AREAS OF PARALLELOGRAMS AND TRIANGLES

AREA OF PARALLELOGRAM BETWEEN SAME BASE AND SAME PARALLEL LINE

EXERCISE

Q.1 ABCD is a quadrilateral and BD is one of its diagonals as shown in fig. Show that ABCD is a parallelogram and find its area.



- **Q.2** In parallelogram ABCD, AB = 10 cm. The altitudes corresponding to the sides AB and AD are respectively 7 cm and 8 cm. Find AD.
- **Q.3** In the adjoining figure, ABCD is a ||gm whose diagonals AC and BD intersect at O. A line segment through O meets AB at P and DC at Q. Prove that are ($^{\sim}APQD$) = $\frac{1}{2}$ ar (||gm ABCD).



- **Q.4** Show that a median of a triangle divides it into two triangles of equal area.
- **Q.5** In figure, AD is a median of \triangle ABC and DE is a median of \triangle DAC. Show that

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$$ar(\Delta AED) = \frac{1}{4}ar(\Delta ABC)$$

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- **Q.6** The diagonals of ABCD, AC and BD intersect in O. Prove that if BO = OD, the triangles ABC and ADC are equal in area.
- **Q.7** Let P, Q, R, S be respectively the midpoints of the sides AB, BC, CD and DA of quad. ABCD. Show that PQRS is a parallelogram such that $ar(||gm PQRS) = \frac{1}{2}ar(quad. ABCD)$.



- **Q.8** The medians BE and CF of a triangle ABC intersect at G. Prove that area of \triangle GBC = area of quadrilateral AFGE.
- **Q.9** E, F, G, H are respectively, the mid-points of the sides AB, BC, CD and DA of parallelogram ABCD. Show that the area of quadrilateral EFGH is half the area of the parallelogram ABCD.
- **Q.10** Two segments AC and BD bisect each other at O. Prove that ABCD is a parallelogram.

ANSWER KEY

- **1.** ABCD = 5.2×4 sq.cm
- **2.** AD =8.75 cm.