



INTRODUCTION TO TRIGONOMETRY

MCQs & A and R WORK SHEET

Test / Exam Name: Introduction To Trigonometry	Standard: 10th	Subject: Mathematics
Student Name: _____	Section: _____	Roll No.: _____
Questions: 35		Time: 01:00 hh:mm
Negative Marks: 0		Marks: 35

Instructions

1. MULTIPLE CHOICE QUESTIONS.

Q1.Choose the correct answer from the given four options. 1 Mark

Given that $\sin \theta = \frac{a}{b}$, then $\cos \theta$ is equal to:

- A $\frac{b}{\sqrt{b^2-a^2}}$
- B $\frac{b}{a}$
- C $\frac{\sqrt{b^2-a^2}}{b}$
- D $\frac{a}{\sqrt{b^2-a^2}}$

Q2. $(\operatorname{cosec} \theta - \cot \theta)^2 = ?$ 1 Mark

- A $\frac{1+\cos \theta}{1-\cos \theta}$
- B $\frac{1-\cos \theta}{1+\cos \theta}$
- C $\frac{1+\sin \theta}{1-\sin \theta}$
- D None of these.

Q3.Choose the correct option and justify your choice: 1 Mark

$\frac{1-\tan ^{2} 45^{\circ}}{1+\tan ^{2} 45^{\circ}} =$

- A $\tan 90^{\circ}$
- B 1
- C $\sin 45^{\circ}$
- D 0

Q4.If $\theta = 45$ then $\frac{2 \tan \theta}{1+\tan ^2 \theta}$ is : 1 Mark

- A 1
- B 0
- C 2
- D 3

Q5.If $3 x=\operatorname{cosec} \theta$ and $\frac{3}{x}=\cot \theta$ then $3\left(x^2-\frac{1}{x^2}\right)=?$ 1 Mark

- A $\frac{1}{27}$
- B $\frac{1}{81}$
- C $\frac{1}{3}$
- D $\frac{1}{9}$

Q6.The value of $\tan 45^{\circ} \times \cot 45^{\circ}$ is: 1 Mark

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

Q7.If $\cot \theta = \frac{7}{8}$ then the value of $\frac{(1+\sin \theta)(1-\sin \theta)}{(1+\cos \theta)(1-\cos \theta)}$ is: 1 Mark

- A $\frac{8}{7}$
- B $\frac{49}{64}$
- C $\frac{7}{8}$
- D $\frac{64}{49}$

Q8.Choose the correct answer from the given four options. 1 Mark

If $\cos A = \frac{4}{5}$, then the value of $\tan A$ is:

- A $\frac{3}{5}$
- B $\frac{3}{4}$
- C $\frac{4}{3}$
- D $\frac{5}{3}$

Q9. $\sqrt{\frac{1-\sin A}{1+\sin A}} = ?$ 1 Mark

- A $\sec A + \tan A$
- B $\sec A - \tan A$
- C $\sec A \tan A$
- D None of these.

Q10.If $2 x=\sec A$ and $\frac{2}{x}=\tan A$ then $2\left(x^2-\frac{1}{x^2}\right)=?$ 1 Mark

- A $\frac{1}{2}$
- B $\frac{1}{4}$
- C $\frac{1}{8}$
- D $\frac{1}{16}$

Q11.Choose the correct option and justify your choice: 1 Mark

$\frac{2 \tan 30^{\circ}}{1-\tan ^2 30^{\circ}} =$

- A $\cos 60^{\circ}$
- B $\sin 60^{\circ}$
- C $\tan 60^{\circ}$
- D $\sin 30^{\circ}$

Q12.If $x \tan 45^{\circ} \cos 60^{\circ}=\sin 60^{\circ} \cot 60^{\circ}$, then x is equal to: 1 Mark

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

Q13.What is the value of $\sin 30^{\circ} \times \operatorname{cosec} 30^{\circ} ?$ 1 Mark

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

Q14.If $x=r \sin \theta \cos \phi, y=r \sin \phi$ and $z=r \cos \theta$, then: 1 Mark

- A $x^2+y^2+z^2=r^2$
- B $x^2+y^2-z^2=r^2$
- C $x^2-y^2+z^2=r^2$
- D $z^2+y^2-x^2=r^2$

Q15.In right triangle ABC, right angled at C, if $\tan A=1$, then the value of $2 \sin A \cos A$ is: 1 Mark

- A -1
- B 1
- C 2
- D 0

Q16.If $\cos A+\cos ^2 A=1$ then $\sin ^2 A+\sin ^4 A=?$ 1 Mark

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

Q17.If $\sin \theta +\sin ^2 \theta =1$ then $\cos ^2 \theta +\cos ^4 \theta$: 1 Mark

- A -1
- B 1
- C 0
- D None of these.

Q18.Choose the correct option and justify your choice: 1 Mark

$\sin 2A = 2 \sin A$ is true when $A =$

- A 0°
- B 30°
- C 45°
- D 60°

Q19. $(1 + \tan \theta + \sec \theta)(1 + \cot \theta - \operatorname{cosec} \theta) =$ **1 Mark**

- A 0
- B 1
- C 2
- D -1

Q20.If $\tan \theta = \frac{a}{b}$ then $\frac{\cos \theta + \sin \theta}{\cos \theta - \sin \theta} =$ **1 Mark**

- A $\frac{a-a}{a+b}$
- B $\frac{b-a}{b+a}$
- C $\frac{b+a}{b-a}$
- D None of these

Q21. $\frac{\sin \theta}{1 - \cot \theta} + \frac{\cos \theta}{1 - \tan \theta}$ is equal to: **1 Mark**

- A 0
- B 1
- C $\sin \theta + \cos \theta$
- D $\sin \theta - \cos \theta$

Q22.If $x = a \cos \theta$ and $y = b \sin \theta$, then $b^2x^2 + a^2y^2 =$ **1 Mark**

- A a^2b^2
- B ab
- C a^4b^4
- D $a^2 + b^2$

Q23.If $(\cos \theta + \sec \theta) = \frac{5}{2}$ then $(\cos^2 \theta + \sec^2 \theta) = ?$ **1 Mark**

- A $\frac{21}{4}$
- B $\frac{17}{4}$
- C $\frac{29}{4}$
- D $\frac{33}{4}$

Q24. $2(\sin^6 \theta + \cos^6 \theta) - 3(\sin^4 \theta + \cos^4 \theta)$ is equal to: **1 Mark**

- A 0
- B 1
- C -1
- D None of these.

Q25.If $2 \cos 3\theta = 1$ then $\theta = ?$ **1 Mark**

- A 10°
- B 15°
- C 20°
- D 30°

Q26.Choose the correct option. Justify your choice: **1 Mark**

- $\frac{1 + \tan^2 A}{1 + \cot^2 A} =$
- A $\sec^2 A$
- B -1
- C $\cot^2 A$
- D $\tan^2 A$

Q27.If $\sec \theta + \tan \theta = x$, then $\sec \theta =$ **1 Mark**

- A $\frac{x^2+1}{x}$
- B $\frac{x^2+1}{2x}$
- C $\frac{x^2-1}{2x}$
- D $\frac{x^2-1}{x}$

Q28.If $a \cos \theta + b \sin \theta = m$ and $a \sin \theta - b \cos \theta = n$, then $a^2 + b^2 =$ **1 Mark**

- A $m^2 - n^2$
- B m^2n^2
- C $n^2 - m^2$
- D $m^2 + n^2$

Q29. $(\sec A + \tan A)(1 - \sin A) = ?$ **1 Mark**

- A $\sin A$
- B $\cos A$
- C $\sec A$
- D $\operatorname{cosec} A$

Q30. $\cos^4 A - \sin^4 A$ is equal to: **1 Mark**

- A $2 \cos^2 A + 1$
- B $2 \cos^2 A - 1$
- C $2 \sin^2 A - 1$
- D $2 \sin^2 A + 1$

Q31.The value of $(\cos 60^\circ \cos 30^\circ - \sin 60^\circ \sin 30^\circ)$ is: **1 Mark**

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

ASSERTION AND REASON QUESTIONS

Q32. Directions: In the following questions, a statement of assertion (A) is followed by a statement of reason **1 Mark**

(R). Mark the correct choice as:

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

- A Both A and R are true and R is the correct explanation for A.
- B Both A and R are true and R is not the correct explanation for A.
- C A is true but R is false.
- D A is false but R is true.

Q33.Assertion: In a right angled triangle, if $\tan \theta = \frac{3}{4}$, then greatest side of the triangle is 5 units. **1 Mark**

Reason: $(\text{greatest side})^2 = (\text{hypotenuse})^2 = (\text{perpendicular})^2 + (\text{base})^2$.

- A A is true, R is true; R is a correct explanation for A.
- B A is true, R is true; R is not a correct explanation for A.
- C A is true; R is false.
- D A is false; R is true.

Q34.Assertion: If $\cos A + \cos^2 A = 1$ then $\sin^2 A + \sin^4 A = 2$. **1 Mark**

Reason: $1 - \sin^2 A = \cos^2 A$, for any value of A.

- A Both A and R are true and R is the correct explanation for A.
- B Both A and R are true and R is not the correct explanation for A.
- C A is true but R is false.
- D A is false but R is true.

Q35.Assertion: $\sin^2 67 + \cos^2 67 = 1$. **1 Mark**

Reason: For any value of θ , $\sin^2 \theta + \cos^2 \theta = 1$.

- A Both A and R are true and R is the correct explanation for A.
- B Both A and R are true and R is not the correct explanation for A.
- C A is true but R is false.
- D A is false but R is true.