Title : Circle Theorems

Key Knowledge/Prior Learning KS2/3 and Retrieval and Suggested Starters
• Identifying and labelling parts of a circle

KS4 National Curriculum – what students will be practicing
• Spotting and knowing the rules of the various circle theorems • 1) Angle at centre is double angle at circumference • 2) Angle in a semi circle touches circumference at right angle • 3) Angles in same segment are equal • 4) Opposite angles in a cyclic quadrilateral add to 180 • 5) Tangent meets radius at right angle • 6) Two tangents that meet the same point are equal in length • 7) Alternate segment theorem

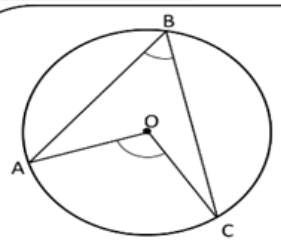
Specific Ambitious Knowledge
Be able to solve problems with 1 or more circle theorems Be able to prove using algebra some of these circle theorems

Key Vocabulary/Literacy Opportunities
• Radius • Diameter • Circumference • Segment • Cyclic Quadrilateral • Tangent • Theorem

Key Formulae/Knowledge

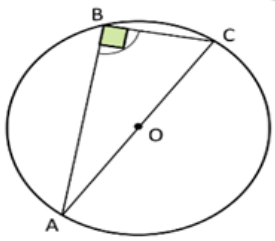
Circle Theorems

1



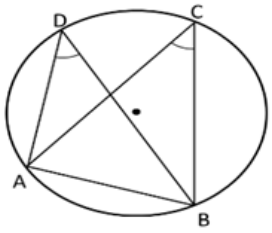
Angles at the centre are double the circumference

2



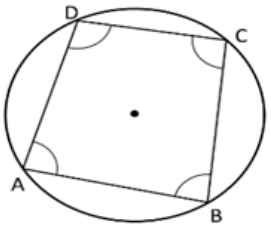
Angles in semicircle are 90°

3



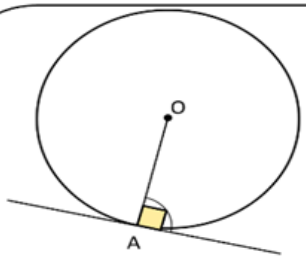
Angles in the same segment are equal

4



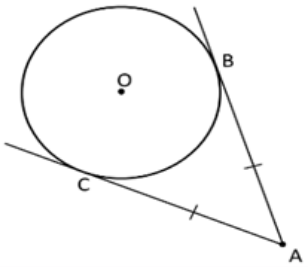
Opposite angles in a cyclic quadrilateral add up to 180°

5



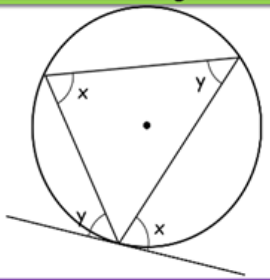
A tangent is perpendicular (at 90°) to a radius

6



Tangents to a circle from the same point are equal in length

7 – Alternate Segment Thrm



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

Maths in Context (Historical, Real Life and Student Thinking Points)
Thales' theorem is that the angles in a semicircle make a right angle. This link talks through the theorem and looks at the need for mathematical rigour and proof. https://mathigon.org/course/euclidean-geometry/introduction **Thales of Miletus** (c. 624 – 546 BCE) was a Greek mathematician and philosopher.  Thales is often recognised as the first scientist in Western civilisation: rather than using religion or mythology, he tried to explain natural phenomena using a scientific approach. He is also the first individual in history that has a mathematical discovery named after him: Thales' theorem.

Projects/Enrichment/Investigations
• **Sitting Pretty** • **Partly Circles**