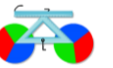
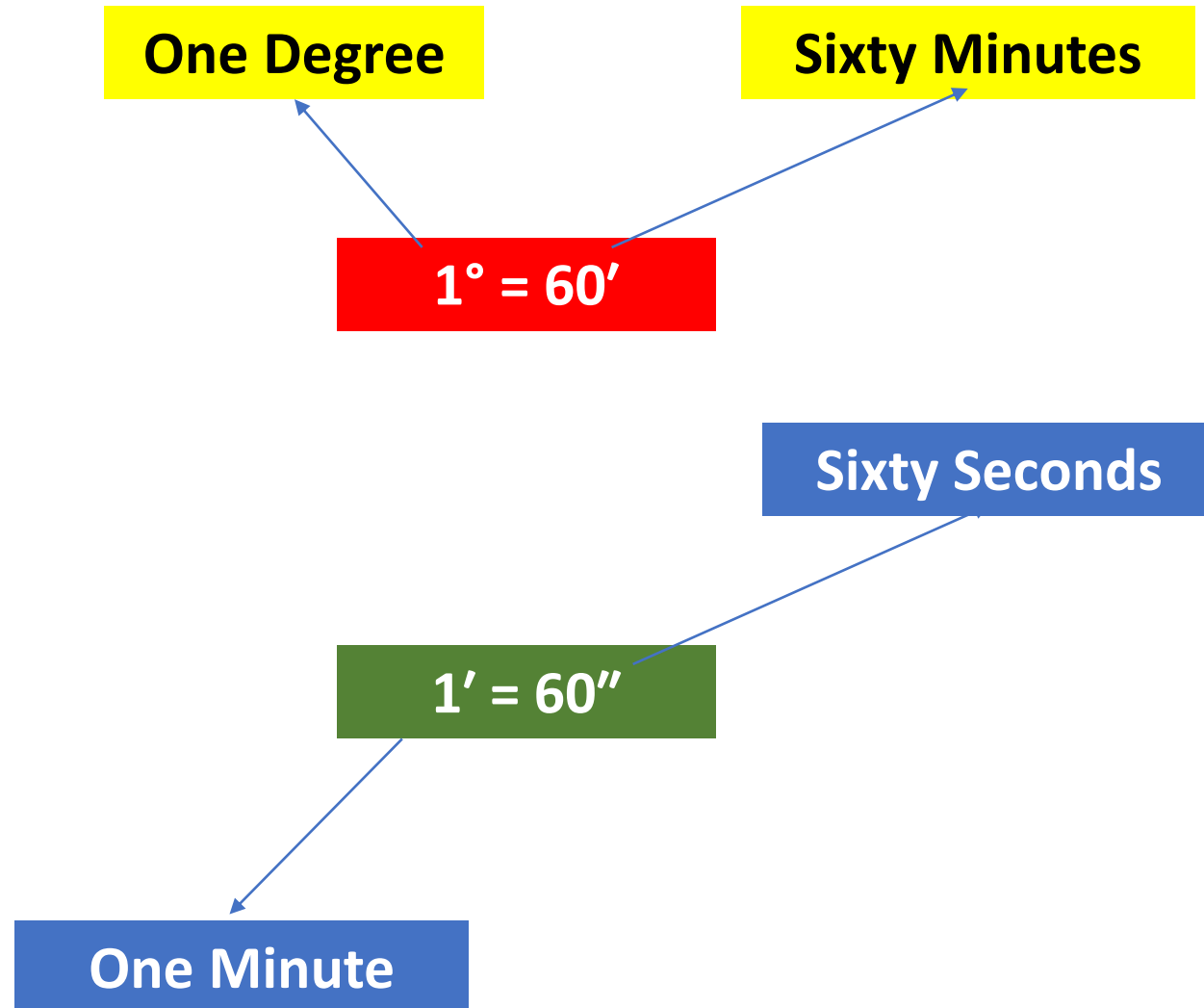


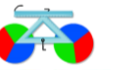
NCERT CLASS 11 TRIGONOMETRY

FORMULAE

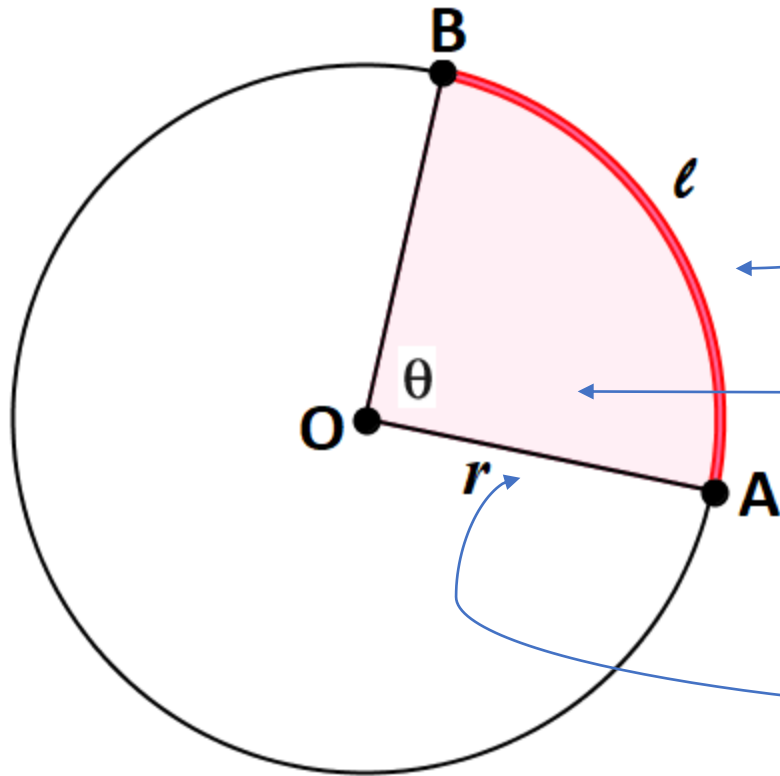


DEGREE MEASURE





RADIAN MEASURE GENERALLY



Length of arc AB = ℓ unit

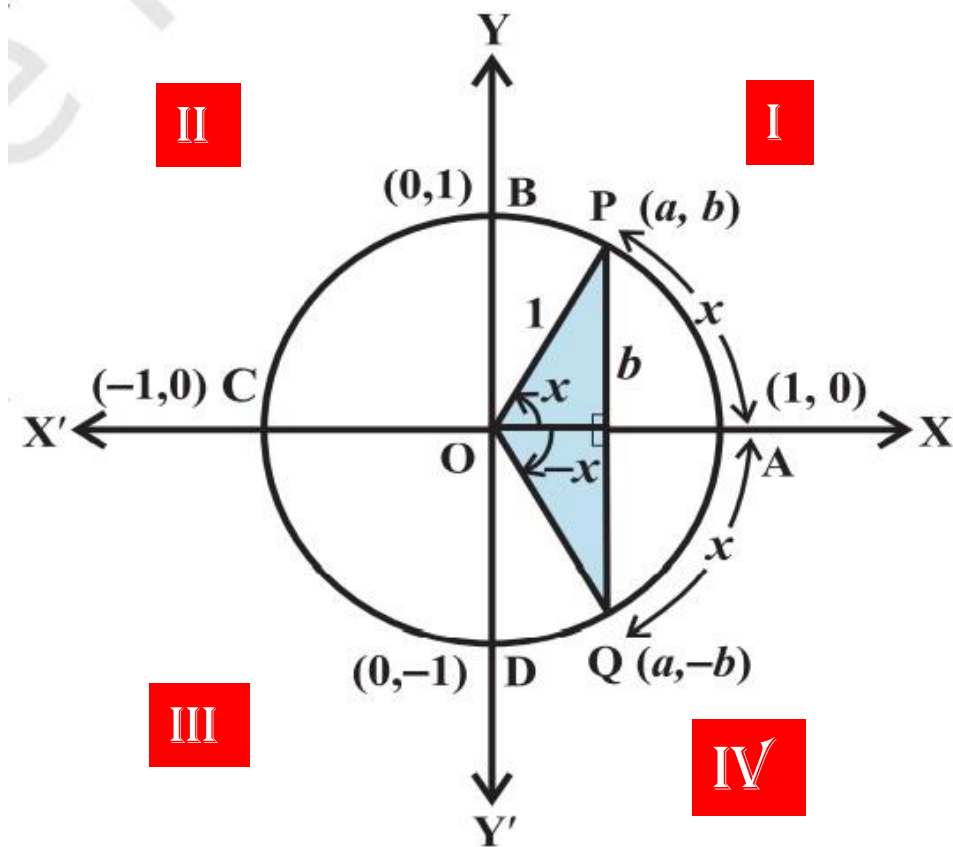
$\angle AOB = \theta$ radian

$$r = \frac{\text{Length of arc}}{\text{Angle subtended at center}} = \frac{l}{\theta}$$

Radius of Circle = r unit

$$\therefore l = r \theta$$

SIGN OF TRIGONOMETRIC FUNCTIONS

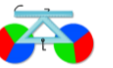


first quadrant ($0 < x < \frac{\pi}{2}$) **cos x** and **sin x** are both positive,

second quadrant ($\frac{\pi}{2} < x < \pi$) **cos x** is negative and **sin x** is positive,

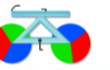
third quadrant ($\pi < x < \frac{3\pi}{2}$) **cos x** and **sin x** are both negative

fourth quadrant ($\frac{3\pi}{2} < x < 2\pi$) **cos x** is positive and **sin x** is negative



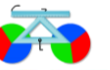
SIGN OF TRIGONOMETRIC FUNCTIONS

	I	II	III	IV
$\sin x$	+	+	-	-
$\cos x$	+	-	-	+
$\tan x$	+	-	+	-
$\operatorname{cosec} x$	+	+	-	-
$\sec x$	+	-	-	+
$\cot x$	+	-	+	-



TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

1. $\cos (-x) = \cos x$
2. $\sin (-x) = -\sin x$
3. $\cos (x + y) = \cos x \cos y - \sin x \sin y$
4. $\cos (x - y) = \cos x \cos y + \sin x \sin y$



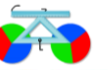
TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

$$5. \cos \left(\frac{\pi}{2} - x \right) = \sin x$$

$$6. \sin \left(\frac{\pi}{2} - x \right) = \cos x$$

$$7. \sin (x + y) = \sin x \cos y + \cos x \sin y$$

$$8. \sin (x - y) = \sin x \cos y - \cos x \sin y$$



TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

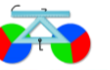
$$9. \cos \left(\frac{\pi}{2} + x \right) = -\sin x$$

$$10. \sin \left(\frac{\pi}{2} + x \right) = \cos x$$

$$11. \cos (\pi - x) = -\cos x$$

$$12. \cos (\pi + x) = -\cos x$$

$$13. \cos (2\pi - x) = \cos x$$

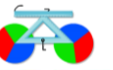


TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

$$14. \sin (\pi - x) = \sin x$$

$$15. \sin (\pi + x) = -\sin x$$

$$16. \sin (2\pi - x) = -\sin x$$



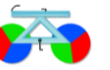
TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

$$17. \tan (x + y) = \frac{\tan x + \tan y}{1 - \tan x \tan y}$$

$$18. \tan (x - y) = \frac{\tan x - \tan y}{1 + \tan x \tan y}$$

$$19. \cot (x + y) = \frac{\cot x \cot y - 1}{\cot y + \cot x}$$

$$20. \cot (x - y) = \frac{\cot x \cot y + 1}{\cot y - \cot x}$$

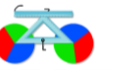


TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

$$21. \cos 2x = \cos^2 x - \sin^2 x = 1 - 2 \sin^2 x = 2 \cos^2 x - 1 = \frac{1 - \tan^2 x}{1 + \tan^2 x}$$

$$22. \sin 2x = 2 \sin x \cos x = \frac{2 \tan x}{1 + \tan^2 x}$$

$$23. \tan 2x = \frac{2 \tan x}{1 - \tan^2 x}$$

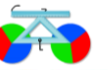


TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

$$24. \sin 3x = 3\sin x - 4\sin^3 x$$

$$25. \cos 3x = 4\cos^3 x - 3\cos x$$

$$26. \tan 3x = \frac{3\tan x - \tan^3 x}{1 - 3\tan^2 x}$$



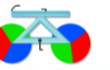
TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

$$27. \cos x + \cos y = 2\cos\left(\frac{x+y}{2}\right) \cos\left(\frac{x-y}{2}\right)$$

$$28. \cos x - \cos y = -2\sin\left(\frac{x+y}{2}\right) \sin\left(\frac{x-y}{2}\right)$$

$$29. \sin x + \sin y = 2\sin\left(\frac{x+y}{2}\right) \cos\left(\frac{x-y}{2}\right)$$

$$30. \sin x - \sin y = 2 \cos \left(\frac{x+y}{2}\right) \sin \left(\frac{x-y}{2}\right)$$



TRIG FUNC OF SUM & DIFF. OF TWO ANGLES

$$31. 2 \cos x \cos y = \cos (x+y) + \cos (x-y)$$

$$32. -2 \sin x \sin y = \cos (x+y) - \cos (x-y)$$

$$33. 2 \sin x \cos y = \sin (x + y) + \sin (x - y)$$

$$34. 2 \cos x \sin y = \sin (x + y) - \sin (x - y)$$