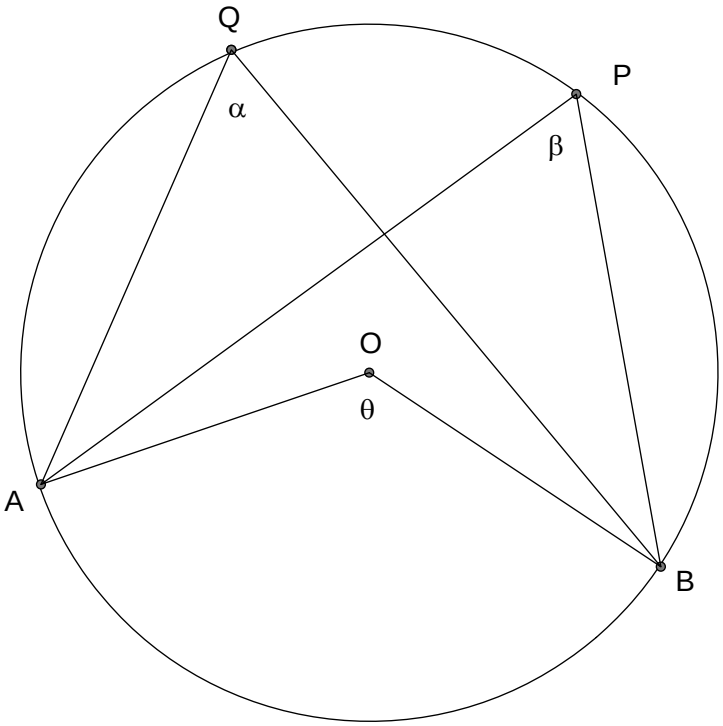
Year 10 Mathematics Extension Investigation

Circle Geometry Properties!!! Take Home Part Solution 3 of 7

TASK THREE: Angles in the Same Segment Theorem



Given: Circle centre O. A and B are two points on the circumference. ∠AOB is the angle subtended at the centre. Q and P are two points on the major arc AB.

To Prove: ∠AQB = ∠APB

Extension to the diagram: Join AQ, QB, AP and PB.

Proof: Let ∠AOB = θ , ∠AQB = α and α , ∠APB = β

$\theta = 2\alpha$ Central Angle Theorem

$\theta = 2\beta$ Central Angle Theorem

$\therefore$ $2\alpha = 2\beta$ Transitive

$\therefore$ $\alpha = \beta$

$\therefore$ ∠AQB = ∠APB

Q.E.D.