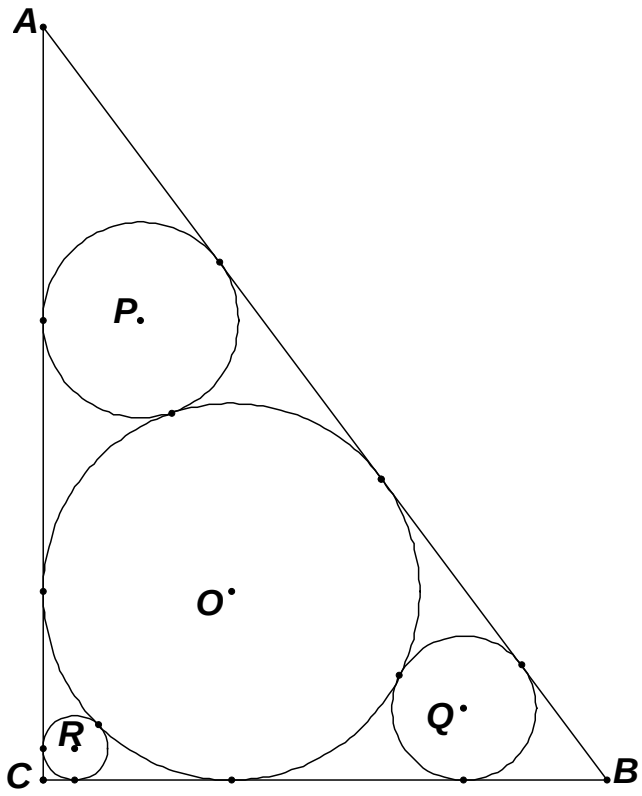
ROUND 7 TEAM QUESTIONS - continued

E) Circle *O* is inscribed in ΔABC, a 3-4-5 right triangle. Three smaller circles centered at *P*, *Q* and *R* are drawn inside ΔABC.
Each is tangent to circle *O* and to two sides of ΔABC. Their radii are r_1, r_2 and r_3, where $r_1 < r_2 < r_3$.
Compute the ordered triple (r_1, r_2, r_3).
The diagram <u>is</u> constructed to scale.



F) A sequence, whose initial term is a positive integer t_1 , is defined by the following rule:

- if a term is even, the next term is half the current term
- if a term is odd, the next term is 1 more than the current term

For some <u>minimum</u> value of *k*, for <u>all</u> $n \geq k$, $t_n = 2$ and $t_{n+1} = 1$ (or vice versa).
For example, $t_1 = 48 \Rightarrow 48, 24, 12, 6, 3, 4, 2, 1, 2, 1, 2, 1, \ldots \Rightarrow k = 7$
Compute <u>all</u> values of t_1 for which *k* = 5.