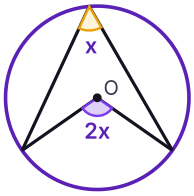
Circle theorems

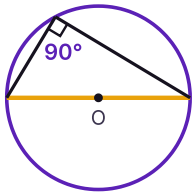
All eight theorems on one page, with the reason to write in words next to each angle. In the exam, an angle without its reason often loses the mark.



1 The angle at the centre is twice the angle at the circumference

Both angles must stand on the same arc.

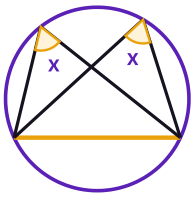
Write: "The angle at the centre is twice the angle at the circumference."



2 The angle in a semicircle is 90°

Look for a triangle drawn on a diameter.

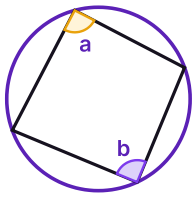
Write: "The angle in a semicircle is 90°."



3 Angles in the same segment are equal

Angles drawn from the same chord, on the same side, match.

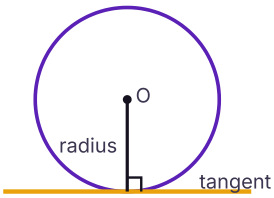
Write: "Angles in the same segment are equal."



4 Opposite angles of a cyclic quadrilateral add up to 180°

All four corners must touch the circle. $a + b = 180°$

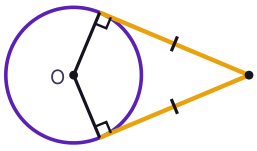
Write: "Opposite angles in a cyclic quadrilateral add up to 180°."



5 A tangent meets a radius at 90°

Often gives you a right-angled triangle for Pythagoras or trig.

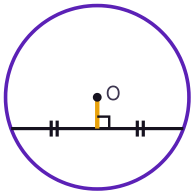
Write: "A tangent and a radius meet at 90°."



6 Two tangents from the same point are equal

The shape they make with the radii is a kite.

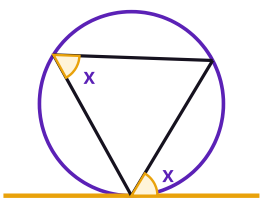
Write: "Tangents from an external point are equal in length."



7 The perpendicular from the centre bisects a chord

It cuts the chord into two equal halves at 90°.

Write: "The perpendicular from the centre to a chord bisects the chord."



8 Alternate segment theorem

The angle between the tangent and a chord equals the angle in the opposite segment.

Write: "Alternate segment theorem."