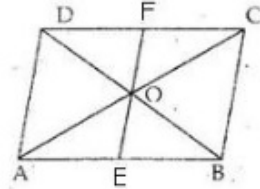




Exercise 9B

Question 17:



Given : A parallelogram ABCD ,in which diagonals intersect at O. E and F are the points on AB and CD

To Prove : $OE = OF$

Proof : In $\triangle AOE$ and $\triangle COF$, we have

$$\angle CAE = \angle DCA \quad [\text{Alternate angles}]$$

$$AO = CO \quad [\text{diagonals are equal and bisect each other}]$$

$$\text{and, } \angle AOE = \angle COF \quad [\text{Vertically opposite angles}]$$

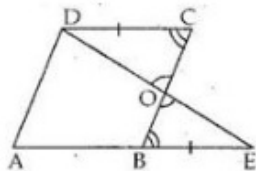
Thus by Angle-Side-Angle criterion of congruence, we have,

$$\therefore \triangle AOE \cong \triangle COF \quad [\text{By ASA}]$$

The corresponding parts of the congruent triangles are equal.

$$\therefore OE = OF \quad [\text{By cpct}]$$

Question 18:



Given : ABCD is a parallelogram in which AB is produced to E such that $BE = AB$. DE is joined which cuts BC at O.

To Prove : $OB = OC$

Proof : In $\triangle OCD$ and $\triangle OBE$, we have,

$$\angle DOC = \angle EOB \quad [\text{vertically opposite angles are equal}]$$

$$\angle OCD = \angle OBE \quad [\text{AB} \parallel \text{CD}, \text{BC is a transversal} \\ \text{thus, alternate angles are equal}]$$

$$DC = BE \quad [\text{AB} = \text{CD and BE} = \text{AB}]$$

Thus, by Angle-Angle-Side criterion of congruence, we have

$$\therefore \triangle OCD \cong \triangle OBE \quad [\text{by AAS}]$$

The corresponding parts of the congruent triangles are equal.

$$\therefore OC = OB$$

Hence, ED bisects BC.

***** END *****