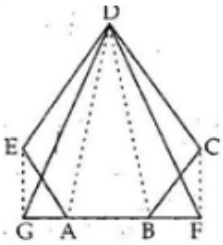
Exercise 10A

Question 22:

Given: ABCDE is a pentagon. EG, drawn parallel to DA, meets BA produced at G, and CF, drawn parallel to DB, meets AB produced at F.



To Prove: ar(Pentagon ABCDE) = ar (ΔDGF)

Proof:

Triangles on the same base and between the same parallels are equal in area.

Since ΔDGA and ΔAED have same base AD and lie between parallel lines AD and EG

$\therefore \quad ar(\Delta DGA) = ar(\Delta AED).....(1)$

Similarly, ΔDBC and ΔBFD have same baseDB and lie between parallel lines BD and CF.

$\therefore \quad ar(\Delta DBF) = ar(\Delta DBC).....(2)$

Adding both the sides of the equations (1) and (2), we have

$\therefore \quad ar(\Delta DGA) + ar(\Delta DBF) = ar(\Delta AED) + ar(\Delta BCD)$

Adding $ar(\Delta ABD)$ to both sides, weget,

$ar(\Delta DGA) + ar(\Delta DBF) + ar(\Delta ABD)$

$= ar(\Delta AED) + ar(\Delta BCD) + ar(\Delta ABD)$

$\therefore \quad ar(\Delta DGA) = ar(\text{pentagon ABCDE})$

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