Guide to: Circle theorems

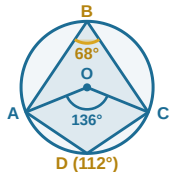
maths Links

Explanation:

Key circle theorems (always write the exact **worded reason** in exams): • **Angle at the centre** is twice the angle at the circumference. • **Angle in a semicircle** is 90°. • **Angles in the same segment** are equal. • **Opposite angles in a cyclic quadrilateral** add up to 180°.

For tangents: a **tangent meets a radius at 90°**; **tangents from an external point are equal in length**; and by the **alternate segment theorem**, the angle between a tangent and a chord equals the angle subtended by the chord in the alternate segment.

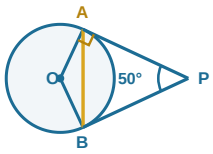
Example 1: A, B, C, D lie on a circle with centre O. Angle **AOC = 136°**. Find acute angle **ABC** and obtuse angle **ADC**.



Solution:

∠ABC = 136° ÷ 2 = **68°** (*angle at centre = 2 × circumference*)
∠ADC = 180° − 68° = **112°** (*opposite angles in cyclic quad = 180°*)
Answer: ∠ABC = 68°, ∠ADC = 112°

Example 2: PA and PB are tangents from P to a circle with centre O. Given **∠APB = 50°**, find **∠OAB**.



Solution:

PA = PB (△PAB isosceles) → ∠PAB = (180° − 50°) ÷ 2 = **65°**
∠OAP = 90° (*tangent ⊥ radius*) → ∠OAB = 90° − 65° = 25°
Answer: ∠OAB = 25°

Worksheets and other links					
Video Lesson on this topic	Video		**Naiker Maths**	Qs	Ans
Ken Stafford (Past Paper Qs)	Qs	Ans	**Dr Austin Maths**	Qs	Ans
Maths Genie	Qs	Ans	**Maths Made Easy**	Qs	Ans
Corbettmaths (Practice)	Qs	Ans	**Metatutor**	Qs	Ans
Corbettmaths (Textbook)	Qs	Ans	**E Classroom**	Qs	Ans
1st Class Maths	Qs	Ans	**PMT (Edexcel)**	Qs	Ans

Questions by topic | **Past Papers** | **Maths worksheets**

Buy workbook | **Quizzes** | **More resources like this**

ken@mathslinks.co.uk