

## Auxiliary Circle.

The circle described on the major axis of an ellipse as diameter is called an auxiliary circle of the ellipse.

If  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$  is an ellipse, then its auxiliary circle is  $x^2 + y^2 = a^2$

**Eccentric angle of a point:** Let P be any point on the ellipse  $\frac{x^2}{a^2} + \frac{y^2}{b^2} = 1$ .

Draw PM perpendicular from P on the major axis of the ellipse and produce MP to meet the auxiliary circle in Q. Join CQ. The angle  $\angle XCQ = \phi$  is called the eccentric angle of the point P on the ellipse.

Note that the angle  $\angle XCP$  is not the eccentric angle of point P.

