VIDYA SHREE ACADEMY
SR. SEC. SCHOOL

VSA
A Real English Medium School

Little Steps
Pre Primary wing of VSA

An English Medium Co.Ed. School | Science & Commerce
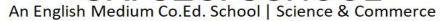
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Subject – Maths.   Class- 10th   Topic – Ch. 8 Heights and Distances

Refer to Video #13, 14 & 15 and solve the following exercise:

MISCELLANEOUS EXERCISE 8

1. The shadow of a vertical pillar is equal to the height of the pillar, then the angle of elevation of the Sun will be :
   (a) 45°   (b) 30°
   (c) 60°   (d) 50°   ( )

2. From a point on the ground which is 100 m away from the foot of a tower, the angle of elevation of its top is 60°. Then height of the tower is :
   (a) $100\sqrt{3}$ m   (b) $\dfrac{100}{\sqrt{3}}$ m
   (c) $50\sqrt{3}$ m   (d) $\dfrac{200}{\sqrt{3}}$ m   ( )

3. A ladder 15 m long reaches the top of a vertical wall. If this ladder makes an angle of 60° with the wall, then height of the wall is :
   (a) $15\sqrt{3}$ m   (b) $\dfrac{15\sqrt{3}}{2}$ m
   (c) $\dfrac{15}{2}$ m   (d) 15 m   ( )

4. From the top of a 10 m high tower the angle of depression of a point on the Earth is 30°. The distance of the point from the base of the tower is:
   (a) $10\sqrt{3}$ m   (b) $\dfrac{10}{\sqrt{3}}$ m
   (c) 10 m   (d) $5\sqrt{3}$ m   ( )

5. A bridge over a river makes an angle of 45° with the bank of the river. If the length of the bridge over the river is 150 m then the width of the river will be :
   (a) 75 m   (b) $50\sqrt{2}$ m
   (c) 150 m   (d) $75\sqrt{2}$ m   ( )

6. Tops of two towers whose heights are 20 m and 14 m are joined by a wire. If the wire makes an angle of 30° with the horizontal line, then the length of the wire is :
   (a) 12 m   (b) 10 m
   (c) 8 m   (d) 6 m   ( )

7. The angles of elevation of the top of a tower from two points at a distance of a m and b m $(a > b)$ from the base of the tower and in the same straight line with it are respectively 30° and 60°. Then height of the tower is :
   (a) $\sqrt{a+b}$ (b) $\sqrt{a-b}$
   (c) $\sqrt{ab}$ (d) $\sqrt{\dfrac{a}{b}}$ ( )

8. From the top of a 25 m high pillar the angle of elevation of the top of a tower and the angle of depression of the foot of the tower are equal then the height of the tower is :
   (a) 25 m   (b) 100 m
   (c) 75 m   (d) 50 m   ( )

9. The ratio of the length of a vertical rod and the length of its shadow is $1 : \sqrt{3}$. Then the angle of elevation of the Sun is :
   (a) 30°   (b) 45°
   (c) 60°   (d) 90°   ( )

10. The slope of a hill makes an angle of 60° with the horizontal of 500 m has to be walked to reach the top, then the height of the hill is :
    (a) $500\sqrt{3}$ m   (b) $\dfrac{500}{\sqrt{3}}$ m
    (c) $250\sqrt{3}$ m   (d) $\dfrac{250}{\sqrt{3}}$ m   ( )

11. A tower is standing vertically on a horizontal plane. If the angle of elevation of the Sun is 30° and the length of the shadow of the tower is 45 m then find the height of the tower.

12. A tree breaks due to storm and the broken upper part of the tree makes an angle of 60° with the horizontal ground. The top of the tree touches the horizontal ground at a distance of 10 m from the root of the tree. Find the height of the tree before breaking.   ($\sqrt{3} = 1.732$)

13. From a point at a distance of 120 m from the base of an unfinished tower the angle of elevation of the top of the tower is 30°. Find how much more height the tower be made so that its angle of elevation at the same point becomes 60°?

14. From a point situated at a distance of 100 m from the base of a tower. The angle of elevation of the top is 30°. Then find the height of the tower.

15. The angle of elevation of the top of a pillar from a point situated on a plane in 15°. On walking 100 m towards the pillar, the angle of elevation becomes 30°. Then find the height of the pillar.
    (where, tan 15° = $2\sqrt{3}$)

16. The shadow of a tower standing on a plane ground becomes 40 m longer when the angle of elevation of the Sun changes from 60° to 30°. Find the height of the tower.

17. On observing from the top of a lighthouse 60 m high from the sea level, the angles of depression of two ships are 30° and 45°. If one ship is just behind the other ship on the same side of the lighthouse then find the distance between the ships.

18. A 1.5 m long boy is standing at a certain distance from a 30 m high building when he goes towards the high building then the angle of elevation of the top of the building from his eye becomes 60° from 30°. Find by how much distance he has walked towards the building.

19. From the top of a 7 m high building the angle of elevation of the top of a tower is 60° and the angle of depression of its foot is 45°. Find the height of the tower.

20. From the top of a hill, in east side at two points, the angles of depression are 30° and 45°. If distance between two points is 1 km, then find height of the hill.

21. From a point A 20 m high above the water level in a lake the angle of elevation of a cloud is 30°. If the angle of depression of its reflection in the lake from point A is 60° then find the distance of the cloud from point A.

22. From a point on a bridge of a river, the angles of depression of the opposite banks of the river are 30° and 45°. If the bridge is at a height of 4 m from the bank, then find the width of the river.

23. A man is standing on the deck of a ship, which is 10 m above the water level. If he observes the angle of elevation of the top of a hill as 60° and the angle of depression of the base of the hill as 30°, then find the distance of the hill from the ship and the height of the hill.

24. A 12 m high tree breaks due to wind such that its top touches the ground and makes an angle of 60° with the ground. Find at what height from the ground did the tree break ($\sqrt{3} = 1.732$)?

25. A straight highway leads to the foot of a tower. A man standing at the top of the tower observes a car at an angle of depression of 30°, which is approaching the foot of the tower with a uniform speed. Six seconds later, the angle of depression of the car is found to be 60°. Find the time taken by the car to reach the foot of the tower from this point.

26. The angles of elevation of the top of a tower from two points at a distance of 4 m and 9 m from the base of the tower and in the same

straight line with it are complementary. Prove that the height of the tower is 6 m.

27. On one side of a road, a tower is situated and on the other side, a building is situated. The angles of depression of the roof and base of the building from the top of the tower are respectively 45° and 60°. If the height of the building is 12 m then find the height of the tower. ($\sqrt{3} = 1.732$)

28. If the angle of elevation of the Sun changes from 30° to 60°. Then find the difference in the length of the shadows of a 15 m high pillar at both these angles of elevation.