

Lesson plan (consolidated)

Subject – Math

Grade - 10(X)

S.No	Chapter Number and Title of chapter	10 (Circles)
1	No .of periods	6 (40 min. each)
2	Learning objectives	• Understand the difference between secant and tangents to the circle. • Prove that the tangent at any point of a circle is perpendicular to the radius through the point of contact . • Find the length of a tangent drawn from a point out side a circle . • Understand that tangent touches the circle at one point . • Find the angle formed between two tangents of a circle. • Understand that tangents drawn from external point to the Circle are equal in length .
3	Teaching aids / resources	• Black board ,chalk ,ppts . • Text book (NCERT text book) • Reference book (exemplar)
4	Previous knowledge/ Curiosity Questions	• Basic knowledge of circle and its radius • Knowledge of diameter and secant • Knowledge of tangent • Knowledge of Pythagoras theorem . • Can you give examples of tangents in daily life ? • How many tangents can a circle have ? • How many parallel tangents a circle can have, at the most ?

5	Announcement of topic	• Circle : A circle is collection of all points in a plane which are at constant distant form fixed a point .Fixed point is known as center of circle and fixed distance is known as radius • Tangent : a tangent is a line intersects the circle is exactly at one point .
6	Teaching methodology/ Strategy	• Think pair and share In this activity students think about a practical question. Individually then they form pairs to discuss their answers . • Inquiry based learning Inquiry based learning uses different approaches to learning including small group discussion and guided learning instead of memorizing facts and material, students learn by doing . • Inductive and deductive learning In inductive type students proceed from particular to general And in deductive type students proceed from general to particular. • Mind Map
7	Content Obligatory Vocabulary (Keywords)	• Radius, diameter, chord, secant, tangent, angle point of contact.
9	Hard Spot /Focus spot	• Tangent and Secant . • why : Students are unable to differentiate between the tangents and secant .Because they get confused between two words touch and cut.

10	Experiential content	To verify using the method of paper cutting ,pasting and folding that The lengths of tangents drawn from an external point are equal .
11	Subject enrichment Activities for internal assessment	To verify that lengths of tangents drawn from external point to a circle are equal by cutting and pasting .
12	Recapitulation	Q.1 If radii of two concentric circles are 4cm and 5cm,then the length of each chord of one circle which is tangent to the other Circle is (a) 3cm (b)6cm (c) 9cm (d)1cm Q.2 If angle between two radii of a circle is 130°,the angle between the tangents at the ends of radii is (a) 90° (b) 50° (c) 70° (d) 40° Q.3 A line that intersects a circle in two distinct points is called (a) a diameter (b) secant (c) a tangent (d) radius Q.4 The distance between two parallel tangents of a circle of radius 3cm is (a) 6cm (b) 3cm (c) 4.5cm (d) 12cm Q.5 A line touching a circle at one point is called a (a) diameter (b) chord (c) secant (d) tangent .

13	Assignment	Q .1 Prove that in two concentric circles, the chord of the larger circle, is bisected at the point of contact . Q.2 Prove that the tangents drawn at the ends of a diameter of a circle are parallel . Q.3 The length of a tangent from a point A at distance 5cm from the center of the circle is 4cm .Find the radius of the circle . Q.4 Prove that opposite sides of a quadrilateral circumscribing A circle subtend supplementary angles at the center of the Circle. Q.5 Prove that the tangent drawn at the mid –point of an arc of a circle is parallel to the chord joining the end points of the arc. Q.6 Out of the two concentric circles, the radius of the outer circle is 5cm and the chord AC of length 8cm is a tangent to the Inner circle. Find the radius of the inner circle . Q.7 From an external point P ,two tangents PA and PB are drawn to the circle with center O. Prove that OP is the perpendicular bisector of AB. Q.8 Two tangents TP and TQ are drawn to a circle with center O from an external point T .Prove that $\angle PTQ = 2 \angle OPQ$.
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