Mathematics

Practice Test Paper 7

(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.

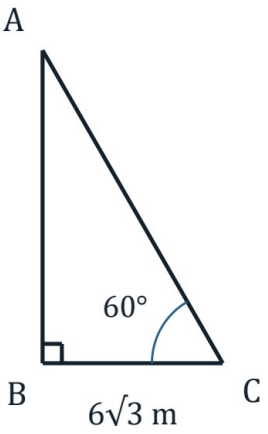
SECTION A

(5 questions × 1 mark = 5 marks)

1. An observer looks at an object below eye level. The angle between the horizontal and the downward line of sight is the angle of:

(A) depression
(B) elevation
(C) reflection
(D) rotation

2. A vertical post AB is seen from C at 60°. BC = $6\sqrt{3}$ m on level ground. The height AB is:



(A) 6 m
(B) 12 m
(C) 18 m
(D) $6\sqrt{3}$ m

3. For a 30° elevation, the horizontal distance from a ground observer to a tower is:

(A) half its height
(B) equal to its height
(C) twice its height
(D) $\sqrt{3}$ times its height

4. A 30 m string is taut from a ground peg to a kite, making 60° with level ground. The kite's height is:

(A) 15 m (B) $15\sqrt{3}$ m

(C) $30\sqrt{3}$ m (D) $10\sqrt{3}$ m

5. A 25 m lighthouse is viewed at elevation 45° from a boat at sea level. The horizontal distance to its foot is:

(A) $25\sqrt{2}$ m (B) 50 m

(C) 25 m (D) $25\sqrt{3}$ m

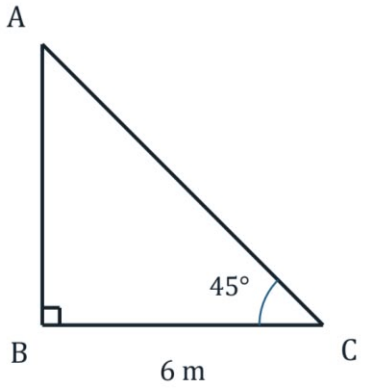
SECTION B

(4 questions × 2 marks = 8 marks)

6. A 15 m ladder touches a vertical wall and makes 60° with the wall. Find its vertical reach and its foot's distance from the wall.

7. A flagpole is 17.5 m high. An observer's eyes are 1.5 m above level ground, and the top's elevation is 45°. Find the horizontal distance and the line-of-sight distance.

8. A tree breaks at A, and the broken part AC touches level ground 6 m from the foot B at 45°. Find the height of the stump and the original tree height.



9. A tower casts a 27 m shadow when the Sun's elevation is 30°. Find its height and the shadow length when the Sun's elevation is 60°.

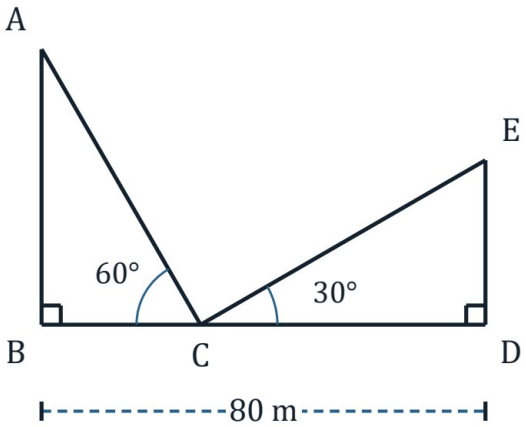
SECTION C

(3 questions × 3 marks = 9 marks)

10. From a point on level ground, a tower top has elevation 45°. On moving 12 m directly away, the elevation becomes 30°. Find the tower height and the initial distance.

11. A rock top is seen at elevations 30° and 45° from the top and foot, respectively, of a 100 m tower. The tower foot and rock base are at the same level. Find the rock height.

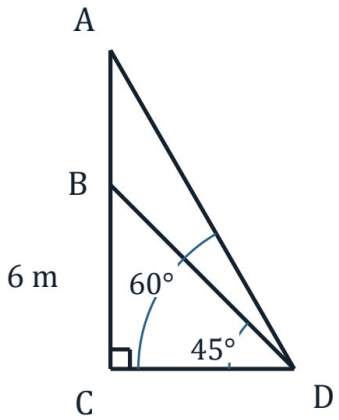
12. Pillars AB and ED stand 80 m apart on level ground. AB is 20 m taller than ED. From C between their feet, the top elevations are 60° and 30°. Find BC and both pillar heights.



SECTION D

(Application Based Question - 3 marks)

13. A small antenna AB is on a 6 m building BC. At a ground observation point D, its bottom and top have elevations 45° and 60°, respectively.



(i) Find CD.

(ii) Find the total height AC.

(iii) Find the antenna height AB.