CHAPTER-9 WORKSHEET CLASS-IX

# AREAS OF PARALLELOGRAM AND TRIANGLES

Q1. The diagonals of a ||gm ABCD intersect at O. A line through O meets AB in X and CD in Y. Show that ar(||gm AEFD) = ar(||gm EBCF).

Q2. Triangles ABC and DBC are on the same base BC with A, D on opposite sides of line BC, such that $ar(\Delta ABC) = ar(\Delta DBC)$. Show that BC bisects AD.

Q3. If the medians of a $\Delta ABC$ intersect at G, show that $ar(\Delta AGB) = ar(\Delta AGC) = ar(\Delta BGC) = \frac{1}{3} ar(\Delta ABC)$.

Q4. In $\Delta ABC$, D is the mid point of AB. P is any point on BC. $CQ \parallel PD$ meets AB in Q. Show that $ar(\Delta BPQ) = \frac{1}{2} ar(\Delta ABC)$.

Q5. Let ABCD be a ||gm of area 124 $cm^2$. If E and F are the mid points of sides AB and CD resp., then find the area of ||gm AEFD.

Q6. ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Then prove that $ar(\Delta BDE) = \frac{1}{4} ar(\Delta ABC)$.

Q7. X and Y are points on the side LN of $\Delta LMN$ such that LX = XY = YN. Through X, a line is drawn parallel to LM to meet MN at Z. Prove that $ar(\Delta LZY) = ar(MZYX)$. (Fig 1)

Q8. ABCD is a ||gm in which BC is produced to E such that CE = BC. AE intersects CD at F. If $ar(\Delta BDF) = 3 cm^2$, find the area of ||gm ABCD. (Fig 2).

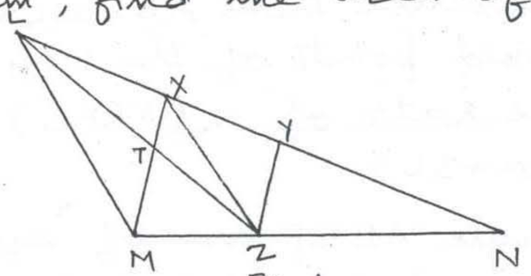

Fig 1

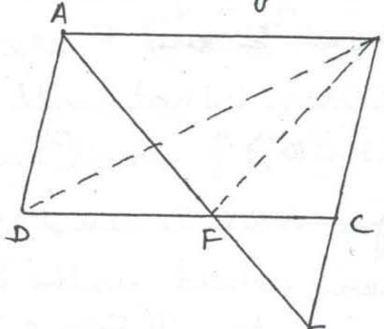

Fig 2

Q9. ABCD is a ||gm and BC is produced to a point Q such that BC = CQ. If AQ intersects DC at P. Show that $ar(\Delta BPC) = ar(\Delta DPQ)$. (Fig 3)

# WORK SHEET CLASS- IX CHAPTER-9

## AREAS OF PARALLELOGRAMS AND TRIANGLES

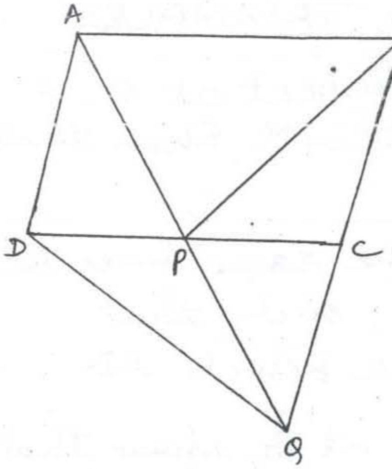

Fig 3

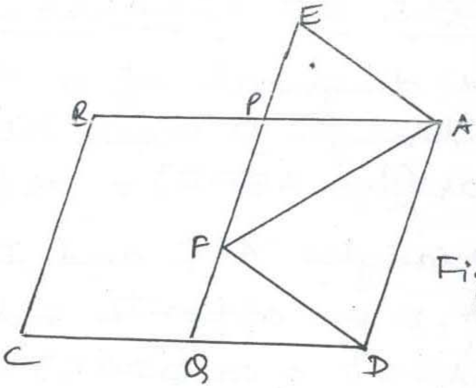

Fig 4

Q11. X and Y are the mid points of AC and AB resp, QP||BC and CYQ and BXP are straight lines. Prove that ar($\Delta$ ABP) = ar($\Delta$ ACQ). (Fig 5)

Q12. 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).

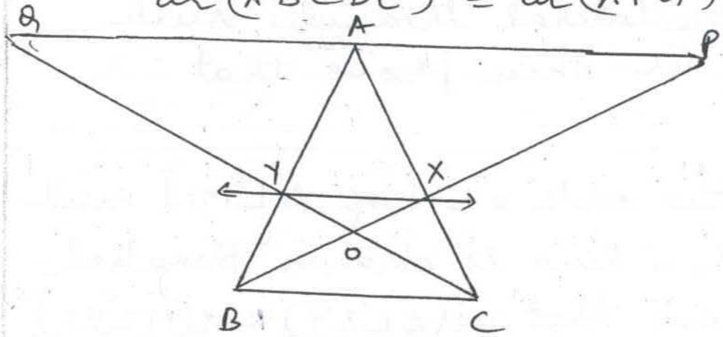

Fig 5

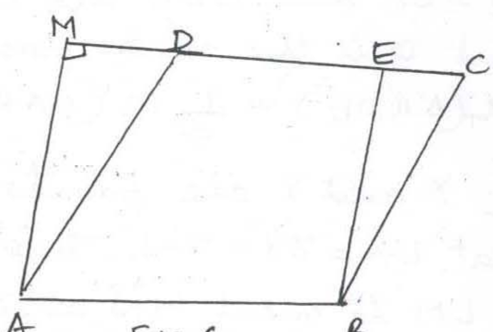

Fig 6

Q13. Two ||gms are on equal bases and between the same parallels. What will be the ratio of their areas?

Q14. ABCD is a trapezium with parallel sides AB = a cm and DC = b cm. E and F are the mid points of the non-parallel sides. What will be the ratio of ar(ABFE) and ar(EFCD)? Ans: (3a+b):(a+3b)

Q15. If ||gm ABCD and rectangle ABEF are of equal areas, then what will be the relationship between their perimeters? (Fig 6) Ans: Peri(ABCD) > Peri(ABEM)

Q16. PQRS is a square. T and U are resp the mid points of PS and QR. Find ar($\Delta$OTS), if PQ = 8 cm. where O is the point of intersection of TU and QS.

WORKSHEET CLASS – IX CHAPTER – 9

AREAS OF PARALLELOGRAMS AND TRIANGLES

Q17. ABCD is a square. E and F are resp. the mid-points of BC and CD. If R is the mid point of EF prove that ar (AER) = ar (AFR). (Fig 7)

Q18. O is any point on the diagonal PR of a ||gm PQRS. Prove that ar (PSO) = ar (PQO).

Q19. BD || CA, E is mid-point of CA and $BD = \frac{1}{2}$ CA. Prove that ar (ABC) = 2 ar (DBC). (Fig 8)

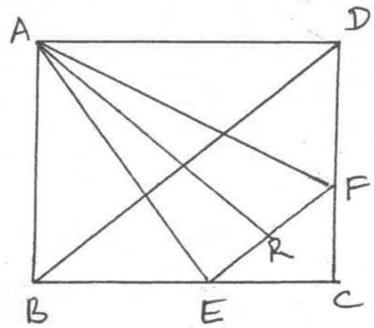


Fig 7

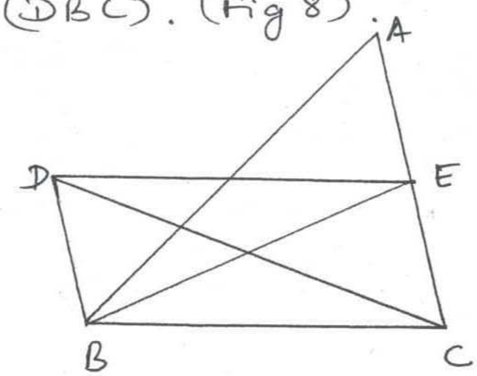


Fig 8

Q20. A point E is taken on the side BC of a ||gm ABCD. AE and DC are produced to meet at F. Prove that ar (ADF) = ar (ABFC).