UNIQUE STUDY POINT

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Class: VI	**Subject:** Mathematics	**Session:** 2025-26
Chapter: 08 - Playing with Constructions	**Time:** 1½ Hours	**Max. Marks:** 40

General Instructions:

1. All questions are compulsory.
2. This question paper contains 20 questions divided into five sections A, B, C, D and E.
3. Section A contains 10 MCQs of 1 mark each.
4. Section B contains 4 questions of 2 marks each.
5. Section C contains 3 questions of 3 marks each.
6. Section D contains 1 question of 5 marks.
7. Section E contains 2 Case Study Based questions of 4 marks each.

SECTION A - Multiple Choice Questions (1 mark each)

Q.1. The diameter of a circle is:

(a) Equal to the radius

(b) Half of the radius

(c) Twice the radius

(d) Four times the radius

Q.2. Which of the following is TRUE for a square?

(a) Opposite sides are equal, adjacent sides are unequal

(b) All sides are equal, all angles are 90°

(c) All sides are equal, angles are not 90°

(d) Only two sides are equal

Q.3. The instrument used to measure and draw angles is:

(a) Compass

(b) Ruler

(c) Protractor

(d) Divider

Q.4. In rectangle ABCD, AB and CD are:

(a) Adjacent sides

(b) Opposite sides

(c) Diagonals

(d) None of these

Q.5. How many diagonals does a rectangle have?

(a) 1

(b) 2

(c) 3

(d) 4

Q.6. If all four sides of a rectangle are equal, it becomes a:

(a) Circle

(b) Triangle

(c) Square

(d) Rhombus

Q.7. A point P is at a distance of 5 cm from point O. What is the radius of the circle with center O passing through P?

(a) 2.5 cm

(b) 5 cm

(c) 10 cm

(d) Cannot be determined

Q.8. The sum of all angles in a rectangle is:

(a) 180°

(b) 270°

(c) 360°

(d) 450°

Q.9. Which property is NOT true for a rectangle?

(a) Opposite sides are equal

(b) All angles are 90°

(c) All sides are equal

(d) Diagonals are equal

Q.10. A compass can be used to:

(a) Draw circles only

(b) Transfer lengths only

(c) Both draw circles and transfer lengths

(d) Measure angles

SECTION B - Short Answer Questions (2 marks each)

Q.11. What is the relationship between the diameter and radius of a circle? Explain with an example.

Q.12. List two differences between a square and a rectangle.

Q.13. Draw a circle with radius 3 cm. Mark and label its center and radius.

Q.14. If the sides of a rectangle are 8 cm and 4 cm, can it be divided into two equal squares? Justify.

SECTION C - Short Answer Questions (3 marks each)

Q.15. Construct a square ABCD with side 5 cm. Mark its diagonals AC and BD. Measure the length of each diagonal.

Q.16. Explain with steps how you would use a compass to draw two circles of radius 4 cm each, with their centers 6 cm apart.

Q.17. Two points A and B are 6 cm apart. How would you locate all points that are exactly 4 cm away from both A and B? Explain the method.

SECTION D - Long Answer Question (5 marks)

Q.18. Construct a rectangle PQRS where PQ = 7 cm and diagonal PS = 9 cm. Write detailed steps of construction. After construction, measure and verify:

(a) The length of QR

(b) The length of diagonal QS

(c) All four angles

SECTION E - Case Study Based Questions (4 marks each)

Q.19. Case Study 1: Park Layout

A rectangular park measures 40 m × 25 m. A circular flower bed with radius 5 m is placed in the center. Square benches of side 2 m each are placed at the four corners of the park.

Based on this information, answer the following:

(a) What is the area of the rectangular park? (1 mark)

(b) What is the diameter of the circular flower bed? (1 mark)

(c) Find the perimeter of one square bench and the total perimeter of all four benches. (2 marks)

Q.20. Case Study 2: Construction Activity

In a mathematics lab, students are constructing geometric figures. Priya draws a rectangle ABCD where AB = 10 cm and BC = 6 cm. She then draws both diagonals AC and BD.

Answer the following:

(a) What is the perimeter of rectangle ABCD? (1 mark)

(b) Are the diagonals AC and BD equal? Give reason. (1 mark)

(c) If Priya draws circles with centers at A and C, each with radius equal to half the diagonal AC, will these circles intersect? Explain. (2 marks)

DETAILED ANSWER KEY - PAPER 03

SECTION A - Answers to MCQs

1. (c) Twice the radius

The diameter is twice the length of the radius.

2. (b) All sides are equal, all angles are 90°

A square has all four sides equal and all four angles equal to 90°.

3. (c) Protractor

A protractor is used to measure and draw angles.

4. (b) Opposite sides

In rectangle ABCD, AB and CD are opposite sides.

5. (b) 2

A rectangle has 2 diagonals.

6. (c) Square

If all four sides of a rectangle become equal, it becomes a square.

7. (b) 5 cm

The radius of the circle is 5 cm.

8. (c) 360°

The sum of all angles in any quadrilateral is 360°.

9. (c) All sides are equal

In a rectangle, only opposite sides are equal, not all sides.

10. (c) Both draw circles and transfer lengths

A compass can draw circles and transfer lengths.

SECTION B - Answers to Short Answer Questions

11.

Diameter = 2 × Radius
Example: If radius = 4 cm, then diameter = 8 cm.

12.

1. All sides are equal in a square; only opposite sides are equal in a rectangle.
2. A square is always a rectangle, but a rectangle is not always a square.

13.

[Student should draw circle with proper labeling]

14.

Yes. Since 8 = 2 × 4, we can divide it into two 4 cm × 4 cm squares.

SECTION C - Answers to Short Answer Questions

15.

Each diagonal ≈ 7.07 cm ($5\sqrt{2}$ cm).

16.

Mark points A and B (6 cm apart), set compass to 4 cm, draw circle from A, then from B.

17.

Draw arcs of radius 4 cm from both A and B. The intersection points are the required points.

SECTION D - Answer to Long Answer Question

18.

[Complete construction steps with verification]
(a) QR ≈ 5.66 cm
(b) QS = 9 cm
(c) All angles = 90°

SECTION E - Answers to Case Study Based Questions

19.

(a) 1000 m^2
(b) 10 m
(c) 8 m each, total 32 m

20.

(a) 32 cm
(b) Yes, rectangle diagonals are equal
(c) They will touch at one point
