Maths Class 10 Notes for Area Related to Circles

PERIMETER AND AREA OF A CIRCLE

We know that

The area of a circle is the measurement of the region enclosed by its boundary. It is measured in square units. -ie- square centimetres or square metres etc.

Area of the circle = pr^2

The perimeter of a circle is the length of its boundary. The unit measurement of perimeter is the unit of length.

Perimeter of circle = 2pr

where r is the radius of the circle.

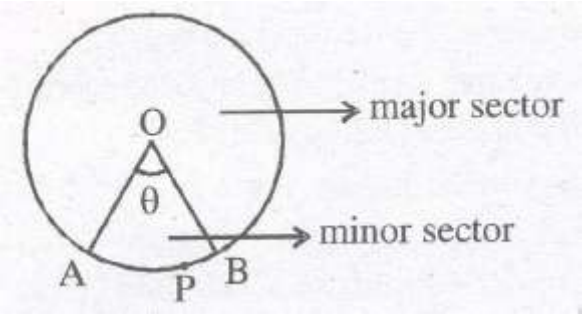
Perimeter of a circle is known as circumference of a circle.

AREA OF SECTOR OF CIRCLE

The part of the circle inclined between two radii (OA & OB) is called sector of circle.

Area of the sector OAPB =0 /360° x pr^2

& length of an arc of sector OAPB = length of arc AB =0 /360° x 2pr



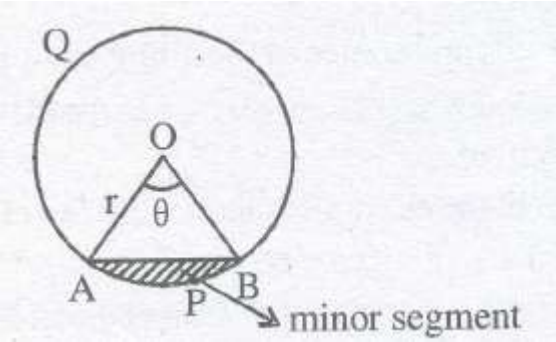
Where 0 is the measure of arc AB.

Perimeter of the sector (minor sector)
=0 /360° x 2pr + 2r

AREA OF SEGMENT OF CIRCLE

Any chord AB divides circle into two parts. The bigger part is known as major segment and smaller one is called minor segment.

Area of minor segment APB — Area of sector OAPB — area of ?OAB



Area of major segment OAQB = pr^2 — area of minor segment APB.

NOTE: Area of ? OAB with ?AOB = 0 = 1/2 (OA) (OB) sin?

IN GENERAL

Area of segment of a circle = Area of the corresponding sector — Area of the corresponding triangle.

AREA ENCLOSED BY THE TWO CIRCLES

If R and r are the radii of two concentric circles such that R > r then area enclosed by the two circles = $pR^2 – pr^2$

SOME USEFUL RESULTS

(i) If two circles touch internally, then the distance between their centres is equal to the difference of their radii.

(ii) If two circles touch externally, then the distance between their centres is equal to the sum of their radii.

(iii) Distance moved by a rotating wheel in one revolution is equal to the circumference of the wheel.

(iv) The number of revolutions completed by a rotating wheel in one minute Distance moved in one minute= Distance moved in one minute / circumference