MATHEMATICS

CLASS NOTES FOR CBSE

Chapter 25. Circles

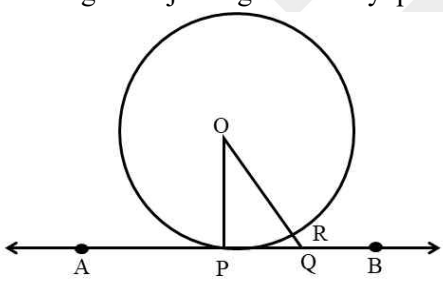
Secant
A line which intersects a circle in two distinct points is called a secant of the circle.

Tangent
A tangent to a circle is a line that intersects the circle in exactly one point. The point is called the point of contact of the tangent and the line is said to touch the circle at this point.

01. Some Properties of Tangent to A Circle

Result A tangent to a circle is perpendicular to the radius through the point of contact.

Give : A circle C (O,*r*) and a tangent *AB* at a point P.
To Prove : OP $\perp$ AB.
Construction : Take any point Q, other than P, on the tangent AB. Join OQ. Suppose OQ meets the circle at R
Proof : We know that among all line segments joining the point O to point on AB, the shortest one is perpendicular to AB. So, to prove that OP $\perp$ AB, it is sufficient to prove that OP is shorter than any other segment joining O to any point of AB.



Clearly, OP = OR
Now, OQ = OR + RQ
$\Rightarrow$ OQ > OR
$\Rightarrow$ OQ > OP [$\because$ OP = OR]
$\Rightarrow$ OP > OQ
Thus, OP is shorter than any other segment joining O to any point of AB.
Hence, OP $\perp$ AB.

Remark : The converse of the above theorem is also true as given below.