



Circle Theorems – Y11 Higher

What do I need to be able to do?

By the end of this unit you should be able to:

Know that 'the angle in a semicircle is a right angle'
Know that 'the angle at the centre is double the angle at the circumference'

Know that 'angles in the same segment are equal'

Know that 'opposite angles in a cyclic quadrilateral sum to 180° '

Know that 'two tangents from an external point are equal in length'

Know that 'a radius is perpendicular to a tangent at that point'

Know that 'a radius that bisects a chord is perpendicular to that chord'

Know the alternate segment theorem

Vocabulary

Radius: a straight line from the centre to the circumference of a circle

Centre: is the midpoint of the circle

Tangent: a straight line that touches the circle at one point

Circumference: distance around a circle

Right angle: 90°

Segment: a region in a circle bounded by a chord

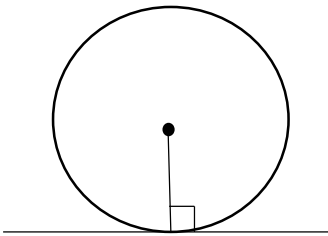
Sector: part of a circle bounded by two radii and an arc

Chord: is a straight line segment whose endpoints both lie on the circle

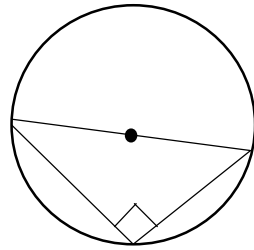
Angle: a measure of a turn, measured in degrees or $^\circ$

Cyclical quadrilateral: is a quadrilateral with all its four vertices or corners lying on the circle

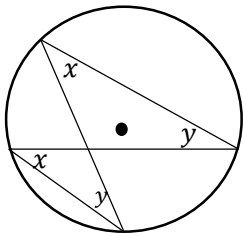
Arc: part of the circumference of a circle



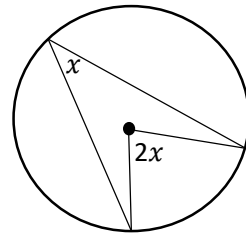
The angle between a radius and a tangent is 90°



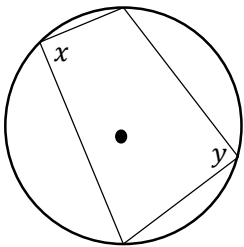
The angle in a semi circle is 90°



Angles in the same segment are equal

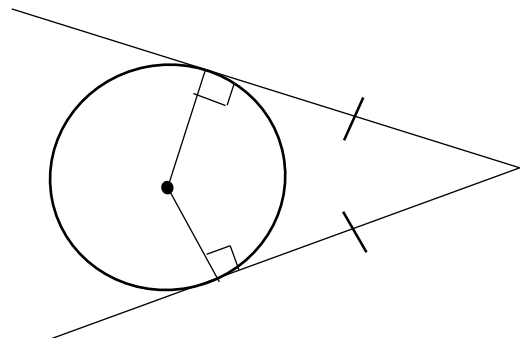


The angle at the centre is twice that at the circumference

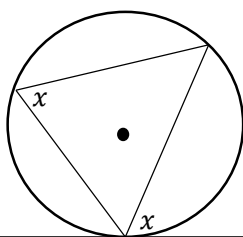


$$x + y = 180^\circ$$

Opposite angles in a cyclical quadrilateral sum to 180°



From any point you can only draw two tangents, and they are equal in length



Same size

The alternate segment theorem