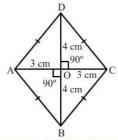


Understanding shapes-III special types of quadrilaterals Ex 17.2 Q14



Let the given quadrilateral be ABCD in which diagonals AC is equal to $6~\mathrm{cm}$ and BD is equal to $8~\mathrm{cm}$.

Also, it is given that the diagonals bisect each other at right angle, at point O.

$$\therefore$$
 AO = OC = $\frac{1}{2}$ AC = 3 cm

Also,
$$OB = OD = \frac{1}{2}BD = 4$$
 cm

In right △ AOB:

$$AB^2 = OA^2 + OB^2$$

$$\Rightarrow$$
 AB² = $(9+16)$ cm²

$$\Rightarrow AB^2 = 25 \text{ cm}^2$$

$$\Rightarrow$$
 AB = 5 cm

Thus, the length of each side of the quadrilateral is 5 cm.

$$AB^{2} = AO^{2} + BO^{2}$$

$$\Rightarrow AO^{2} = (AB^{2} - BO^{2})$$

$$\Rightarrow AO^{2} = (10)^{2} - (8)^{2} cm^{2}$$

$$\Rightarrow AO^{2} = (100 - 64) cm^{2} = 36 cm^{2}$$

$$\Rightarrow AO = \sqrt{36} cm = 6 cm$$

$$\therefore AC = 2 \times AO = (2 \times 6) cm = 12 cm$$

*********** END ********