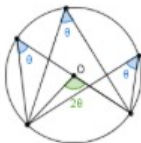
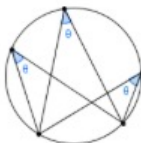


## Properties of Circles



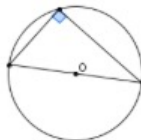
The angle subtended at the centre of a circle by an arc is twice the angle subtended at the circumference by the same arc.

$$\angle \text{ at ctr} = 2 \angle \text{ at circum}$$



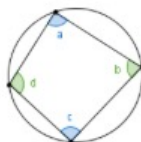
Angles in the same segment are equal.

$$\angle s \text{ in the same seg}$$



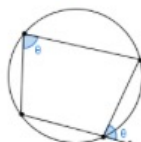
The angle subtended in a semicircle is a right angle.

$$\angle \text{ in semicircle}$$



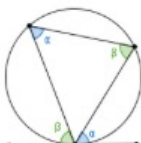
Opposite angles of a cyclic quadrilateral are supplementary.  
( $a + c = 180^\circ$  &  $b + d = 180^\circ$ )

$$\text{opp. } \angle s \text{ of cyclic quad.}$$



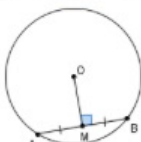
If one side of a cyclic quadrilateral is produced, the exterior angle so formed is equal to the interior opposite angle.

$$\text{ext. } \angle \text{ of cyclic quad.}$$

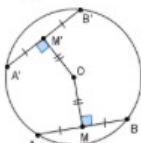


The angle between the chord and the tangent is equal to the angle in the alternate segment.

$$\angle s \text{ in alt. seg.}$$



A line through the centre of the circle and perpendicular to a chord bisects the chord.



Equal chords are equidistant from the centre.



Radius perpendicular to tangent.

$$\text{radius} \perp \text{tangent}$$



Tangents from an external point are equal.