

Class-IX Math Chapter: Area of Parallelogram and Triangles Test Guess question-2

26. In a parallelogram, E and F are the mid- points of sides of AB and CD respectively. Show that the line segments AF and EC trisect the diagonal BD.
27. Show that if the diagonals of a quadrilateral are equal and bisect each other at right angle, then it is a square.
28. ABCD is a parallelogram and AP and CQ are perpendiculars from vertices A and C on diagonal BD.
Show that: (i) $\triangle APB \cong \triangle CQD$ (ii) $AP = CQ$
29. ABC is a triangle, AD is a median and E is the mid- point of AD. BE is joined and produced to intersect AC in a point F. Prove that $AF = \frac{1}{3} AC$.
30. ABCD is a parallelogram in which P and Q are mid- points of opposite sides AB and CD. If AQ intersects DP at S and BQ intersects CR at R, show that:
(i) APCQ is a parallelogram. (ii) DPBQ is a parallelogram. (iii) PSQR is a parallelogram.
31. ABCD is a parallelogram and X and Y are the mid- points of the sides AB and DC respectively. Show that AXC Y is a parallelogram.
32. Bisectors of $\angle B$ and $\angle D$ of quadrilateral ABCD meet CD and AB produced at P and Q respectively.
Prove that $\angle P + \angle Q = \frac{1}{2} (\angle ABC + \angle ADC)$
33. 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.
34. Two segments AC and BD bisect each other at O. Show that the ABCD is a parallelogram.
35. ABCD is a rectangle in which diagonal AC bisects $\angle A$ as well as $\angle C$. Show that (i) ABCD is a square (ii) diagonal BD bisects $\angle B$ as well as $\angle D$
36. ABCD is a rectangle and P, Q, R and S are mid- points of the sides AB, BC, CD and DA respectively. Show that the quadrilateral PQRS is a rhombus.
37. In parallelogram ABCD, two points P and Q are taken on diagonal BD such that $DP = BQ$.
Show that: (i) $\triangle APD \cong \triangle CQB$ (ii) $AP = CQ$ (iii) $\triangle AQB \cong \triangle CPD$ (iv) $AQ = CP$
38. In trapezium ABCD, $AB \parallel CD$ and $AD = BC$. Show that: (i) $\angle A = \angle B$ (ii) $\angle C = \angle D$ (iii) $\triangle ABC \cong \triangle BAD$ (iv) $AC = BD$
39. Two parallel lines l and m are intersected by a transversal line p. Show that the quadrilateral formed by the bisectors of interior angles is a rectangle.
40. Show that the line segment joining the mid- points of two sides of a triangle is parallel to third side and half of third side.
41. Show that the bisectors of angles of a parallelogram form a rectangle.
42. In quadrilateral ABCD, $\angle B = 130^\circ$, $\angle C = 60^\circ$, angle bisectors of $\angle A$ and $\angle D$ meet at P. Find $\angle APD$.
43. Prove that the quadrilateral obtained by joining the mid- points of consecutive sides of a quadrilateral is a parallelogram.
44. ABC is an isosceles triangle in which $AB = AC$. AD bisects exterior angle PAC and $CD \parallel AB$. Show that (i) $\angle DAC = \angle BCA$ (ii) ABCD is a parallelogram.
45. ABCD is a square and on the side DC, an equilateral triangle is constructed. Prove that $AE = BE$ and $\angle DAE = 15^\circ$.
46. P, Q, R and S are respectively the mid- points of the sides A, BC, CD and DA of a quadrilateral ABCD such that AC is perpendicular to BD. Prove that PQRS is a square.
47. In $\triangle ABC$, D, E and F are respectively the mid- points of the sides AB, BC and CA. Show that $\triangle ABC$ is divided into four congruent triangles by joining D, E and F.