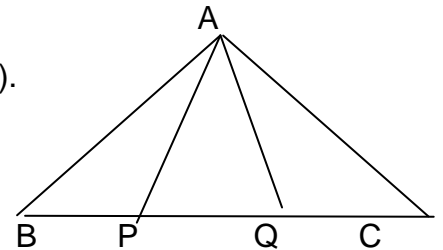


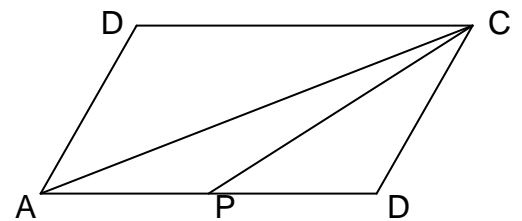
CHAPTER – AREA OF TRIANGLES AND PARALLELOGRAMS

1. D, E and F are respectively the mid-points of the sides BC, CA and AB of $\triangle ABC$. Show that $\text{ar}(\triangle DEF) = \frac{1}{4} \text{ar}(\triangle ABC)$.

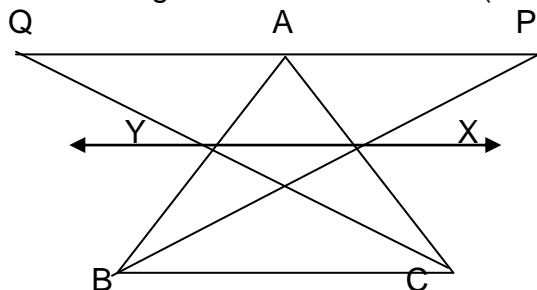
2. P and Q trisect the line-segment BC of $\triangle ABC$.
Show that : $\text{ar}(\triangle APB) = \text{ar}(\triangle APQ) = \text{ar}(\triangle AQC) = \frac{1}{3} \text{ar}(\triangle ABC)$.



3. In the given figure, ABCD is a parallelogram. P is the mid-point of side AB and $\text{ar}(\triangle PCD) = 36 \text{sq.m}$. Find $\text{ar}(\triangle ABC)$.

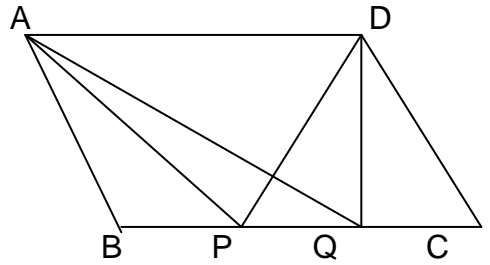


4. ABCD is a parallelogram and E is the mid point of BC. Show that :
 $\text{ar}(\triangle DEC) = \frac{1}{4} \text{ar}(\triangle ABCD)$.
5. Prove that of all parallelograms of which the sides are given, the parallelogram which is a rectangle has the greatest area.
6. If each diagonal of a quadrilateral separates it into two triangles of equal area then show that the quadrilateral is a parallelogram.
7. In the given figure, X and Y are the mid points of AC and AB respectively, $QP \parallel BC$ and CYQ and BXP are straight lines. Prove that $\text{ar}(\triangle ABP) = \text{ar}(\triangle ACQ)$.



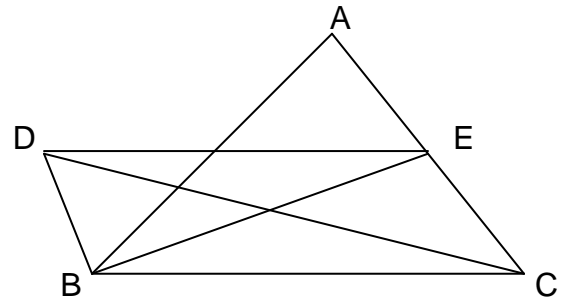
8. In the given figure, ABCD is a parallelogram. Point P and Q on BC trisect BC .

Prove that $\text{ar}(\text{APQ}) = \text{ar}(\text{DPQ}) = \frac{1}{6} \text{ar}(\text{ABCD})$.



9. In the given figure, $BD \parallel CA$, E is the mid-point of CA and $BD = \frac{1}{2} CA$. Prove that:

$\text{ar}(\text{DBC}) = \text{ar}(\text{EBC})$ and $\text{ar}(\text{ABC}) = 2 \text{ar}(\text{DBC})$



10. ABCD is a parallelogram in which BC is produced to E such that $CE = BC$. AE intersects CD at F.
- Prove that $\text{ar}(\text{ADF}) = \text{ar}(\text{ECF})$.
 - If the area of $\triangle \text{ADF} = 3 \text{ cm}^2$, find the area of parallelogram ABCD.

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