

Circles

CBSE Class 10 Maths · Knowledge organiser

KEY DEFINITIONS

Tangent

A line that meets a circle at exactly one point.

Point of contact

The point where a tangent touches the circle; the radius there is perpendicular to the tangent.

Secant

A line that cuts a circle at two points.

KEY FORMULAS

Tangent $\perp$ radius at the point of contact

Tangents from an external point are equal $PA = PB$

Length of tangent from P , distance d from centre $\sqrt{d^2 - r^2}$

Tangents from a point: inside 0, on the circle 1, outside 2

YOU SHOULD BE ABLE TO...

- You know what a tangent is, how many tangents can be drawn from a point, and that a tangent is perpendicular to the radius.
- Use equal tangents from an external point and Pythagoras to find lengths and angles in board-style figures.
- Write both theorem proofs and the long 'prove that' questions with a figure, given, to prove and reasons.
- Handle incircles of triangles and quadrilaterals, tangents meeting chords, and the multi-step angle problems.

WORKED EXAMPLE

The tangent from P to a circle of radius 9 cm has length 12 cm. Find OP . $OP = \sqrt{81 + 144} = 15$ cm.

COMMON MISTAKES

- ✗ Using $OP^2 = PA^2 - r^2$: OP is the hypotenuse, not a leg.
- ✗ Claiming $\angle APB = \angle AOB$. They are supplementary, not equal.
- ✗ Quoting "tangents from an external point are equal" without naming the point. Write " $PA = PB$ (tangents from P)".