STRAIGHT LINES

Exercise 7.1

Q3. AD and BC are equal perpendiculars to a line segment. Show that CD bisects AB.

Solution

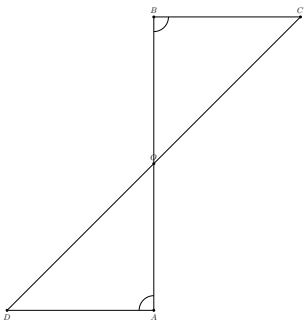

Figure 0-1: Figure

Given:

$$AD = BC \tag{1}$$

$$AD \perp BC \implies \angle OAD = 90^\circ \tag{2}$$

$$BC \perp AB \implies \angle OAD = 90^\circ \tag{3}$$

To Prove : CD bisects AB $\implies$ OA=OB

0.1 Proof

In $\triangle BOC$ and $\triangle AOD$ and from given information

$$\angle BOC = \angle AOD \tag{4}$$
$$\angle CBO = \angle DAO \tag{5}$$
$$BC = AD \tag{6}$$
$$\therefore \triangle BOC \cong \triangle AOD \tag{7}$$
$$\therefore OB = OA \tag{8}$$

Thus, CD bisects AB and O is the mid-point of AB.