Mathematics

Practice Test Paper 6

(Chapter 9: Some Applications of Trigonometry)

Class X | 2026–27

Time Allowed: 45 Minutes | Maximum Marks: 25

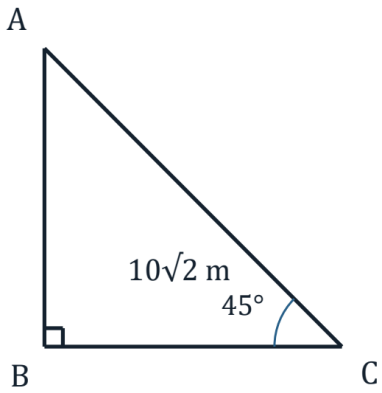
General Instructions

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. In the diagram, AC is a $10\sqrt{2}$ m ladder inclined at 45° to the floor BC. Its vertical reach AB is:



(A) 20 m
(B) 10 m
(C) $5\sqrt{2}$ m
(D) $10\sqrt{2}$ m

2. A tower top has elevation θ from a ground point at distance d from the foot. Which expression gives the tower height?

(A) d cos θ
(B) d sin θ
(C) d tan θ
(D) d cot θ

3. From the centre of the segment joining the feet of two towers, their top elevations are 30° and 60°. The ratio of their heights, in that order, is:

(A) 1 : 3
(B) $1 : \sqrt{3}$
(C) 3 : 1
(D) $\sqrt{3} : 1$

4. A 2 m vertical post casts a 2 m shadow. At the same time, a nearby tree casts a 9 m shadow on the same level ground. The tree's height is:

(A) 18 m (B) 4.5 m
(C) 11 m (D) 9 m

5. A downward line of sight makes 30° with the horizontal. Its acute angle with the vertical is:

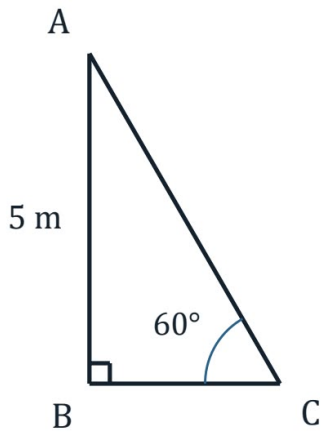
(A) 30° (B) 60°
(C) 45° (D) 90°

SECTION B

(4 questions × 2 marks = 8 marks)

6. A 1.5 m tall observer stands $10\sqrt{3}$ m from a tree. The elevation of the tree top from eye level is 30°. Find the tree's height.

7. A 5 m vertical post AB supports a taut wire AC inclined at 60° to level ground BC. Find the wire length and the distance BC.



8. A straight slide begins 1.5 m above level ground and is inclined at 30°. Find its length and horizontal run.

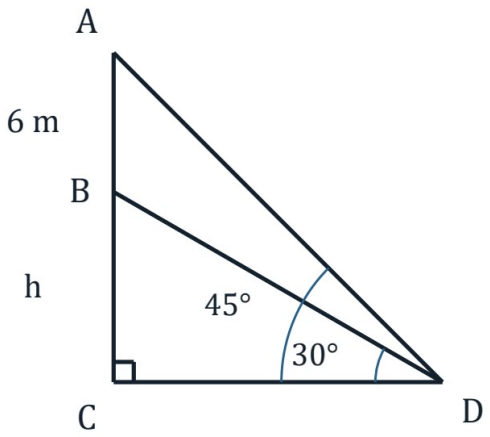
9. A mast is 36 m high. Its top has depression angle 30° towards a ground marker. Find the marker's horizontal distance and verify that the line-of-sight distance is twice the mast height.

SECTION C

(3 questions × 3 marks = 9 marks)

10. A tower top has elevation 60° from ground point X. From Y, 40 m vertically above X, its elevation is 45°. Find the tower height and the horizontal distance from X to its foot.

11. A 6 m flagstaff AB stands on a tower BC. From D on level ground, the bottom and top of the flagstaff have elevations 30° and 45°. Find the tower height.

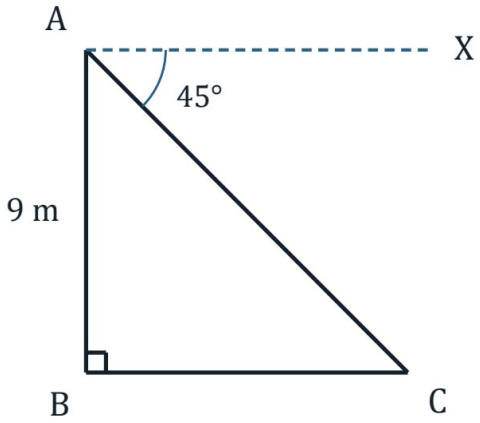


12. A boat moves directly away from a 100 m lighthouse at constant speed. The elevation of the top changes from 60° to 30° in 2 minutes. Find the boat's speed in metres per minute.

SECTION D

(Application Based Question - 3 marks)

13. A light at A is fixed 9 m above level ground at B. A target C is viewed from A at depression angle 45° from horizontal AX.



(i) Find the horizontal distance to the target.

(ii) Find the length of the light path AC.

(iii) Find the elevation of A from C.