Mathematics

Practice Test Paper 9

(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 taut 18 m cable makes 60° with level ground. Its horizontal projection is:

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

(C) $9\sqrt{3}$ m (D) 18 m

2. For a vertical tower of height h seen at elevation 45° from ground level, the line-of-sight distance is:

(A) h (B) $h\sqrt{3}$

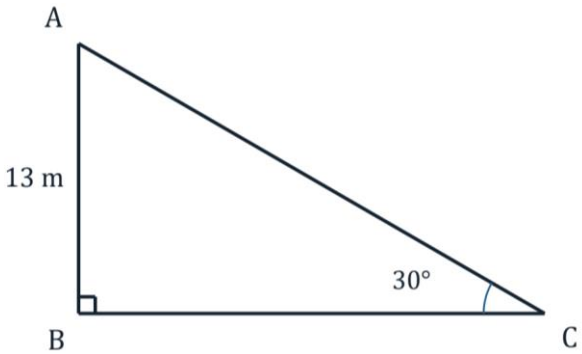
(C) 2h (D) $h\sqrt{2}$

3. Two ground observation points lie on one straight line through a tower's foot, on opposite sides. Each is at distance d from the foot. The distance between them is:

(A) 2d (B) d

(C) d/2 (D) d$\sqrt{2}$

4. AB is a 13 m vertical pole. The line of sight AC makes elevation 30° at C on level ground. The distance AC is:



(A) $13\sqrt{3}$ m (B) 6.5 m

(C) 26 m (D) 13 m

5. At an elevation of 60°, the vertical rise from eye level is $6\sqrt{3}$ m. The horizontal distance is:

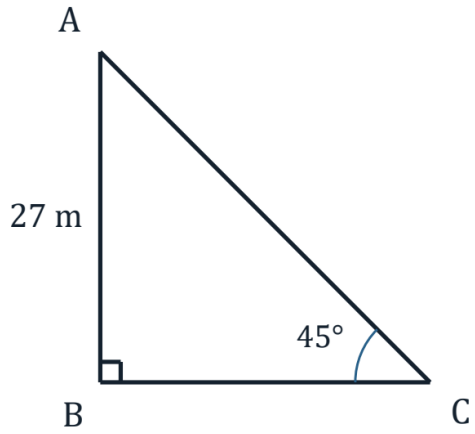
(A) 18 m (B) 3 m

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

SECTION B

(4 questions × 2 marks = 8 marks)

6. A vertical building AB is 27 m high. Its top A is observed from C on level ground at 45°. Find BC and AC.



7. A vertical tree has a $10\sqrt{3}$ m shadow at Sun elevation 30°. Find its height. Is a claim that the height is 30 m correct?

8. The top of a 13 m building is viewed from a 1 m high camera at elevation 30°. Find the horizontal distance and the line-of-sight distance.

9. A crane arm is 14 m long and inclined at 60° to a horizontal line through its pivot. The pivot is 2 m above level ground. Find the arm tip's height above ground.

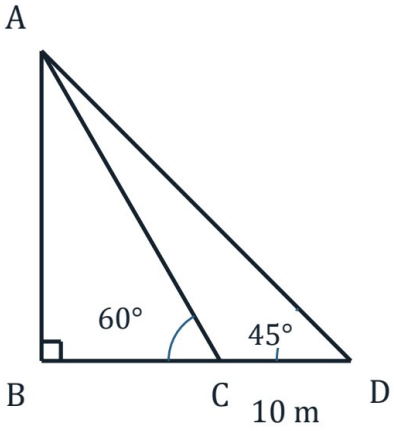
SECTION C

(3 questions × 3 marks = 9 marks)

10. An observer on a 12 m platform sees a taller tower's foot at depression 30° and its top at elevation 45°. Both structures stand on level ground. Find the separation and the tower height.

11. Two equal poles stand 36 m apart on level ground. A point between them sees their tops at 30° and 60°. Find the pole height and the distances from the point to the poles.

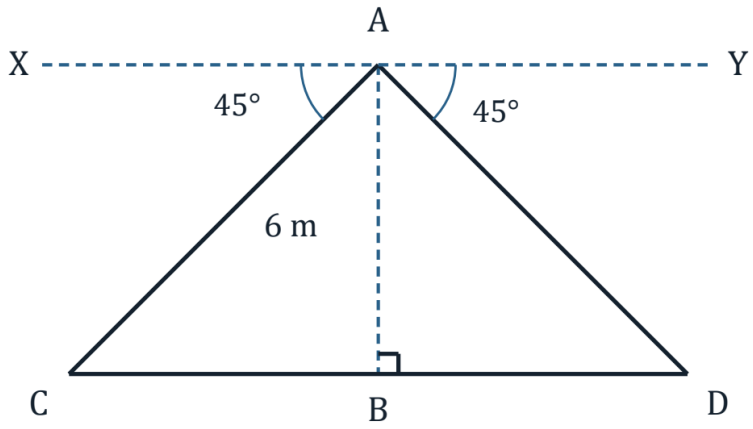
12. A tower AB is viewed from C and D on the same straight ground line, with C between B and D. The elevations are 60° and 45°, and CD = 10 m. Find the tower height.



SECTION D

(Application Based Question - 3 marks)

13. A footbridge observation point A is 6 m above the level of banks C and D. B lies vertically below A between the banks. The marked depression angles are 45° and 45°.



(i) Find BC.

(ii) Find BD.

(iii) Find the river width CD.