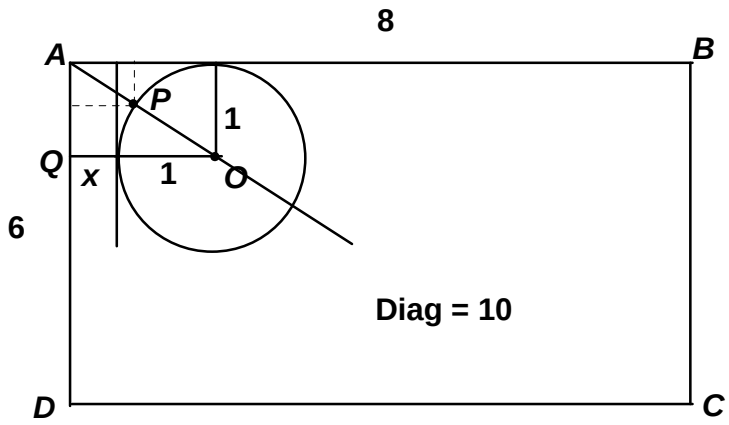
Appeal from Hamilton Wenham in Round 5 Question B

The original wording of the question was as follows:
A bead with a 2 inch diameter slides along a metal rod which connects opposite corners of a rectangular 6 inch by 8 inch wooden frame. When the bead touches the side of the frame it reverses direction. Let *P* and *Q* be the points along the wire where the bead comes closest to the opposite corners of the frame. Compute *PQ*.

Assuming *P* was not the center of the bead.
Zoom in on the upper left corner of the frame when the bead touches the top edge of the frame.



$$\Delta AOQ \sim \Delta ACD \Rightarrow \frac{AQ}{OQ} = \frac{AD}{CD} \Leftrightarrow \frac{1}{x+1} = \frac{6}{8} = \frac{3}{4} \Rightarrow 3x+3 = 4 \Rightarrow x = \frac{1}{3}$$

Using the Pythagorean Theorem on ΔAQO,

$$\left(\frac{4}{3}\right)^2 + 1^2 = AO^2 \Rightarrow AO^2 = \frac{25}{9} \Rightarrow AO = \frac{5}{3} \Rightarrow AP = \frac{5}{3} - 1 = \frac{2}{3}$$

Therefore, $PQ = 10 - 2\left(\frac{2}{3}\right) = \underline{\mathbf{\frac{26}{3}}}$

Alternate interpretation was accepted.