Circumference or perimeter of a circle: The total len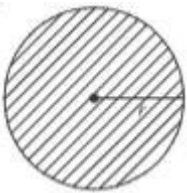gth of boundary of a circle is called its circumference. Circumference of a circle = $2\pi r$; where ' r ' is radius of the circle
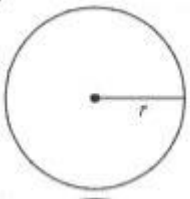
• Area of circle : Area of circle of radius r = πr^2

• Area of semicircle = ½ (Area of circle) = $\frac{1}{2}\pi r^2$

• Area of quadrant = ¼ × Area of circle = $\pi r^2/4$

• Perimeter of Semicircle = ½ (Circumference of semicircle) + Diameter
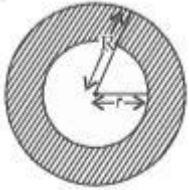

= $\pi r + 2r = (\pi + 2)r$

 Area of a ring or Area enclosed between two concentric circles:

If 'R' is radius of outer circle and 'r' is radius of smaller (inner) circle. Then area enclosed between two concentric circles (or area of ring)
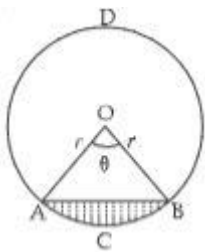
= πR² - πr²

= π(R² - r²)

Length of arc, area of sector and segment: Let us consider an arc AB making an angle θ <180° at the centre of a circle of radius 'r'. Then

(i) Length of arc ACB = 2πrθ/360°= *l*

(ii) (a) Area of sector OACBO = πr²θ/360°= $\frac{1}{2} \times \frac{2\pi r\theta}{360°} \times r = \frac{1}{2} \times l \times r$

(b) Perimeter of sector OACBO = OA + OB + length of arc ACB

$= \left(2r + \frac{2\pi r\theta}{360°}\right) = 2r + \frac{\pi r\theta}{180°}$

(iii) (a) Area of minor segment ACBA = (area of sector OACBO)

   - (area of △OAB)

$= \frac{\pi r^2\theta}{360°} - \frac{1}{2}r^2 sin\theta = \left(\frac{\pi\theta}{360°} - \frac{sin\theta}{2}\right)r^2$

(b) Area of major segment BDAB = (Area of the circle) – (Area of the minor segment ACBA)

Rotating wheels:

i) Distance moved by a wheel in 1 rotation = Circumference of whee

ii) Number of rotations in 1 minute = Distance moved in 1 minute/Circumference

• Rotations of the hands of a clock:

i) Angle described by the minute – hand of a clock in 60 minutes = 360°

ii) Angle described by the hour – hand of a clock in 12 hours = 360°