Problem of the Week
Problem E
Two Circles and a Triangle

Two circles, with centres $O$ and $B$ and each with a radius of 2, are tangent to each other. A straight line is drawn through $O$ and $B$ meeting the circles at $Q$ and $R$. Two other sides of $\triangle PQR$ are drawn such that side $PR$ is tangent to the circle with centre $B$ at $A$ and side $PQ$ is tangent to the circle with centre $B$ at $Q$.

Determine the length of $PQ$.

It may be helpful to use the facts that

- a line drawn from the centre of a circle to a point of tangency is perpendicular to the tangent, and

- if two circles are tangent to each other, a line segment joining the two centres passes through the point of tangency.