TRIGONOMETRY.

The word of trigonometry is derived from the Greek words. 

*Trigonometry* = tri+ gon + metry. (Tri means three, gon means side, metry means measure.)

Study of relationship between sides and angles of a triangle.

It is used on <0° & <90°

**Trigonometric Ratios**

Consider a right angled triangle ABC (*Fig.1.*) as shown in figure where angle B=90°. BC is base (side opposite to angle A), AB is perpendicular (side opposite to angle C) and AC is hypotenuse (side opposite to angle B)

![Fig.1](image-url)

Pythagoras theorem: - In a right angled triangle the square of the long side is equal to the squares of the other two sides.

To find the trigonometric ratios in a right angled triangle –

According to Pythagoras theorem, 

\[(\text{Hypotenuse})^2 = (\text{Perpendicular})^2 + (\text{Base})^2\]

i.e., \[(AC)^2 = (AB)^2 + (BC)^2\]

In the same, way -

\[\sin\Theta = \frac{AB}{AC} = \frac{P}{H}, \quad \cos\Theta = \frac{BC}{AC} = \frac{B}{H}, \quad \tan\Theta = \frac{AB}{BC} = \frac{P}{B}\]

\[\cosec\Theta = \frac{1}{\sin \Theta} = \frac{H}{P}, \quad \sec\Theta = \frac{1}{\cos \Theta} = \frac{H}{B}, \quad \cot \Theta = \frac{1}{\tan \Theta} = \frac{B}{P}\]

Therefore, by applying these formula we can calculate value of sin, cos, tan, cosec, sec and cot.