

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  $ar(CBX) = ar(XY)$

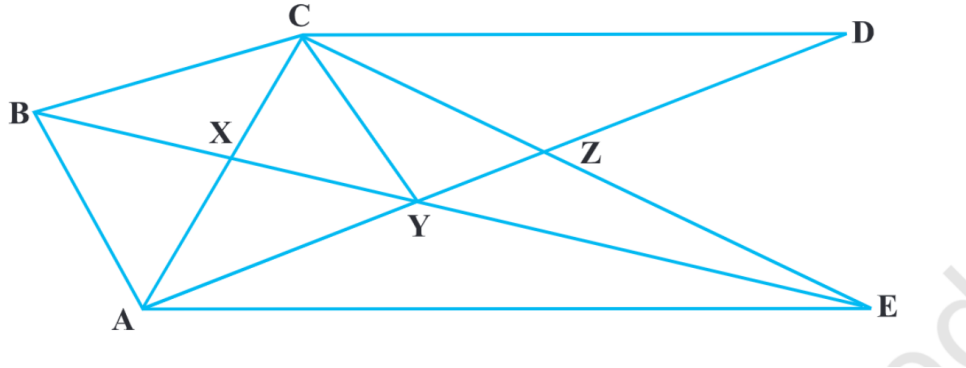


Figure 1

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  $ar(LOB) = ar(MOC)$ .

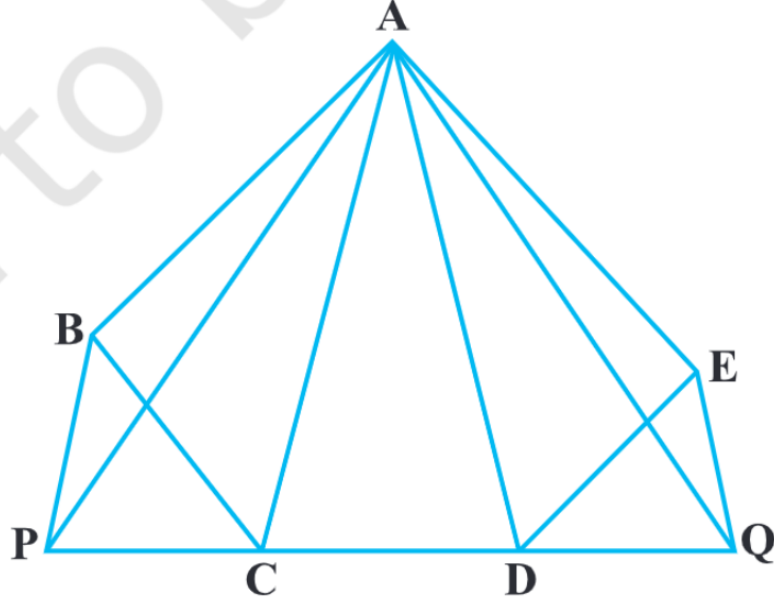


Figure 2

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  $ar(ABP) = ar(ACQ)$ .

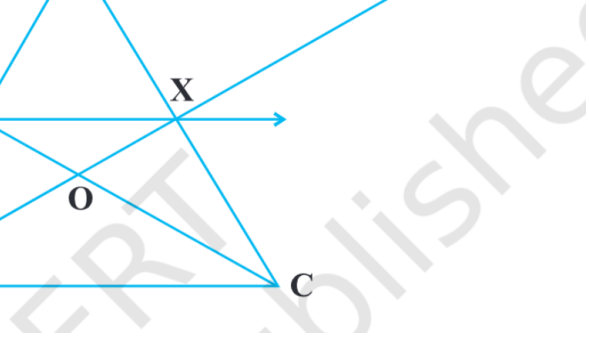


Figure 3

10. In Fig.4, ABCD and AEFD are two parallelograms. Prove that  $ar(PEA) = ar(QFD)$  [Hint: Join PD].

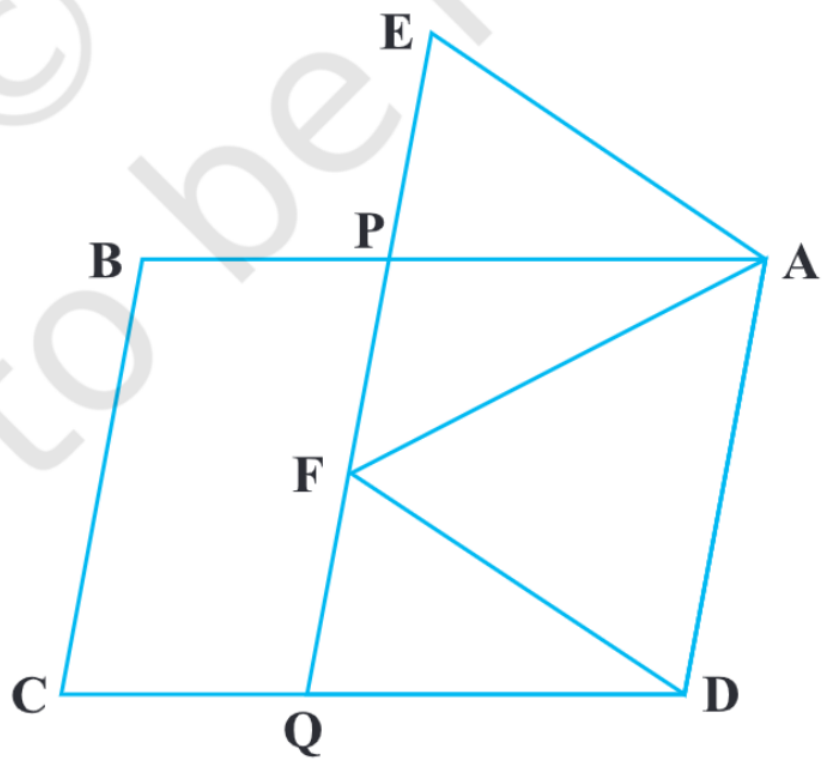


Figure 4