) 6.45 m (iii) 8.45 m (iv) 7.45 m (v) 10.45 m

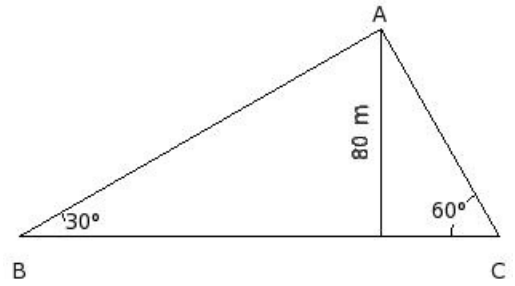
21. From the top of a 12 m high building , the angle of elevation of the top of a cable tower is 60° and the angle of depression of its foot is 45°. Find the height of the cable tower.

(i) 35.79 m (ii) 32.79 m (iii) 29.79 m (iv) 37.79 m (v) 27.79 m

22. Two vertical poles are on either side of a road. A 29 m long ladder is placed between the two poles. When the ladder rests against one pole, it makes an angle of 60° with the pole and when it is turned to rest against another pole, it makes an angle of 30° with the road. Find the width of the road.

(i) 36.61 m (ii) 44.61 m (iii) 39.61 m (iv) 42.61 m (v) 34.61 m

23. Two boys are on opposite sides of a tower of 80 m height. They measure the angle of elevation of the top of the tower as 30° and 60° respectively. Find the distance between the two boys.



(i) $\frac{320}{3}\sqrt{18}$ m (ii) 320 m (iii) $\frac{320}{3}\sqrt{3}$ m (iv) $160\sqrt{2}$ m (v) $\frac{320}{3}$ m

24. A tower stands vertically on the ground.
The distance between the observation point and its foot tower is 200 m .
The distance between the observation point and its top is 400 m .
Find the angle of elevation.

(i) 90° (ii) 105° (iii) 60° (iv) 30° (v) 45°

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 60° and the angle of elevation of the top of the building is 30°. If the height of the building is 14 m, find the height of the flag staff .

(i) 31.00 m (ii) 25.00 m (iii) 28.00 m (iv) 23.00 m (v) 33.00 m

Assignment Key

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