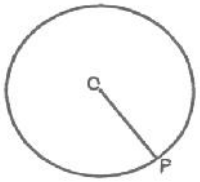
CHAPTER – 10
CIRCLE

10.1 INTRODUCTION

(A) Circle :

The collection of all the points in a plane, which are at a fixed distance from a fixed point in the plane, is called a circle.

The fixed point is called the centre of the circle and the fixed distance is called the radius of the circle.



In figure, O is the centre and the length OP is the radius of the circle. So the line segment joining the centre and any point on the circle is called a radius of the circle.

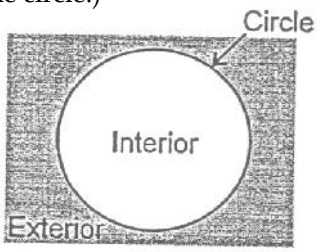
(b) Interior and Exterior of a Circle :

A circle divides the plane on which it lies into three parts. They are

(i) inside the circle (or interior of the circle)

(ii) the circle nd

(iii) outside the circle (or exterior of the circle.)



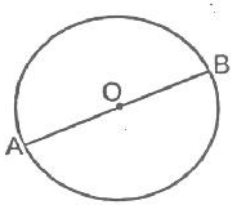
The circle and its interior make up the **circular region.**

(c) Chord :

If we take two points P and Q on a circle, then the line segment PQ is called a chord of the circle.

(d) Diameter:

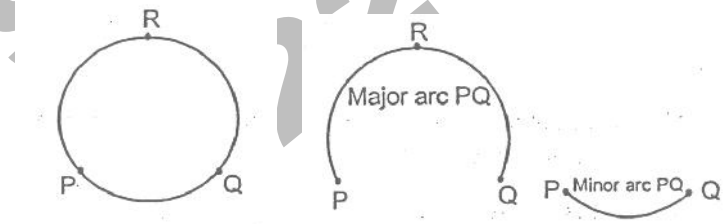
The chord which passes through the centre of the circle, is called **a diameter** of the circle.



A diameter is the longest chord and all diameter have the same length, which is equal to two times the radius. In figure, AOB is a diameter of circle.

(e) Arc :

A piece of a circle between two points is called an arc. If we look at the pieces of the circle between two points P and Q in figure, we find that there are two pieces, one longer and the other smaller. The longer one is called the major arc PQ and the shorter one is called the minor arc PQ. The minor arc PQ is also denoted by PQ and the major arc PQ by PRQ, where R is some point on the arc between P and Q. Unless otherwise states, arc PQ or PQ stands for minor arc PQ. When P and Q are ends of a diameter, then both arcs are equal and each is called a semi circle.

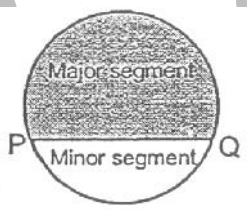


(f) Circumference:

The length of the complete circle is called its **circumference.**

(g) Segment :

The region between a chord and either of its arcs is called a **segment** of the circular region or simply a segment of the circle. There are two types of segments also, which are the major segment and the minor segment (as in figure).



(h) Sector :

The region between an arc and the two radii, joining the centre to the end points of the arc is called a sector. Like segments, we find that the minor arc corresponds to the minor sector and the major arc corresponds to the major sector. In figure, the region OPQ in the minor sector and the remaining part of the circular region is the major sector. When two arcs are equal, then both segments and both sectors become the same and each is known as a semicircular region.