WORKSHEET 9

## CHAPTER 9 – AREAS OF PARALLELOGRAMS AND TRIANGLES

1. Two figures are called congruent, if they have
   (*a*) same size   (*b*) same area   (*c*) same shape   (*d*) both same shape and size

2. Two parallelograms ABCD and EBCF lie on the same base and between the same parallels BC and AF. If ar(EBCF) = 15 sq cm, then ar(ABCD) is
   (*a*) 15 sq cm   (*b*) 30 sq cm   (*c*) 18 sq cm   (*d*) 45 sq cm

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

   (*a*)
   (*b*)

   (*c*)
   (*d*)
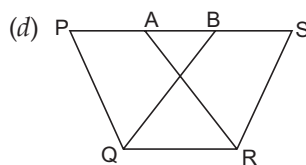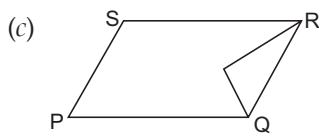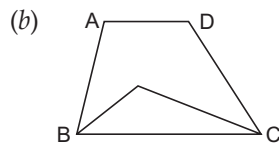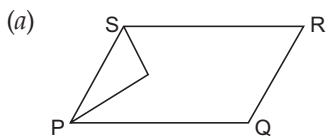
4. ABCD is a trapezium with parallel sides AB = *a* cm and DC = *b* cm, E and F are the mid-points of the non-parallel sides. The ratio of ar(ABFE) and ar(EFCD) is

   (*a*) $a : b$
   (*b*) $(3a + b) : (a + 3b)$
   (*c*) $(a + 3b) : (3a + b)$
   (*d*) $(2a + b) : (3a + b)$
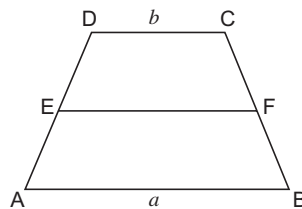
5. The median of a triangle divides it into two
   (*a*) triangles of equal areas   (*b*) congruent triangles
   (*c*) right triangles   (*d*) isosceles triangles

6. The figure obtained by joining the mid-points of the adjacent sides 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*) at trapezium of area 24 cm^2 (*d*) a rhombus of area 24 cm^2

7. 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

8. 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)   (*d*) $\frac{1}{4}$ ar(ABC)   (*d*) ar(ABC)

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9. In the figure given alongside, the area of parallelogram ABCD is
   (a) AB × BM (b) BC × BN (c) DC × DL (d) AD × DL

10. Two parallelograms are on equal base and between the same parallels. The ratio of their areas is
    (a) 1 : 2 (b) 1 : 1 (c) 2 : 1 (d) 3 : 1

11. Find the area of a rhombus, the lengths of whose diagonals are 16 cm and 24 cm respectively.

12. Show that the diagonals of a ||gm divide into four triangles of equal area.
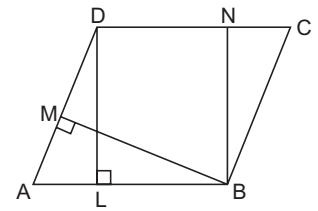
13. The base BC of a ΔABC is divided at D such that BD = $\frac{1}{2}$ DC. Prove that ar(ΔABD) = $\frac{1}{3}$ × ar(ΔABC).

14. In the given figure, ABCD and EFGD are two parallelograms and G is the mid-point of CD. Then ar(DPC) = $\frac{1}{2}$ ar(EFGD). This statement is true or false.

15. ABCD is a parallelogram in which BC is produced to E such that CE = BC. AE intersects CD at F.

    If ar(DFB) = 3 cm², find the area of the parallelogram ABCD.
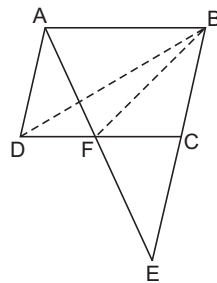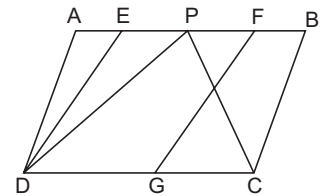
16. ABCD is a square. E and F are the mid-points of BC and CD respectively. If R is the mid-point of EF, prove that ar(AER) = ar(AFR).
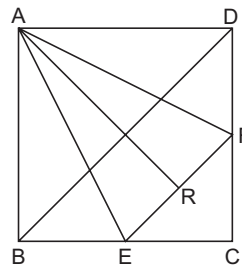
17. A point E is taken on the side BC of a parallelogram ABCD. AE and DC are produced to meet at F. Prove that ar(ADF) = ar(ABFC).

18. O is any point on the diagonal PR of a parallelogram PQRS as shown in the figure. Prove that ar(PSO) = ar(PQO).

19. The diagonals of a parallelogram ABCD intersect at a point O. Through O, a line is drawn to intersect AD at P and BC at Q. Show that PQ divides the parallelogram into two parts of equal areas.

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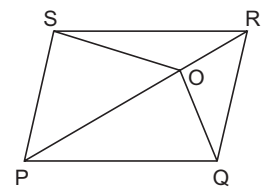
ANSWERS

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1. (*d*) both same shape and size   2. (*a*) 15 sq cm   3. (*d*)

4. (*b*) $(3a + b) : (a + 3b)$ 5. (*a*) Triangles of equal areas   6. (*d*) a rhombus of area 24 cm^2

7. (*b*) 1 : 2   8. (*a*) $\frac{1}{2}$ ar(ABC)   9. (*c*) DC × DL   10. (*b*) 1 : 1

11. 192 sq cm.   14. False   15. 12 sq cm