

Mathematics
Practice Test Paper 5
(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. cosec 30° equals:

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

2. If $\tan A = 1$, then $2\sin A \cos A$ equals:

- | | |
|-------|-------------------|
| (A) 1 | (B) 0 |
| (C) 2 | (D) $\frac{1}{2}$ |

3. Which statement is true for every acute angle A?

- | | |
|------------------|----------------------------------|
| (A) $\sin A > 1$ | (B) $\cos A < 0$ |
| (C) $\tan A = 1$ | (D) $\operatorname{cosec} A > 1$ |

4. $9\sec^2 A - 9\tan^2 A$ equals:

- | | |
|-------|-------|
| (A) 1 | (B) 9 |
| (C) 8 | (D) 0 |

5. For an acute angle A, $\cos A = \sin A$ implies A is:

- | | |
|----------------|----------------|
| (A) 30° | (B) 60° |
| (C) 45° | (D) 0° |

SECTION B

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

6. If $\cot \theta = \frac{7}{8}$, evaluate $\frac{(1+\sin \theta)(1-\sin \theta)}{(1+\cos \theta)(1-\cos \theta)}$.

7. Evaluate $\frac{2\tan 30^\circ}{1+\tan^2 30^\circ}$.

8. Explain why $\cot 0^\circ$ and $\operatorname{cosec} 0^\circ$ are not defined.

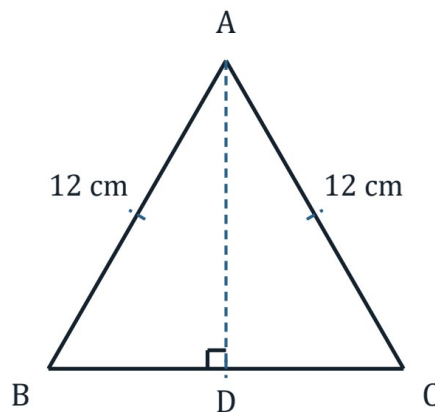
9. Prove that $(\operatorname{cosec} A - \sin A)\sin A = \cos^2 A$ (where defined).

SECTION C

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

10. Prove that $\sqrt{\frac{1+\sin A}{1-\sin A}} = \sec A + \tan A$ (where defined).

11. ABC is equilateral with side 12 cm. AD is perpendicular to BC, as shown. Find AD, $\sin B$ and $\cos B$.



12. If $x = 3\sin \theta + 4\cos \theta$ and $y = 3\cos \theta - 4\sin \theta$, find $x^2 + y^2$.

SECTION D

(Application Based Question - 3 marks)

13. A right triangle has an acute angle θ with $\sin \theta = 8/17$. Its hypotenuse is 34 cm.

(i) Find the side opposite θ .

(ii) Find the side adjacent to θ .

(iii) Find $\cot \theta$.