Understanding shapes-III special types of quadrilaterals Ex 17.1 Q26

Answer :

(i) True, since opposite angles of a parallelogram are equal.

(ii) True, as AF is the bisector of $\angle$A.

(iii) True, as CE is the bisector of $\angle$C.

(iv) True

$\angle$CEB = $\angle$DCE........(i) (alternate angles)

$\angle$DCE= $\angle$ FAB.........(ii) (opposite angles of a parallelogram are equal)

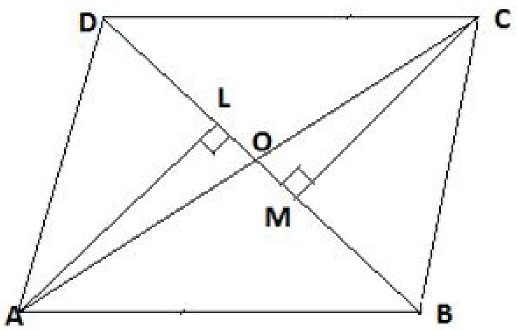
From equations (i) and (ii):

$\angle$CEB = $\angle$FAB

(v) True, as corresponding angles are equal ($\angle$CEB = $\angle$FAB).

Understanding shapes-III special types of quadrilaterals Ex 17.1 Q27

Answer :



In ΔAOL and ΔCMO :

$\angle \mathrm{AOL} = \angle \mathrm{COM}$(vertically opposite angle)....(i)

$\angle \mathrm{ALO} = \angle \mathrm{CMO} = 90^\circ$ (each right angle).....(ii)

Using *angle sum property* :

$\angle \mathrm{AOL} + \angle \mathrm{ALO} + \angle LAO = 180^\circ$..........$(iii)$

$\angle COM + \angle CMO + \angle OCM = 180^\circ$......$(iv)$

From equations (iii) *and* (iv) :

$\angle \mathrm{AOL} + \angle \mathrm{ALO} + \angle LAO = \angle COM + \angle CMO + \angle OCM$

$\angle LAO = \angle OCM$ (*from equations* (i) *and* (ii))

In ΔAOL and ΔCMO :

$\angle \mathrm{ALO} = \angle \mathrm{CMO}$ (each right angle)

AO = OC (diagonals of a parallelogram bisect each other)

$\angle LAO = \angle OCM$ (*proved above*)

So, ΔAOL is congruent to ΔCMO (SAS).

$\Rightarrow$ AL = CM [cpct]

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