

INTERNATIONAL INDIAN SCHOOL BURAI DAH

Worksheet 2026-27

CLASS: X

SUBJECT: MATH EMATICS

Chapter No:8 – Introduction to Trigonometry

MCQ:

1- $\frac{\sec 30^\circ}{\operatorname{cosec} 60^\circ} =$

(a) $\frac{2}{\sqrt{3}}$

(b) $\frac{\sqrt{3}}{2}$

(c) $\sqrt{3}$

(d) 1

2- Given that $\sin \theta = \frac{a}{b}$, find $\cos \theta$

(a) $\frac{b}{\sqrt{b^2 - a^2}}$

(b) $\frac{b}{a}$

(c) $\frac{\sqrt{b^2 - a^2}}{b}$

(d) $\frac{a}{\sqrt{b^2 - a^2}}$

3- $(\sec A + \tan A)(1 - \sin A) =$

(a) $\sec A$

(b) $\sin A$

(c) $\operatorname{cosec} A$

(d) $\cos A$

4- If $\tan \theta = \frac{1}{\sqrt{3}}$, the value of $\sin(90^\circ - \theta)$ is

(a) 0

(b) 1

(c) $\sqrt{3}$

(d) $\frac{\sqrt{3}}{2}$

5- If $\tan \theta + \frac{1}{\tan \theta} = 2$, then the value of $\tan^2 \theta + \frac{1}{\tan^2 \theta}$ is

(a) 3

(b) 4

(c) 2

(d) -4

6- If $2 \tan A = 3$, then the value of $\frac{4 \sin A + 3 \cos A}{4 \sin A - 3 \cos A}$ is

(a) $\frac{7}{\sqrt{13}}$

(b) $\frac{1}{\sqrt{13}}$

(c) 3

(d) does not exist

7- $\left[\frac{3}{4} \tan^2 30^\circ - \sec^2 45^\circ + \sin^2 60^\circ \right]$ is equal to

(a) -1

(b) $\frac{5}{6}$

(c) $-\frac{3}{2}$

(d) $\frac{1}{6}$

8- If $x = a \sec \theta$, $y = b \tan \theta$ then $\frac{x^2}{a^2} - \frac{y^2}{b^2}$ is equal to

(a) a^2

(b) b^2

(c) -1

(d) 1

9- If $\cot \beta = \frac{7}{8}$, then $\frac{(1 + \sin \beta)(1 - \sin \beta)}{(1 + \cos \beta)(1 - \cos \beta)} =$

(a) $\frac{49}{64}$

(b) $\frac{64}{49}$

(c) $\frac{7}{8}$

(d) $\frac{7}{5}$

10- If $\cos \theta + \sin \theta = \sqrt{2} \cos \theta$ then $\cos \theta - \sin \theta$ is

(a) $-\sqrt{2} \cos \theta$

(b) $\sqrt{2} \sin \theta$

(c) $2 \sin \theta$

(d) $\sqrt{2} \tan \theta$

Assertion and Reasoning Based Questions:

The following questions consist of two statements -Assertion (A) and Reason(R) .Answer these questions selecting the appropriate option given below :

- (a) Both A and R true and R is the correct explanation for A.
- (b) Both A and R are true but R is not the correct explanation for A
- (c) A is true but R is false.
- (d) A is false but R is true .

1-Assertion: In a right angled triangle ,if $\cos \theta = \frac{1}{2}$ and $\sin \theta = \frac{\sqrt{3}}{2}$ then $\tan \theta = \sqrt{3}$.

Reason: $\tan \theta = \frac{\sin \theta}{\cos \theta}$

2-Assertion: $\sin A$ is the product of Sin and A

Reason: The value of $\sin \theta$ increases as θ increases.

Subjective Questions:

1-Find the value of $\frac{2 \tan 30^\circ}{1 + \tan^2 30^\circ}$

2-If $\cot \theta = \frac{15}{8}$ then evaluate $\frac{(2 + \sin \theta)(1 - \sin \theta)}{(1 + \cos \theta)(2 - 2 \cos \theta)}$

3- If $\sin A = \frac{3}{4}$ calculate $\sec A$

4-Evaluate: $\sin^2 60^\circ + 2 \tan 45^\circ - \cos^2 30^\circ$

5-Prove that : $2 \cos^2 \theta + \frac{2}{1 + \cot^2 \theta} = 2$

6-Prove that : $\frac{\sin^3 \theta + \cos^3 \theta}{\sin \theta + \cos \theta} + \sin \theta \cos \theta = 1$

7-Prove that : $\frac{\sin \theta + \cos \theta}{\sin \theta - \cos \theta} + \frac{\sin \theta - \cos \theta}{\sin \theta + \cos \theta} = \frac{2 \sec^2 \theta}{\tan^2 \theta - 1}$

8-Prove that : $\frac{\cos \theta}{1 - \tan \theta} + \frac{\sin \theta}{1 - \cot \theta} = \cos \theta + \sin \theta$

9-Prove that: $\sqrt{\frac{1 + \sin \theta}{1 - \sin \theta}} + \sqrt{\frac{1 - \sin \theta}{1 + \sin \theta}} = 2 \sec \theta$

10- If A and B are acute angles such that $\sin(A - B) = 0$ and $2 \cos(A + B) - 1 = 0$, then find angles A and B.

11-Evaluate: $\frac{5 \cos^2 60^\circ + 4 \sec^2 30^\circ - \tan^2 45^\circ}{\sin^2 30^\circ + \cos^2 30^\circ}$

12-Find the value of x :

$$2 \operatorname{Cosec}^2 30^\circ + \sin^2 60^\circ - \frac{3}{4} \tan^2 30^\circ = 10$$

13- If $7 \sin^2 \theta + 3 \cos^2 \theta = 4$, Show that $\tan \theta = \frac{1}{\sqrt{3}}$

14- If $\sin \theta = \frac{12}{13}$, $0^\circ < \theta < 90^\circ$ then find the value of $\frac{\sin^2 \theta - \cos^2 \theta}{2 \sin \theta \cos \theta} \times \frac{1}{\tan^2 \theta}$

15-Prove that $(1 + \cot \theta - \operatorname{Cosec} \theta)(1 + \tan \theta + \sec \theta) = 2$

16- If $\sec \theta + \tan \theta = p$, prove that $\sin \theta = \frac{p^2 - 1}{p^2 + 1}$

17- If $x = a \sec \theta + b \tan \theta$ and $y = a \tan \theta + b \sec \theta$ then prove that $x^2 - y^2 = a^2 - b^2$

18- Prove that : $\frac{\tan^2 A}{\tan^2 A - 1} + \frac{\operatorname{Cosec}^2 A}{\sec^2 A - \operatorname{Cosec}^2 A} = \frac{1}{1 - 2 \cos^2 A}$

19-In the ΔABC , $\angle A = \text{Right angle}$, $AB = \sqrt{x}$ and $BC = \sqrt{x + 5}$ Evaluate $\sin C \cdot \cos C \cdot \tan C + \cos^2 C \cdot \sin A$

20-Prove that : $\frac{\tan \theta}{1 - \cot \theta} + \frac{\cot \theta}{1 - \tan \theta} = 1 + \sec \theta \cos \theta$

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