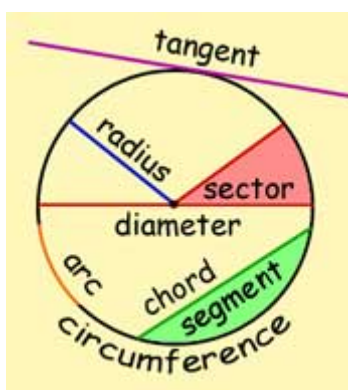


The parts of a circle

centre - the point within the circle where the distance to points on the circumference is the same.

radius - the distance from the centre to any point on the circle. The diameter is twice the radius.

circumference(perimeter) - the distance around a circle.

chord is a straight line joining two points on the circumference.

diameter - a chord(of max. length) passing through the centre

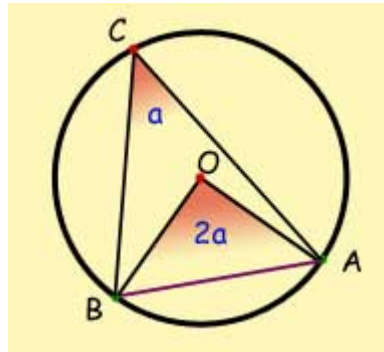
sector - a region enclosed by two radii and an arc.

segment - the region enclosed by a chord and an arc of the circle.

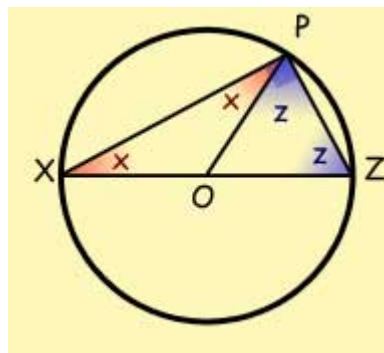
tangent - a straight line making contact at one point on the circumference, such that the radius from the centre is at right angles to the line.

Subtended angles

When a chord subtends an angle on the circumference of a circle, the angle subtended at the centre of the circle is twice the angle.

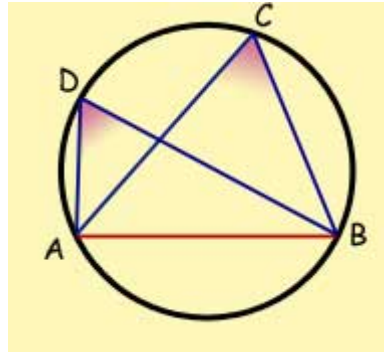


A diameter subtends a right-angle at the circumference



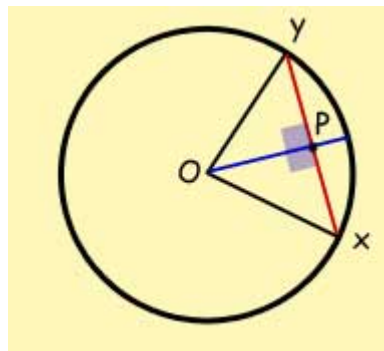
angle XPZ = 90 deg.

Angles subtended by a chord onto the circumference of a circle are equal.



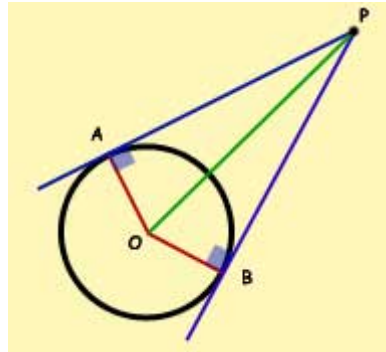
$$\text{angle ADB} = \text{angle ACB}$$

Chords



The line joining the centre of a circle and the mid-point of a chord is perpendicular to the chord. The chord is bisected into two equal halves.

$$XP = PY$$

Tangents

The tangents to a circle from a point are equal in length.

$$AP = BP$$

also,

the tangents subtend equal angles at the centre of the circle

$$\text{angle POA} = \text{angle POB}$$

and,

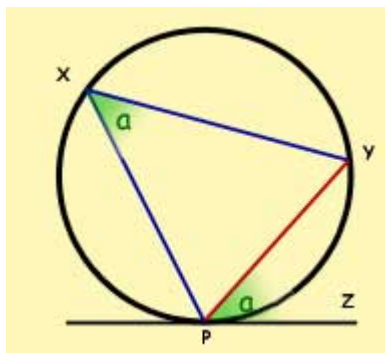
the angles between the tangents and the line joining the centre of the circle and the point are equal.

$$\text{angle APO} = \text{angle BPO}$$

note : Triangle APO and triangle BPO are congruent.

The angle between a tangent and a chord

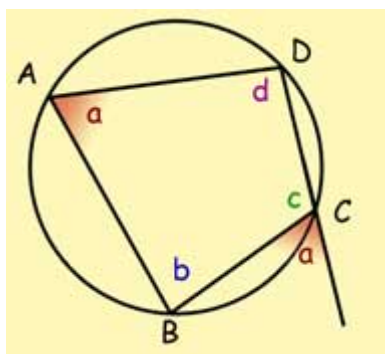
The angle between a tangent and a chord is equal to the angle subtended by the chord in the opposite segment.



$$\text{angle ZPY} = \text{angle PXY}$$

Cyclic quadrilaterals

Opposite angles in a **cyclic** quadrilateral add up to **180 deg**.



As with all quadrilaterals, the **sum of the interior angles = 360 deg**.

Any **exterior angle** of a cyclic quadrilateral **equals the interior opposite angle**.