

Mathematics
Practice Test Paper 4
(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. Which expression equals $\sin^2 A$?

- | | |
|--------------------|--------------------|
| (A) $1 - \cos^2 A$ | (B) $1 + \cos^2 A$ |
| (C) $\sec^2 A - 1$ | (D) $1 - \tan^2 A$ |

2. $\cot 30^\circ$ equals:

- | | |
|--------------------------|----------------|
| (A) $\frac{1}{\sqrt{3}}$ | (B) 1 |
| (C) 2 | (D) $\sqrt{3}$ |

3. For $0^\circ \leq A \leq 90^\circ$, $\sec A$ is not defined when A is:

- | | |
|----------------|----------------|
| (A) 0° | (B) 30° |
| (C) 90° | (D) 60° |

4. If $\cot A = \frac{9}{40}$, then $\tan A$ is:

- | | |
|---------------------|---------------------|
| (A) $\frac{9}{41}$ | (B) $\frac{40}{9}$ |
| (C) $\frac{41}{40}$ | (D) $\frac{40}{41}$ |

5. If every side of a right triangle is doubled, the sine of a corresponding acute angle:

- (A) is unchanged
(B) is doubled
(C) is halved
(D) becomes four times as large

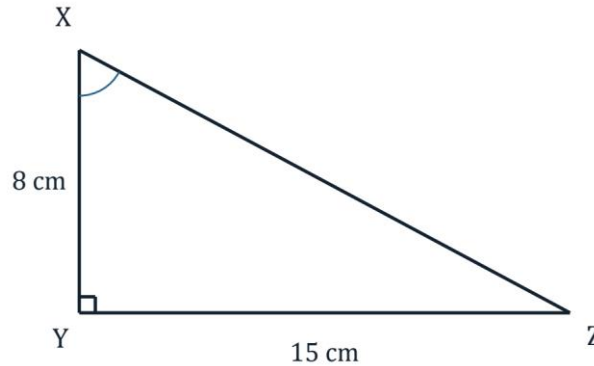
SECTION B

(4 questions × 2 marks = 8 marks)

6. Evaluate $\frac{5 \tan 60^\circ}{(\sin^2 60^\circ + \cos^2 60^\circ) \tan 30^\circ}$.

7. If $\cos A = \frac{8}{17}$, find $\sin A$ and $\tan A$.

8. In the right triangle XYZ shown, find $\tan X$ and $\sec X$.



9. Prove that $\frac{\sec^2 A - 1}{\sec^2 A} = \sin^2 A$ (where defined).

SECTION C

(3 questions × 3 marks = 9 marks)

10. Using a right triangle, prove $\sin^2 A + \cos^2 A = 1$. Then verify it at $A = 0^\circ$ and $A = 90^\circ$.

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

12. Find A and B if $\tan(A + B) = \sqrt{3}$ and $\tan(A - B) = \frac{1}{\sqrt{3}}$, with $A > B > 0^\circ$ and $A + B < 90^\circ$.

SECTION D

(Application Based Question - 3 marks)

13. A triangular bracket is right-angled at B , with $AB = 12$ cm and $AC = 13$ cm. The acute angle at A is θ .

(i) Find BC .

(ii) Find $\tan \theta$.

(iii) Find $\sec \theta - \tan \theta$.