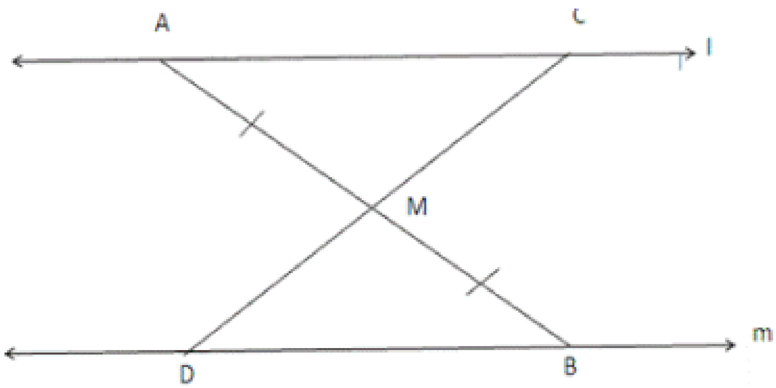
Exercise 5A

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

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

$AM = MB$ [given]

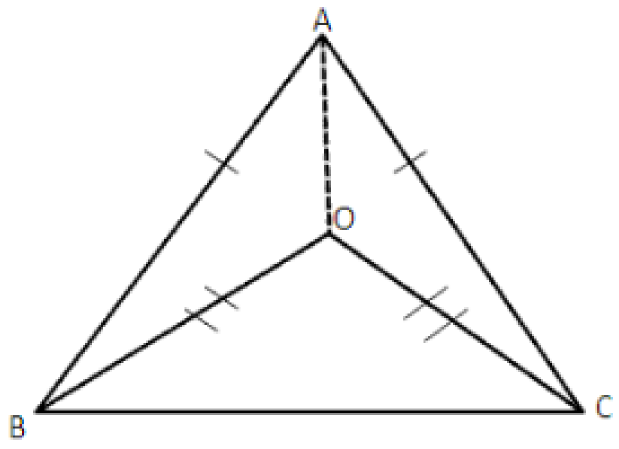
$\angle AMC = \angle BMD$ [vertically opposite angles are equal]

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

$AB = AC$ [Given]

$AO = AO$ [Common]

$OB = OC$ [Given]

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

$\triangle ABO \cong \triangle ACO$

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

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