

Mathematics
Practice Test Paper 3
(Chapter 8: Introduction to 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. Unless stated otherwise, angles are acute. Use of calculators is not allowed.

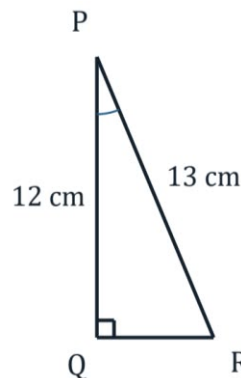
SECTION A

(5 questions $\times$ 1 mark = 5 marks)

1. In a right triangle, the reciprocal of the opposite-to-adjacent ratio is:

- | | |
|------------|------------|
| (A) $\sin$ | (B) $\cos$ |
| (C) $\sec$ | (D) $\cot$ |

2. For the marked angle P in the triangle, $\sin P$ equals:



- | | |
|---------------------|--------------------|
| (A) $\frac{12}{13}$ | (B) $\frac{5}{13}$ |
| (C) $\frac{5}{12}$ | (D) $\frac{13}{5}$ |

3. $\sin 0^\circ + \cos 0^\circ$ equals:

- | | |
|-------|--------|
| (A) 1 | (B) 0 |
| (C) 2 | (D) -1 |

4. For an acute angle, $\frac{\sin A}{\cos A}$ is:

- | | |
|--------------|------------------------------|
| (A) $\cot A$ | (B) $\sec A$ |
| (C) $\tan A$ | (D) $\operatorname{cosec} A$ |

5. If $\tan A = \sqrt{3}$, A is:

(A) 30°

(B) 45°

(C) 90°

(D) 60°

SECTION B

(4 questions $\times$ 2 marks = 8 marks)

6. If $\sec \theta = \frac{13}{12}$, find $\sin \theta$ and $\cot \theta$.

7. Evaluate $\frac{\sec^2 45^\circ - \tan^2 45^\circ}{\sin^2 45^\circ}$.

8. Prove that $(1 - \sin A)(1 + \sin A) = \cos^2 A$ (where defined).

9. Can $\tan A$ be greater than 1 for an acute angle? Explain with a standard-angle example.

SECTION C

(3 questions $\times$ 3 marks = 9 marks)

10. In triangle OPQ, $\angle P = 90^\circ$, $OP = 7$ cm and $OQ - PQ = 1$ cm. Find PQ, $\sin Q$ and $\cos Q$.

11. Prove that $(\operatorname{cosec} A - \cot A)^2 = \frac{1 - \cos A}{1 + \cos A}$ (where defined).

12. Express $\cos A$, $\tan A$ and $\sec A$ in terms of $\sin A$.

SECTION D

(Application Based Question - 3 marks)

13. A design uses a right triangle whose two perpendicular sides are both 9 cm. One acute angle is θ .

(i) Find the hypotenuse.

(ii) Find θ .

(iii) Find $\sec \theta$.