

CHAPTER - 9
TRIANGLES

EXERCISE - 9.4

1. A point **E** is taken on the side BC of a parallelogram $ABCD$. AE and DC are produced to meet at **F**. Prove that $ar(ADF) = ar(ABFC)$.
2. The diagonals of a parallelogram $ABCD$ intersect at a point **O**. Through **O**, a line is drawn to intersect AD at **P** and BC at **Q**. Show that PQ divides the parallelogram into two parts of equal area.
3. The medians BE and CF of a triangle ABC intersect at **G**. Prove that the area of $\triangle GBC$ = area of the quadrilateral $AFGE$.
4. In Fig.1, $CD \parallel AE$ and $CY \parallel BA$. Prove that $ar(CBX) = ar(XY)$

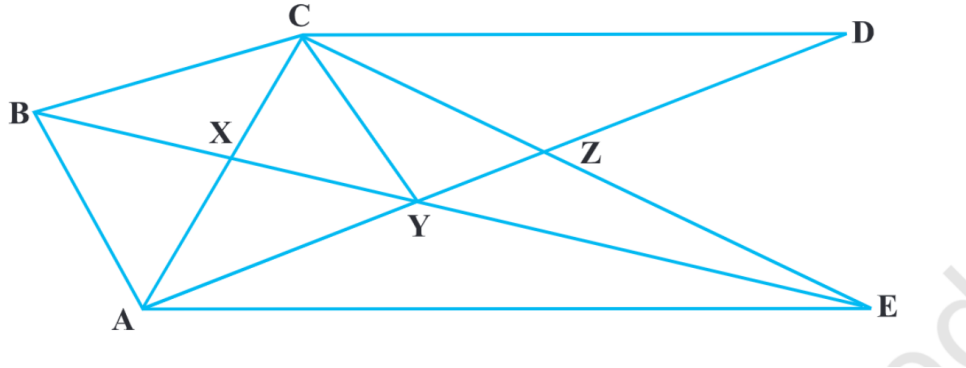


Figure 1

5. $ABCD$ is a trapezium in which $AB \parallel DC$, $DC = 30cm$ and $AB = 50cm$. If **X** and **Y** are, respectively the mid-points of AD and BC , prove that $ar(DCYX) = \frac{7}{9}ar(XYBA)$.
6. In $\triangle ABC$, if **L** and **M** are the points on AB and AC , respectively such that $LM \parallel BC$. Prove that $ar(LOB) = ar(MOC)$.

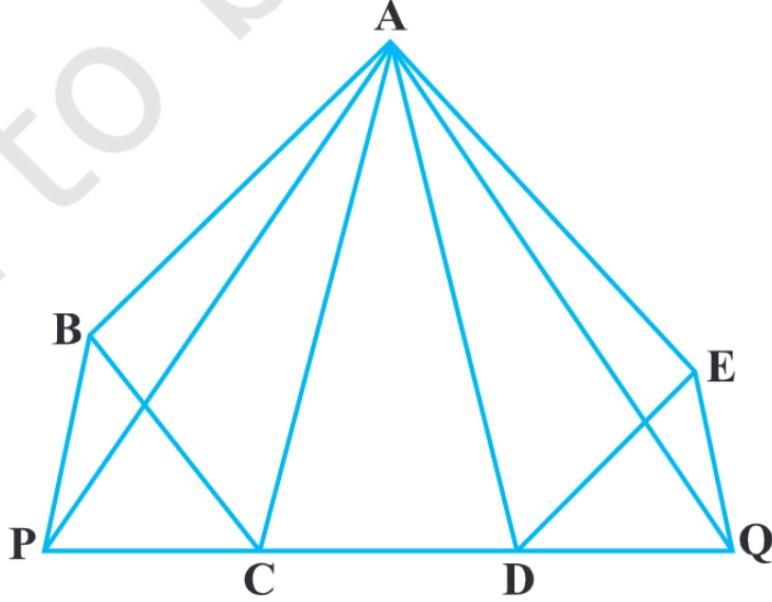


Figure 2

7. In Fig.2, $ABCDE$ is any pentagon. BP drawn parallel to AC meets DC produced at P and EQ drawn parallel to AD meets CD produced at Q . Prove that $ar(ABCDE) = ar(APQ)$.
8. If the medians of a $\triangle ABC$ intersect at G , show that

$$ar(AGB) = ar(AGC) = ar(BGC) = \frac{1}{3}ar(ABC) \quad (1)$$

9. In Fig.3, X and Y are the mid-points of AC and AB respectively, $QP \parallel BC$ and CYQ and BXP are straight lines. Prove that $ar(ABP) = ar(ACQ)$.
10. In Fig.4, $ABCD$ and $AEFD$ are two parallelograms. Prove that $ar(P EA) = ar(QFD)$ [Hint: Join PD].

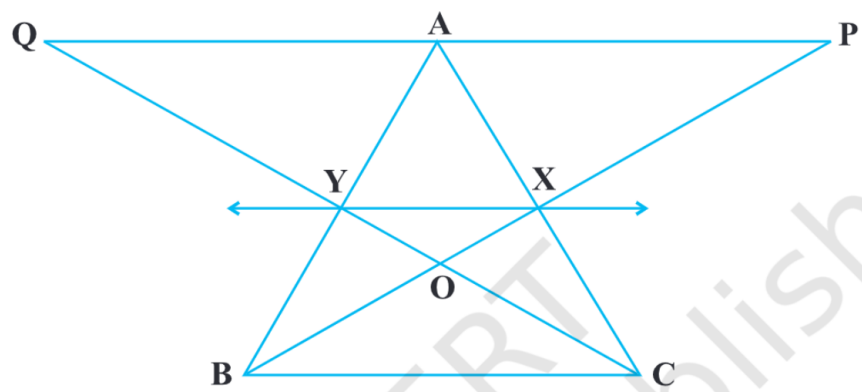


Figure 3

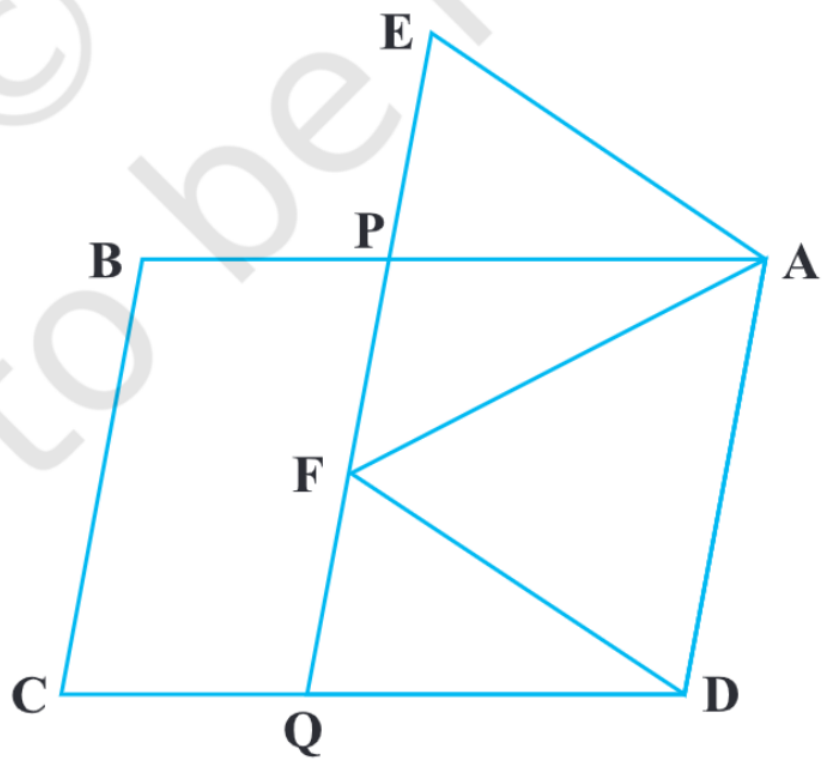


Figure 4