Mathematics

Practice Test Paper 8

(Chapter 9: Some Applications of Trigonometry)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

General Instructions

1. All 13 questions are compulsory. The paper has four sections: A, B, C and D.
2. Section A - 5 marks; Section B - 8 marks; Section C - 9 marks; Section D - 3 marks.
3. Choose one correct option in Section A. Show the necessary steps and reasoning in Sections B, C and D.
4. Give exact answers unless stated otherwise. Use of calculators is not allowed.

SECTION A

(5 questions × 1 mark = 5 marks)

1. A 7 m pole casts a shadow of length $7\sqrt{3}$ m. If the Sun's elevation becomes 45°, its new shadow length is:

(A) $7\sqrt{3}$ m (B) 14 m

(C) 7 m (D) $\frac{7}{\sqrt{3}}$ m

2. The elevation of a tower top is 30° from P and 60° from Q, both on level ground on the same side of the foot. Which statement is correct?

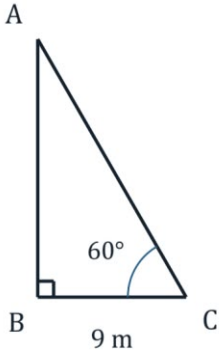
(A) P is closer to the foot

(B) They are equally far

(C) P is twice as far

(D) Q is closer to the foot

3. AC is the line of sight to the top A of a vertical tower. BC = 9 m and ∠ACB = 60°. The length AC is:



(A) $9\sqrt{3}$ m (B) 18 m

(C) $6\sqrt{3}$ m (D) 9 m

4. The vertical rise from an observer's eye to a building top is 10 m. The eye is 1.8 m above ground. The building's height is:

(A) 11.8 m (B) 8.2 m

(C) 10 m (D) 18 m

5. A line of sight has length L and makes elevation 30° from level ground. Its horizontal projection is:

(A) L/2 (B) $L\sqrt{3}$

(C) $\frac{L\sqrt{3}}{2}$ (D) 2L

SECTION B

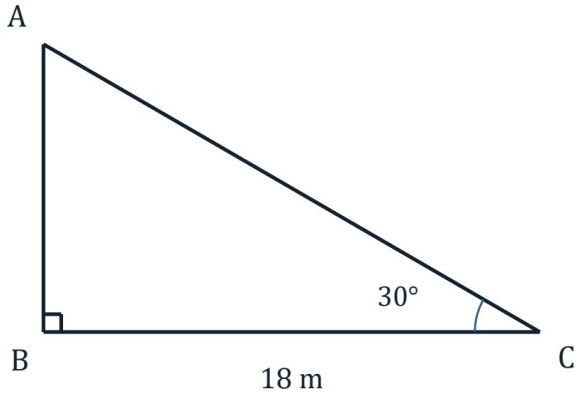
(4 questions × 2 marks = 8 marks)

6. The top of a 21 m tower is viewed from a 1.5 m high instrument at elevation 60°. Find the horizontal distance between the instrument and the tower.

7. A 12 m long inclined support makes 60° with level ground. How far does its upper end rise above the ground and what is its horizontal projection?

8. An observer at the top of a 16 m building sees a ground marker $16\sqrt{3}$ m away horizontally. Find the depression angle, showing the ratio used.

9. AB is a pole whose shadow BC is 18 m long at Sun elevation 30°. Find its height and the shadow length at Sun elevation 45°.

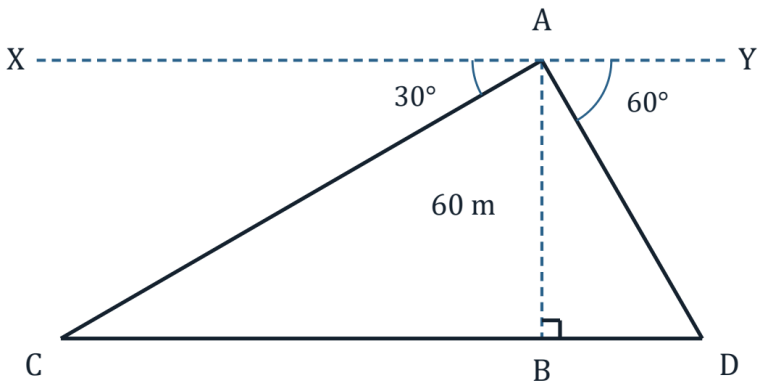


SECTION C

(3 questions × 3 marks = 9 marks)

10. An aircraft flies horizontally at height 1500 m, directly away from a ground observer in the same vertical plane. In 30 seconds its elevation changes from 60° to 30°. Find its speed in m/s.

11. A lighthouse AB is 60 m high. Two ships C and D lie on opposite sides of B on one straight line at sea level. Their depression angles from A are 30° and 60°. Find the distance CD.

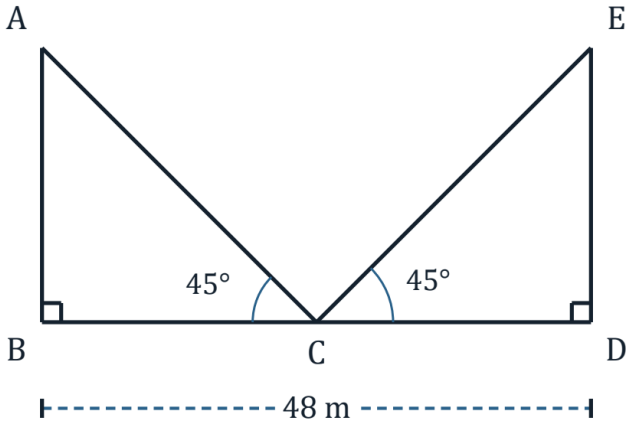


12. From a 60 m building top, a shorter tower's top and foot have depression angles 45° and 60°. Both bases are on level ground. Find the tower height.

SECTION D

(Application Based Question - 3 marks)

13. Equal poles AB and ED stand on opposite sides of a 48 m path BD. C is its midpoint, and both tops are viewed from C at 45°.



(i) Find BC.

(ii) Find the height of either pole.

(iii) Find the line-of-sight distance AC.