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Question 4 **(Suggested maximum time: 20 minutes)**

(a) Prove that the angle at the centre of a circle standing on a given arc is twice the angle at any point of the circle standing on the same arc.

Diagram:

Given:

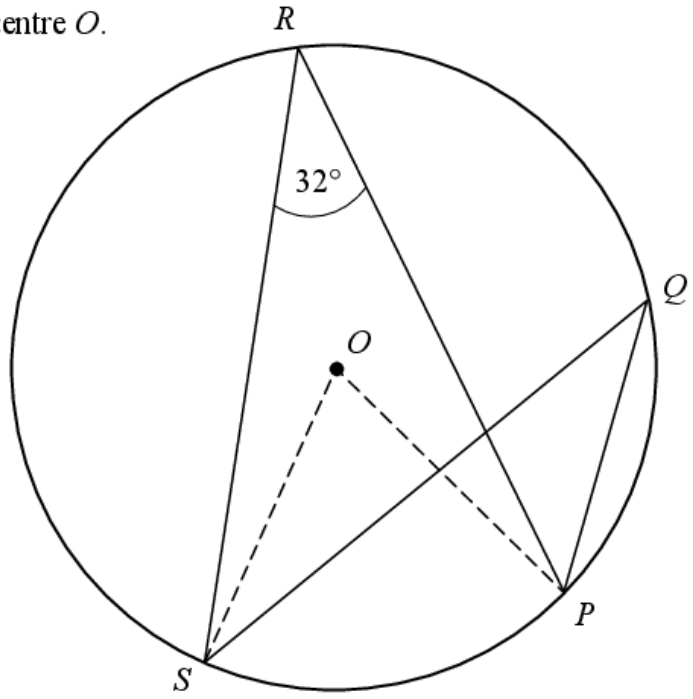
To Prove:

Construction:

Proof:

(b) P, Q, R, and S are points on a circle with centre O.

$|\angle PRS| = 32°$, as shown.

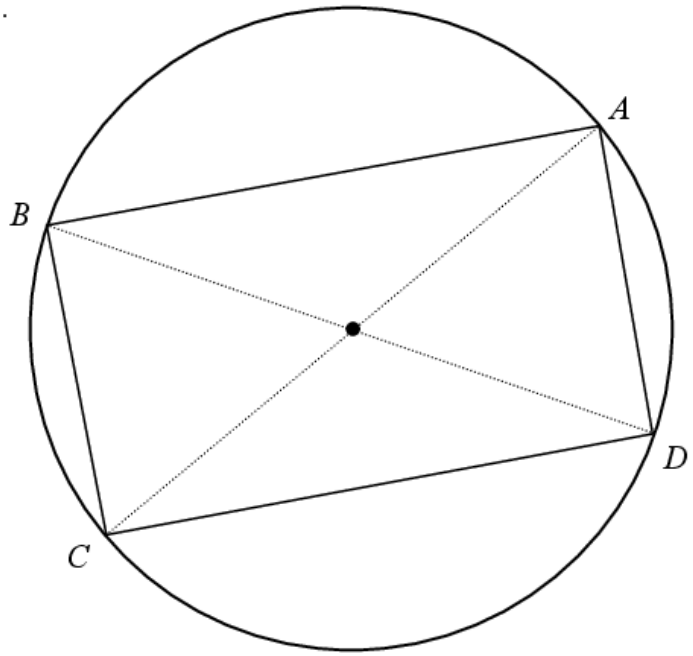


(i) Find $|\angle SOP|$.

(ii) Find $|\angle SQP|$.

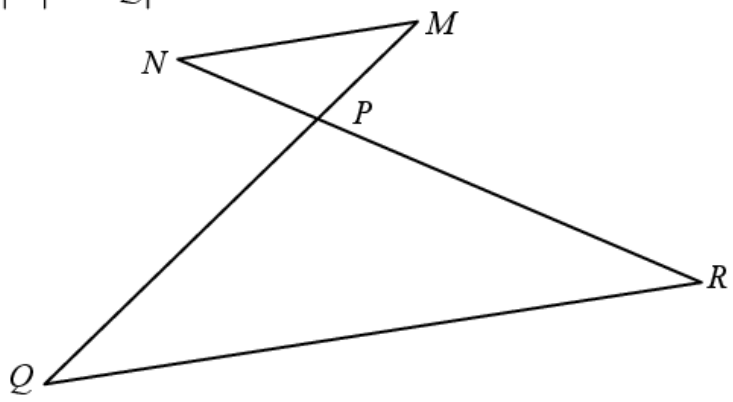
(c) A, B, C, and D are points on a circle, as shown below.
$[AC]$ and $[BD]$ are diameters of the circle.

Prove that $ABCD$ is a rectangle.



Question 2

In the diagram below, $|\angle MNP| = |\angle PRQ|$.



(i) Prove that ΔMNP and ΔQRP are similar.

(ii) Is NM parallel to QR? Give a reason for your answer.

Given $|MN| = 6$, $|NP| = 4$, $|QP| = 9$, and $|PR| = 10$, find:

(iii) $|QR|$

(iv) $|QM|$.

Question 3

Prove that the angle at the centre of a circle standing on a given arc is twice the angle at any point of the circle standing on the same arc.

Diagram:

Given:

To Prove:

Construction:

Proof: