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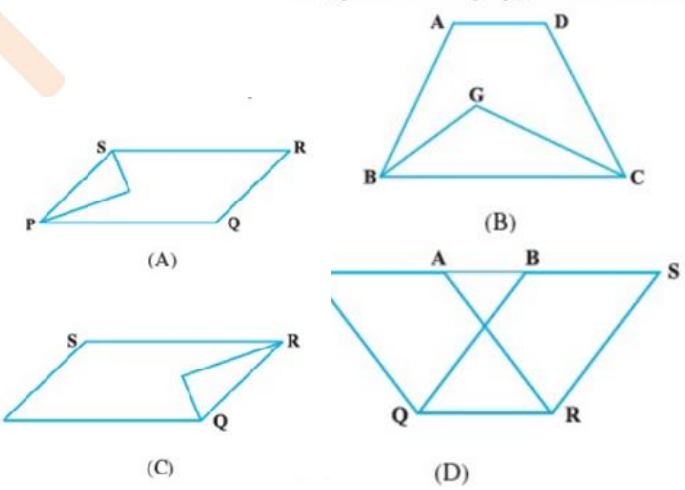
Class: IX
Subject: Mathematics
Topic: Area of Parallelogram & Triangles
No. of Questions: 20
Duration: 60 Min
Maximum Marks: 60

1. The median of a triangle divides it into two
   (A) Triangles of equal area
   (B) Congruent triangles
   (C) right triangles
   (D) isosceles triangles

   Sol: A (fact)

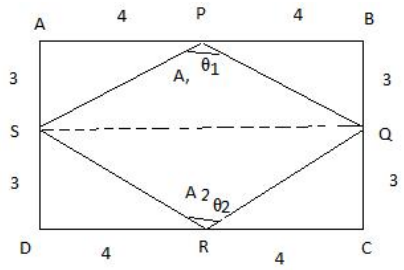
2. In which of the following figures (fig. 9.3), you find two polygons on the same base and between the same parallels?

   Sol: D (All the height is same on equals bases)



3. The figure obtains by joining the mid – points of the adjacent side of a rectangle of sides 8 cm and 6 cm is:
   A. A rectangle of area 24 cm^2
   B. A square of area 25 cm^2
   C. A trapezium of area 24 cm^2
   D. A rhombus of area 24 cm^2

   Sol: D



PS = 5cm

PQ = OR = RS = 5cm

Area $= \frac{1}{2} \times \sin\theta_1 \times 25 + \frac{1}{2} \times \sin\theta_2 \times 25$

Area $= \frac{25}{2} \{\sin\theta_1 + \sin\theta_2\}$

$\sin\theta_1$ & $\sin\theta_2$ can be found out using trigonometry

4. In Fig. 9.4, the area of parallelogram ABCD is:

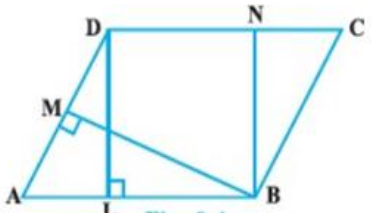


Fig. 9.4

A. AB× BM
B. BC× BN
C. DC×DL
D. AD×D

Sol: C (Area of ABCD = Base × height = {DC×DL}

= base × height)

5. In Fig. 9.5, if parallelogram ABCD and rectangle ABEF are of equal 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)

Sol: C (Perimeter of ABCD > Parameter of ABEM as hypotenuse is side in triangle.

AD > AM & BC > BC)

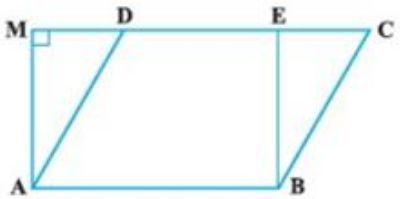


Fig. 9.5

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6. 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)

   Sol: A.

   From mid-points theorem
   DF = $\frac{1}{2}$ AC
   EF = $\frac{1}{2}$ AB
   AD = EF = & AE = FD
   ADFE is ‖ gm.

7. Two parallelograms are on equal bases and between the same parallels. The ratio of there are as is
   A. 1:2
   B. 1:1
   C. 2:1
   D. 3:1
   Sol: B (If they have same base & same parallels so they have equal area.)

8. 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 to be any of (A), (B) or (c)
   Sol: D (Properties of the quadrilateral ABCD)

9. If a triangle and a parallelogram are on the same bases 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

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Sol: B (Parallelogram will have twice the area of triangle)

10. ABCD is a trapezium with parallel sides AB = a cm and DC = b cm (fig. 9.6) E and F are the mid-point 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)

    Sol: B

    {EF =$\frac{a+b}{2}$}

    From symmetry oppose height is

    Area of ABFE = $\frac{1}{2}$ ×h [a+$\frac{a+b}{2}$]

    Area of EFCD = $\frac{1}{2} \times h\ [\frac{a+b}{2} + b]$

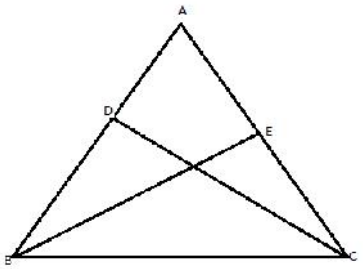
    3a + b: a+3b

11. D and E are points on sides AB and AC respectively of? ABC such that are (DBC) = area (EBC). Which of following is true?
    A. Area of triangle ABC = (1/2) Area of triangle DBC
    B. Triangle DBC is congruent to triangle to EBC
    C. DE = (1/2) BC
    D. DE II BC

    Sol: D

    Area (ABC) = Area (BEC)

    Base is same which means they are between same parallel.



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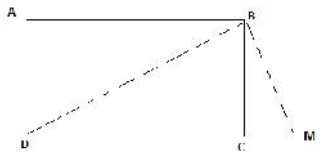
12. If a triangle and a parallelogram are on the same base and between same parallels, then the ratio of the area of the triangle to the area of parallelogram is?
    A. 1:4
    B. 2:1
    C. 1:2
    D. 1:1

    Sol: C



    Area (ABCD) = BM × DC

    Area of (ABC) = $\frac{1}{2} \times BM \times DC$

    $\therefore$ 1:2

13. Two parallelograms are on equal base and between the same parallels. The ratio of there is?
    A. 1:4
    B. 2:1
    C. 1:2
    D. 1:1

    Sol: D (So the area will be same)

14. ABCD is a rectangle of Area 40cm^2 x is any point on AB, what is the area of the triangle XCD?
    A. 10cm^2
    B. 40 cm^2
    C. Insufficient date

    Sol: B

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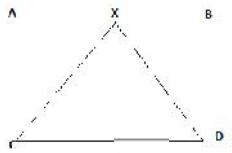


CXD $\neq$ Ar $(\frac{ABCD}{2})$

$\therefore$ CXD $= 20$

15. Which of these is false?
    A. The diagonal of the parallelogram divides into four equal parts
    B. Area of parallelogram is base multiplied by the height
    C. If EFGH are the respective midpoint of the sides of the parallelogram ABCD, Area of EFGH is half the area of the parallelogram
    D. None of these

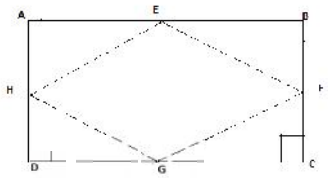
    Sol: c (Property)

16. The median of the triangle divides it into
    A. Two triangle with equal area
    B. Right angle triangles
    C. Equilateral triangle
    D. Isosceles triangle

    Sol: A (Two equal areas)

17. ABCD is a rectangle, EFGH are the mid points of the side. Area of the rectangle is 40 cm^2. The figure EFGH is?
    A. Parallelogram with area 30cm^2
    B. Rhombus with area 20cm^2
    C. Square of the area 25cm^2
    D. Insufficient Data

    Sol: B



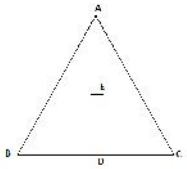
EH = $\frac{1}{2}\sqrt{a^2+b^2}$

EFGH = $\frac{1}{2} d_1 d_2$

$= \frac{1}{2}$ Ar (ABCD)

= 20

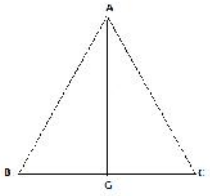
18. In a triangle ABC, E is the mid-point of median AD, which of the following is false?
    A. Area of triangle ABD= (1/2) Area of triangle ABC
    B. Area of triangle BED= (1/4) Area of triangle ABC
    C. Area of triangle ABE = (1/4) Area of triangle ABC
    D. None of these



    Sol: D (As areas of triangle become half by median)

19. The median of the triangle ABC meets at point G, which of these is not true?
    A. Area of triangle AGC=Area of triangle BGC
    B. Area of triangle AGC=Area of triangle AGB
    C. Area of triangle AGC= (1/3) Area of triangle ABC
    D. None of these

    Sol: A



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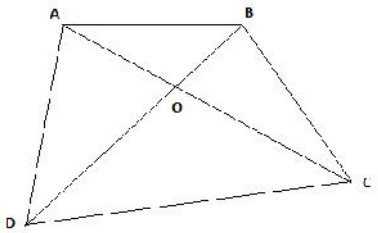
20. Diagonals Ac and BD of a trapezium ABCD with AB II Dc intersect each other at O.
    A. Area of triangle AOD=Area of triangle BOC
    B. Area of triangle AOD= (1/2) Area of triangle BOC
    C. Area of triangle AOD= (1/2) Area of triangle BOc
    D. None of these

    Sol:



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