

QUADRILATERALS

MID POINT THEOREM

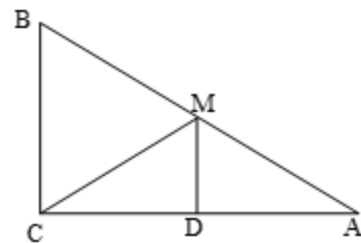
EXERCISE

- Q.1** In fig. D,E and F are, respectively the mid- points of sides BC, CA and AB of an equilateral triangle ABC. Prove that DEF is also an equilateral triangle.
- Q.2** P,Q and R are, respectively, the mid-points of sides BC, CA and AB of a triangle ABC. PR and BQ meet at X. CR and PQ meet at Y. Prove that $XY = \frac{1}{4}BC$
- Q.3** Show that the quadrilateral, formed by joining the mid-points of the sides of a square, is also a square.
- Q.4** $\triangle ABC$ is a triangle right angled at B ; and P is the mid-point of AC. Prove that $PB = PA = \frac{1}{2}AC$.
- Q.5** Show that the quadrilateral formed by joining the mid-points of the consecutive sides of a rectangle is a rhombus.
- Q.6** ABC is a triangle right angled at C. A line through the mid-point M of hypotenuse AB and parallel to BC intersects AC at D. Show that

(i) D is the mid-point of AC

(ii) $MD \perp AC$

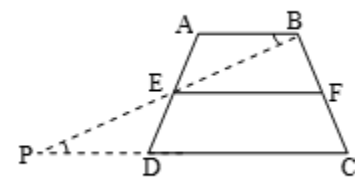
(iii) $CM = MA = \frac{1}{2}AB$



- Q.7** E, F are respectively the mid-points of non-parallel sides of a trapezium ABCD. Prove that

(i) $EF \parallel AB$ and

(ii) $EF = \frac{1}{2}(AB + CD)$



Q.8 ABCD is || gm. P is a point on AD such that $AP = \frac{1}{3}AD$ and Q is a point on BC such that $CQ = \frac{1}{3}BC$. Prove that the quadrilateral AQCP is a || gm.

Q.9 If ABCD is a rectangle, E, F are the mid points of BC and AD respectively and G is any point on EF, then prove that

$$\Delta GAB = \frac{1}{4}(ABCD)$$