81. A diagonal of a rectangle is inclined to one side of the rectangle at 25°. The acute angle between the diagonals will be? \(\text{Ans 50°}\).

82. ABCD is a rhombus such that \(\angle ACD = 40°\). What will be \(\angle ADC\)? \(\text{Ans 50°}\).

83. In quadrilateral \(ABCD\), \(AB + CD = 180°\). What special name can be given to this quadrilateral?

84. Diagonals AC and BD of a quadrilateral ABCD intersect each other at O such that \(OA : OC = 3 : 2\). Is ABCD a parallelogram? Why or why not?

85. What will be the figure obtained by joining the midpoints of the sides of a rhombus?

86. Can all the four angles of a quadrilateral be obtuse angles? Give reason.

87. In \(\triangle ABC\), \(AB = 5\text{ cm}, BC = 8\text{ cm}\) and \(CA = 7\text{ cm}\). If D and E are resp. mid points of AB and BC, determine the length of DE. \(3.5\text{ cm}\).

88. AX and CY are resp. the bisectors of the opposite angles A and C of a \(11\text{gm}\) ABCD. Show that \(AX || CY\). (Fig 1)

89. Three angles of a quadrilateral are equal. Is it a parallelogram?

90. Diagonals of a quadrilateral PQR S bisect each other. If \(\angle P = 40°\), determine \(\angle Q\). \(\text{Ans 140°}\).

91. ABCD is a \(11\text{gm}\) and \(\angle DAB = 60°\). If the bisectors of angles A and B meet at M on CD, prove that M is the mid point of CD. (Fig 2)
CLASS IX  QUADRILATERALS

Q12. Prove that the line segment joining the mid-points of the diagonals of a trapezium is parallel to the parallel sides and equal to half of their difference.

Q13. AD is the median of ΔABC. E is the mid point of AD. BE is produced to meet AC at F. Show that \( AF = \frac{1}{3} AC \) [Hint: Draw DG \parallel BF].

Q14. Bisectors of \( LB \) and \( LD \) of quadrilateral \( ABCD \) meet \( CD \) and \( AB \) produced at \( P \) and \( Q \) resp. Prove that \( LP + LQ = \frac{1}{2} (LABC + LADC) \). (Fig 3).

Q15. \( PQRS \) is a \( llgm \), \( PO \) and \( BD \) are resp. the angle bisectors of \( LP \) and \( LB \). Line \( LOM \) is drawn parallel to \( PQ \). Prove that (i) \( PL = QM \) (ii) \( LO = OM \). (Fig 4)

Q16. \( ABCD \) is a \( llgm \). \( AB \) is produced to \( E \) so that \( BE = AB \). Prove that \( ED \) bisects \( BC \).

Q17. P, Q and R are resp. the mid points of sides \( BC \), \( CA \) and \( AB \) of \( ΔABC \). PR and BS meet at \( X \). CR and PA meet at \( Y \). Prove that \( XY = \frac{1}{4} BC \).

Q18. Show that the quadrilateral formed by joining the mid-points of the sides of a square, is also square.

Q19. D, E and F are the mid points of the sides \( BC \), \( CA \) and \( AB \), resp. of an equilateral \( ΔABC \). Show that \( ΔDEF \) is also an equilateral triangle.

Q20. \( P \) is the \( pm \) mid-point of side \( BC \) of a \( llgm \) \( ABCD \) such that \( LBAF = LDAF \). Prove that \( AD = 2CD \). (Fig 5)
A square is inscribed in an isosceles right triangle so that the square and the triangle have one angle common. Show that the vertex of the square opposite the vertex of the common angle bisects the hypotenuse.

P, Q, R and S are resp. the mid - points of the sides AB, BC, CD and DA of quadrilateral ABCD in which AC = BD and AC \perp BD. Prove that PQRS is a square.

P is the mid- point of the side CD of a \( \square ABCD \). A line through C parallel to PA intersects \( \overline{AB} \) at \( Q \) and \( \overline{DA} \) produced at \( R \). Prove that \( \overline{DA} = AR \) and \( CQ = QR \).