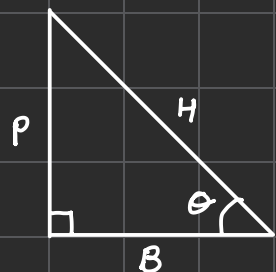


# Chapter - 8 : Introduction to Trigonometry

## \* Notes



$$\sin \theta = \frac{p}{H} \quad \text{cosec } \theta = \frac{H}{p}$$

$$\cos \theta = \frac{B}{H} \quad \sec \theta = \frac{H}{B}$$

$$\tan \theta = \frac{p}{B} \quad \cot \theta = \frac{B}{p}$$

	0°	30°	45°	60°	90°
sin	0	$\frac{1}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{\sqrt{3}}{2}$	1
cos	1	$\frac{\sqrt{3}}{2}$	$\frac{1}{\sqrt{2}}$	$\frac{1}{2}$	0
tan	0	$\frac{1}{\sqrt{3}}$	1	$\sqrt{3}$	N.d
cosec	N.d	2	$\sqrt{2}$	$\frac{2}{\sqrt{3}}$	1

## \* Reciprocal Identities

$$\sin = \frac{1}{\text{cosec}}, \quad \text{cosec} = \frac{1}{\sin}$$

$$\cos = \frac{1}{\sec}, \quad \sec = \frac{1}{\cos}$$

$$\tan = \frac{1}{\cot}, \quad \cot = \frac{1}{\tan}$$

## \* Identities

$$\frac{\sin}{\cos} = \tan, \quad \frac{\cos}{\sin} = \cot$$

$$\sin^2 \theta + \cos^2 \theta = 1$$

$$\tan^2 \theta + 1 = \sec^2 \theta$$

$$\cot^2 \theta + 1 = \text{cosec}^2 \theta$$

sec	1	$\frac{2}{\sqrt{3}}$	$\sqrt{2}$	2	N.d
cot	N.d	$\sqrt{3}$	1	$\frac{1}{\sqrt{3}}$	0

## \* How to Prove Questions

- ① Apply identities
- ② Convert into "sin" or "cos".
- ③ Take common values
- ④ Take LCM
- ⑤ Rationalize
- ⑦ Apply polynomial identity:
 
$$a^2 + b^2 = (a+b)^2 - 2ab$$

$$(a+b)^2 = a^2 + b^2 + 2ab$$

$$a^3 - b^3 = (a-b)(a^2 + b^2 + ab)$$

$$a^3 + b^3 = (a+b)(a^2 + b^2 - ab)$$

$$(a+b)^3 = a^3 + b^3 + 3ab(a+b)$$

$$(a-b)^3 = a^3 - b^3 - 3ab(a-b)$$
- ⑧ Give up