

CHAPTER-8 | Introduction to Trigonometry

QUIZ
PART-04

1. Evaluate the following expression: $\sin 60^\circ \cdot \cos 30^\circ + \sin 30^\circ \cdot \cos 60^\circ$

- A. 1
B. 0
C. $\frac{1}{\sqrt{2}}$
D. $\frac{\sqrt{3}}{2}$ (A)

Explanation: This is a standard trigonometric

identity. Using known values of $\sin 60^\circ = \frac{\sqrt{3}}{2}$,

$\cos 30^\circ = \frac{\sqrt{3}}{2}$, $\sin 30^\circ = \frac{1}{2}$, and $\cos 60^\circ = \frac{1}{2}$, we get the result as 1.

2. What is the value of $2 \tan^2 45^\circ + \cos^2 30^\circ - \sin^2 60^\circ$?

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

Explanation: Using the known trigonometric

values: $\tan 45^\circ = 1$, $\cos 30^\circ = \frac{\sqrt{3}}{2}$, and $\sin 60^\circ = \frac{\sqrt{3}}{2}$, we calculate the value to be 1.

3. What is the value of $\cos 45^\circ \cdot \sec 30^\circ \cdot \csc 30^\circ$?

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

Explanation: Using the known values of $\cos 45^\circ =$

$\frac{1}{\sqrt{2}}$, $\sec 30^\circ = \frac{2}{\sqrt{3}}$, and $\csc 30^\circ = 2$, the product simplifies to $\frac{2}{\sqrt{3}}$.

4. The value of $\sin 30^\circ \cdot \tan 45^\circ - \csc 60^\circ \cdot \sec 30^\circ \cot 45^\circ$ is:

- A. 1
B. 0
C. $\frac{1}{2}$
D. $\frac{3}{2}$ (B)

Explanation: Using the known values of $\sin 30^\circ = \frac{1}{2}$, $\tan 45^\circ = 1$, $\csc 60^\circ = \frac{2}{\sqrt{3}}$, $\sec 30^\circ = \frac{2}{\sqrt{3}}$, and $\cot 45^\circ = 1$, the expression simplifies to 0.

5. Evaluate the following expression: $5 \cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ$

- A. 1
B. 2
C. 3
D. 4 (D)

Explanation: Using the values $\cos 60^\circ = \frac{1}{2}$, $\sec 30^\circ = \frac{2}{\sqrt{3}}$, and $\tan 45^\circ = 1$, we get the value as 4.

6. Which of the following options is correct for the identity $2 \tan 30^\circ + \tan 30^\circ = \sin 60^\circ$?

- A. $\sin 60^\circ$
B. $\cos 60^\circ$
C. $\tan 60^\circ$
D. $\sin 30^\circ$ (A)

Explanation: Using the known values $\tan 30^\circ = \frac{1}{\sqrt{3}}$ and $\sin 60^\circ = \frac{\sqrt{3}}{2}$, we confirm the equation is correct.

7. In the triangle ΔABC , if $\angle ACB = 30^\circ$ and $AB = 5$, what is the length of side BC ?

- A. 5
B. 2.5
C. $5/2$
D. 3 (B)

Explanation: Using the trigonometric ratio $\sin 30^\circ = BC/AB$, we get $BC = AB \times \sin 30^\circ = 5 \times \frac{1}{2} = 2.5$.

8. The value of $\sec 90^\circ$ is:

- A. 1
B. 0
C. Undefined
D. ∞ (C)

Explanation: $\sec 90^\circ = 1 / \cos 90^\circ$, and since $\cos 90^\circ = 0$, the value is undefined.

9. The value of $\sin 2A = 2 \sin A$ holds true when $A =$:

- A. 0°
B. 30°
C. 45°
D. 60° (C)

Explanation: The identity $\sin 2A = 2 \sin A$ holds true when $A = 45^\circ$.

10. For $\tan(A + B) = 3$, the values of A and B are:

- A. 30° and 60°
B. 45° and 45°
C. 60° and 30°
D. 45° and 30° (A)

Explanation: The tangent of the sum of two angles is equal to 3 when $A = 30^\circ$ and $B = 60^\circ$.