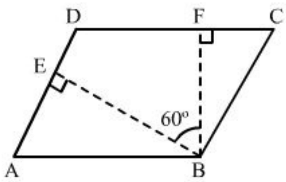
Understanding shapes-III special types of quadrilaterals Ex 17.1 Q20

Answer :

In $\triangle$ CEB :
$\angle ECB + \angle CBE + \angle BEC = 180^\circ$ $(angle\ sum\ property\ of\ a\ triangle)$
$40^\circ + 90^\circ + \angle EBC = 180^\circ$
$\therefore\ \angle EBC = 50^\circ$
Also, $\angle EBC = \angle ADC = 50^\circ$ (opposite angle of a parallelogram)
In $\triangle$ FDC :
$\angle FDC + \angle DCF + \angle CFD = 180^\circ$
$50^\circ + 90^\circ + \angle DCF = 180^\circ$
$\therefore\ \angle DCF = 40^\circ$
Now, $\angle BCE + \angle ECF + \angle FCD + \angle FDC = 180^\circ$
(in a parallelogram, the sum of alternate angles is 180°)
$50^\circ + 40^\circ + \angle ECF + 40^\circ = 180^\circ$
$\angle ECF = 180^\circ - 50^\circ + 40^\circ - 40^\circ = 50^\circ$

Understanding shapes-III special types of quadrilaterals Ex 17.1 Q21

Answer :



Draw a parallelogram ABCD.
Drop a perpendicular from B to the side AD, at the point E.
Drop perpendicular from B to the side CD, at the point F.
In the quadrilateral BEDF :
$\angle EBF = 60^\circ, \angle BED = 90^\circ$
$\angle BFD = 90^\circ$
$\angle EDF = 360^\circ - (60^\circ + 90^\circ + 90^\circ) = 120^\circ$
In a parallelogram, opposite angles are congruent and adjacent angles are supplementary.
In the parallelogram ABCD :
$\angle B = \angle D = 120^\circ$
$\angle A = \angle C = 180^\circ - 120^\circ = \mathbf{60}^\circ$

Understanding shapes-III special types of quadrilaterals Ex 17.1 Q22

Answer :

Both the parallelograms ABCD and AEFG are similar.
$\therefore\ \angle C = \angle A = 55^\circ$ (opposite angles of a parallelogram are equal)
$\therefore\ \angle A = \angle F = 55^\circ$ (opposite angles of a parallelogram are equal)

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