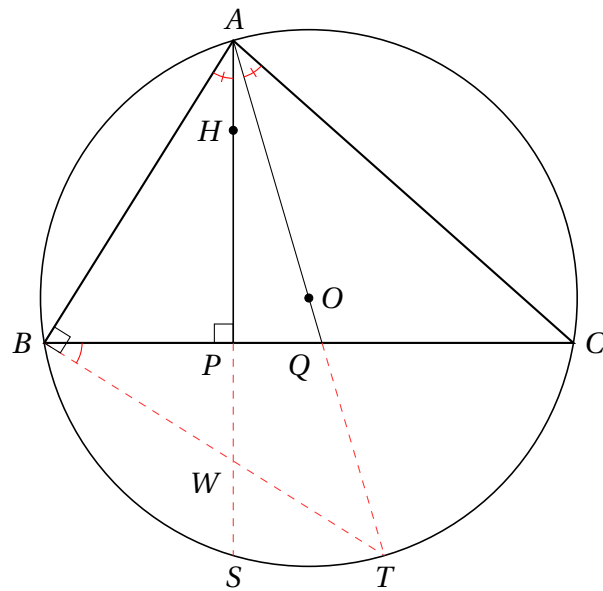


Problem

Let H and O denote the orthocenter and circumcenter of acute triangle ABC , respectively. \overline{AH} meets \overline{BC} at P and \overline{AO} meets BC at Q . Prove that $\angle BAP = \angle CAQ$.



First, $\angle TAC = \angle TBC = \widehat{TC}$ and so we just need to prove $\angle TBC = \angle BAP =$.

Next, $\angle TBA = 90^\circ$ because AT is a diameter of the circle, and with $\angle APB = 90^\circ$ we conclude that $\angle TBC = \angle BAP$ because both add $\angle PWB$ to 90° .

Therefore, $\angle BAP = \angle TBC = \angle TAC$.