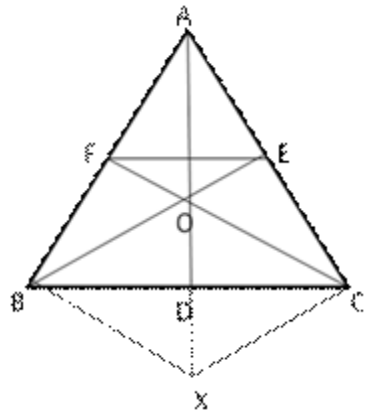
Exercise 4A

Question 11:



Given BD = CD and OD = DX
Join BX and CX
Thus, the diagonals of quad OBXC bisect each other
OBXC is a parallelogram
BX || CF and so, OF || BX
Similarly, CX || OE
In ΔABX, OF || BX

$$\therefore \frac{AO}{AX} = \frac{AF}{AB} - - - (1)$$

$$\text{In } \Delta ACX, OE \,||\, XC$$

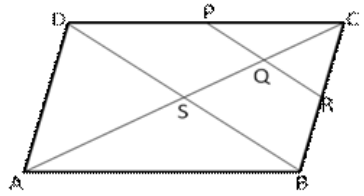
$$\therefore \frac{AO}{AX} = \frac{AE}{AC} - - - (2)$$

$$\text{From } (1) \& (2),$$

$$\text{we get } \frac{AF}{AB} = \frac{AE}{AC}$$

$$\text{Hence, } EF \,||\, BC$$

Question 12:



Given: ABCD is a parallelogram in which P is the midpoint of DC and Q is a point on AC such that CQ=1/4 AC. PQ produced meets BC at

R.
To prove: R is the midpoint of BC
Construction: Join BD
Proof: Since the diagonals of a || gm bisect each other at S such that

$$CS = \frac{1}{2} AC$$

$$\text{Now, } CS = \frac{1}{2}AC \text{ and } CQ = \frac{1}{4}AC \Rightarrow CQ = \frac{1}{2} CS$$

Therefore Q is the midpoint of CS
So, PQ || DS.
Therefore, QR || SB.
In **Δ**CSB, Q is the midpoint of CS and QR || SB.
So R is the midpoint of BC.

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