Quadrilaterals

Standard difficulty · 20 questions · 40 marks · Time: 28 minutes

Name: _____ Date: _____ Score: ____ / 40

Show your working for Sections B and C. Answers are on the last page — try every question first!

Section A — Choose the correct answer — 8 × 1 = 8 marks

1. Three angles of a quadrilateral are 65°, 90° and 139°. The fourth angle is:
(a) 294° **(b)** 76° **(c)** 67° **(d)** 66°

2. One angle of a parallelogram is 135°. The angle next to it is:
(a) 45° **(b)** 135° **(c)** 225° **(d)** 46°

3. The angles of any quadrilateral add up to:
(a) 540° **(b)** 270° **(c)** 360° **(d)** 180°

4. A rhombus has diagonals of 30 cm and 72 cm. Each side is:
(a) 78 cm **(b)** 40 cm **(c)** 51 cm **(d)** 39 cm

5. The diagonals of a rectangle ABCD meet at O. If AC = 70 cm, then OB is:
(a) 140 cm **(b)** 70 cm **(c)** 35 cm **(d)** 17.5 cm

6. A quadrilateral has all sides equal, but angles not 90°. It is a:
(a) rectangle **(b)** trapezium **(c)** parallelogram **(d)** rhombus

7. Three angles of a quadrilateral are 80°, 100° and 90°. The fourth is:
(a) 180° **(b)** 80° **(c)** 100° **(d)** 90°

8. In trapezium ABCD, AB ∥ DC and ∠A = 71°. What is ∠D?
(a) 289° **(b)** 71° **(c)** 109° **(d)** 90°

Section B — Short answer — 8 × 2 = 16 marks

9. The angles of a quadrilateral are in the ratio 1 : 4 : 3 : 1. Find them.

10. One angle of a parallelogram is 100° more than the angle next to it. Find all four angles.

11. A parallelogram has a perimeter of 90 cm and one side of 36 cm. Find the other sides.

12. A rhombus has diagonals 48 cm and 64 cm. Find its side and perimeter.

13. A rectangle has a diagonal of 34 cm and one side of 16 cm. Find the other side and the length of the other diagonal.

14. In square PQRS of side 10 cm, the diagonals meet at O. Find ∠POQ, ∠OPQ and the perimeter.

15. In an isosceles trapezium, one angle at the longer base is 47°. Find the other three angles.

16. In kite ABCD, AB = AD and CB = CD, so ∠B = ∠D. If ∠A = 120° and ∠C = 130°, find ∠B.

Section C — Word problems — 4 × 4 = 16 marks

17. Vikram makes a window frame with opposite sides 126 cm and 90 cm. To check it is a rectangle, Vikram measures both diagonals: 155 cm and 158 cm. Is it a rectangle? Why?

18. A floor tile is a rhombus with diagonals 72 cm and 96 cm. Find the length of each side and the area of the tile.

19. A field is shaped like a parallelogram. One corner measures 120°. What are the other three corners, and which corner is opposite the 120° one?

20. A toy kite has a top angle of 101° and a bottom angle of 73°. Its two side angles are equal. Find them.

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Answer key

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Q	Answer	Working
1	**(d) 66°**	360° − 294°
2	**(a) 45°**	adjacent angles add to 180°
3	**(c) 360°**	a diagonal makes two triangles
4	**(d) 39 cm**	the diagonals bisect at right angles: $\sqrt{(15^2 + 36^2)} = 39$
5	**(c) 35 cm**	the diagonals are equal and bisect each other
6	**(d) rhombus**	—
7	**(d) 90°**	360° − 270°
8	**(c) 109°**	co-interior angles between the parallel sides add to 180°
9	**40°, 160°, 120°, 40°**	360° ÷ 9 = 40°
10	**40°, 140°, 40°, 140°**	x + x + 100 = 180°
11	**36 cm, 9 cm, 9 cm**	45 − 36 = 9; opposite sides are equal
12	**40 cm; 160 cm**	halves 24 and 32: $\sqrt{(576 + 1024)} = 40$
13	**30 cm; 34 cm**	$\sqrt{(1156 - 256)} = 30$; the diagonals of a rectangle are equal
14	**90°, 45°, 40 cm**	the diagonals of a square are perpendicular and bisect its 90° angles
15	**47°, 133°, 133°**	base angles are equal; angles on the same leg add to 180°
16	**55°**	(360° − 120° − 130°) ÷ 2
17	**No, the diagonals are not equal**	a parallelogram is a rectangle exactly when its diagonals are equal
18	**60 cm; 3456 cm^2**	side $\sqrt{(36^2 + 48^2)}$; area ½ × 72 × 96
19	**60°, 120°, 60°; the opposite corner is also 120°**	opposite angles are equal; neighbours add to 180°
20	**93° each**	(360° − 101° − 73°) ÷ 2

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