Grade 10
Mathematics Chapter Notes
Circles
Topics

1. Lines related to a Circle
2. Tangents and Secants
3. Number of Tangents
4. Theorems related to a Tangent
5. Important Corollaries
Circles

Lines related to Circle

Line outside the circle

Tangent

Chord

Secant

Diameter

Centre
For any point on the circumference of a circle,
No. of tangents = 1

No. of tangents from an external point to circle = 2
Theorems related to Tangent

Theorem 1
Tangents and Radius

Theorem 2
Tangents from external point

1: Tangents and Radius

**Theorem:** The tangent at any point of the circle is perpendicular to the radius through the point of contact.

Hence, \( PQ \perp OA \)
Theorem: The lengths of tangents drawn from an external point to a circle are equal.

Hence, $PT = QT$

Can be proved in two ways:

- Congruence of $\triangle TOP$ & $\triangle TOQ$
- Pythagoras' theorem
For $C_1$ and $C_2$ being concentric circles,
- OP is perpendicular bisector of AB
- AP = PB

PA and PB are 2 tangents drawn from an external point P to a circle with centre at O,
- $\angle APB = 2\angle BAO$
- $\angle PAB = \angle PBA = (90^\circ - \frac{x}{2})$

$x$ and $y$ are supplementary
i.e. $x + y = 180^\circ$
Circles

- Line and a circle
- Tangents and secants
- Tangents
  - Number of tangents
  - Theorems related to tangents
    - Tangent and radius
    - Tangents from external point
- Important corollaries