

Some Applications of Trigonometry: 5 Intriguing Questions

CBSE Grade X Mathematics

Instructions:

1. This set contains 5 questions.
2. Go through the questions properly.
3. Attempt all the questions.
4. Each question contains four options.
5. Only one of the options is correct.

1.	<p>A boy sitting by the window on the 10th floor of a building sees his father coming towards the building on his bike. If it took 18 mins for the angle of depression to change from 30° to 60°, then find the remaining time taken by the father to reach the building. (Assume that he travels the entire distance at a constant speed).</p> <p>A. $10\sqrt{3}$ min B. 9 min C. 6 min D. 36 min</p>
2.	<p>Two ships, are at the South of a lighthouse, make an angle of depression of 45° and 30°, respectively from its top. The ships are at a constant distance of 'a' m from each other. The ship which is the closest to the lighthouse moves towards its East until the angle of depression changes from 45° to 30°. The distance (in m) moved by this ship is:</p> <p>A. $\frac{a}{\sqrt{3}-1}$ B. $\frac{2a}{\sqrt{3}-1}$ C. $\frac{\sqrt{2}a}{\sqrt{3}-1}$ D. $\frac{\sqrt{3}a}{\sqrt{3}-1}$</p>

3.	<p>A highway road is blocked by protestors using rectangular wooden slabs making an angle of 30° with the road. If the road is blocked by using slabs of length 8 m, 4 m, 2 m, 1 m, and so on. Find the approximate width of the road.</p> <p>A. 8 m B. 16 m C. 32 m D. 64 m</p>
4.	<p>At an annual function of a college, the head of the department gave a inspirational speech while standing on a stage with height of $8\sqrt{3}$ m. A student of height $2\sqrt{3}$ m standing 12 m away from the stage, can see the foot and the head of the speaker at two different angles of elevation that are found to be complementary. Using the given data, find the height of the speaker.</p> <p>A. $3\sqrt{3}$ m B. $2\sqrt{3}$ m C. $\sqrt{3}$ m D. 3 m</p>
5.	<p>A flag post and a shelter are opposite to each other. A part of the flag post bent and fell on top of the shelter, making an angle of 30°. After a few hours, it fell again and landed at a distance of 4 m in front of the shelter, making an angle of 45°. If the height of the shelter is 6 m, then find the initial height of the flag post.</p> <p>A. $3(5\sqrt{3} + 8)$ m B. $3(5\sqrt{3} + 7)$ m C. $2(5\sqrt{3} + 8)$ m D. $2(5\sqrt{3} + 7)$ m</p>