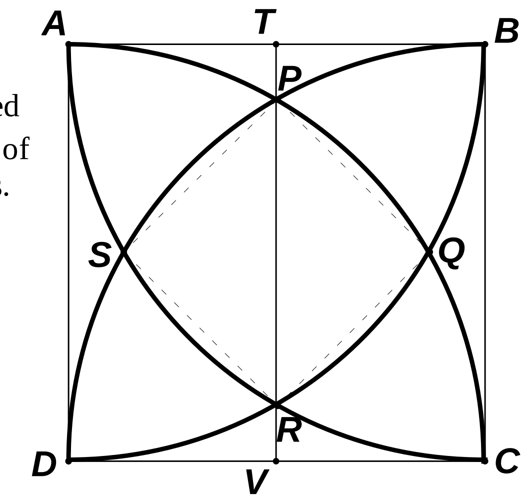
Team Round - continued



F) Let D be the origin, $\overline{DC}$ lie on the positive x-axis, and $\overline{DA}$ lie on the positive y-axis.
R and S (and P and Q) are images across $y = x$, so we need only find the coordinates of one point and the coordinates of the other is found by simply interchanging the coordinates.
Clearly, the x-coordinate of points P and R is 2 and the y-coordinate of points Q and S is 2 as well.
The equation of the arc $\overset{\frown}{APQC}$ is $x^2 + y^2 = 16$.

$x = 2 \Rightarrow y = 2\sqrt{3}$

Therefore, the coordinates are $P\left(2, 2\sqrt{3}\right)$, $Q\left(2\sqrt{3}, 2\right)$.

$TP + PV = TV \Leftrightarrow TP + 2\sqrt{3} = 4 \Rightarrow TP = 4 - 2\sqrt{3}$

$TP = RV \Rightarrow R\left(2, 4-2\sqrt{3}\right)$, $S\left(4-2\sqrt{3}, 2\right)$

$PR = 2\sqrt{3} - \left(4 - 2\sqrt{3}\right) = 4\sqrt{3} - 4$

$$PQ = \frac{PR}{\sqrt{2}} = \frac{4\left(\sqrt{3}-1\right)}{\sqrt{2}} = 2\sqrt{2}\left(\sqrt{3}-1\right)$$

$\Rightarrow$ Perimeter $= 4PQ = 8\sqrt{2}\left(\sqrt{3}-1\right) = 8\left(\sqrt{6}-\sqrt{2}\right) \Rightarrow (a,b,c) = \underline{(\mathbf{8, 6, 2})}$.