CLASS VIII – MATHEMATICS

Chapter Test: Quadrilaterals

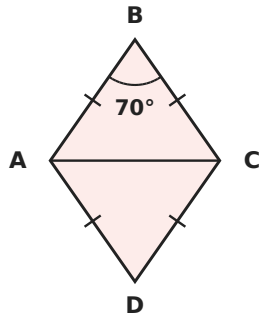
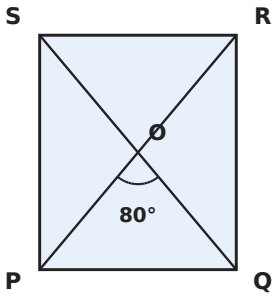
(Ganita Prakash, Grade 8, Part I – Chapter 4)

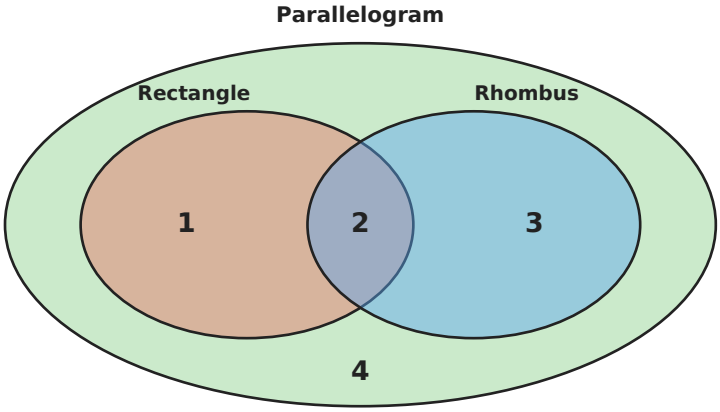
Time: 1½ Hours **M. M.: 40**

General Instructions:

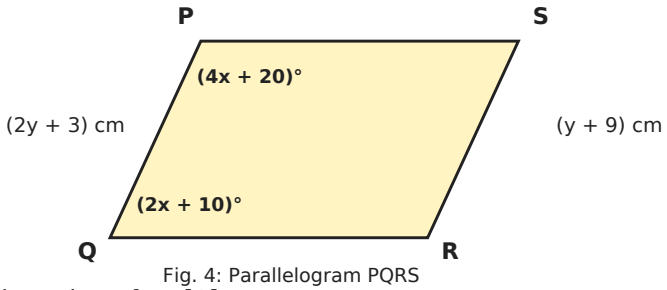
1. This paper contains 20 questions. All questions are compulsory.
2. This paper is divided into 4 sections: **A, B, C** and **D**.
3. In **Section A**, Questions no. 1 to 10 are Multiple Choice Questions carrying 1 mark each.
4. In **Section B**, Questions no. 11 to 13 are Very Short Answer type questions carrying 2 marks each.
5. In **Section C**, Questions no. 14 to 17 are Short Answer type questions carrying 3 marks each.
6. In **Section D**, Questions no. 18 to 20 are Long Answer / Case-based questions carrying 4 marks each.
7. There is no overall choice. However, an internal choice has been provided in 1 question of Section B, 3 questions of Section C and 2 questions of Section D.
8. Figures are only for reference and are not drawn to scale. Questions 9, 10, 11, 14 and 18 are figure-based.
9. Show all the steps of your working.
10. Use of calculator is **not** allowed.

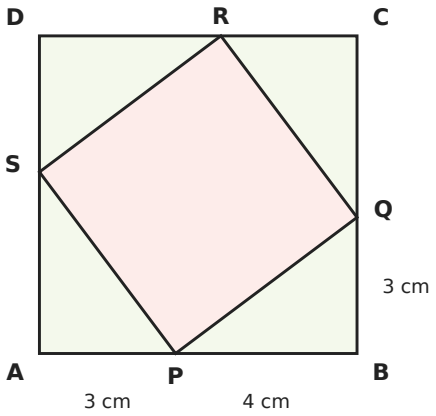
Q. No.	Section – A	Marks
1	Three angles of a quadrilateral measure 85°, 95° and 110°. The fourth angle is (A) 60° (B) 70° (C) 80° (D) 90°	**[1]**
2	A quadrilateral whose diagonals are equal in length and bisect each other is a (A) kite (B) rhombus (C) rectangle (D) trapezium	**[1]**
3	Two adjacent angles of a parallelogram are in the ratio 2 : 3. The larger angle measures (A) 108° (B) 72° (C) 120° (D) 98°	**[1]**
4	Which of the following is **not** always true for a rhombus? (A) All sides are equal (B) Opposite angles are equal (C) Diagonals bisect each other at right angles (D) Diagonals are equal in length	**[1]**
5	The diagonals of rectangle PQRS meet at O. If PR = 18 cm, then OS is (A) 9 cm (B) 18 cm (C) 36 cm (D) 4.5 cm	**[1]**
6	In trapezium ABCD, AB ∥ DC and ∠A = 70°. Then ∠D is (A) 70° (B) 110° (C) 90° (D) 290°	**[1]**
7	Which of the following statements is true? (A) Every rhombus is a square (B) Every rectangle is a square (C) Every square is a rhombus (D) Every parallelogram is a rectangle	**[1]**
8	In a kite ABCD with AB = BC and CD = DA, the diagonal BD (A) is equal to AC (B) bisects AC at right angles (C) is bisected by AC (D) is parallel to AC	**[1]**

Q. No.	Section – A	Marks
9	In the rhombus ABCD of Fig. 1, ∠ABC = 70°. The measure of ∠BAC is  Fig. 1: Rhombus ABCD with diagonal AC (A) 55° (B) 35° (C) 70° (D) 110°	**[1]**
10	The diagonals of rectangle PQRS in Fig. 2 meet at O and ∠POQ = 80°. The measure of ∠OPQ is  Fig. 2: Rectangle PQRS with diagonals (A) 40° (B) 80° (C) 100° (D) 50°	**[1]**

Q. No.	Section – B	Marks
11	In the Venn diagram of Fig. 3, the regions are numbered 1 to 4.  Fig. 3: Relationship between quadrilaterals (i) Name the quadrilateral represented by region 2 and give a reason. [1] (ii) Ria draws a parallelogram with sides 5 cm and 3 cm and one angle of 60°. In which region does it lie? Give a reason. [1]	**[2]**

Q. No.	Section – B	Marks
12	(A) The angles of a quadrilateral are in the ratio 3 : 4 : 5 : 6. Find all the angles. **OR** (B) In quadrilateral PQRS, ∠P = 2∠Q, ∠R = 90° and ∠S = 60°. Find ∠P and ∠Q.	**[2]**
13	The diagonals AC and BD of a rectangle ABCD measure (3x + 4) cm and (5x − 6) cm respectively. Find the value of x and the length of AC.	**[2]**

Q. No.	Section – C	Marks
14	PQRS is a parallelogram (Fig. 4) with ∠P = (4x + 20)°, ∠Q = (2x + 10)°, PQ = (2y + 3) cm and SR = (y + 9) cm.  Fig. 4: Parallelogram PQRS (i) Find the value of x. [1] (ii) Find all four angles of the parallelogram. [1] (iii) Find the value of y and the length of PQ. [1]	**[3]**
15	(A) The diagonals of a rhombus are 16 cm and 12 cm long. Find the length of its side and its perimeter. **OR** (B) The diagonals PR and QS of a rectangle PQRS meet at O and ∠QOR = 70°. Find ∠OPQ and ∠OPS.	**[3]**
16	(A) The diagonals AC and BD of a parallelogram ABCD meet at O. A line through O meets AB at P and DC at Q. Prove that OP = OQ. **OR** (B) The diagonals AC and BD of a quadrilateral ABCD bisect each other at right angles. Prove that ABCD is a rhombus.	**[3]**
17	(A) ABCD is an isosceles trapezium with AB ∥ DC and AD = BC. If ∠A = 65°, find ∠B, ∠C and ∠D. **OR** (B) ABCD is a kite with AB = AD and CB = CD. If ∠A = 110° and ∠C = 50°, find ∠B, ∠D and ∠ACB. (Hint: AC bisects ∠A and ∠C.)	**[3]**

Q. No.	Section – D	Marks
18	(A) In Fig. 5, ABCD is a square. Points P, Q, R and S lie on AB, BC, CD and DA such that AP = BQ = CR = DS = 3 cm, and AB = 7 cm.  Fig. 5: Square ABCD with points P, Q, R, S on its sides (i) Show that ΔAPS ≅ ΔBQP. [2] (ii) Find the length of PS. [1] (iii) Show that ∠SPQ = 90°. [1] **OR** (B) E, F, G and H are the midpoints of the sides AB, BC, CD and DA of a rectangle ABCD with AB = 16 cm and BC = 12 cm. (i) Show that EFGH is a rhombus. [2] (ii) Find the length of each side of EFGH. [1] (iii) Is EFGH a square? Give a reason. [1]	**[4]**
19	(A) In a parallelogram ABCD, AD = 7 cm and AB = 12 cm. The bisector of ∠A meets DC at E. (i) Prove that DE = AD. [2] (ii) Find the length of EC. [1] (iii) If ∠D = 110°, find ∠DAE. [1] **OR** (B) The diagonals of a parallelogram PQRS meet at O. PO = (2x + 3) cm, OR = (4x − 5) cm, QO = (y + 4) cm and OS = (3y − 8) cm. (i) Find the value of x. [1] (ii) Find the value of y. [1] (iii) Find the lengths of both diagonals. [1] (iv) Is PQRS a rectangle? Give a reason. [1]	**[4]**
20	**Case Study:** Ravi, a carpenter, makes a window frame the way the chapter describes: he takes two wooden strips AC and BD, fixes them so that they cross at their midpoints O, and joins the four end points with a thread to get a rectangular frame ABCD. The strip AC is 130 cm long. (i) What is the length of the strip BD? Give a reason. [1] (ii) If the angle between the strips at O is ∠AOB = 100°, find ∠OAB. [1] (iii) Ravi now wants a *square* frame using two equal strips. At what angle must the strips cross? [1] (iv) Next, he uses strips of 120 cm and 160 cm that bisect each other at right angles. Name the frame so formed and find the length of each of its sides. [1]	**[4]**

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