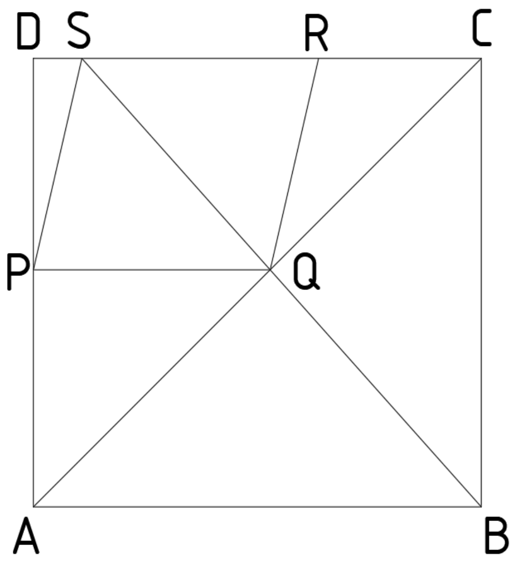

ABCD is a square, PQRS is rhombus, calculate [CQR]?

Let $PQ = QR = RS = SP = x, CQ = y\ (0 < x, y < a)$

Not hard to see that:

$$DP = \frac{CQ}{\sqrt{2}} = \frac{y}{\sqrt{2}}, AP = PQ = x$$

Then, $AD = a = AP + PD = x + \frac{y}{\sqrt{2}}, DP = \sqrt{x^2 - \frac{y^2}{2}}$

⇨ $x = a - \frac{y}{\sqrt{2}}$

⇨ $x^2 = a^2 - \sqrt{2}ay + \frac{y^2}{2}$

Using Thales theorem with SC // AB, we have:

$$\frac{SC}{AB} = \frac{CQ}{QA}$$

⇨ $\frac{a-\sqrt{x^2-\frac{y^2}{2}}}{a} = \frac{y}{\sqrt{2}a-y}$

⇨ $\sqrt{2}a^2 - 2ay = \sqrt{2x^2 - y^2}\left(a - \frac{y}{\sqrt{2}}\right) = x\sqrt{2x^2 - y^2}$

⇨ $2a^4 - 4\sqrt{2}a^3y + 4a^2y^2 = 2x^4 - x^2y^2 = 2\left(a^2 - \sqrt{2}ay + \frac{y^2}{2}\right)^2 - \left(a^2 - \sqrt{2}ay + \frac{y^2}{2}\right)y^2$

⇨ $2a^4 - 4\sqrt{2}a^3y + 4a^2y^2 = 2a^4 - 4\sqrt{2}a^3y + 5a^2y^2 - \sqrt{2}ay^3$

⇨ $y = \frac{a}{\sqrt{2}}$

⇨ Q is the center of ABCD, $S \equiv D$

⇨ **Impossible**

That means, there’s no solution!