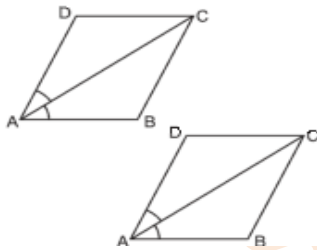
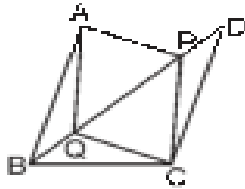


Class: 9
Subject: Mathematics
Topic: Triangle
No. of Questions: 20

- Q1. The angles of a quadrilateral are in the ratio 3 : 5 : 9 : 13. Find all the angles of the quadrilateral.
- Q2. If the diagonal of a parallelogram are equal, then show that it is a rectangle.
- Q3. Show that if the diagonals of a quadrilateral bisect each other at right angles, then it is a rhombus.
- Q4. Show that the diagonals of a square are equal and bisect each other at right angles.
- Q5. Show that if the diagonals of a quadrilateral are equal and bisect each other at right angles, then it is a square.
- Q6. Diagonals AC of a parallelogram ABCD bisect $\angle A$ (see Fig.) Show that
(a) It bisects $\angle C$ also.
(b) ABCD is a rhombus.



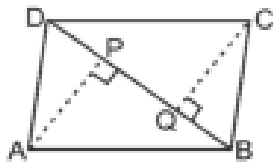
- Q7. ABCD is a rhombus show that diagonals AC bisect $\angle A$ as well as $\angle C$ and diagonal BD bisect $\angle B$ as well as $\angle D$
- Q8. ABCD is a rectangle in which diagonals AC bisect $\angle A$ as well as $\angle C$. Show that: (i) ABCD is a square (ii) diagonals BD bisect $\angle B$ as well as $\angle D$.
- Q9. In parallelogram ABCD, two points P and Q are taken on diagonals BD such that $DP = BQ$ (See Fig.) Show that:



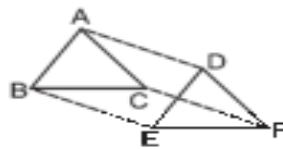
- (i) $\triangle APD \cong \triangle CQB$
- (ii) $AP = CQ$
- (iii) $\triangle AQB \cong \triangle CPD$
- (iv) $AQ = CQ$
- (v) APCQ is a parallelogram

Q10. ABCD is a parallelogram and AP and CQ are perpendicular from vertices A and C on diagonals BD (see Fig.) Show that

- (i) $\triangle APB \cong \triangle CQD$
- (ii) $AP = CQ$



Q11. In $\triangle ABC$ and $\triangle DEF$, $AB = DE$, $AB \parallel DE$, $BC = EF$ and $BC \parallel EF$. Vertices A, B and C are joined to vertices D, E and F respectively (see Fig.) Show that

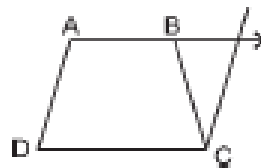


- (i) Quadrilateral ABED is a parallelogram
- (ii) Quadrilateral BEFC is a parallelogram
- (iii) $AD \parallel CF$ and $AD = CF$
- (iv) Quadrilateral ACFD is a parallelogram
- (v) $AC = DF$
- (vi) $\triangle ABC \cong \triangle DEF$

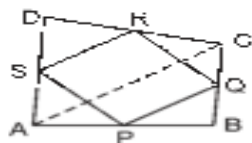
Q12. ABCD is a trapezium in which $AB \parallel CD$ and $AD = BC$ (see Fig.).

Show that

- (i) $\angle A = \angle B$
- (ii) $\angle C = \angle D$
- (iii) $\triangle ABC \cong \triangle BAD$
- (iv) Diagonal $AC = BD$



Q13. ABCD is a quadrilateral in which P, Q, R and S are mid-points of the sides, AB, BC, CD and DA respectively. (See Fig.). AC is a diagonal. Show that:

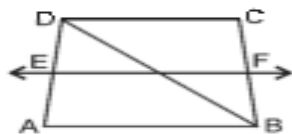


- (i) $SR \parallel AC$ and $SR = \frac{1}{2} AC$
- (ii) $PQ = SR$
- (iii) PQRS is a parallelogram.

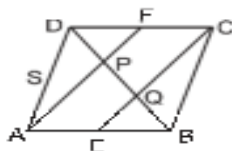
Q14. ABCD is a rhombus and P, Q, R and S are the mid-points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rectangle.

Q15. ABCD is a rectangle and P, Q, R and S are mid-points of the sides AB, BC, CD and DA respectively. Show that quadrilateral PQRS is a rhombus.

Q16. ABCD is a trapezium in which $AB \parallel DC$, BD is a diagonal and E is the mid-point of AD. A line is drawn through E parallel to AB intersecting BC at F (See Fig.). Show that F is the mid-point of BC.



Q17. In a parallelogram ABCD, E and F are the mid-points of sides AB and CD respectively (see Fig.). Show that the line segments AF and EC trisect the diagonals BD.



- Q18. Show that the line segments joining the mid-points of the opposite sides of a quadrilateral bisect each other.
- Q19. 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
- D is the mid-point of AC.
 - $MD \perp BC$
 - $CM = MA = \frac{1}{2} AB$
- Q20. In a quadrilateral ABCD, AC bisect $\angle C$ and $BC = CD$.
Prove that:
- $AB = AD$
 - AC is the perpendicular bisect of BD.

