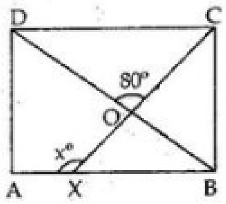
Exercise 9B

Question 13:



Consider the triangle ΔABD

$AB = AD$ [∴ ABCD is a square]

So, $\angle ADB = \angle ABD$ [base angles are equal]

$\therefore \angle ADB + \angle ABD = 90^0$ [$\because \angle A = 90^0$ as ABCD is a square]

$2\angle ADB = 90^0$

$\Rightarrow \angle ADB = \frac{90}{2} = 45^0$

Now in ΔOXB,

$\angle XOB = \angle DOC = 80^0$ [vertically opposite angle]

and $\angle ABD = 45^0 \Rightarrow \angle XBD = 45^0$.....(1)

So, exterior$\angle AXO = \angle XOB + \angle XBD$

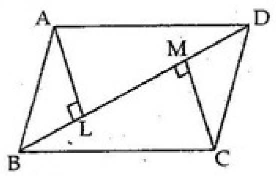
$x^0 = 80^0 + 45^0$ [from (1)]

$= 125^0$

$\therefore x^0 = 125^0$

Question 14:

A parallelogram ABCD in which AL and CM are perpendiculars to its diagonal BD



To Prove : (i) $\Delta ALD \cong \Delta CMB$

(ii) $AL = CM$

Proof : (i) In ΔALD and ΔCMB, we have

$\angle ALD = \angle CMB = 90^0$ [Given]

$\angle ADL = \angle CBM$ [$AD \parallel BC$, BD is a transversal, so alternate angles are equal]

$AD = BC$ [Opposite sides of a parallelogram]

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

$\therefore \Delta ALD \cong \Delta CMB$ [By AAS]

(ii) Since $\Delta ALD \cong \Delta CMB$, the corresponding parts of the congruent triangles are equal.

$\therefore AL = CM$ [C.P.C.T.]

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