

## Circle Geometry

### **CIRCLE PROPERTIES (Diagrams can be found in notes)**

- Equal arcs subtend equal angles at the centre of the same circle (or circles with the same radii)
- If two arcs subtend equal angles at the centre of the circle, then the arcs are equal
- Equal chords subtend equal angles at the centre
- Equal angles subtend at the centre of the circle cut off by two chords
- The angle at the centre of a circle is double the angle at the circumference subtended by the same arc
- Angles in the same segment of a circle are equal ie. angles at the circumference standing on the same arc are equal
- The angle in semi-circle is a right angle
- A perpendicular line from the centre of a circle to a chord bisects the chord
- A line from the centre of the circle that bisects a chord is perpendicular to the chord
- Equal chords are equidistant from the centre of the circle
- Chords that are equidistant from the centre are equal
- The products of the intercepts of intersecting chords are equal
- The opposite angles in a cyclic quadrilateral are supplementary
- If the opposite angles of a quadrilateral are supplementary, then the quadrilateral is cyclic
- The exterior angle at a vertex of a cyclic quadrilateral is equal to the interior opposite angle
- The tangent to a circle is perpendicular to the radius drawn from the point of contact
- The line perpendicular to the radius at the point of contact is a tangent to the circle at that point
- Tangents to a circle from an exterior point are equal
- When the tangents touch, the line through their centres passes through their point of contact
- The angle between a tangent and a chord through the point of contact is equal to the angle in the alternate segment
- The square of the length of the tangent from an exterior point is equal to the product of the intercepts of the secant passing through this point