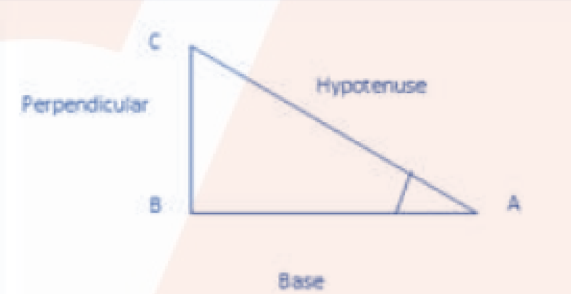
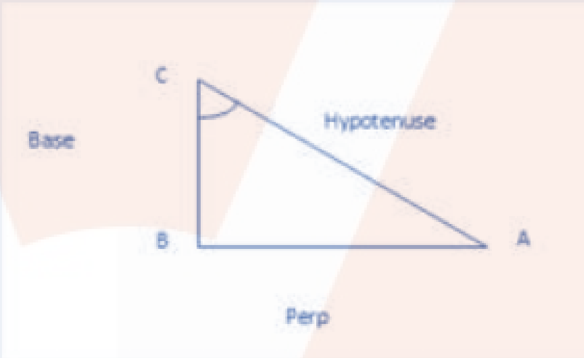
CHAPTER – 8

TRIGONOMETRY

S.no	Terms	Descriptions
1	**What is Trigonometry**	Trigonometry from Greek trigõnon, "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°  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= Perpendicular/Hypotenuse =BC/AC cosec A= Hypotenuse/Perpendicular =AC/BC cos A= Base/Hypotenuse =AB/AC sec A= Hypotenuse/Base=AC/AB tan A= Perpendicular/Base =BC/AB cot A= 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 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 of sin and cos	**Is always less 1**
5	Trigonometric ration from another angle	We can define the trigonometric ratios for angle C as  sin C= Perpendicular/Hypotenuse =AB/AC cosec C= Hypotenuse/Perpendicular =AC/ABB cos C= Base/Hypotenuse =BC/AC sec C= Hypotenuse/Base=AC/BC tan A= Perpendicular/Base =AB/BC cot A= Base/Perpendicular=BC/AB
6	Trigonometric ratios of complimentary	Sin (90-A) =cos(A) Cos(90-A) = sin A
	angles	Tan(90-A) =cot A Sec(90-A)= cosec A Cosec (90-A) =sec A Cot(90- A) =tan A
7	Trigonometric identities	$\text{Sin}^2 A + \cos^2 A = 0$ $1 + \tan^2 A = \sec^2 A$ $1 + \cot^2 A = \text{cosec}^2 A$

Trigonometric Ratios of common angles:

We can find the values of trig0nometric ratio’s various angle

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