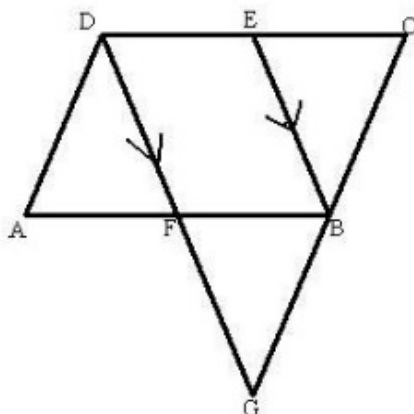




Exercise 9C

Question 6:

Given : ABCD is a parallelogram in which E is the mid point of DC.



Through D, a line is drawn parallel to EB meeting AB at F and BC produced at G.

To Prove : (i) $AD = \frac{1}{2}GC$

(ii) $DG = 2EB$

Proof : (i) In $\triangle CDG$,

$EB \parallel DG$ and E is the mid – point of CD.

The line drawn through the midpoint of one side of a triangle, parallel to another side, intersects the third side at its midpoint.

So, by Mid – point Theorem , B is the mid – point of CG.

$\therefore CB = BG$

As, ABCD is a parallelogram,

So, $AD = BC$

$\Rightarrow BG = CB$

$\Rightarrow AD = BG = \frac{1}{2}CG$

(ii) Midpoint Theorem: The line segment joining the midpoints of any two sides of a triangle is parallel to the third side and equal to half of it.

Since E is the midpoint of DC and B is the midpoint of CG

\therefore By Mid point Theorem, in $\triangle CDG$

$EB = \frac{1}{2}DG$

$\Rightarrow DG = 2EB$

***** END *****