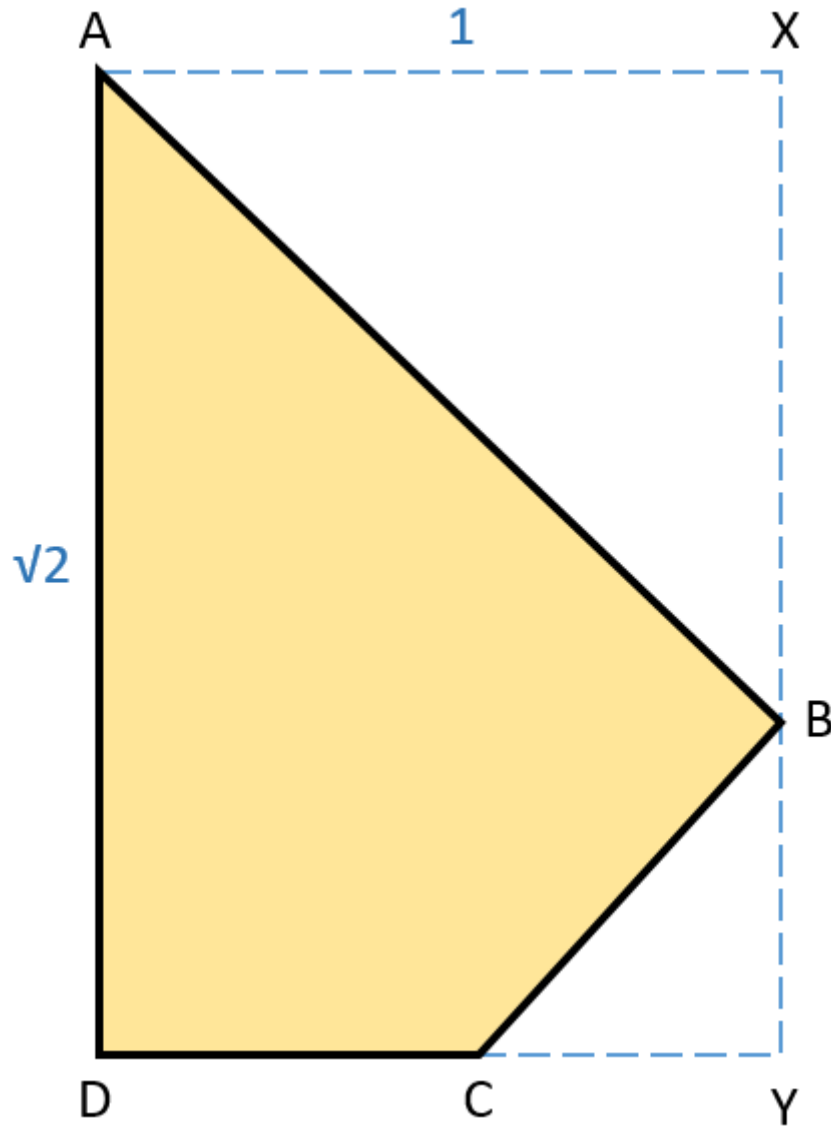


I have labelled the diagram to help explain the solution:



The perimeter of the yellow quadrilateral is calculated as

$$AB + BC + CD + DA$$

$$AB = \sqrt{2} \text{ (Use Pythagoras on triangle } AXB \text{ where } XB = 1)$$

$$BC = \sqrt{2(\sqrt{2} - 1)^2} \text{ (Pythag on } BYC \text{ where } BY = CY = XY - XB)$$

$$CD = 1 - (\sqrt{2} - 1) \text{ (subtracting } CY \text{ from } DY)$$

$$DA = \sqrt{2} \text{ (given)}$$

$$\begin{aligned} \text{Perimeter} &= \sqrt{2} + \sqrt{2(\sqrt{2} - 1)^2} + 1 - (\sqrt{2} - 1) + \sqrt{2} \\ &= \sqrt{2} + 2 + 2 - \sqrt{2} = 4 \end{aligned}$$