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 (**AXY**)

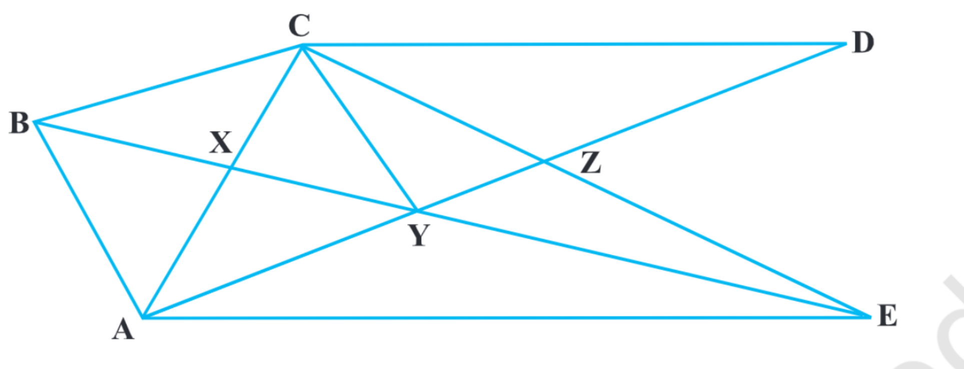

Figure 1

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**).

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**).

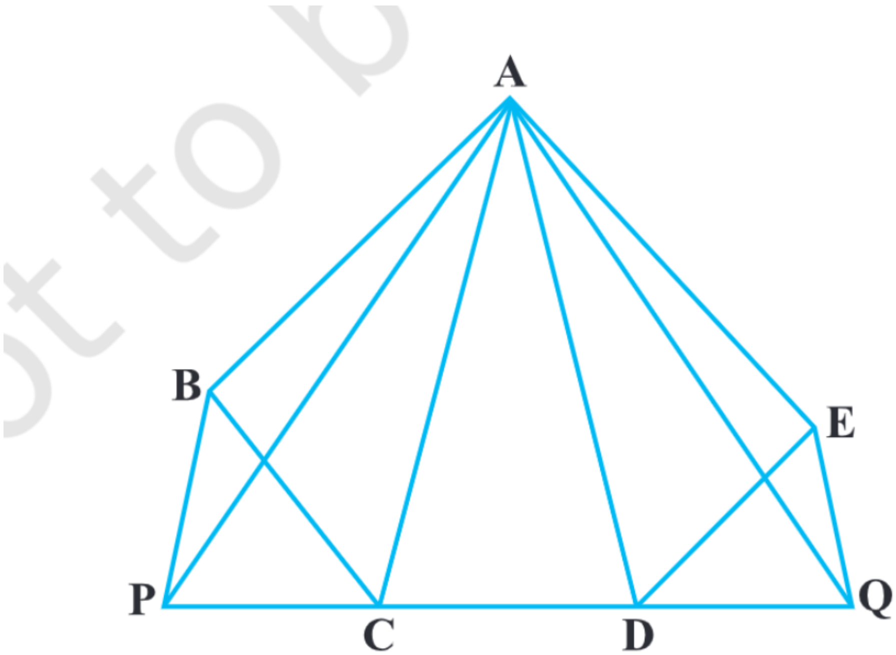

Figure 2

8. If the medians of a $\triangle$**ABC** intersect at **G**,show that ar (**AGB**) = ar (**AGC**) = ar (**BGC**) = $\frac{1}{3}$ ar (**ABC**).

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**).

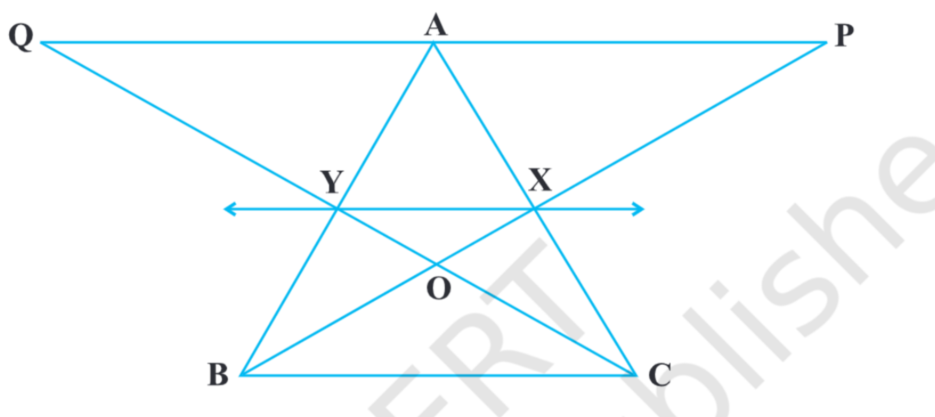

Figure 3

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

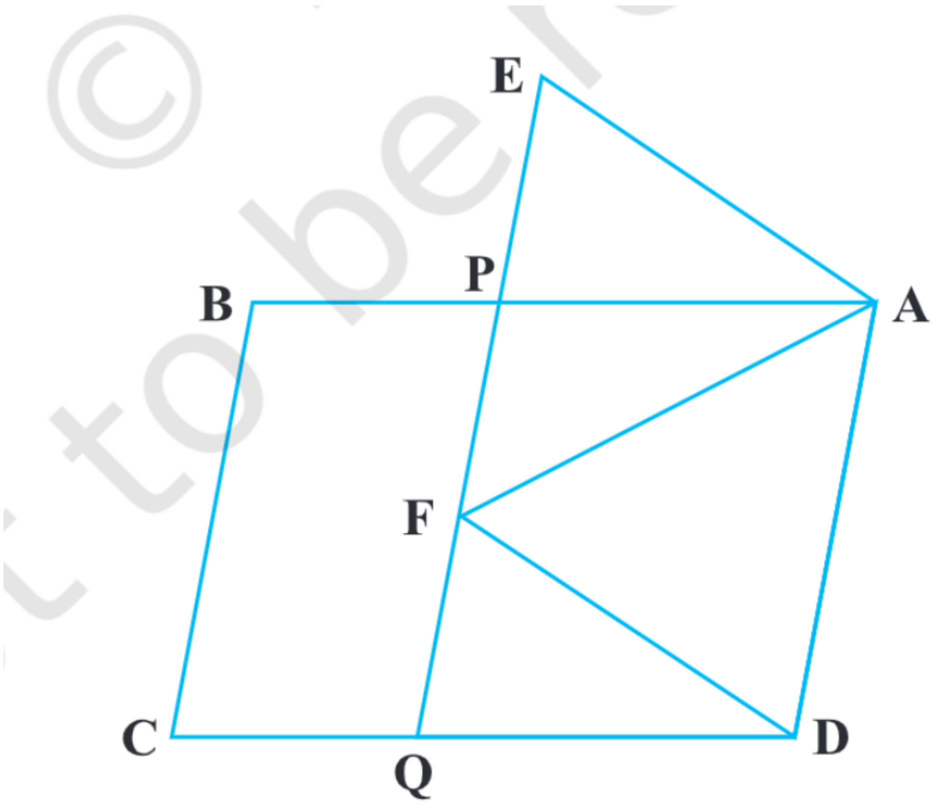

Figure 4