MIND MAP

AREAS RELATED TO CIRCLES

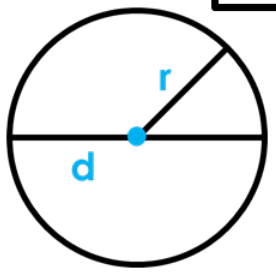
Perimeter and Area of a Circle

Circumference $C = 2\pi r$

Area $A = \pi r^2$

Diameter $d = 2r$

Radius $r = \sqrt{\frac{A}{\pi}}$



r ⟶ Radius

C ⟶ Circumference

A ⟶ Area

- Distance moved by a wheel in 1 rotation = circumference of the wheel
- Number of rotation in 1 min.= Distance moved in 1 min. /circumference

Area of Sector and Segment of a Circle

Area of Sector

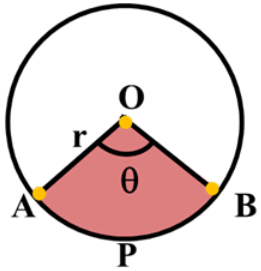
Thus area of the sector OAPB i.e.,

Sector of angle $\theta = \frac{\theta}{360^\circ} \times \pi r^2$

Where,

r : radius of the circle

θ : Sector Angle

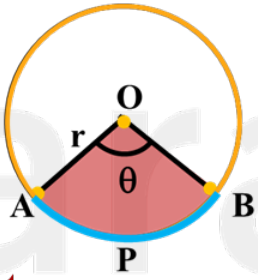


Length of Arc

Thus,

Length of the arc of segment OAPB is

$\ell = \frac{\theta}{360^\circ} \times 2\pi r$



Area of Segment

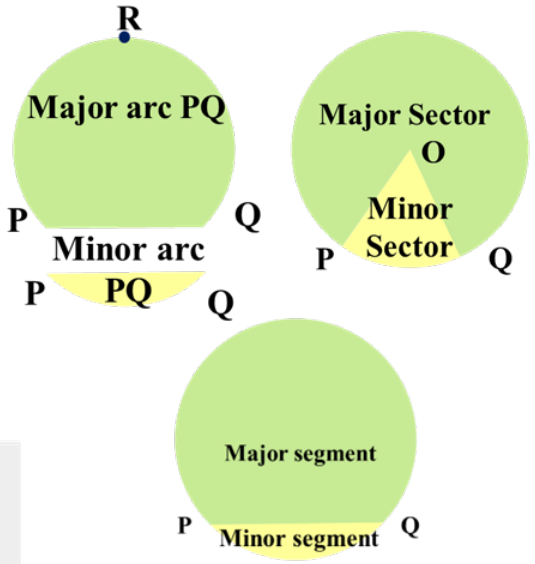
Area of segment APB =

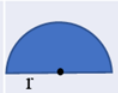
Area of sector OAPB − Area of ΔOAB

Area of sector of angle $\theta = \frac{\theta}{360^\circ} \times \pi r^2$

∴ Area segment APB =

$\frac{\theta}{360^\circ} \times \pi r^2$ − area of ΔOAB0



Name	Figure	Perimeter	Area
Circle		$2\pi r$ or πd	πr^2
Semi-circle		$\pi r + 2r$	$\frac{1}{2}\pi r^2$
Ring (Shaded region)		$2\pi(r+R)$	$\pi(R^2 - r^2)$
Sector of a circle		$\frac{2\pi r}{360^\circ} \times \theta + 2r$	$\frac{\pi r^2}{360^\circ} \times \theta$
segment of a circle		$\frac{\pi r}{360^\circ} \times \theta + AB$	$\frac{\pi r^2}{360^\circ} \times \theta - \frac{\sqrt{3}}{4}(r)^2$