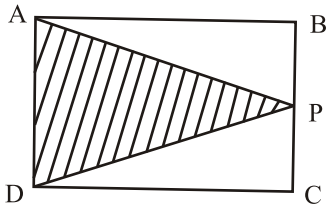
Very Short Answer Type (1 Mark)

Fill in blanks :

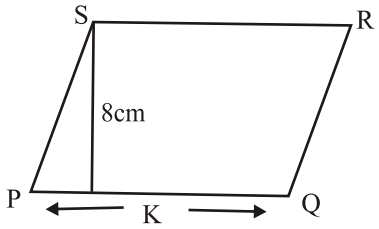
1. The area of a parallelogram is the product of any of its sides and its corresponding _____
2. The area of parallelogram on the same base and between the same _____ are equal.
3. The diagonal of a parallelogram divides it into triangles having equal _____.
4. Area of trapezium = $\frac{1}{2}$ x height x _____

State True or False :

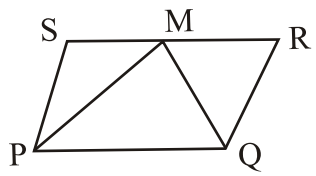
5. The median of a triangle divides it into two triangles of ..... area.
6. In ΔXYZ, P is the mid-point of side YZ. Find the ratio ar (ΔXYZ) : or (ΔXYP)
7. A square and rhombus are on the same base and between same parallels. What is the ratio of their areas ?
8. If area of Parallelogram ABCD is 80 cm^2. Find the area of ΔAPD.



9. If area of Parallelogram PQRS is 88 cm^2 find K.

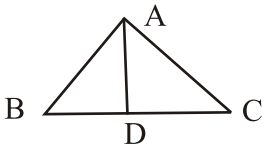


10. PQRS is a Parallelogram and PQM is a triangle. If area of Δ PQM = 18cm^2. Find the area of PQRS.

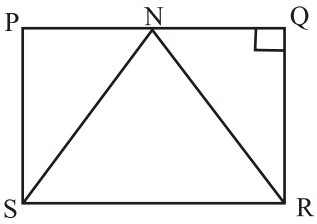


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11. In ΔABC, AD is median. If area of $\Delta ABD = 25cm^2$ find the area of ΔABC.



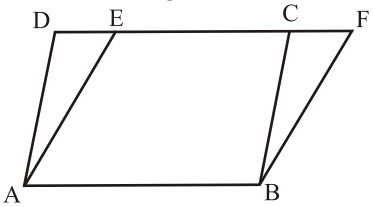
12. In the given figure, area of $\Delta SRN = 21cm^2$ RQ = 6cm find PQ.



13. In the figure ABCD and ABFE are Parallelograms then find ar (ΔBCF).

If ar (ABCE) = 18 cm^2

ar (ABCD) = 25 cm^2



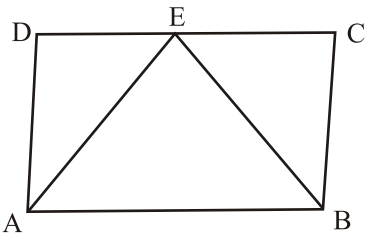
14. If two parallelogram are on equal base and between the same parallels, then what is the ratio of their areas?

15. In ΔABC, D, E, F are respectively the mid points of the sides AB, BC and AC. Find ratio of the area of ΔDEF and area of ΔABC.

16. If the base of a parallelogram is 8 cm and its altitude is 5 cm then find its area.

17. If two triangles are on the same base and between the same parallels. Then find the ratio of area of the two triangles.

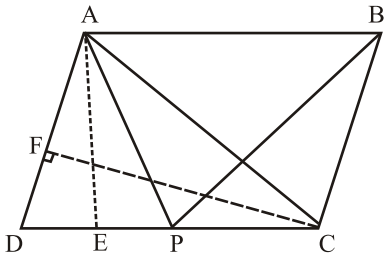
18. In given figure, if area of parallelogram ABCD is 30 cm^2 then find ar (ΔADE) + ar (ΔBCE)



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Case study based problem (19-20)

19. In a math lab activity, A student pasted three triangular papers to form of parallelogram. In the figure found from this activity, ABCD is a parallelogram. P lies on DC. If ar (ΔDPA) = 15 cm^2 and or (ΔBPC) = 20 cm^2 then.



A. Ar (ΔADC)

(a) 35cm^2 (b) 70cm^2 (c) 20cm^2 (d) 10cm^2

B. Ar (ABCD)

(a) 15cm^2 (b) 40cm^2 (c) 70cm^2 (d) 140cm^2

C. Ar (ΔABP)

(a) 15cm^2 (b) 35cm^2 (c) 70cm^2 (d) 20cm^2

D. If AE $\perp$ DC and AE = 7cm then AB =

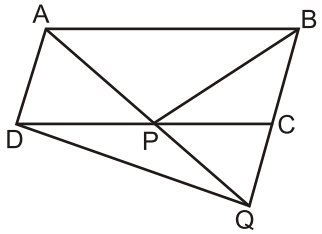
(a) 7cm (b) 10cm (c) 14cm (d) 15cm

E. If CF $\perp$ AD and AD = 7, then CF=

(a) 14cm (b) 7cm (c)10cm (d) None

20. Rakesh and Arun are two farmers. Rakesh has a parallelogram shaped field and Arun has triangular shaped field with one common side. Rakesh divides his field in three part to grow three types of vegetables and Arun divides the field in two parts to grow two types of vegetables.

In figure, Rakesh's field is shown by ΔABCD and Arun's field is shown by ΔCDQ. On measuring, it is found that BC=CQ. If AQ and CD cuts each other at P then area of ΔABP is 600m^2.



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a. The area of Rakesh's field is

(a) $300m^2$ (b) $600m^2$ (c) $900m^2$ (d) $1200m^2$

b. Area of ΔAPD is

(a) $300m^2$ (b) $150m^2$ (c) $450m^2$ (d) $600m^2$

c. Area of ΔPCQ is

(a) $300m^2$ (b) $450m^2$ (c) $600m^2$ (d) $150m^2$

d. Ar. (ΔABP) : Ar (ΔCDQ) is :

(a) 1 :1 (b) 1:2 (c) 2:1 (d) None

E. $\frac{Ar\ (\Delta BPC)}{Ar\ (\Delta DPQ)} =$

(a) 1 (b) 2 (c) $\frac{1}{2}$ (d) $\frac{3}{2}$

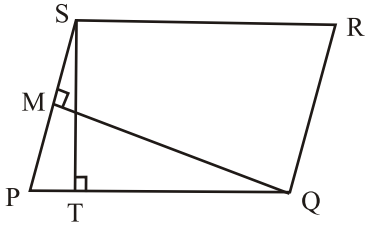
Very Short Answer Type (2 marks)

21. Show that the median of a triangle divides it into two triangles of equal areas.

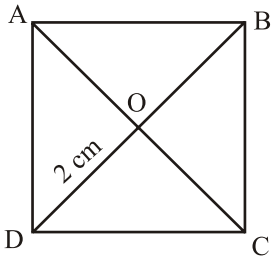
22. P and Q are any two points lying on the side DC and AD respectively of a parallelogram ABCD. Show that ar (APB) = ar (BQC).

23. If the ratio of altitude and area of the parallelogram is 2:11, then find the length of the base of parallelogram.

24. In figure if PQRS is a parallelogram in which PQ=12cm, ST=9cm, QM=6cm, ST $\perp$ PQ, QM $\perp$ SP, then find length of SP.



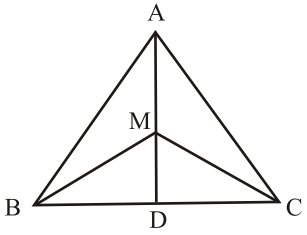
25. In given fig. ABCD is a square whose diagonals are interesting at O. If OD = 2 cm, then find the length of AB.



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26. Show that the diagonals of a parallelogram divides it into four triangles of equal area.

27. M is any point on the median AD of ΔABC. Show that ar (AMB) = ar (AMC).



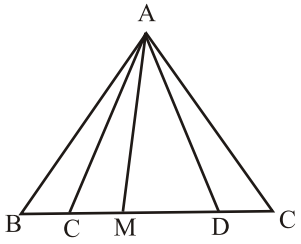
28. If D, E and F are respectively the mid points of sides BC, CA, and AB of ΔABC show that.

i) BDEF is a parallelogram.

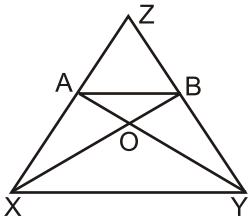
ii) ar (DEF) = 1/4 ar (ΔABC)

29. In the given figure BC = CD = DE and ar (ΔABC) = 60cm^2

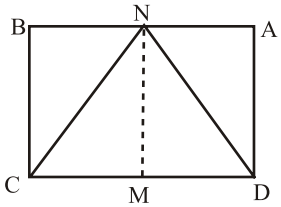
M is the mid point of CD, then find the area of ΔAMC.



30. In ΔXYZ, A and B are points on sides XZ and YZ respectively. YA and XB interset at O. If AB||XY, then show that or (ΔAOX) = or (ΔBOY)



31. In the given figure, the area of parallelogram ABCD is 40 cm^2. If MN is a median of ΔCDN then find the area of ΔNDM.



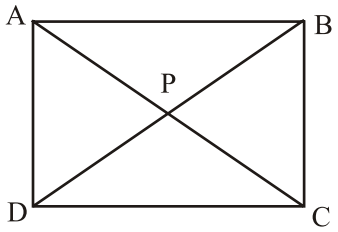
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Short Answer type (3 Marks)

32. In the figure, P is the point in the interior of parallelogram ABCD then show that

    (i) ar (APB) + ar (PCD) = 1/2 ar (ABCD)

    (ii) ar (APD) + ar (PBC) = ar (APB) + ar (PCD)



33. ABCD is a trapezium in which AB || DC. If diagonal AC and BD intersect at O then prove that ar (AOD) = ar (BOC).

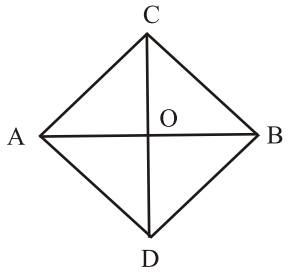
34. ABCD is a parallelogram whose diagonals AC and BD intersect at O. A line through O intersects AB at P and DC at Q. Prove that ar (ΔPOA) = ar (ΔQOC).

35. Diagonal PR and QS of quadrilateral PQRS intersects at T such that

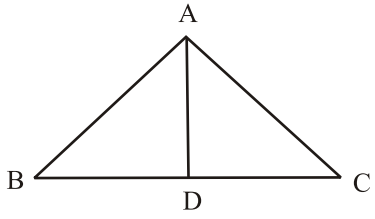
    PT = TR and PS = QR, show that

    ar (ΔPTS) = ar (ΔRTQ).

36. In the figure, ABC and ABD are two triangles on the same base AB. If line segment CD bisects AB at O show that ar (ΔABC) = ar (ΔABD).



37. In given figure AD is median of ΔABC. Prove that ar (ΔABD) = ar (ΔACD).

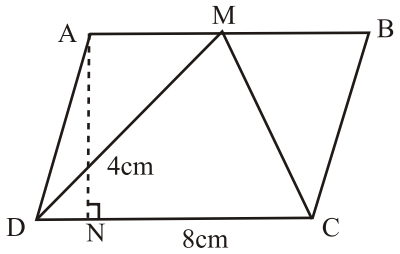


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38. Prove that parallelogram on the same base and between same parallels are equal in area.

39. Prove that the two triangles on the same base and between the same parallels are equal in area.

40. If a triangle and parallelogram are on the same base and between the same parallels then prove that the area of triangle is equal to the half the area of parallelogram. Using this find ar (ΔCMD).



41. XY is a line parallel to side BC of a triangle ABC. If BE ||AC and CF || AB meet XY at E and F respectively show that ar (ABE) = ar (ACF).

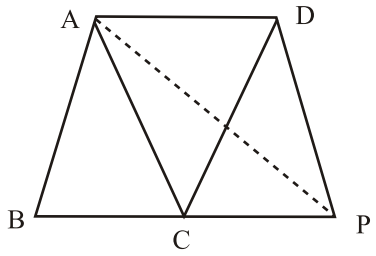
42. If E, F, G and H are respectively the mid points of the sides of a parallelograms ABCD. Show that ar (EFGH) = 1/2 ar (ABCD).

43. There is a plot in a village in the shape of a quadrilateral ABCD. Head of the village wants to get floor cemented so as to use it for panchayat meetings.

Later he decided to construct playground of shape ΔABP for children. If AC || DP then

(a) Prove than ar (ABCD) = ar (ABP)

(b) area (ABCD) = 2x _____



Long Answer type (5 Marks)

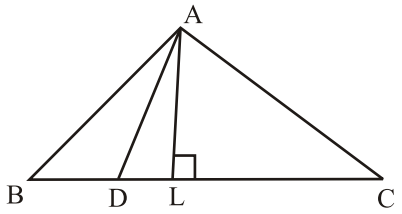
44. A farmer has a square plot of land where he wants to grow five different crops at a time. On half of the area in the middle he want to grow different crops.

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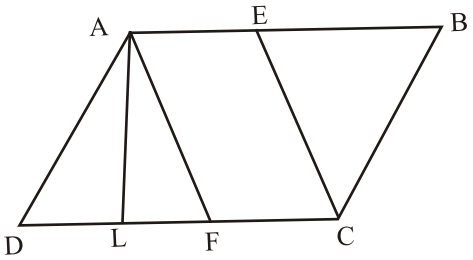
a) Explain by diagram how he can divide the area to fulfill his purpose.

b) For same base and between the same parallels, write the relation between area of triangle and parallelogram formed.

45. In the adjoining figure, the point D divides the side BC of ΔABC in the ratio m:n. Prove that ar (ΔABD) : ar (ΔADC) = m : n.

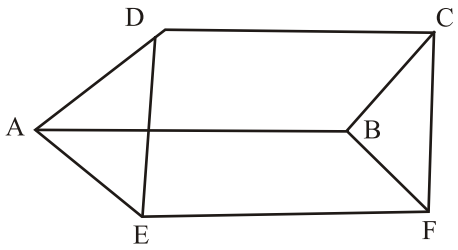


46. ABCD is a parallelogram. E is a point on BA such that BE= 2EA and F is a point on DC such that DF = 2 FC. Prove that AECF is a parallelogram whose area is one third of the area of parallelogram ABCD.



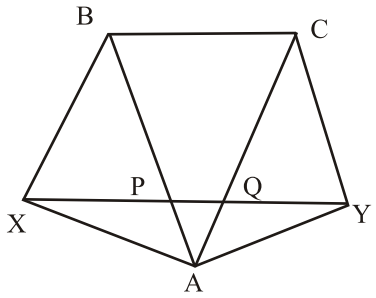
47. In the adjoining figure, two parallelogram ABCD and AEFB are drawn on opposite sides of AB. Prove that

ar($\square$ABCD) + ar($\square$ AEFB) = ar ($\square$ EFCD)

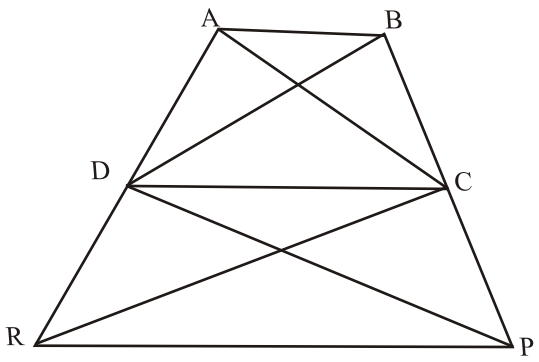


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48. In the given figure BC || XY, BX || CA and AB || YC. Prove that ar (∆ABX) = ar (∆ACY)



49. In the given figure, ar (DRC) = ar (DPC) and ar (BDP) = ar (ARC). Show that both the quadrilateral ABCD and DCPR are trapeziums.



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CHAPTER-9

AREAS OF PARALLELOGRAMS TRIANGLES

1. altitude
2. parallels
3. areas
4. Sum of parallel sides
5. equal
6. 2:1
7. 1:1
8. $40cm^2$
9. 11cm
10. $36cm^2$
11. $50cm^2$
12. PQ=7cm
13. $7cm^2$
14. 1:1
15. 1:4
16. $40cm^2$
17. 1:1
18. $15cm^2$
19. (A) a) $35cm^2$
    (B) c) $70cm^2$
    (C) b) $35cm^2$
    (D) b) 10cm
    (E) c) 10cm
20. (A) d) $120cm^2$
    (B) b) $15cm^2$
    (C) a) $15cm^2$
    (D) a) 1:1
    (E) a) 1

23. $\frac{11}{2}$ units

24. ar (PQRS) = PQ x ST

    $= 108cm^2$

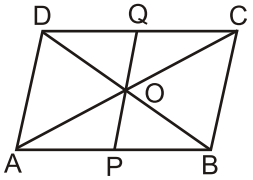
    108 = SP x 6cm

    SP = 18cm

25. $\sqrt{8}$cm or $2\sqrt{2}$cm

29. $10cm^2$

31. $10cm^2$

34. 

    Δ POA $\cong$ ΔQOC

    $\rightarrow$ as (ΔPOA) = ar (ΔQOC)

35. Since ΔPTS $\cong$ ΔRTQ

    $\therefore$ ar (ΔPTS) = ar (ΔRTQ)

40. ar (ΔCMD) = $16cm^2$

43. (a) ar (ΔACP) = ar (ΔACD)

    ar (ΔACP) + ar (ΔABC) = ar (ΔACD) + ar (ABC)

    ar (ΔABP) = ar (quad ABCD)

    (b) ar (ΔACD)

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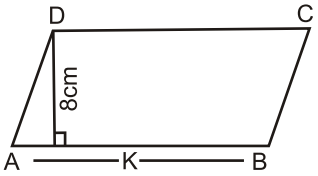
PRACTICE TEST

AREAS OF PARALLELOGRAMS & TRIANGLES

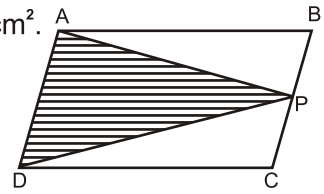
Time : 1hrs. M.M : 25

1. What will be ratio of areas of the two parallelogram which lie on the same base and between the same parallels ? (1)

2. If area of parallelogram ABCD is $96cm^2$, find K.



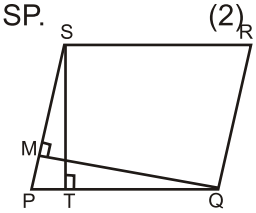
3. If area of parallelogram ABCD is $60cm^2$. (1)
Find area of ΔAPD



(1)

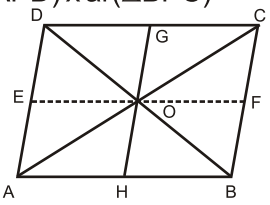
4. Show that the media of a triangle divides it into two triangles of equal area. (2)

5. In fig, of PQRS is a parallelogram in which PQ = 12cm, ST=9cm, QM=6cm, $ST \perp PQ$, $QM \perp SP$, then find length of SP. (2)



6. Diagonals AC and BD of a quadrilateral ABCD interest each other at P. Show that as $(\Delta APB) \times ar(\Delta CPD) = ar(\Delta APD) \times ar(\Delta BPC)$

7. ABCD is a parallelogram and O is a point in the interior, Prove that
$ar(\Delta AOB) + ar(\Delta COD) =$
$ar(\Delta AOD) + ar(\Delta BOC)$

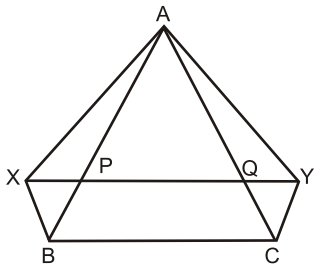


8. The base BC of ΔABC is divided at D, Such that BD= $\frac{1}{2}$ DC. Prove that $ar(\Delta ABD) = \frac{1}{3} ar(\Delta ABC)$

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9. Prove that parallelogram on the same base and between same parallels are equal in area.

10. In fig, PQ is a line parallel to the side BC of ABC. If BX || CA and CY||BA meet the line PQ produced in X and Y respectively. Show that ar (ΔABX) = ar (ΔACY)



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