Mathematics

Practice Test Paper 10

(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 camera 2 m above level ground views the top of a tower of height H metres. Which vertical length must be used with the horizontal distance in the tangent ratio?

(A) H + 2 metres

(B) H − 2 metres

(C) H metres

(D) 2H metres

2. A 22 m taut rope is attached from level ground at 30° to a pole. Its attachment height is:

(A) 11 m

(B) $22\sqrt{3}$ m

(C) $11\sqrt{3}$ m

(D) 22 m

3. A tower top has elevation 60° from a ground point. If the observer's distance from its foot is tripled, the new elevation is:

(A) 60°

(B) 45°

(C) 30°

(D) 90°

4. A student subtracts an observer's eye height from the calculated rise above eye level to obtain a building's full height. The correct operation is to:

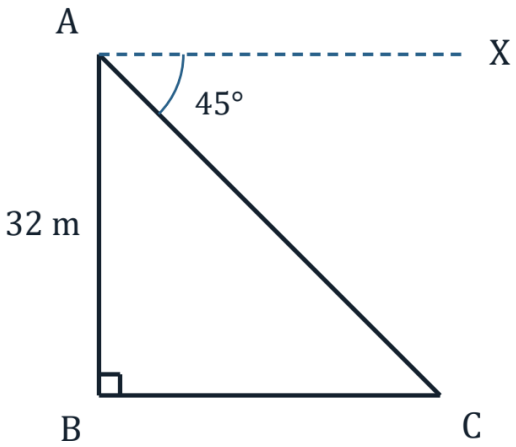
(A) divide by eye height

(B) multiply by eye height

(C) leave the rise unchanged

(D) add eye height

5. A 32 m observation tower AB overlooks a ground point C at depression angle 45° from horizontal AX. The ground distance BC is:



(A) 16 m (B) $32\sqrt{2}$ m

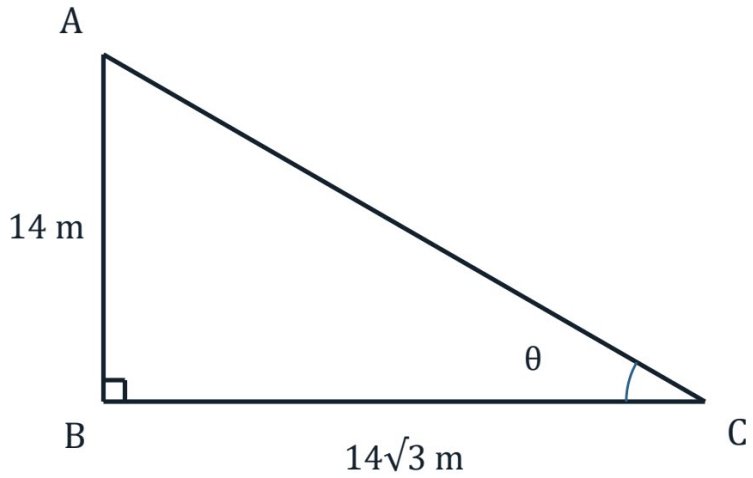
(C) 64 m (D) 32 m

SECTION B

(4 questions × 2 marks = 8 marks)

6. A kite string is held 1.5 m above level ground. The taut string is 40 m long and makes 30° with the horizontal. Find the kite's height above ground.

7. A 14 m tower AB has a $14\sqrt{3}$ m shadow BC on level ground. Find the Sun's elevation and the distance from A to the shadow tip C.



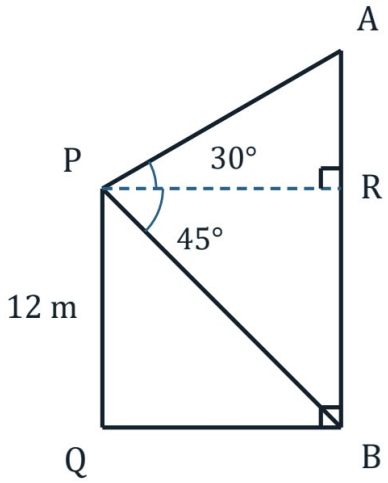
8. A ground observer is 8 m from a building. A balcony has elevation 45°, while the roof has elevation 60°. Find the vertical distance between the balcony and the roof.

9. A taut cable from the ground to a pole makes 45° with level ground. If its attachment height is 7 m, find the cable length and horizontal distance from the peg to the pole.

SECTION C

(3 questions × 3 marks = 9 marks)

10. A tower top A is observed from P, the top of a 12 m building PQ. The elevation of A is 30° and the depression of the tower foot B is 45°. PR is horizontal and QB is level. Find AB and QB.



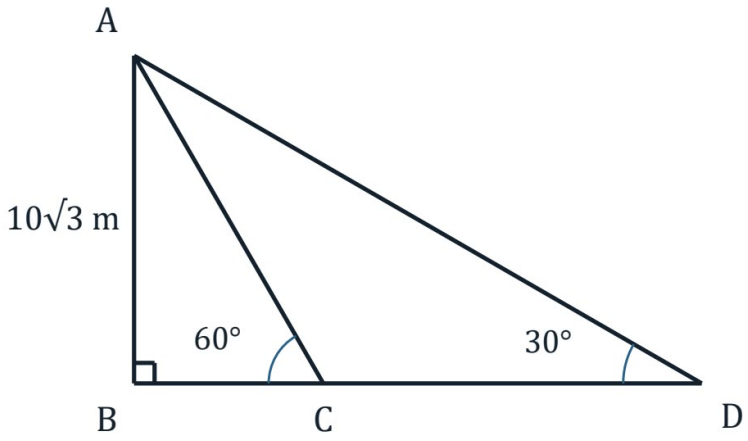
11. A 30 m pole's shadow shortens as the Sun's elevation changes from 30° to 45°. Find both shadow lengths and the decrease in length.

12. A car travels straight towards a tower at constant speed. Its depression angle from the tower top changes from 30° to 60° in 12 seconds. If the tower is $24\sqrt{3}$ m high, find the car's speed and the remaining time to reach the foot.

SECTION D

(Application Based Question - 3 marks)

13. A tower AB is $10\sqrt{3}$ m high. A walker approaches it along level ground from D to C; B, C and D lie on one straight line. The elevations of A are marked.



(i) Find the starting distance BD.

(ii) Find the final distance BC.

(iii) Find the distance walked.