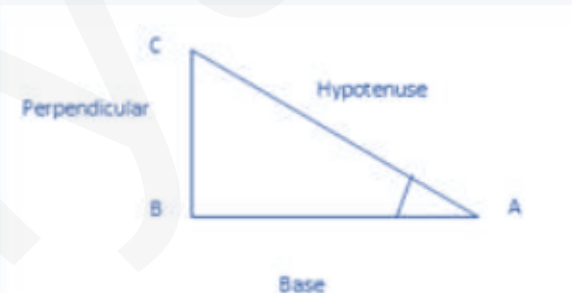
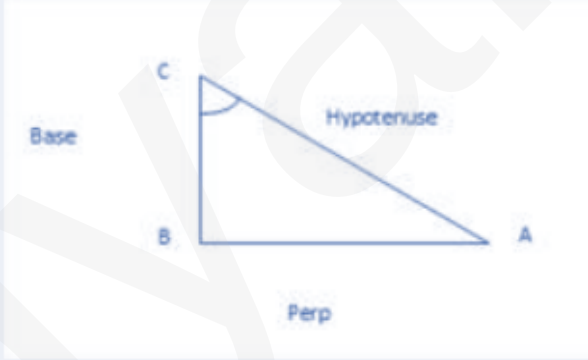




CHAPTER – 8

TRIGONOMETRY

S.no	Terms	Descriptions
1	What is Trigonometry	Trigonometry from Greek trigōnon, "triangle" and metron, "measure") is a branch of mathematics that studies relationships involving lengths and angles of triangles. The field emerged during the 3rd century BC from applications of geometry to astronomical studies. Trigonometry is most simply associated with planar right angle triangles (each of which is a two-dimensional triangle with one angle equal to 90 degrees). The applicability to non-right-angle triangles exists, but, since any non-right-angle triangle (on a flat plane) can be bisected to create two right-angle triangles, most problems can be reduced to calculations on right-angle triangles. Thus the majority of applications relate to right-angle triangles
2	Trigonometric Ratio's	In a right angle triangle ABC where $B=90^\circ$  We can define following term for angle A Base : Side adjacent to angle Perpendicular: Side Opposite of angle Hypotenuse: Side opposite to right angle We can define the trigonometric ratios for angle A as $\sin A = \text{Perpendicular/Hypotenuse} = BC/AC$ $\operatorname{cosec} A = \text{Hypotenuse/Perpendicular} = AC/BC$ $\cos A = \text{Base/Hypotenuse} = AB/AC$ $\sec A = \text{Hypotenuse/Base} = AC/AB$ $\tan A = \text{Perpendicular/Base} = BC/AB$ $\cot A = \text{Base/Perpendicular} = AB/BC$ Notice that each ratio in the right-hand column is the inverse, or the reciprocal, of the ratio in the left-hand column.

3	Reciprocal of functions	The reciprocal of $\sin A$ is $\operatorname{cosec} A$; and vice-versa. The reciprocal of $\cos A$ is $\sec A$ And the reciprocal of $\tan A$ is $\cot A$ These are valid for acute angles. We can define $\tan A = \sin A / \cos A$ And $\cot A = \cos A / \sin A$
4	Value of $\sin$ and $\cos$	Is always less 1
5	Trigonometric ratios from another angle	We can define the trigonometric ratios for angle C as  $\sin C = \text{Perpendicular} / \text{Hypotenuse} = AB / AC$ $\operatorname{cosec} C = \text{Hypotenuse} / \text{Perpendicular} = AC / AB$ $\cos C = \text{Base} / \text{Hypotenuse} = BC / AC$ $\sec C = \text{Hypotenuse} / \text{Base} = AC / BC$ $\tan A = \text{Perpendicular} / \text{Base} = AB / BC$ $\cot A = \text{Base} / \text{Perpendicular} = BC / AB$
6	Trigonometric ratios of complimentary angles	$\sin (90-A) = \cos(A)$ $\cos(90-A) = \sin A$ $\tan(90-A) = \cot A$ $\sec(90-A) = \operatorname{cosec} A$ $\operatorname{Cosec} (90-A) = \sec A$ $\cot(90- A) = \tan A$
7	Trigonometric identities	$\sin^2 A + \cos^2 A = 1$ $1 + \tan^2 A = \sec^2 A$ $1 + \cot^2 A = \operatorname{cosec}^2 A$

Trigonometric Ratios of common angles:

We can find the values of trigonometric ratio's various angle

Angles(A)	SinA	Cos A	TanA	Cosec A	Sec A	Cot A
0°	0	1	0	Not defined	1	Not defined
30°	$\frac{1}{2}$	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{3}}$	2	$\frac{2}{\sqrt{3}}$	$\sqrt{3}$
45°	$\frac{1}{\sqrt{2}}$	$\frac{1}{\sqrt{2}}$	1	$\sqrt{2}$	$\sqrt{2}$	1
60°	$\frac{\sqrt{3}}{2}$	$\frac{1}{2}$	$\sqrt{3}$	$\frac{2}{\sqrt{3}}$	2	$\frac{1}{\sqrt{3}}$
90°	1	0	Not defined	1	Not defined	0