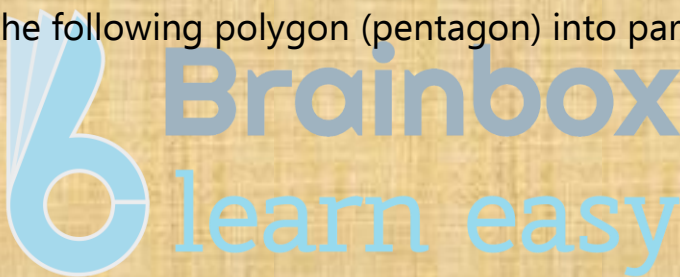


CHAPTER 09**Area of Plane Figures****Area of a polygon:**

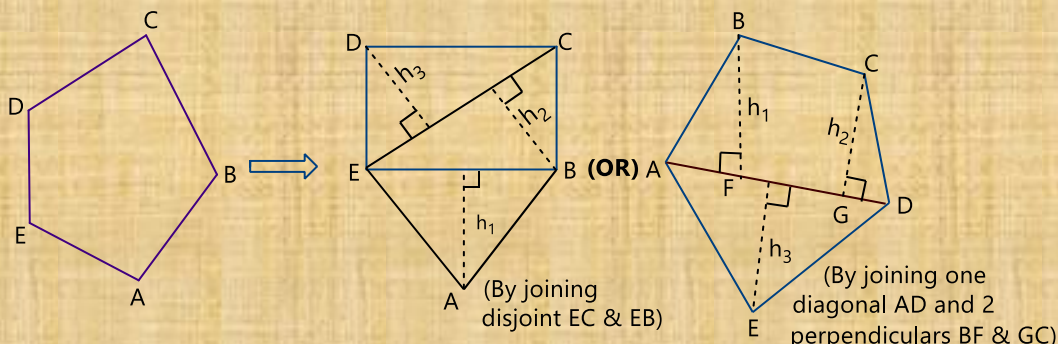
The area of a polygon may be obtained by dividing the polygon into a number of simple shapes like triangles, rectangles, trapeziums etc. Then the areas of each of them can be calculated and added up to get the required area.

Example:

Divide the following polygon (pentagon) into parts to find out its area.



Sol.



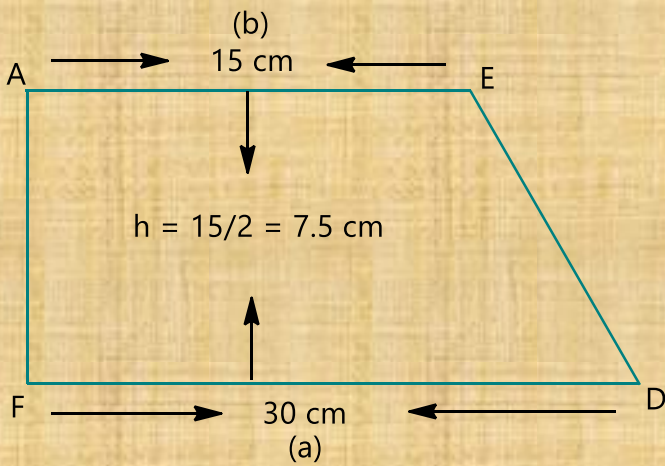
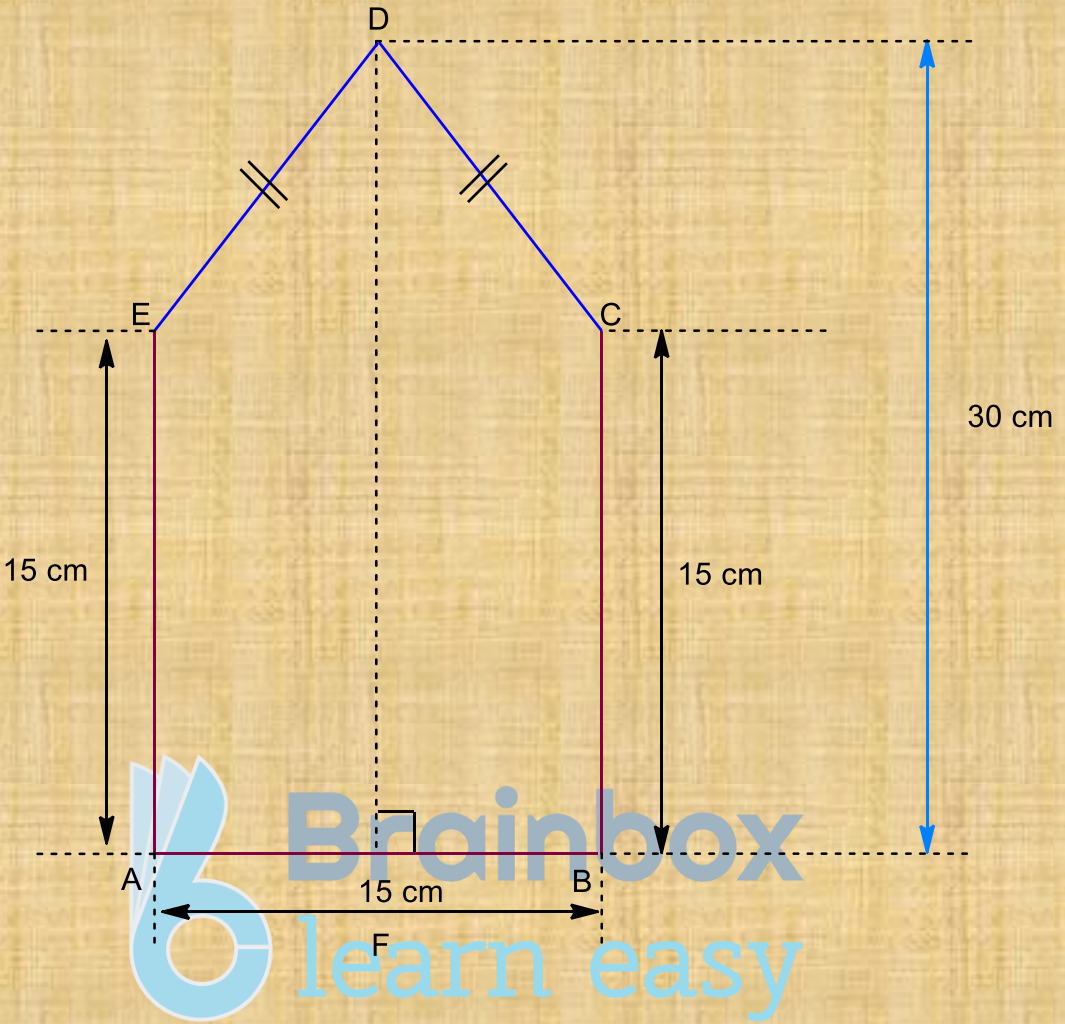
$$\begin{aligned}
 \text{Area of Polygon ABCDE} &= \begin{aligned} &\text{Area of } \triangle ABE \\ &+ \\ &\text{Area of } \triangle BCE \quad (\text{OR}) \\ &+ \\ &\text{Area of } \triangle CDE \end{aligned} \\
 &\quad \begin{aligned} &\text{Area of } \triangle ABF \text{ (Right angle triangle)} \\ &+ \\ &\text{Area of Trapezium BFGC} \\ &+ \\ &\text{Area of } \triangle GCD \text{ (Right angle triangle)} \\ &+ \\ &\text{Area of } \triangle AED \end{aligned}
 \end{aligned}$$

Example:

Find the area of the following polygon.

Sol.

By drawing perpendicular line 'D' to AB we get 2 trapeziums.
i.e. Trapezium AFDE and Trapezium BCDF.



Area of Trapezium AFDE.

$$= \frac{1}{2} h(a + b)$$

$$= \frac{1}{2} \times 7.5 (30 + 15)$$

$$= \frac{1}{2} \times 7.5 (45)$$

$$= 168.75 \text{ Sq. cm.}$$

The measurements of Trapezium BCDF is same as Trapezium AFDE.

So, area of Trapezium AFDE = 168.75 Sq. cm.

Area of polygon ABCDE =

$$(\text{Area of Trapezium AFDE}) + (\text{Area of Trapezium BCDF})$$

$$= 168.75 + 168.75$$

$$= 337.5 \text{ Sq. cm}$$