

UNIQUE STUDY POINT

By Sumeet Sahu

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| Class: VI | Subject: Mathematics | Session: 2025-26 |
| Chapter: 06 - Perimeter and Area | 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)

1. If a square has perimeter 48 cm, its side is:
(a) 24 cm
(b) 12 cm
(c) 8 cm
(d) 6 cm
2. The area of a rectangle with length 15 m and breadth 10 m is:
(a) 50 sq m
(b) 150 sq m
(c) 25 sq m
(d) 75 sq m
3. A regular hexagon has a perimeter of 48 cm. The length of each side is:
(a) 6 cm
(b) 8 cm
(c) 12 cm
(d) 16 cm
4. The perimeter of a rectangle is 60 m and its length is 18 m. Its breadth is:
(a) 12 m
(b) 10 m
(c) 14 m
(d) 15 m
5. A square garden has an area of 144 sq m. Its perimeter is:
(a) 36 m
(b) 48 m

- (c) 72 m
- (d) 24 m

6. Two rectangles have the same area. Rectangle A is $20\text{ m} \times 10\text{ m}$ and Rectangle B is $25\text{ m} \times b\text{ m}$. The value of b is:

- (a) 8 m
- (b) 6 m
- (c) 10 m
- (d) 12 m

7. The length and breadth of a rectangle are doubled. Its area becomes:

- (a) Double
- (b) Triple
- (c) Four times
- (d) Same

8. A wire of length 36 cm is bent to form a rectangle with length 10 cm. Its breadth is:

- (a) 8 cm
- (b) 6 cm
- (c) 10 cm
- (d) 4 cm

9. The cost of fencing a square plot at ₹20 per metre is ₹2400. The side of the square plot is:

- (a) 30 m
- (b) 60 m
- (c) 20 m
- (d) 40 m

10. A rectangular field has the same perimeter as a square field of side 50 m. If the rectangle's length is 60 m, its breadth is:

- (a) 40 m
- (b) 30 m
- (c) 50 m
- (d) 35 m

SECTION B - Short Answer Questions (2 marks each)

11. The perimeter of a square is 96 cm. Find its side and area.

12. A rectangular room is 8 m long and 6 m wide. Find the cost of carpeting the room with carpet costing ₹150 per sq m.

13. Ravi runs around a square park of side 75 m. Find the total distance he covers if he completes 4 rounds.

14. The area of a rectangular garden is 300 sq m and its breadth is 12 m. Find its length and perimeter.

SECTION C - Short Answer Questions (3 marks each)

15. A square and a rectangle have the same area of 100 sq m. If the rectangle has length 20 m, find the perimeter of both shapes and identify which has the smaller perimeter.

16. A rectangular field is 100 m long and 80 m wide. A path of width 3 m runs all around outside the field. Find the area of the path.

17. A piece of wire is in the shape of a rectangle 18 cm long and 14 cm wide. If the same wire is rebent into a square, find the side of the square. Which shape encloses more area?

SECTION D - Long Answer Question (5 marks)

18. A rectangular playground is 40 m long and 30 m wide. There is a path of width 2 m running all around inside the playground. The rest is covered with grass.

- (a) Find the area of the playground.
- (b) Find the dimensions of the inner rectangle.
- (c) Find the area covered with grass.
- (d) Find the area of the path.
- (e) Find the cost of maintaining grass at ₹30 per sq m.

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

19. Swimming Pool

A rectangular swimming pool is 25 m long and 15 m wide. A tile border of width 1.5 m runs all around outside the pool.

- (a) Find the perimeter of the swimming pool. (1 mark)
- (b) Find the dimensions of the outer rectangle (including border). (1 mark)
- (c) Find the area of the tile border. (1 mark)
- (d) Find the cost of tiles at ₹500 per sq m. (1 mark)

20. Farm Plot

A farmer has two plots. Plot A is a square with side 40 m. Plot B is a rectangle with length 50 m and breadth 30 m.

- (a) Which plot has greater perimeter and by how much? (1 mark)
- (b) Which plot has greater area and by how much? (1 mark)
- (c) If the farmer wants to fence both plots with 3 rounds of wire, what total length of wire is needed? (1 mark)
- (d) Find the total cost at ₹25 per metre. (1 mark)

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SECTION A - Answers to MCQs**1. (b) 12 cm**

$$\text{Side} = \text{Perimeter} \div 4 = 48 \div 4 = 12 \text{ cm}$$

2. (b) 150 sq m

$$\text{Area} = \text{length} \times \text{breadth} = 15 \times 10 = 150 \text{ sq m}$$

3. (b) 8 cm

$$\text{Side} = \text{Perimeter} \div 6 = 48 \div 6 = 8 \text{ cm}$$

4. (a) 12 m

$$2 \times (18 + \text{breadth}) = 60$$

$$18 + \text{breadth} = 30$$

$$\text{breadth} = 30 - 18 = 12 \text{ m}$$

5. (b) 48 m

$$\text{Side} = \sqrt{144} = 12 \text{ m}$$

$$\text{Perimeter} = 4 \times 12 = 48 \text{ m}$$

6. (a) 8 m

$$\text{Area of A} = 20 \times 10 = 200 \text{ sq m}$$

$$\text{Area of B} = 25 \times b = 200$$

$$b = 200 \div 25 = 8 \text{ m}$$

7. (c) Four times

$$\text{Original area} = l \times b$$

$$\text{New area} = 2l \times 2b = 4lb = \text{Four times}$$

8. (a) 8 cm

$$2 \times (10 + \text{breadth}) = 36$$

$$10 + \text{breadth} = 18$$

$$\text{breadth} = 8 \text{ cm}$$

9. (a) 30 m

$$\text{Perimeter} = 2400 \div 20 = 120 \text{ m}$$

$$\text{Side} = 120 \div 4 = 30 \text{ m}$$

10. (a) 40 m

$$\text{Perimeter of square} = 4 \times 50 = 200 \text{ m}$$

$$2 \times (60 + \text{breadth}) = 200$$

$$60 + \text{breadth} = 100$$

$$\text{breadth} = 40 \text{ m}$$

SECTION B - Answers to Short Answer Questions**11.**

Given: Perimeter = 96 cm

Step 1: Side = $96 \div 4 = 24$ cm

Step 2: Area = $24 \times 24 = 576$ sq cm

Answer: Side = 24 cm, Area = 576 sq cm

12.

Given: Length = 8 m, Breadth = 6 m, Rate = ₹150 per sq m

Step 1: Area = $8 \times 6 = 48$ sq m

Step 2: Cost = $48 \times 150 = ₹7200$

Answer: Cost of carpeting = ₹7200

13.

Given: Side = 75 m, Rounds = 4

Step 1: Perimeter = $4 \times 75 = 300$ m

Step 2: Total distance = $300 \times 4 = 1200$ m

Answer: Total distance = 1200 m

14.

Given: Area = 300 sq m, Breadth = 12 m

Step 1: Length = $300 \div 12 = 25$ m

Step 2: Perimeter = $2 \times (25 + 12) = 2 \times 37 = 74$ m

Answer: Length = 25 m, Perimeter = 74 m

SECTION C - Answers to Short Answer Questions

15.

Given: Both have area = 100 sq m, Rectangle length = 20 m

For Square:

Side = $\sqrt{100} = 10$ m

Perimeter = $4 \times 10 = 40$ m

For Rectangle:

Breadth = $100 \div 20 = 5$ m

Perimeter = $2 \times (20 + 5) = 2 \times 25 = 50$ m

Answer: Square has smaller perimeter (40 m)

16.

Given: Field = 100 m \times 80 m, Path width = 3 m (outside)

Step 1: Outer dimensions = $(100 + 2 \times 3) \times (80 + 2 \times 3) = 106 \times 86$

Step 2: Area of field = $100 \times 80 = 8000$ sq m

Step 3: Total area (with path) = $106 \times 86 = 9116$ sq m

Step 4: Area of path = $9116 - 8000 = 1116$ sq m

Answer: Area of path = 1116 sq m

17.

Given: Rectangle = 18 cm \times 14 cm

Step 1: Perimeter = $2 \times (18 + 14) = 64$ cm

Step 2: Side of square = $64 \div 4 = 16$ cm

Step 3: Area of rectangle = $18 \times 14 = 252$ sq cm

Step 4: Area of square = $16 \times 16 = 256$ sq cm

Answer: Side = 16 cm, Square encloses more area (by 4 sq cm)

SECTION D - Answer to Long Answer Question

18.

Given: Playground = 40 m × 30 m, Path width = 2 m (inside)

(a) Area of playground:

$$\text{Area} = 40 \times 30 = 1200 \text{ sq m}$$

(b) Dimensions of inner rectangle:

$$\text{Length} = 40 - 2 \times 2 = 36 \text{ m}$$

$$\text{Breadth} = 30 - 2 \times 2 = 26 \text{ m}$$

$$\text{Dimensions: } 36 \text{ m} \times 26 \text{ m}$$

(c) Area covered with grass:

$$\text{Area} = 36 \times 26 = 936 \text{ sq m}$$

(d) Area of path:

$$\text{Area} = 1200 - 936 = 264 \text{ sq m}$$

(e) Cost of maintaining grass:

$$\text{Cost} = 936 \times 30 = ₹28,080$$

Answers: (a) 1200 sq m, (b) 36 m × 26 m, (c) 936 sq m, (d) 264 sq m, (e) ₹28,080

SECTION E - Answers to Case Study Based Questions

19.

(a) Perimeter of swimming pool:

$$\text{Perimeter} = 2 \times (25 + 15) = 2 \times 40 = 80 \text{ m}$$

(b) Dimensions of outer rectangle:

$$\text{Length} = 25 + 2 \times 1.5 = 28 \text{ m}$$

$$\text{Breadth} = 15 + 2 \times 1.5 = 18 \text{ m}$$

$$\text{Dimensions: } 28 \text{ m} \times 18 \text{ m}$$

(c) Area of tile border:

$$\text{Area of pool} = 25 \times 15 = 375 \text{ sq m}$$

$$\text{Total area} = 28 \times 18 = 504 \text{ sq m}$$

$$\text{Border area} = 504 - 375 = 129 \text{ sq m}$$

(d) Cost of tiles:

$$\text{Cost} = 129 \times 500 = ₹64,500$$

Answers: (a) 80 m, (b) 28 m × 18 m, (c) 129 sq m, (d) ₹64,500

20.

(a) Comparing perimeters:

$$\text{Plot A: } 4 \times 40 = 160 \text{ m}$$

$$\text{Plot B: } 2 \times (50 + 30) = 160 \text{ m}$$

Both have equal perimeter

(b) Comparing areas:

Plot A: $40 \times 40 = 1600$ sq m

Plot B: $50 \times 30 = 1500$ sq m

Plot A is greater by 100 sq m

(c) Total length of wire:

Total perimeter = $160 + 160 = 320$ m

Wire needed = $320 \times 3 = 960$ m

(d) Total cost:

Cost = $960 \times 25 = ₹24,000$

Answers: (a) Equal, (b) Plot A by 100 sq m, (c) 960 m, (d) ₹24,000

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