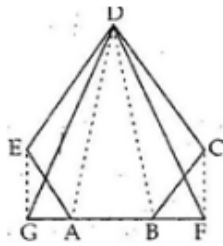




### Exercise 10A

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:  $\text{ar}(\text{Pentagon } ABCDE) = \text{ar}(\triangle DGF)$

Proof:

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

Since  $\triangle DGA$  and  $\triangle AED$  have same base AD and lie between parallel lines AD and EG

$$\therefore \text{ar}(\triangle DGA) = \text{ar}(\triangle AED) \dots (1)$$

Similarly,  $\triangle DBC$  and  $\triangle BFD$  have same base DB and lie between parallel lines BD and CF.

$$\therefore \text{ar}(\triangle DBF) = \text{ar}(\triangle DBC) \dots (2)$$

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

$$\therefore \text{ar}(\triangle DGA) + \text{ar}(\triangle DBF) = \text{ar}(\triangle AED) + \text{ar}(\triangle BCD)$$

Adding  $\text{ar}(\triangle ABD)$  to both sides, we get,

$$\begin{aligned} \text{ar}(\triangle DGA) + \text{ar}(\triangle DBF) + \text{ar}(\triangle ABD) \\ = \text{ar}(\triangle AED) + \text{ar}(\triangle BCD) + \text{ar}(\triangle ABD) \end{aligned}$$

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

\*\*\*\*\* END \*\*\*\*\*