MATHS

BOOKS - CBSE COMPLEMENTARY MATERIAL MATHS (HINGLISH)

AREAS OF PARALLELOGRAMS AND TRIANGLES

Part A

1. Which of the following figures don't have equal areas if both the figures are on same base and between same parallels ?

A. Two parallelograms

B. One parallelograms and one rectangle

C. Two Triangles

D. One parallelogram and one triangle

Answer: D

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2. Which statement is true ?

A. Two congruent figures have always equal areas.

B. Two figures having equal areas are always congruent.

C. A triangle and a quadrilateral can be congruent.

D. Two congruent figures have only some of its parts equal.

Answer: A

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3. ΔDEF is divided into two triangles ΔDEM and ΔDFM of equal areas. Which of the following statement is true ?

A. ΔDEF and ΔDFM have equal bases.

B. ar $(\Delta DEM) = \frac{1}{3}$ ar (ΔDEF)

C. Mis the mid - point of side EF.

D. ΔDEM and ΔDFM and congruent.

Answer: C

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4. The ratio of the areas of the triangle and a parallelogram in same parallels and on the same base is :

A. $1:2$

B. $4:1$

C. $2:1$

D. $1:4$

Answer: A

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5. The area of a parallelogram PQRS is $36cm^2$. M is any point on the side RS. The area of ΔPMQ is.

A. $18cm^2$

B. $9cm^2$

C. $36cm^2$

D. $12cm^2$

Answer: A

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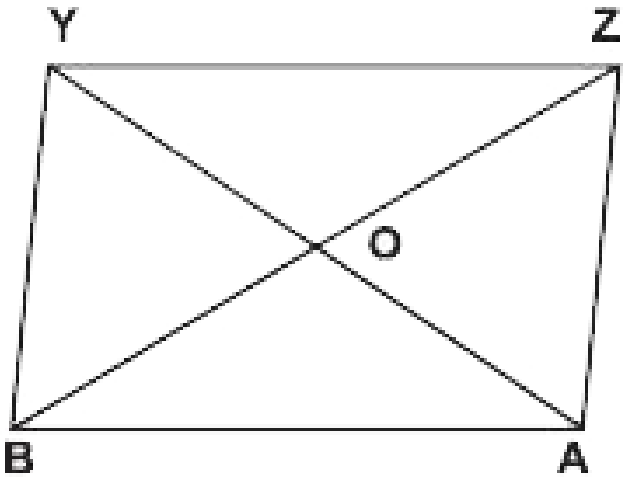
6. AY and BZ are the diagonals of a parallelogram ABYZ, intersecting at O. $ar(\Delta BYZ)$ = ?



A. greater than $ar(\Delta ABZ)$

B. is equal to $ar(\Delta BOA + \Delta BOY)$

C. more than $ar(\Delta BOA + \Delta BOY)$

D. less than $ar(\Delta BOA + \Delta BOY)$

Answer: B

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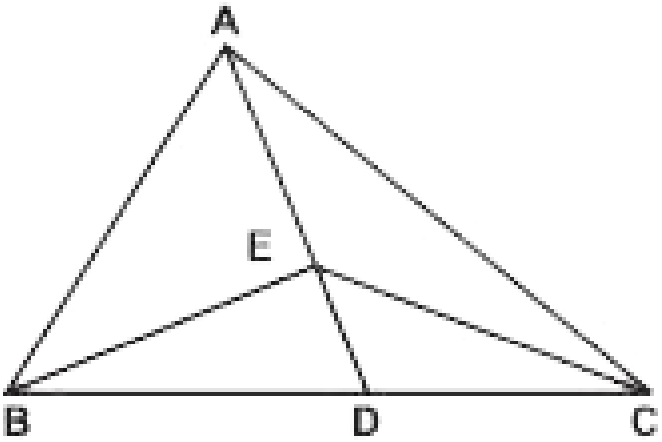
7. AD is the median of ABC and E is any point on AD. Which of the following statement is

true ?



A. ar $(\Delta ABD) >$ ar (ΔACD)

B. ar $(\Delta ABD) <$ ar (ΔACD)

C. ar $(\Delta ABE) =$ ar (ΔCED)

D. ar $(\Delta ABE) =$ ar (ΔACE)

Answer: D

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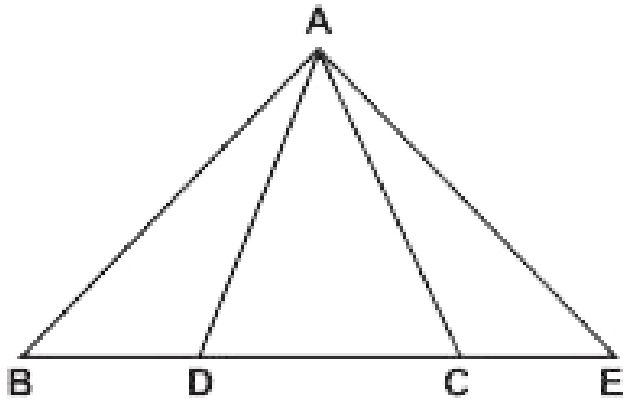
8. In the given figure ar $(\Delta ABC) =$ ar (ΔADE). AC is the median of ΔADE. If ar (ACE) $= 14cm^2$ then ar (ΔABC) = ?



A. $14cm^2$

B. $7cm^2$

C. $21cm^2$

D. $28cm^2$

Answer: B

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9. In the given figure area of IIgm (DEFG) $= 40cm^2$, then ar (HDG) + ar (HEF) =?

A. $10cm^2$

B. $20cm^2$

C. $30cm^2$

D. $40cm^2$

Answer: B

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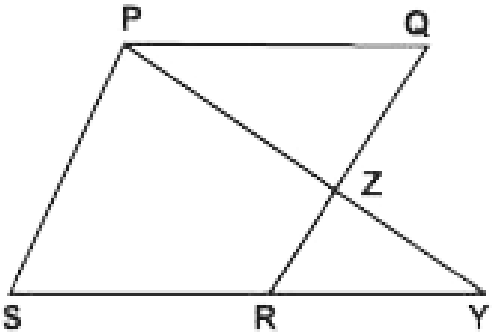
10. In the given figure PQRS is a parallelogram.

Which of the following statements is true



A. $QZ = RZ$

B. ar $(\Delta PYS) =$ ar $(PQRS)$

C. ar $(\Delta PQZ) = \frac{1}{2}(PQRS)$

D. $\angle PQZ = \angle YRZ$

Answer: D

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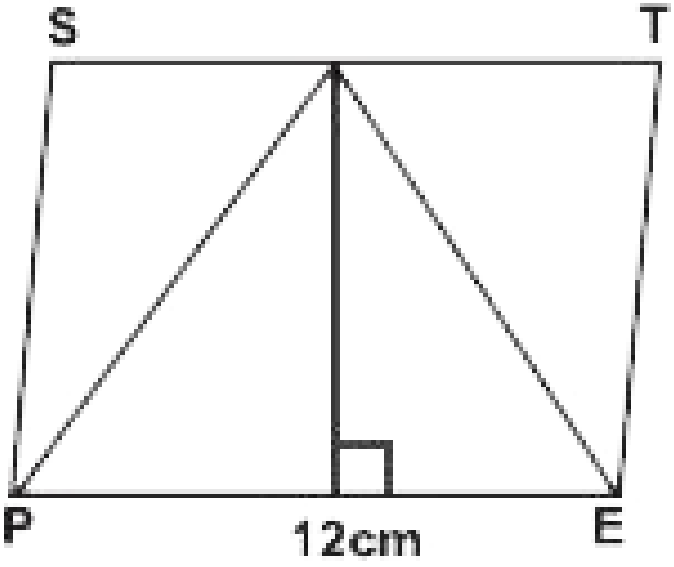
11. STEP is a parallelogram and ar (STEP) $= 84cm^2$ The length of the altitude of ΔAPE is



A. $\frac{7}{4}cm$

B. $\frac{7}{2}cm$

C. 7 cm

D. 14 cm

Answer: C

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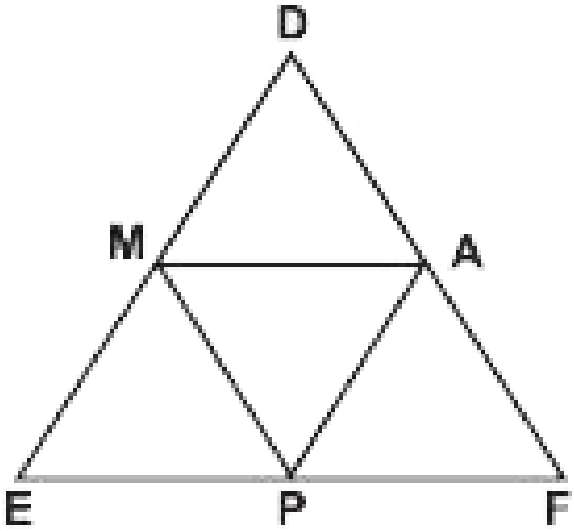
12. M, A and P are the mid-points of the sides DE, DF and EF of Δ DEF respectively. Which of

the following statements is true ?



A. ar $(\Delta MPF) = 2$ ar (ΔDEF)

B. ar $(AMPF) = \frac{1}{2}$ ar (ΔDEF)

C. ar $(\Delta AMP) = \frac{1}{4}$ ar (ΔDEF)

D. ar $(AMPF) = \frac{1}{2}$ ar (ΔDEF)

Answer: B

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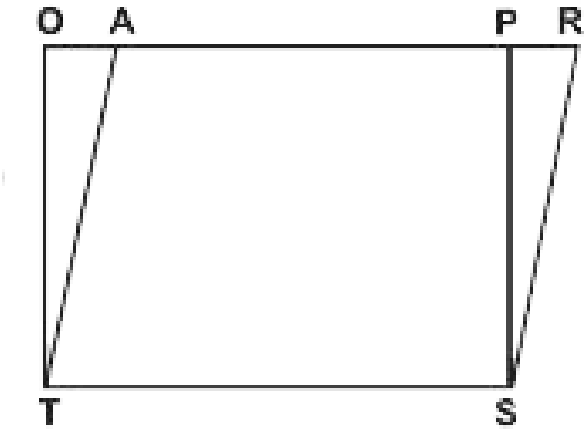
13. STOP is a rectangle STAR is a parallelogram in the given figure.

Which of the following statement is true ?



A. Perimeter (STAR) $>$ Perimeter (STOP)

B. Perimeter (STAR) $<$ Perimeter (STOP)

C. Perimeter (STAR)= Perimeter (STOP)

D. Perimeter (STAR) $= \frac{1}{2}$ Perimeter (STOP)

Answer: A

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Part A Fill In Blanks

1. The area of a triangle is half the product of any of its sides and the corresponding altitude.

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2. The area of parallelogram on the same base and between the same parallel lines are .....

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

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4. Area of trapezium $= \frac{1}{2}$ x height x ____ State True or False :

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5. The median of a triangle divides it into two

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6. The diagonals of a parallelogram are equal. (True Or False)

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7. If both the diagonals of a quadrilateral divides it into four triangles of equal area, then the quadrilateral is a rhombus.

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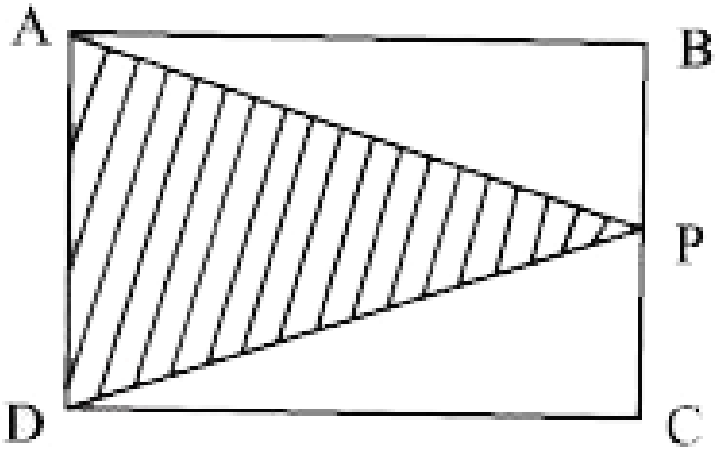
8. If area of Parallelogram ABCD is $80cm^2$ Find the area of ΔAPD.



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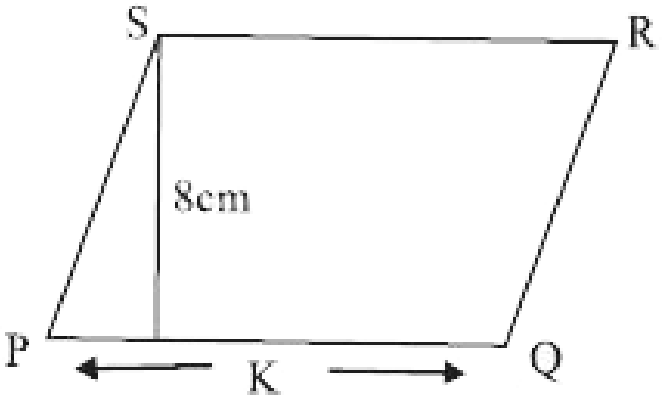
9. If area of Parallelogram PQRS is $88cm^2$ find K.



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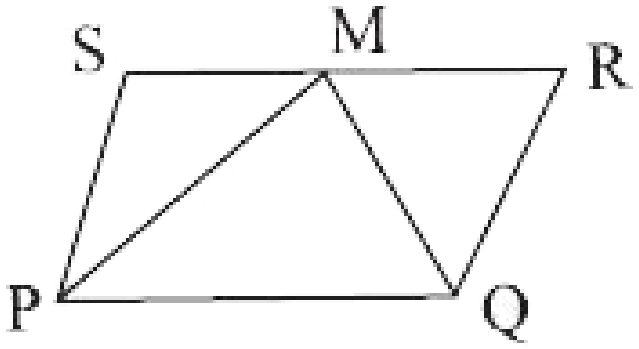
10. PQRS is a Parallelogram and PQM is a triangle. If area of $PQM = 18cm^2$. Find the

area of PQRS.



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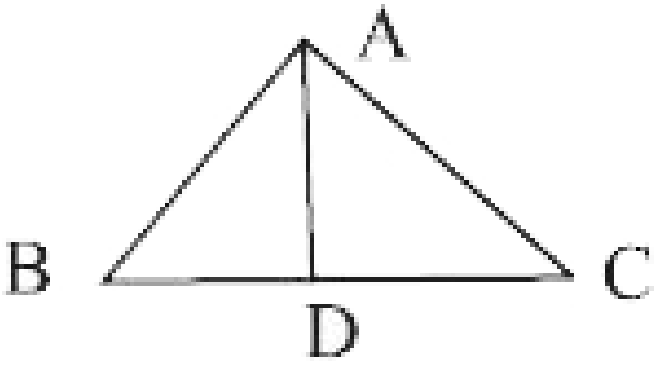
11. In $\Delta ABC, AD$ is median. If area of $\Delta ABD = 25cm^2$ find the area of ΔABC.



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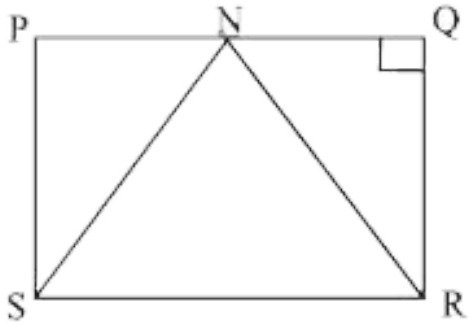
12. In the given figure area of $\Delta SRN = 21cm^2 RQ = 6cm$ find PQ.



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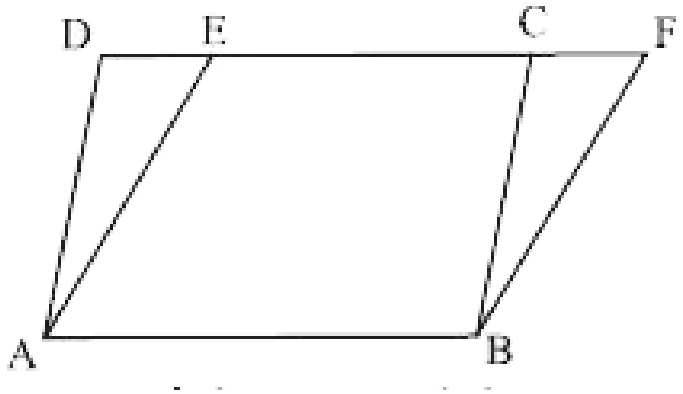
13. In the figure ABCD and ABFE are Parallelograms then find ar (ΔBCF).

If ar $(ABCE) = 18cm^2$

ar $(ABCD) = 25cm^2$



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14. Two parallelograms are on equal bases and between the same parallels.

The ratio of their areas is

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

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

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

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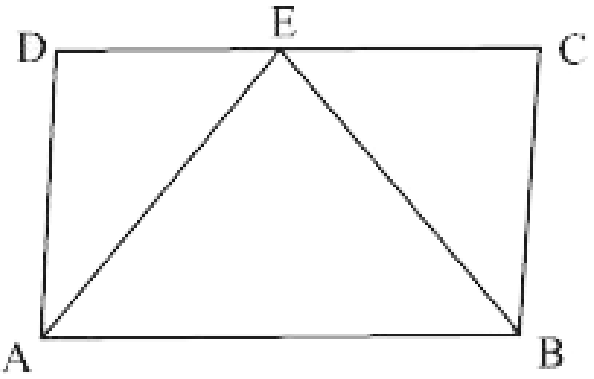
18. In given figure. If area of parallelogram ABCD is $30cm^2$ then find ar $(\Delta ADE) +$ ar (ΔBCE)



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Part B

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

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2. P and Q are any two points lying on the sides DC and AD respectively of a parallelogramABCD. Show that $ar\,(APB) = ar\,(BQC)$.

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

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4. Show that the diagonals of a parallelogram divide it into four triangles of equal area.

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5. D, E and F are respectively the mid -points of the sides BC, CA and AB of a $\triangle ABC$ .Show that (i) BDEF is a parallelogram

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Part C

1. Diagonals AC and BD of a trapezium $ABCD$ with $ABCD$ intersect each where at O. Prove that ar $(AOD) = ar(BOC)$.

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2. 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 $(\Delta POA) = \text{ar } (\Delta QOC)$.

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3. Diagonal PR and QS of quadrilateral PQRS intersects at T such that PT= TR and PS= QR, show that ar $(\Delta PTS) = \text{ar } (\Delta RTQ)$

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Part D

1. Parallelograms on the same base and between the same parallel are equal in area.

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2. Triangles on the same base and between the same parallel are equal in area.

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

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4. 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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5. 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.(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.

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Practice Test

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

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

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