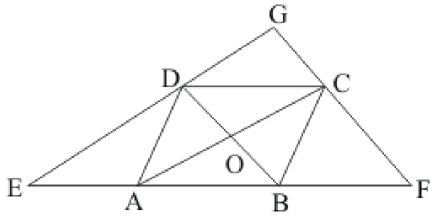
Quadrilaterals Ex 14.3 Q8

Answer :

Rhombus *ABCD* is given:



We have

$EA = AB = BF$

We need to prove that $\angle EGF = 90^0$

We know that the diagonals of a rhombus bisect each other at right angle.

Therefore,

$OA = OC$, $OB = OD$, $\angle AOD = \angle COD = 90^0$

$\angle AOB = \angle COB = 90^0$

In ΔBDE, *A* and *O* are the mid-points of *BE* and *BD* respectively.

By using mid-point theorem, we get:

$OA \parallel DE$

Therefore,

$OC \parallel DG$

In ΔCFA, *A* and *O* are the mid-points of *BE* and *BD* respectively.

By using mid-point theorem, we get:

$OA \parallel DE$

Therefore,

$OD \parallel GC$

Thus, in quadrilateral *DOCG*,we have:

$OC \parallel DG$ and $OD \parallel GC$

Therefore, *DOCG* is a parallelogram.

Thus, opposite angles of a parallelogram should be equal.

$\angle DGC = \angle DOC$

Also, it is given that

$\angle DOC = 90^0$

Therefore,

$\angle DGC = 90^0$

Or,

$\boxed{\angle EGF = 90^0}$

Hence proved.

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