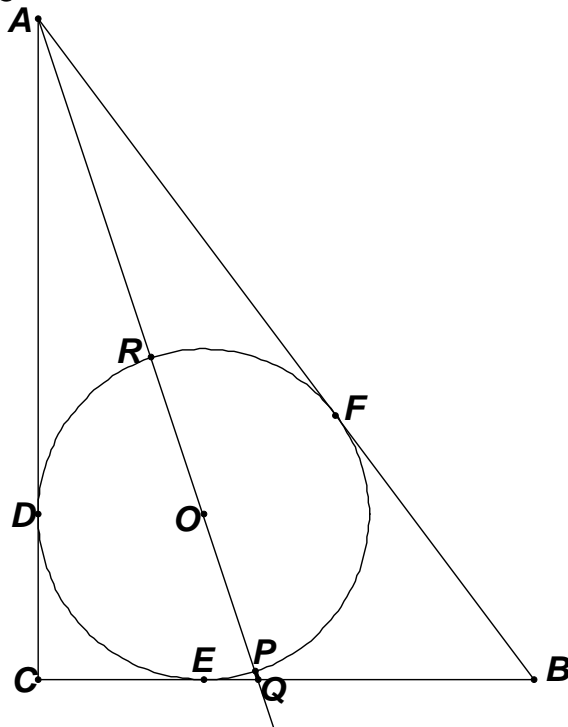


**MASSACHUSETTS MATHEMATICS LEAGUE
CONTEST 5 - FEBRUARY 2014
ROUND 7 TEAM QUESTIONS**

- E) Circle O is inscribed in 3-4-5 right $\triangle ABC$.
Specifically, $BC = 3$ and $AC = 4$.
 \overline{AO} intersects circle O in points P and R and
intersects \overline{BC} in point Q .
The ratio $AO : PQ = k : 1$.
Compute k .



- F) Let P_n be a sequence of polynomials defined by $P_n(x) = xP_{n-1}(x) - P_{n-2}(x)$, where
 $P_0(x) = 1$ and $P_1(x) = x$. Compute $\sum_{n=0}^{n=6} P_n(3)$.