# QUADRILATERALS

THEOREM RELATED TO QUADRILATERAL

EXERCISE

Q.1   Prove that the line segments joining the mid-point of the sides of a quadrilateral forms a parallelogram.

Q.2   In figure ABCD is a parallelogram and X, Y are the mid-points of sides AB and DC respectively. Show that AXCY is a parallelogram.

Q.3   Prove that the line segments joining the mid-points of the sides of a rectangle forms a rhombus.

Q.4   In figure ABCD is a parallelogram and X and Y are points on the diagonal BD such that DX = BY. Prove that

(i)   AXCY is a parallelogram

(ii)   AX = CY, AY = CX

(iii) $\triangle AYB \cong \triangle CXD$

Q.5   In fig. ABC is an isosceles triangle in which AB = AC. CP || AB and AP is the bisector of exterior $\angle CAD$ of $\triangle ABC$. Prove that $\angle PAC = \angle BCA$ and ABCP is a parallelogram

Q.6   In the given figure, ABCD is a square and $\angle PQR = 90º$. If PB = QC = DR, prove that

(i)   QB = RC,

(ii)   PQ = QR,

(iii) $\angle QPR = 45º$.
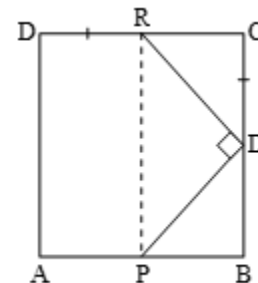
Q.7   Prove that in a parallelogram
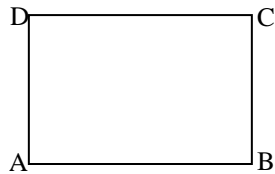
        (i) opposite sides are equal

        (ii) opposite angles are equal

        (iii) each diagonal bisects the parallelogram

Q.8   Prove that area of rhombus $= \dfrac{1}{2} \times$ product of the diagonals.

Q.9   Show that each angle of a rectangle is a right angle.

Q.10   ABCD is a rhombus with $\angle ABC = 58^\circ$. Find $\angle ACD$.