



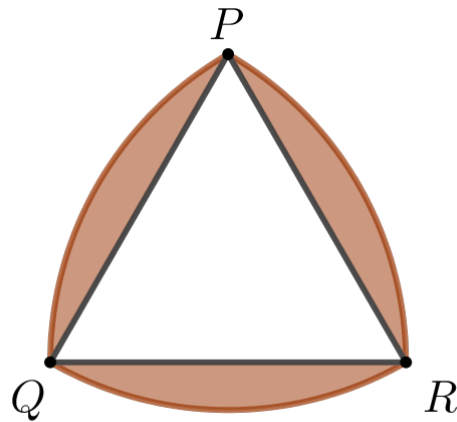
Problem of the Week

Problem D

Painting a Logo

Nathaniel has designed a new logo for his school's math club. When drawing his logo, he starts with an equilateral triangle, labelled $\triangle PQR$, with sides of length 20 cm. He then draws in minor arc PQ , which is an arc of the circle with centre R and radius RQ , followed by minor arc PR , which is an arc of the circle with centre Q and radius QP , and then minor arc RQ , which is an arc of a circle with centre P and radius PR .

He wants to colour the region bounded by each arc but outside of $\triangle PQR$. Determine the total area to be coloured, correct to one decimal place.



NOTE: You may use the fact that an altitude in an equilateral triangle bisects the side it is drawn to.