

# AREAS RELATED TO CIRCLES

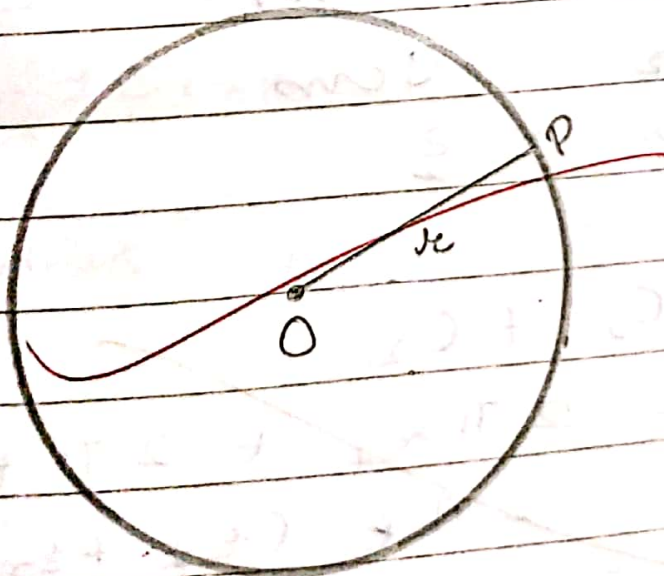
## Perimeter and Area of Circle

If 'r' is the radius of circle with centre O, then the perimeter of circle, i.e., circumference of circle is the circular length and is denoted by 'C' and is given by

$$C = \pi d \quad \text{or} \quad C = 2\pi r$$

Also, if 'A' is the area of circle then

$$A = \pi r^2$$



The radii of two circles

Let  $r_1$  &  $r_2$  be the radii of two circles with circumferences  $C_1$  &  $C_2$ .

Let  $r$  &  $C$  be the radius and circumference of required circle

$$r_1 = 19 \text{ cm}$$

$$r_2 = 9 \text{ cm}$$

$$r = ?$$

$$C = C_1 + C_2$$

$$2\pi r = 2\pi r_1 + 2\pi r_2$$

$$2\pi r = 2\pi r (r_1 + r_2)$$

$$2\pi r = 2\pi r (19 + 9)$$

$$\underline{\underline{r = 28 \text{ cm}}}$$

∴ Radius of third circle is 28 cm.

The radii \_\_\_\_\_ two circles.

Let  $r_1$  &  $r_2$  be the radii of circle.  
 $A_1$  &  $A_2$  be the area of circle

Let  $r$  &  $A$  be the radius and area of circle.

$$r_1 = 8 \text{ cm}$$

$$r_2 = 6 \text{ cm}$$

~~$$A = A_1 + A_2$$~~

~~$$\pi r^2 = \pi r_1^2 + \pi r_2^2$$~~

~~$$\pi r^2 = \pi (r_1^2 + r_2^2)$$~~

~~$$\pi r^2 = \pi (8^2 + 6^2)$$~~

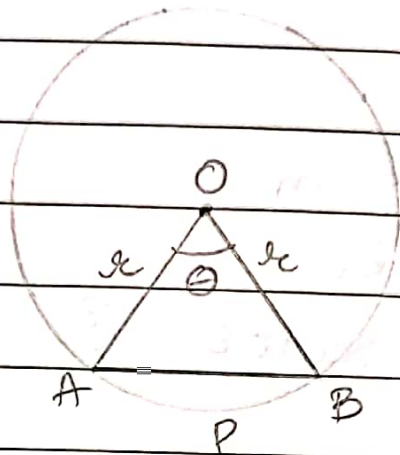
~~$$r^2 = 64 + 36$$~~

~~$$r^2 = 100$$~~

~~$$r = 10 \text{ cm}$$~~

∴ Radius of total circle is 10 cm

# Area of Sector and Segment of a Circle



Length of an arc APB is given by

i) ~~Length of arc =  $\frac{\theta}{360^\circ} \times 2\pi r$~~

(ii) Area of sector  $\theta$ -APB =  $\frac{\theta}{360^\circ} \times \pi r^2$

(iii) ~~Area of segment = Area of sector - Area of triangle~~  
$$= \frac{\theta}{360^\circ} \times \pi r^2 - \frac{1}{2} r^2 \sin \theta$$

Find \_\_\_\_\_ sector of  $60^\circ$

Given  $r =$

$$r = 6 \text{ cm}$$

$$\theta = 60^\circ$$

Area of sector = ?

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

$$= \frac{60}{360} \times \frac{22}{7} \times 6 \times 6$$

$$= \frac{132}{7}$$

$$= 18.85 \text{ cm}^2$$