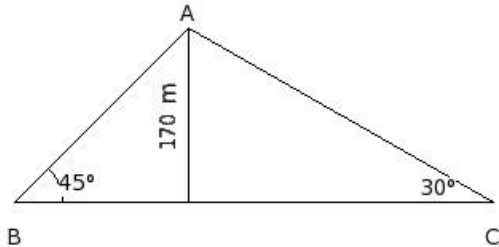


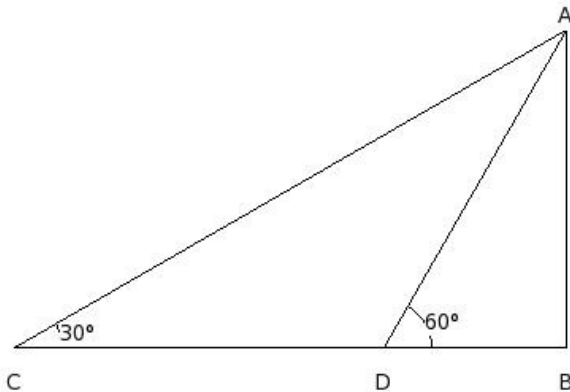


1. Two boys are on opposite sides of a tower of 170 m height. They measure the angle of elevation of the top of the tower as  $45^\circ$  and  $30^\circ$  respectively. Find the distance between the two boys.



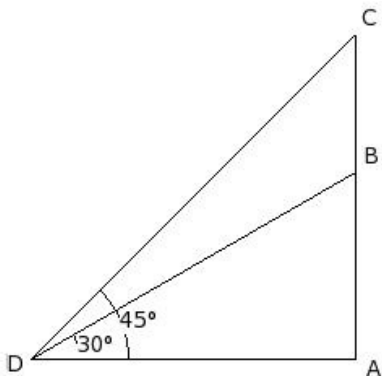
- (i)  $(170+170\sqrt{3})$  m (ii)  $(-2-\sqrt{3})$  m (iii)  $(-57800)$  m (iv)  $(170\sqrt{6}+170\sqrt{18})$  m (v)  $(85\sqrt{6}+255\sqrt{2})$  m

2. A person, walking 30 m from a point toward a flagpost, observes that its angle of elevation changes from  $30^\circ$  to  $60^\circ$ . Find the height of the flagpost.



- (i) 15 m (ii)  $\frac{45}{2}\sqrt{2}$  m (iii)  $15\sqrt{18}$  m (iv) 45 m (v)  $15\sqrt{3}$  m

3. A flagstaff stands on the top of a building at a distance of 40 m away from the foot of building. The angle of elevation of the top of the flagstaff is  $45^\circ$  and the angle of elevation of the top of the building is  $30^\circ$ . Find the height of the flagstaff.



- (i)  $(40\sqrt{6}-\frac{40}{3}\sqrt{18})$  m (ii)  $(40-\frac{40}{3}\sqrt{3})$  m (iii)  $(20\sqrt{6}-20\sqrt{2})$  m (iv)  $\frac{3200}{3}$  m (v)  $(2-\sqrt{3})$  m

- There are two temples one on each bank of a river, just opposite to each other. One of the temples is 50 m high.
4. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are  $45^\circ$  and  $60^\circ$  respectively. Find the width of the river .

(i) 33.87 m (ii) 31.87 m (iii) 23.87 m (iv) 25.87 m (v) 28.87 m

- There are two temples one on each bank of a river, just opposite to each other. One of the temples is 160 m high.
5. As observed from the top of this temple, the angles of depression of the top and foot of the other temple are  $45^\circ$  and  $60^\circ$  respectively. Find the height of the other temple.

(i) 72.63 m (ii) 70.63 m (iii) 62.63 m (iv) 64.63 m (v) 67.63 m

- Two poles of equal height are standing opposite to each other on either side of a road which is 45 m wide. From a
6. point between them on the road, the angles of elevation of the top of the poles are  $45^\circ$  and  $30^\circ$  respectively. Find the height of each pole and the distances of the point from the two poles .

(i) height = 16.47 m, distances away = 28.53 m, 16.47 m

(ii) height = 18.47 m, distances away = 30.53 m, 18.47 m

(iii) height = 17.47 m, distances away = 29.53 m, 17.47 m

(iv) height = 15.47 m, distances away = 27.53 m, 15.47 m

(v) height = 14.47 m, distances away = 26.53 m, 14.47 m

- From the top of a light house which is 100 m high from the sea level, the angles of depression of two ships are  $60^\circ$
7. and  $30^\circ$ . If one ship is exactly behind the other on the same side of the light house , find the distance between the two ships.

(i) 130.46 m (ii) 108.46 m (iii) 91.46 m (iv) 141.46 m (v) 115.46 m

8. From the top of a 20 m high building , the angle of elevation of the top of a cable tower is  $60^\circ$  and the angle of depression of its foot is  $45^\circ$ . Find the height of the cable tower.

(i) 49.64 m (ii) 59.64 m (iii) 51.64 m (iv) 57.64 m (v) 54.64 m

9. The angle of elevation of the top of a building from the foot of a tower is  $45^\circ$ . The angle of elevation of the top of the tower from the foot of the building is  $30^\circ$ . If the height of the tower is 75 m, find the height of the building .

(i) 111.89 m (ii) 129.89 m (iii) 141.89 m (iv) 112.89 m (v) 142.89 m

- 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
10. staff is  $60^\circ$  and the angle of elevation of the top of the building is  $30^\circ$ . If the height of the building is 15 m, find the height of the flag staff .

(i) 27.00 m (ii) 35.00 m (iii) 25.00 m (iv) 33.00 m (v) 30.00 m

- 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
11. staff is  $45^\circ$  and the angle of elevation of the top of the building is  $30^\circ$ . If the height of the flag staff is 6 m, find the height of the building .

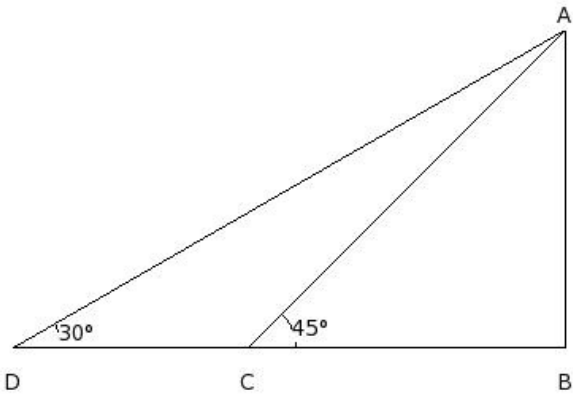
(i) 9.20 m (ii) 10.20 m (iii) 6.20 m (iv) 7.20 m (v) 8.20 m

12. From a point 130 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  $60^\circ$  and  $45^\circ$  respectively. Find the height of the cliff.

(i) 107.00 m (ii) 115.00 m (iii) 130.00 m (iv) 132.00 m (v) 144.00 m

13. From a point 170 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  $45^\circ$  and  $30^\circ$  respectively. Find the height of the pillar.

(i) 76.84 m (ii) 66.84 m (iii) 68.84 m (iv) 74.84 m (v) 71.84 m

14. The angles of depression of two boats from the top of a cliff 140 m high are  $60^\circ$  and  $45^\circ$  respectively. Find the distance between the boats, if the boats are on the same side of the cliff .  
 (i) 62.16 m (ii) 54.16 m (iii) 64.16 m (iv) 56.16 m (v) 59.16 m
15. The angles of depression of two boats from the top of a cliff 80 m high are  $60^\circ$  and  $45^\circ$  respectively. Find the distance between the boats, if the boats are on the opposite sides of the cliff .  
 (i) 138.19 m (ii) 126.19 m (iii) 141.19 m (iv) 120.19 m (v) 98.19 m
16. 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 17 min for the angle of depression to change from  $45^\circ$  to  $60^\circ$ , how soon after this, will the car reach the observation tower?  
 (i) 25 min 16 sec (ii) 23 min 13 sec (iii) 20 min 11 sec (iv) 22 min 12 sec (v) 24 min 14 sec
17. The shadow of a vertical tower BA on a level ground is increased by 30 m, when the altitude of the sun changes from  $45^\circ$  to  $30^\circ$ . Find the height of the tower .
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- (i) 40.99 m (ii) 45.99 m (iii) 43.99 m (iv) 35.99 m (v) 37.99 m
18. 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  $30^\circ$  and  $60^\circ$  and the distance between them is 120 m , find the height of the cliff.  
 (i) 54.97 m (ii) 46.97 m (iii) 56.97 m (iv) 51.97 m (v) 48.97 m
19. A man in a boat rowing away from a lighthouse 90 m high, takes 4 min to change the angle of elevation of the top of the lighthouse from  $60^\circ$  to  $30^\circ$ . Find the speed of the boat.  
 (i) 8.43 m/sec (ii) 1.43 m/sec (iii) 2.43 m/sec (iv) 0.43 m/sec (v) 7.43 m/sec
20. Two vertical poles are on either side of a road. A 37 m long ladder is placed between the two poles. When the ladder rests against one pole, it makes an angle of  $45^\circ$  with the pole and when it is turned to rest against another pole, it makes an angle of  $60^\circ$  with the road. Find the width of the road.  
 (i) 41.66 m (ii) 49.66 m (iii) 44.66 m (iv) 39.66 m (v) 47.66 m

## Assignment Key

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