Mathematics

Practice Test Paper 3

(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)

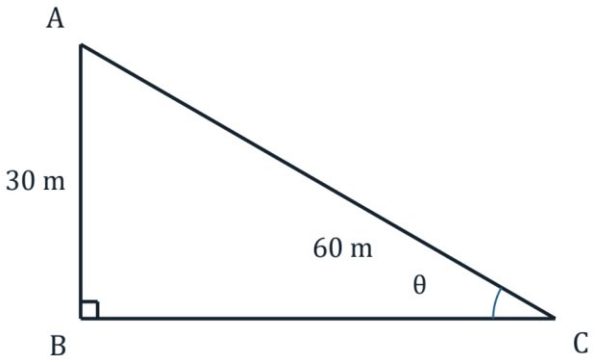
1. The elevation of the top of a vertical tower increases as an observer on level ground:

(A) moves directly away
(B) moves directly towards its foot
(C) stays at the same distance
(D) lowers the tower

2. The height of a pole is $\sqrt{3}$ times its shadow on level ground. The Sun's elevation is:

(A) 60°
(B) 45°
(C) 30°
(D) 90°

3. In the diagram, AC is a taut kite string. The kite A is 30 m above B and AC = 60 m. The angle θ is:



(A) 60°
(B) 90°
(C) 45°
(D) 30°

4. A 16 m ramp makes an angle of 30° with level ground. Its horizontal projection is:

(A) 8 m
(B) $16\sqrt{3}$ m
(C) $8\sqrt{3}$ m
(D) 16 m

5. Which ratio directly relates a vertical height and a horizontal distance to the elevation angle?

(A) sine

(B) secant

(C) cosine

(D) tangent

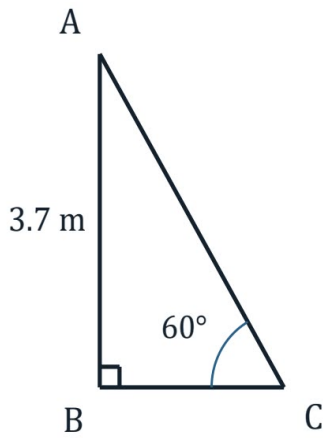
SECTION B

(4 questions × 2 marks = 8 marks)

6. A 24 m building is viewed from level ground at 30°. Find the distance from the observer to its foot.

7. The top of a tower is seen at elevation 60° from a ground point 20 m away. Find its height, giving both the exact value and a value using $\sqrt{3} = 1.732$.

8. A ladder AC reaches a repair point A that is 1.3 m below the top of a 5 m pole. It makes 60° with level ground BC. Find AC and BC.



9. An observer's eye is 1.6 m above level ground, 12 m from a flagpole. The elevation of the top is 60°. Find the pole height.

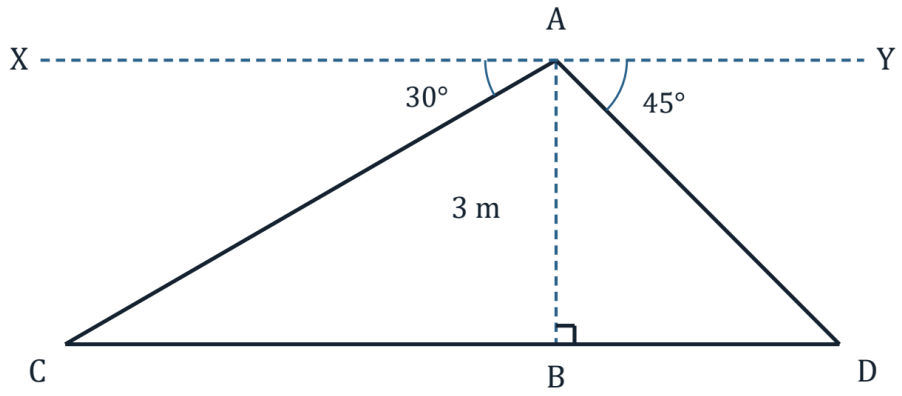
SECTION C

(3 questions × 3 marks = 9 marks)

10. From the top of a tower, the top and foot of an 8 m building are seen at depression angles of 30° and 45°. Both bases are on level ground. Find the tower height and the separation of the buildings.

11. A girl's eyes are 1.2 m above ground. A balloon moves horizontally away from her at height 88.2 m, in the vertical plane through her line of sight. Its elevation changes from 60° to 30°. Find the distance travelled.

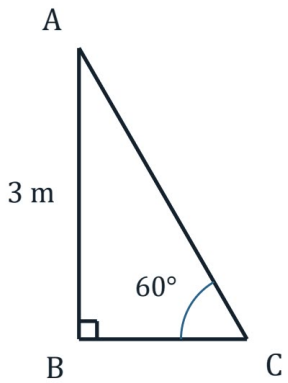
12. A bridge observation point A is 3 m above the level of the two banks C and D. B is vertically below A between the banks. Their depression angles are 30° and 45°. Find the river width CD.



SECTION D

(Application Based Question - 3 marks)

13. A straight playground slide AC starts at A, 3 m vertically above B, and meets level ground at C at 60°.



(i) Find the slide length.

(ii) Find the horizontal distance BC.

(iii) Find the angle between the slide and the vertical support AB.