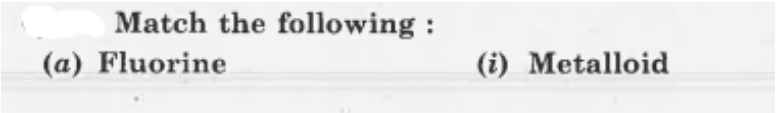
MATHS

BOOKS - MBD

Areas of Parallelograms and Triangles

Exercise

1. Match the following:


Match the following :
(a) Fluorine (i) Metalloid

(b) Neon	(ii) Halogen
(c) Sodium	(iii) Noble gas
(d) Arsenic	(iv) Alkali metal

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2. Match the following :

(i) sin (90°–A)	(a) Sin A
(ii) Cos 0°	(b) 0
(iii) Sin 0°	(c) 1
(iv) Cas (90°–A)	(d) Cos A

.

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3. A diagonal of parallelogram divides it into four triangles of equal area.

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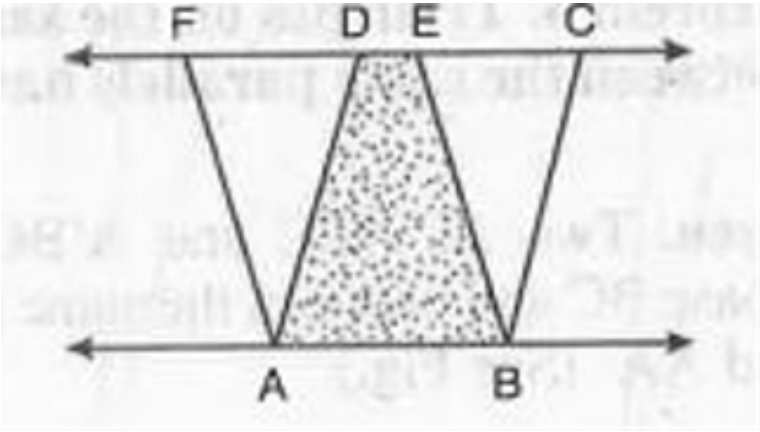
4. Parallelogram on the same base and between the same parallels (i.e. of equal altitude) are equal in area.



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5. Match the following :

(*i*)	sin (90°–A)	(*a*)	Sin A
(*ii*)	Cos 0°	(*b*)	0
(*iii*)	Sin 0°	(*c*)	1
(*iv*)	Cas (90°–A)	(*d*)	Cos A

.

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6. Parallelogram on equal bases and between the same parallels are equal in area.

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7. In Fig.

 ABCD is a parallelogram , $AE \perp DC$ and $CF \perp AD$. If AB = 16 cm, AE = 8 cm and CF = 10 cm, find AD.

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8. If E, F, G and H are respectively the mid-points of the sides of a parallelogram ABCD, show that ar(EFGH) $= \frac{1}{2}$ar(ABCD).

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

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10. In Fig.

 , P is a point in the interior of a

parallelogram ABCD. Show that $ar(APB) + ar(PCD) = \frac{1}{2}ar(ABCD)$.

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11. In Fig.  , P is a point in the interior of a parallelogram ABCD. Show that $ar(APD) + ar(PBC) = ar(APB) + ar(PCD)$

.

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12. In fig.

 PQRS and ABRS are parallelograms and X is any point on side BR. Show that $ar(PQRS) = ar(ABRS)$.

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13. In fig.

 PQRS and ABRS are parallelograms and X is any point on side BR. Show that $ar(AXS) = \frac{1}{2}ar(PQRS)$.

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14. A farmer was having a field in the form of a parallelogram PQRS. She took any point A on RS and joined it to points P and Q.In how many parts the field is divided ? What are the shapes of these parts ? The farmer wants to sow wheat and pulses in equal portions of the field separately. How should she do it ?

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15. In $\| gm$ ABCD, AB = 14 cm. The altitude corresponding to sides AB and AD are 8 cm and 7 cm. Find AD.

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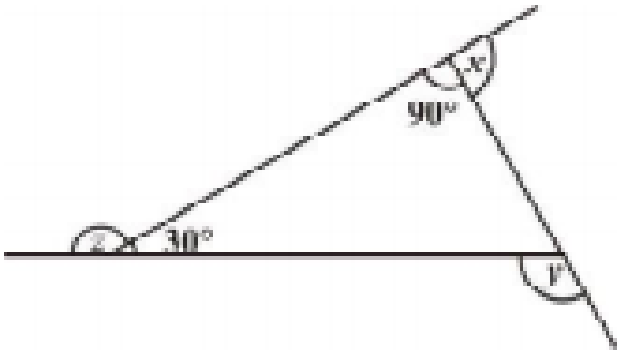
16. Find x+y+z



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17. Match the following :

(*i*) sin (90°–A)	(*a*) Sin A
(*ii*) Cos 0°	(*b*) 0
(*iii*) Sin 0°	(*c*) 1
(*iv*) Cas (90°–A)	(*d*) Cos A

.

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18. Match the following :

(*i*) sin (90°–A)	(*a*) Sin A
(*ii*) Cos 0°	(*b*) 0
(*iii*) Sin 0°	(*c*) 1
(*iv*) Cas (90°–A)	(*d*) Cos A

.

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19. Given figure

 is a parallelogram. P is a point on DC such that ar $(\Delta APD) = 24cm^2$ and ar $(\Delta BPC) = 16cm^2$. Find $CP : PD$.

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20. Match the following :

(*i*)	sin (90°–A)	(*a*)	Sin A
(*ii*)	Cos 0°	(*b*)	0
(*iii*)	Sin 0°	(*c*)	1
(*iv*)	Cas (90°–A)	(*d*)	Cos A

.

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21. Match the following :

(*i*)	sin (90°–A)	(*a*)	Sin A
(*ii*)	Cos 0°	(*b*)	0
(*iii*)	Sin 0°	(*c*)	1
(*iv*)	Cas (90°–A)	(*d*)	Cos A

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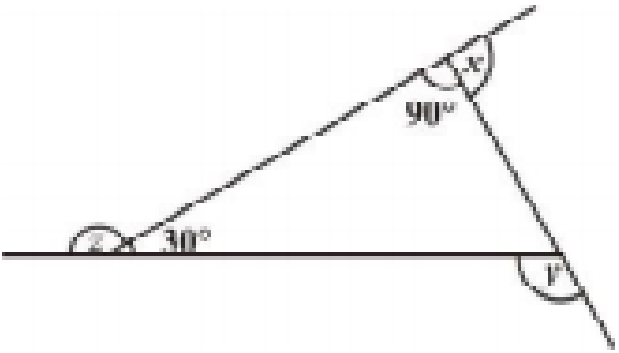
22. Find x+y+z



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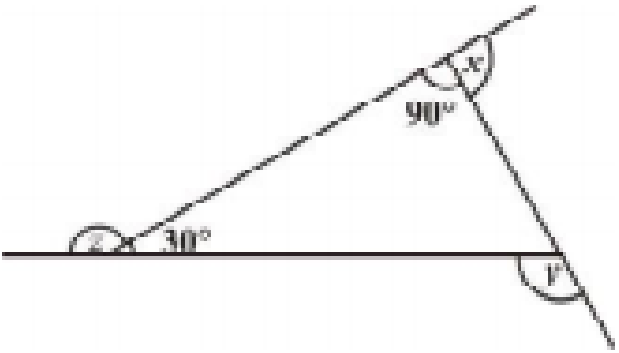
23. Find x+y+z



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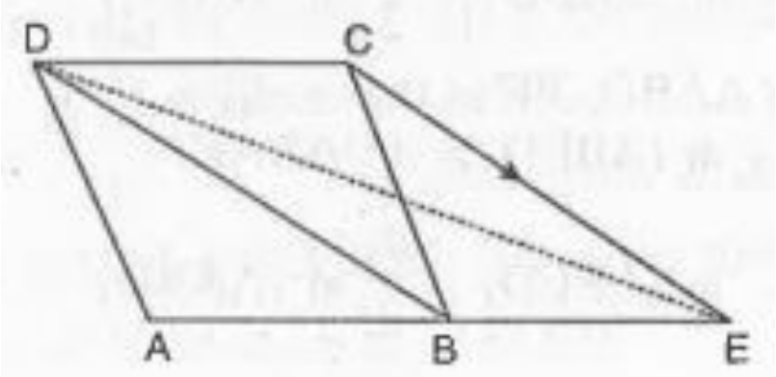
24. In the given figure



$CE \| \ \| DB$. If ar $(\Delta DBE) = 36cm^2$ and ar $(\Delta ADB) = 44cm^2$ find ar (ΔDAE).

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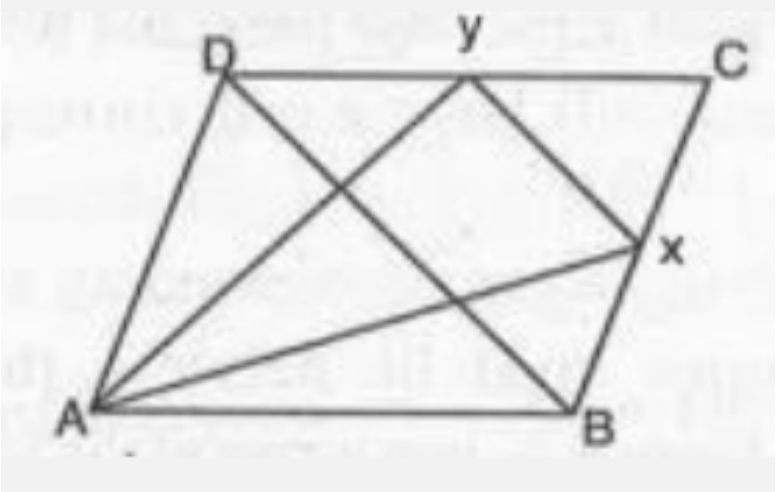
25. ABCD is parallelogram. X and Y are the mid-points of BC and CD respectively. Prove that ar

$(\Delta AXY) = \frac{3}{8}$ ar $(\ |\ \ |\ )^{gm} ABCD.$



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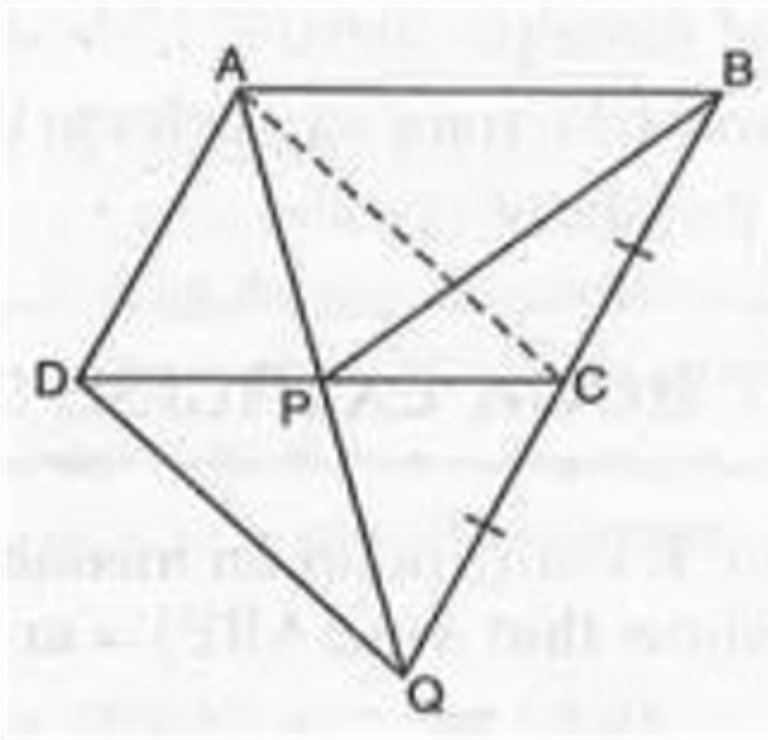
26. In Fig.



ABCD is a parallelogram. Prove that ar (ΔACP) = ar (ΔDPQ).

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27. In Fig.

 , ABCD is a parallelogram and EFCD is a rectangle. Also $AL \perp DC$. Prove that : ar $(ABCD) = DC \times AL$.

A. pages missing for image

B.

C.

D.

Answer:

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28. In Fig. 9.13, ABCD is a parallelogram and EFCD is a rectangle. Also, $AL \perp DC$. Prove that (i) ar (ABCD) = ar (EFCD) (ii) ar (ABCD) = DC × AL

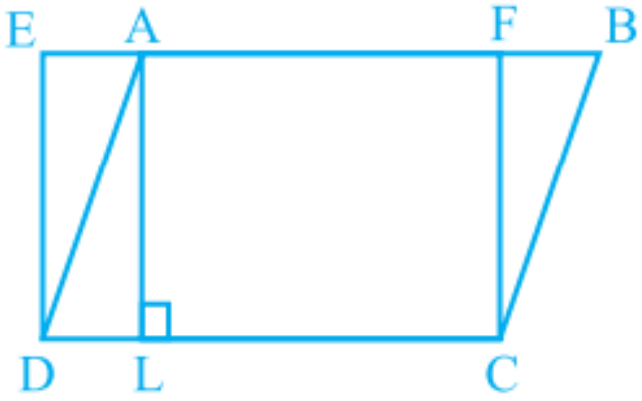

Fig. 9.13

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Answer:

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29. In Fig.

 diagonals AC and BD of quadrilateral ABCD intersect at O such that OB = OD. If AB = CD, then show that : ar (DCB)=ar (ACB).

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30. In Fig.

 diagonals AC and BD of quadrilateral ABCD intersect at O such that OB = OD. If AB = CD, then show that : $DA \mid\mid CB$ or ABCD is a parallelogram.

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31. Diagonals AC and BD of a quadrilateral ABCD intersect at O in such a way that ar (AOD) = ar (BOC). Prove that ABCD is a trapezium.

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32. D and E are points on sides AB and AC respectively of ΔABC such that ar (DBC) = ar (EBC). Prove that $DEIIBC$.

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33. XY is a line parallel to side BC of triangle ABC. If $BEIIAC$ and $CFIIAB$ meet XY at E and F respectively,show that ar (ABE) = ar (ACF).

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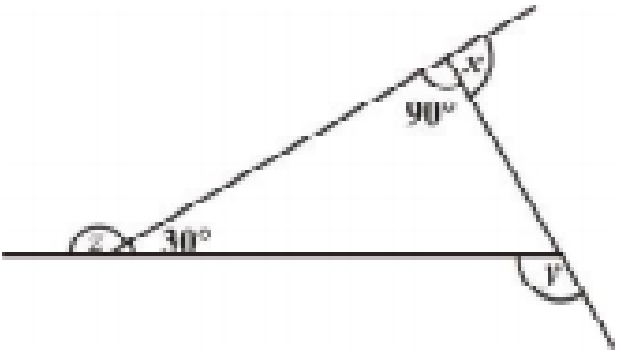
34. Find x+y+z



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35. Diagonals AC and BD of a quadrilateral ABCD intersect at O in such a way that ar (AOD) = ar (BOC). Prove that ABCD is a trapezium.

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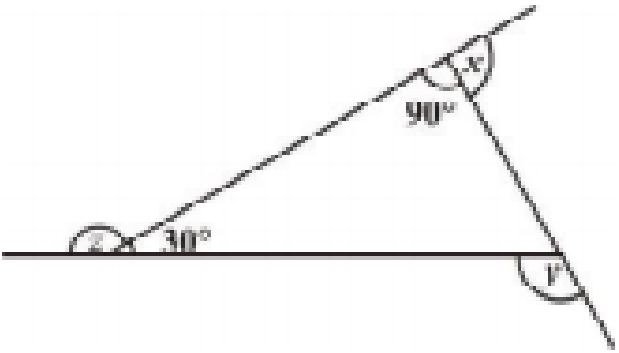
36. Find x+y+z



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37. D and E are points on sides AB and AC respectively of a ΔABC such that ar

$(\Delta BCE) = ar(\Delta BCD)$. Show that $DE \| BC$.

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38. Determine a triangle equal in area to a given quadrilateral.

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39. ABCD is a parallelogram whose diagonals intersect at E. AC is produced to F such that CF

= AE Prove that ar (ΔBDF) = ar $(||gmABCD)$.

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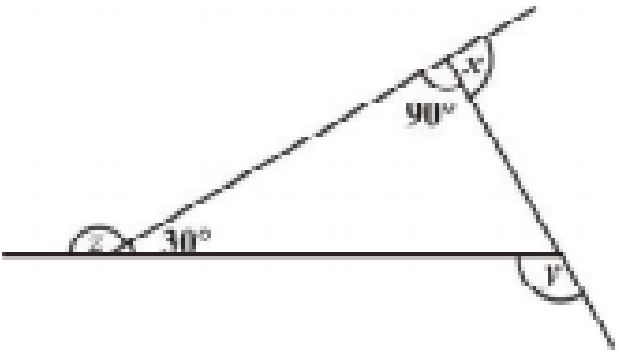
40. Find x+y+z



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41. Parallelogram ABCD and rectangle ABEF are on the same base AB and have equal areas. Show that the perimeter of the parallelogram is greater than that of the rectangle.

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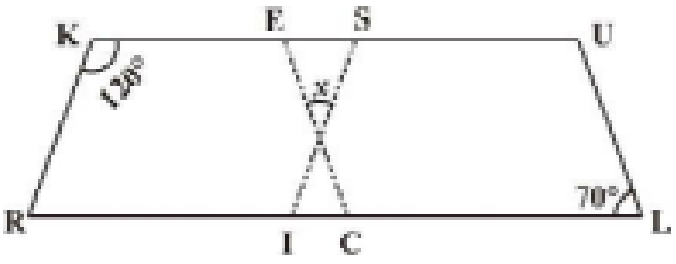
42.



In the

above figure both RISK and CLUE are parallelograms. Find the value of x.

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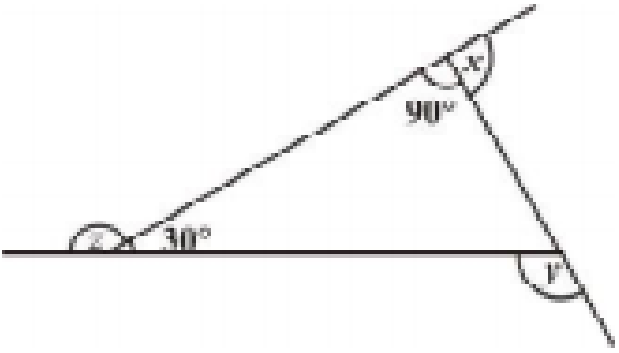
43. Find x+y+z



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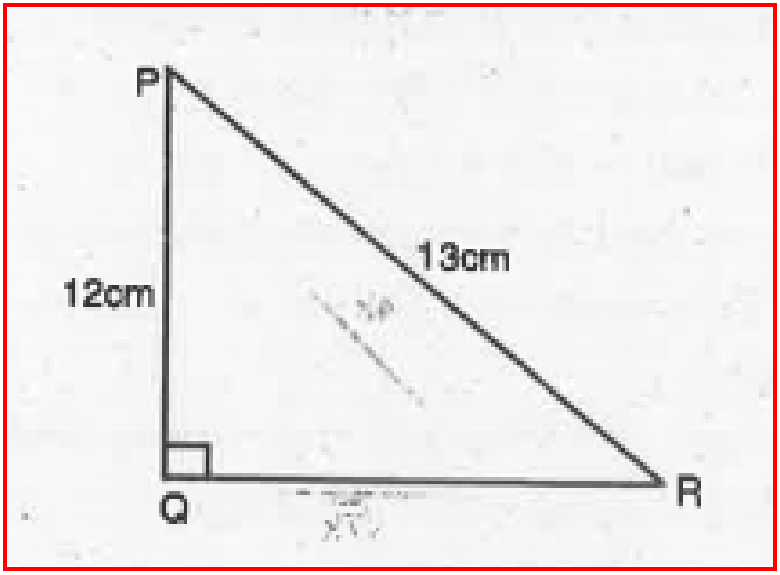
44. In fig., find tan P - cot R.



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45. In Fig.

, ABC and BDE are two equilateral triangles

such that D is the midpoint of BC. If AE intersects BC at F, show that : ar (BDE)=$\frac{1}{2}$ ar(BAE).

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46. In Fig.

 , ABC and BDE are two equilateral triangles such that D is the midpoint of BC. If AE intersects BC at F, show that : ar(BFE)=ar(AFD).

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47. In Fig.  , ABC and BDE are two equilateral triangles such that D is the midpoint of BC. If AE intersects BC at F, show that : ar(BFE)=2ar(FED).

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48. In Fig.  , ABC and BDE are two equilateral triangles such that D is the midpoint of BC. If AE intersects BC at F, show that : ar(BFE)=2ar(FED).

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49. In Fig.

 , ABC and BDE are two equilateral triangles such that D is the midpoint of BC. If AE intersects BC at F, show that : ar(FED)=$\frac{1}{8}$ ar(AFC).

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50. ABC and BDE are two equilateral triangles such that D is the mid-point of BC. Then ar

(BDE)=$\frac{1}{4}$ ar(ABC).

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51. Diagonals AC and BD of quadrilateral ABCD intersect each other at P. Show that ar $(APB) \times ar(CPD)$ = ar $(APD) \times ar(BPC)$.

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52. P and Q are respectively the midpoints of sides AB and BC or a triangle ABC and R is the mid-point of AP, show ar(PRQ)=$\frac{1}{2}$ ar(ARC).

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53. P and Q are respectively the midpoints of sides AB and BC or a triangle ABC and R is the mid-point of AP, show ar(RQC) = $\frac{3}{8}$ ar(ABC).

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54. P and Q are respectively the midpoints of sides AB and BC or a triangle ABC and R is the mid-point of AP, show ar(PBQ)=ar(ARC).

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55. In Fig.

 ABC is a right triangle right angled at A. BCED, ACFG and ABMN are squares on the sides BC, CA and AB respectively. Line segment $AX \perp DE$ meets BC at Y. Show that : $\Delta FCB \cong \Delta ACE.$

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56. In Fig.

 ABC is a right triangle right angled at A. BCED, ACFG and ABMN are squares on the sides BC, CA and AB respectively. Line segment $AX \perp DE$ meets BC at Y. Show that : ar(BYXD)=ar(ABMN).

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57. In Fig.

 ABC is a right triangle right angled at A. BCED, ACFG and ABMN are squares on the sides BC, CA and AB respectively. Line segment $AX \perp DE$ meets BC at Y. Show that : ar(CYXE)=ar(ACFG).

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58. In Fig.

 ABC is a right triangle right angled at A. BCED, ACFG and ABMN are squares on the

sides BC, CA and AB respectively. Line segment $AX \perp DE$ meets BC at Y. Show that : $\Delta MBC \cong \Delta ABD$.

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59. In Fig.

 ABC is a right triangle right angled at A. BCED, ACFG and ABMN are squares on the sides BC, CA and AB respectively. Line segment $AX \perp DE$ meets BC at Y. Show that : ar(CYXE)=ar(ACFG).

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60. In Fig.

 ABC is a right triangle right angled at A. BCED, ACFG and ABMN are squares on the sides BC, CA and AB respectively. Line segment $AX \perp DE$ meets BC at Y. Show that : ar(BCED)=ar(ABMN)+ar(ACFG).

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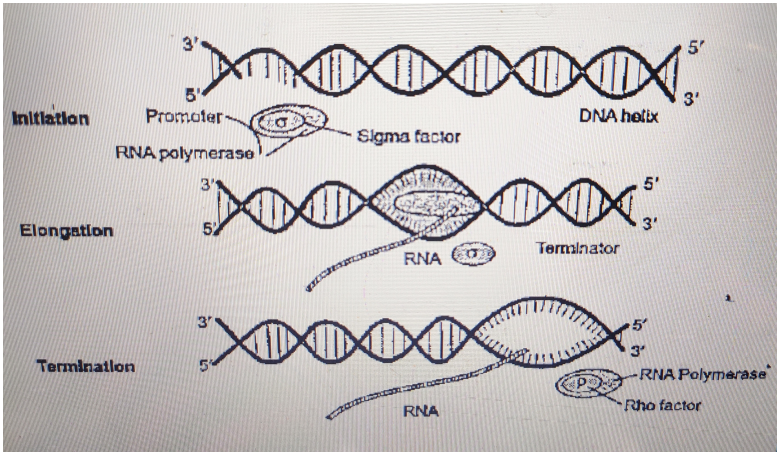
61. Identify (a),(b) and (c)



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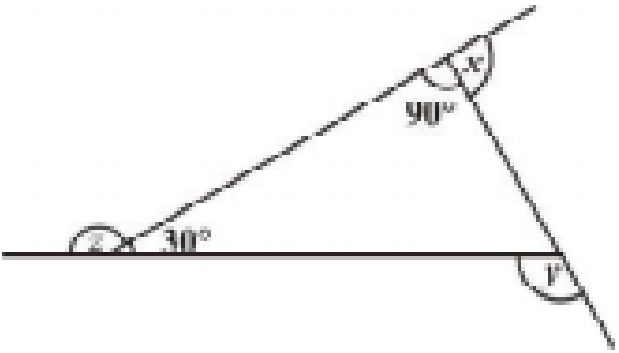
62. Find x+y+z



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63. If E, F, G and H are the mid-points of sides of a parallelogram ABCD then ar (EFGH) = ...

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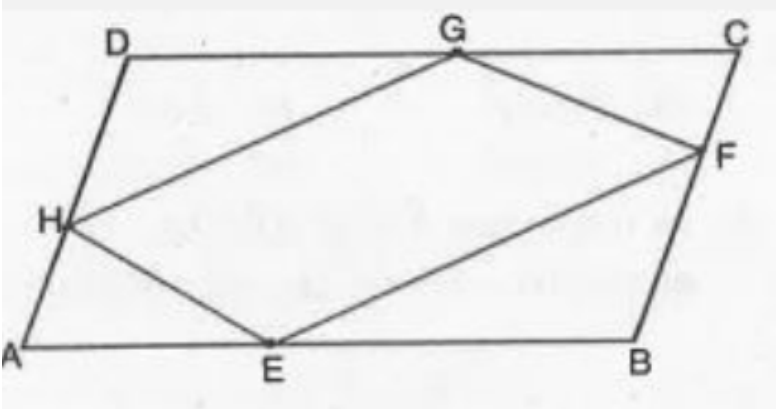

A. $\frac{1}{3}$ ar(ABCD)

B. ar(ABCD)

C. $\frac{1}{2}$ ar(ABCD)

D. $\frac{1}{4}$ ar(ABCD).

Answer:

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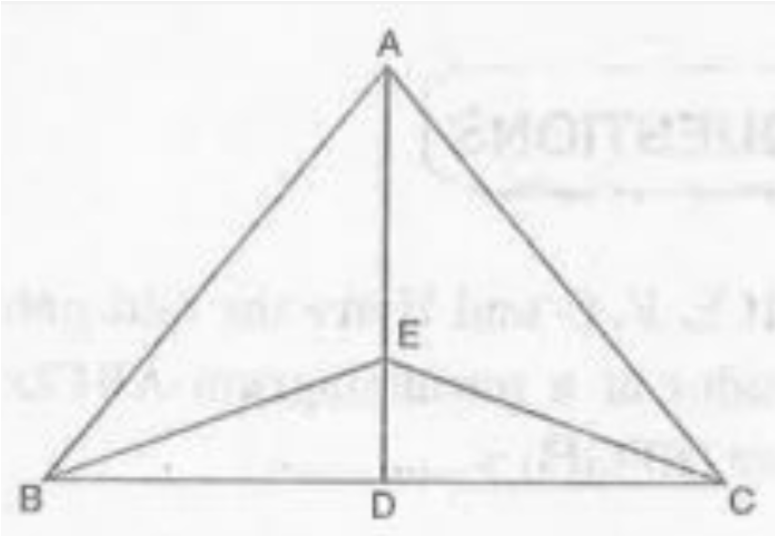
64. E is any point on median AD of ΔABC. If ar $(\Delta ABE) = 10cm^2$ then ar (ΔACE) is :



A. $20cm^2$

B. $5cm^2$

C. $30cm^2$

D. $10cm^2$.

Answer:

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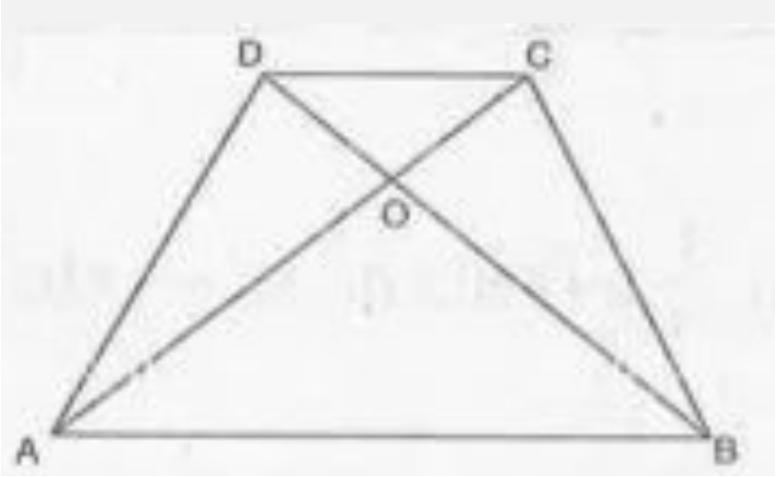
65. In trapezium ABCD $AB \mid\mid DC$. If ar (AOD) = $15cm^2$ then ar (BOC) is :



A. $30cm^2$

B. $15cm^2$

C. $10cm^2$

D. $7.5cm^2$.

Answer:

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66. The median of a triangle divides it into two

A. triangles of equal area

B. congruent triangles

C. right triangles

D. isosceles triangles

Answer:

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67. In which of the following figures , you find two polygons on the same base and between the same parallels ?

A.

B.

C.

D.

Answer:

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68. The figure obtained by joining the midpoints of the adjacent sides of a rectangle of sides 8 cm and 6 cm is :

A. a rectangle of area $24cm^2$

B. a square of area $25cm^2$

C. a trapezium of area $24cm^2$

D. a rhombus of area $24cm^2$.

Answer:

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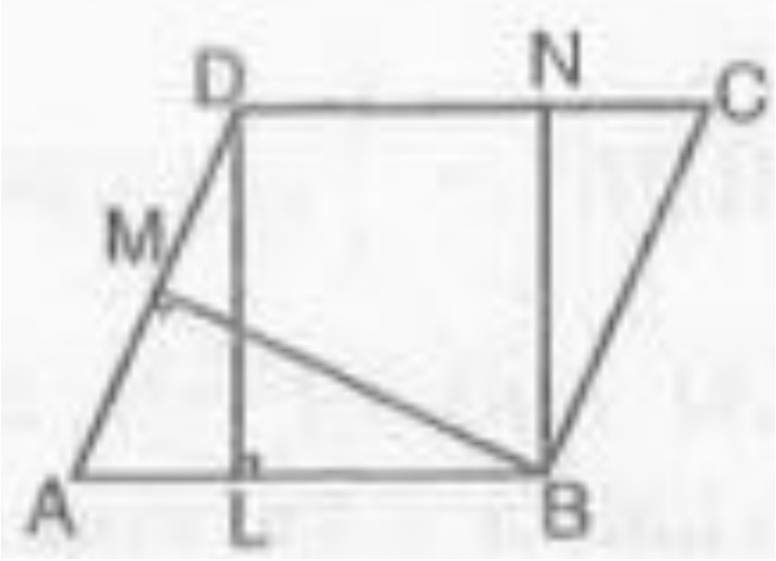
69. In Fig.



the area of parallelogram ABCD is :

A. $AB \times BM$

B. $BC \times BN$

C. $DC \times DL$

D. $AD \times DL$

Answer:

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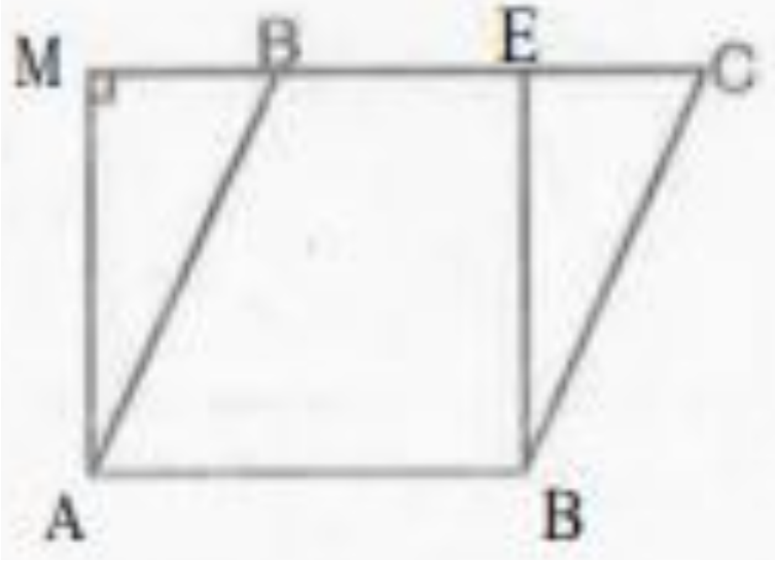
70. In Fig.



If parallelogram ABCD and rectangle ABEF are of equal area,

then :

A. Perimeter of ABCD = Perimeter of ABEM

B. Perimeter of ABCD $<$ Perimeter of ABEM

C. Perimeter of ABCD $>$ Perimeter of ABEM

D. Perimeter of ABCD $= \frac{1}{2}$(Perimeter of ABEM).

Answer:

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71. The mid-point of the sides of a triangle along with any of the vertices as the fourth point make a parallelogram of area equal to

A. $\frac{1}{2}$ar(ABC)

B. $\frac{1}{3}$ar(ABC)

C. $\frac{1}{4}$ar(ABC)

D. ar(ABC).

Answer:

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72. Two parallelograms are on equal bases andbetween the same parallels. The ratio of their areas is

A. $1:2$

B. $1:1$

C. $2:1$

D. $3:1.$

Answer:

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73. ABCD is a quadrilateral whose diagonal AC divides it into two parts, equal in area, then ABCD

A. is a rectangle

B. is always a rhombus

C. is a parallelogram

D. need not be any of (A), (B) or (C)

Answer:

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74. If a triangle and a parallelogram are on the same base and between same parallels, then the ratio of the area of the triangle to the area of parallelogram is

A. $1:3$

B. $1:2$

C. $3:1$

D. $1:4$.

Answer:

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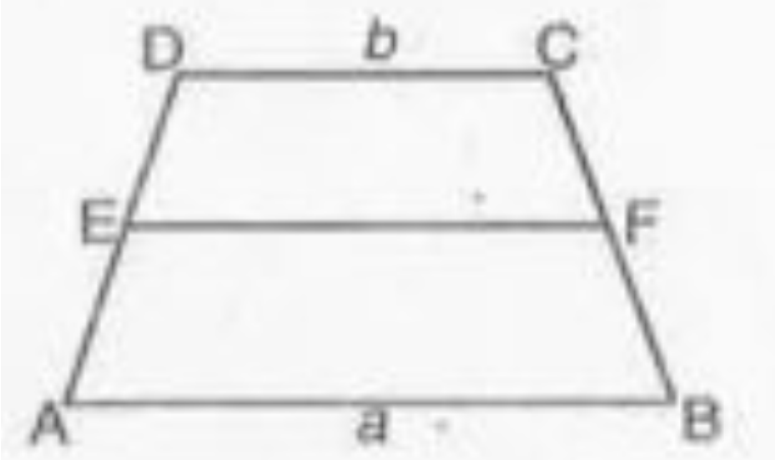
75. ABCD is a trapezium with parallel sides AB = a cm and DC = 6 cm E and F are the mid-points of the non-parallel sides. The ratio of ar (ABFE) and ar (EFCD) is



A. $a : b$

B. $(3a + b) : (a + 3b)$

C. $(a + 3b) : (3a + b)$

D. $(2a + b) : (3a + b)$.

Answer:

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76. ABCD is a parallelogram and X is the mid-point of AB. If ar (AXCD) = $24cm^2$, then ar (ABC) = $24cm^2$.

A. 1

B.

C.

D.

Answer:

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77. PQRS is a rectangle inscribed in a quadrant of a circle of radius 13 cm. A is any point on PQ. If PS = 5 cm, then ar (PAS) = $30cm^2$.

A. 1

B.

C.

D.

Answer:

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78. PQRS is a parallelogram whose area is $180cm^2$ and A is any point on the diagonal QS. The area of $\Delta ASR = 90cm^2$.

A. 1

B.

C.

D.

Answer:

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

A. 1

B.

C.

D.

Answer:

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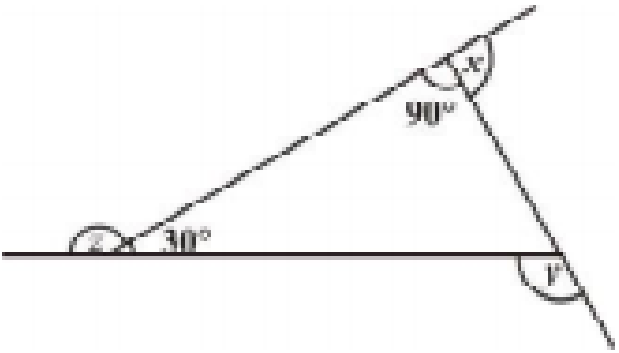
80. Find x+y+z



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