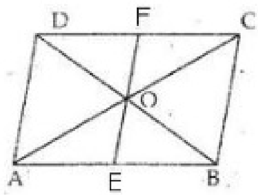
Exercise 9B

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 ΔAOE and ΔCOF, we have

$\angle CAE = \angle DCA$ [Alternate angles]

$AO = CO$ [diagonals are equal and bisect each other]

and, $\angle AOE = \angle COF$ [Vertically opposite angles]

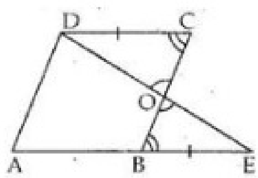
Thus by Angle-Side-Angle criterion of congruence, we have,

$\therefore$ $\Delta AOE \cong \Delta COF$ [By ASA]

The corresponding parts of the congruent triangles are equal.

$\therefore$ $OE = OF$ [By cpct]

Question 18:



Given : ABCD is a parralleogram 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 ΔOCD and ΔOBE, we have,

$\angle DOC = \angle EOB$ [vertically opposite angles are equal]

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

$DC = BE$ [$AB = CD$ and $BE = AB$]

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

$\therefore$ $\Delta OCD \cong \Delta OBE$ [by AAS]

The corresponding parts of the congruent triangles are equal.

$\therefore$ $OC = OB$

Hence, ED bisect BC.

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