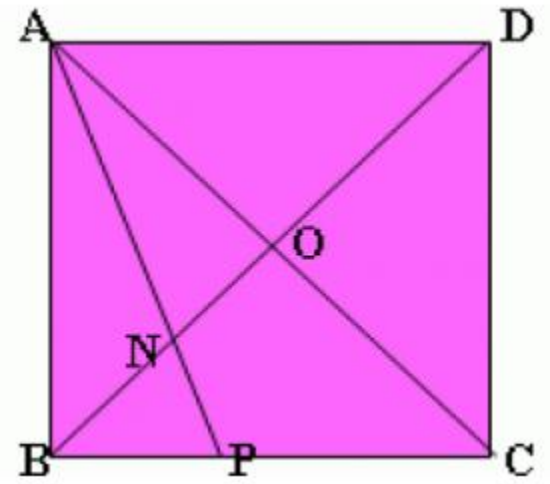
A Square Problem

Solution:



We are given that length of NO is 24 cm. We have to find the length of PC. Let $AO = x$ then $AC = 2x$ and $AB = BC = \sqrt{2}x$.

Now applying angle bisector theorem for ΔABO, we have

$$\frac{BN}{NO} = \frac{AB}{AO}$$

$$\Rightarrow \quad BN = \frac{24\sqrt{2}x}{x} = 24\sqrt{2}.$$

Again applying angle bisector theorem for ΔABC, we have

$$\frac{BP}{PC} = \frac{AB}{AC} = \frac{\sqrt{2}x}{2x} = \frac{1}{\sqrt{2}}$$

$$\Rightarrow \quad BP = \frac{PC}{\sqrt{2}}.$$

Now $BP + PC = BC = \sqrt{2}x$

$$\Rightarrow \quad \frac{PC}{\sqrt{2}} + PC = \sqrt{2}x$$

$$\Rightarrow \quad PC = \frac{2x}{\sqrt{2}+1}. \qquad \ldots(1)$$

Further $AO = x = BO = BN + NO = 24\sqrt{2} + 24 = 24(\sqrt{2} + 1)$.

Putting the value of *x* in (1), we get

$$PC = \frac{2\times 24(\sqrt{2}+1)}{(\sqrt{2}+1)} = 48 \text{ cm}$$

From:

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