

Mathematics
Practice Test Paper 7
(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. $\cos 30^\circ$ equals:

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

2. $\cot 90^\circ$ equals:

- | | |
|-----------------|--------|
| (A) 0 | (B) 1 |
| (C) not defined | (D) -1 |

3. $\sin A \sec A$ is equal to:

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

4. If $\tan A = \frac{5}{12}$, then $\sec A$ equals:

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

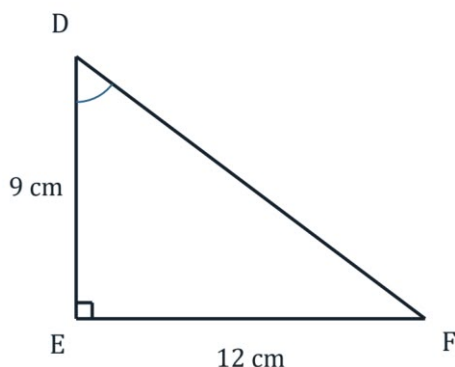
5. If the opposite side is 10 cm and the hypotenuse is 20 cm, the acute angle is:

- | | |
|----------------|----------------|
| (A) 60° | (B) 45° |
| (C) 30° | (D) 90° |

SECTION B

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

6. Evaluate $4\sin 30^\circ \cos 60^\circ + \tan^2 60^\circ$.
7. Prove that $\frac{1+\tan^2 A}{1+\cot^2 A} = \tan^2 A$ (where defined).
8. If $\sin A + \cos A = \frac{7}{5}$, find $\sin A \cos A$.
9. For the right triangle DEF shown, calculate $\sec D$ and $\cot D$.



SECTION C

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

10. Explain, using similar right triangles, why the sine and tangent of an acute angle do not depend on the size of the triangle.
11. Prove that $(\operatorname{cosec} A - \sin A)(\sec A - \cos A) = \frac{1}{\tan A + \cot A}$ (where defined).
12. Find A and B if $\cos(A + B) = 0$ and $\sin(A - B) = \frac{1}{2}$, where $A > B > 0^\circ$ and $A + B \leq 90^\circ$.

SECTION D

(Application Based Question - 3 marks)

13. A square card has diagonal 14 cm. One diagonal divides it into two right triangles. Let θ be an acute angle of one such triangle.
- (i) Find θ .
- (ii) Find the side length of the square.
- (iii) Find $\sin \theta$.