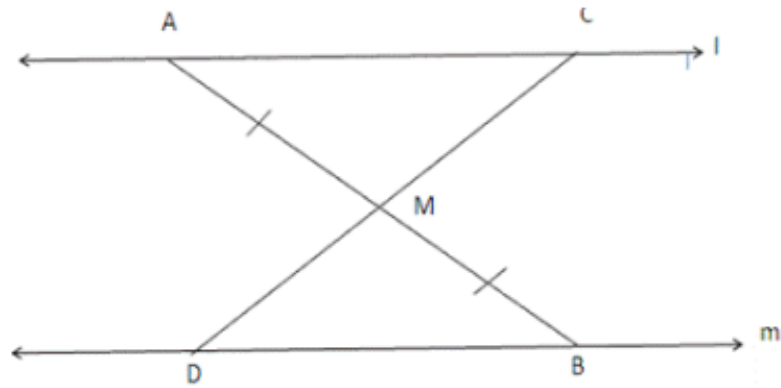




Exercise 5A

Question 11:



Given: Two lines l and m are parallel to each other. M is the midpoint of segment AB . The line segment CD meets AB at M .

To prove: M is the midpoint of CD , that is $CM = MD$

Proof: In $\triangle AMC$ and $\triangle BMD$, we have

$$\angle MAC = \angle MBD \quad [\text{Since } l \text{ and } m \text{ are parallel, } AB \text{ is the transversal, and thus, alternate angles are equal}]$$

$$AM = MB \quad [\text{given}]$$

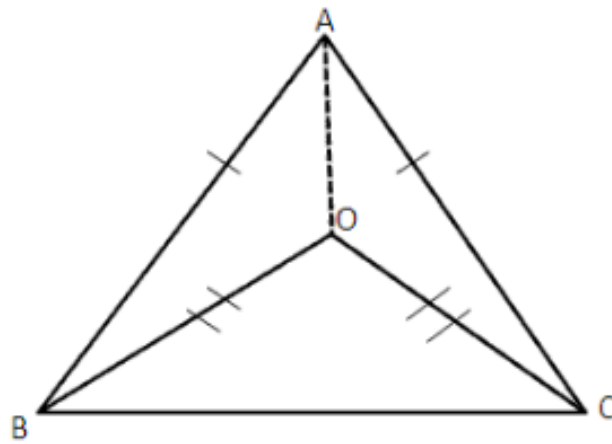
$$\angle AMC = \angle BMD \quad [\text{vertically opposite angles are equal}]$$

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

$$\triangle AMC \cong \triangle BMD$$

Therefore, by corresponding parts of the congruent triangles are equal, we have, $CM = MD$

Question 12:



Given: $AB = AC$ and O is an interior point of the triangle such that $OB = OC$

To prove: $\angle ABO = \angle ACO$

Construction: Join AO

Proof: In $\triangle AOB$ and $\triangle AOC$, we have

$$AB = AC \quad [\text{Given}]$$

$$AO = AO \quad [\text{Common}]$$

$$OB = OC \quad [\text{Given}]$$

So, by Side-Side-Side criterion of congruence, we have,

$$\triangle ABO \cong \triangle ACO$$

$$\Rightarrow \angle ABO = \angle ACO \quad [\text{by corresponding parts of congruent triangles are equal}]$$

***** END *****