



Class 9 Maths – Chapter 6



Exercise 6.1 – Questions with Answer Key

Ganita Manjari | New Syllabus 2026–27

Instruction: Unless stated otherwise, use $\pi = 22/7$.

1. Perimeter of a Circle

Question: The perimeter of a circle is **44 cm**. What is its radius?



Solution:

$$\text{Circumference} = 2\pi r$$

$$44 = 2 \times 22/7 \times r$$

$$r = 7 \text{ cm}$$



Answer: 7 cm

2. Circumference of a Circle

Calculate the circumference, correct to **3 significant figures**, for:

(i) Radius = 7 cm

$$C = 2 \times 22/7 \times 7$$

$$= 44 \text{ cm}$$

(ii) Radius = 10 cm

$$C = 2 \times 22/7 \times 10$$

$$= 440/7$$

≈ 62.9 cm

(iii) Radius = 12 cm

$$C = 2 \times \frac{22}{7} \times 12$$

$$= 528/7$$

≈ 75.4 cm

 **Answers:**

(i) 44 cm

(ii) 62.9 cm

(iii) 75.4 cm

3. Length of an Arc

(i) Radius = 3.5 cm, angle = 60°

$$\text{Arc length} = (\theta/360^\circ) \times 2\pi r$$

$$= 60/360 \times 2 \times \frac{22}{7} \times 3.5$$

$$= 11/3 \text{ cm}$$

≈ 3.67 cm

(ii) Radius = 6.3 m, angle = 120°

$$\text{Arc length} = 120/360 \times 2 \times \frac{22}{7} \times 6.3$$

$$= 13.2 \text{ m}$$

 **Answers:**

(i) 3.67 cm

(ii) 13.2 m

The textbook gives this arc-length relationship before Exercise 6.1.

4. Perimeter of a Sector

Question: Find the perimeter of a sector of radius **14 cm** and sector angle **75°**.

 **Solution:**

Arc length:

$$= \frac{75}{360} \times 2 \times \frac{22}{7} \times 14$$

$$= \mathbf{55/3 \text{ cm}}$$

The two radii:

$$= 14 + 14 = \mathbf{28 \text{ cm}}$$

Therefore:

$$\text{Perimeter} = 55/3 + 28$$

$$= \mathbf{139/3 \text{ cm}}$$

$$\approx \mathbf{46.3 \text{ cm}}$$

 **Answer: 46.3 cm**

5. Perimeters of the Given Shapes

The textbook asks for the perimeter of **nine figures**, treating the curved portions as quarter, half or three-quarter circles as appropriate.

(i) Capsule-shaped figure

Straight portions:

$$80 + 80 = 160 \text{ m}$$

Two semicircles form one complete circle of diameter 60 m.

$$\text{Curved part} = \pi \times 60$$

$$= 1320/7 \text{ m}$$

✓ **Answer: 348.6 m**

(ii) Semicircular ring

Outer semicircle diameter = 12 cm

Inner semicircle diameter = 8 cm

Curved perimeter:

$$= 12\pi/2 + 8\pi/2$$

$$= 10\pi$$

Straight portions:

$$= 12 - 8 = 4 \text{ cm}$$

Total:

$$= 10\pi + 4$$

✓ **Answer: 35.4 cm**

(iii) Four semicircles

Each semicircle has diameter **10 cm**.

Four semicircles together:

$$= 2 \text{ complete circles of diameter } 10 \text{ cm}$$

$$\text{Perimeter} = 20\pi$$

✓ **Answer: 62.9 cm**

(iv) Three semicircles

Each semicircle has diameter **12 cm**.

Total curved length:

$$= 3 \times \pi \times 12/2$$

$$= 18\pi$$

✓ **Answer: 56.6 cm**

(v) Four semicircles

Each semicircle has diameter **14 cm**.

Perimeter:

$$= 4 \times \pi \times 14/2$$

$$= 28\pi$$

✓ **Answer: 88 cm**

(vi) Large semicircle with two smaller semicircles

Large semicircle diameter = **28 cm**

Two smaller semicircles together have total diameter **28 cm**.

Therefore total curved length:

$$= 28\pi/2 + 28\pi/2$$

$$= 28\pi$$

✓ **Answer: 88 cm**

(vii) Three semicircles on the sides of a 6–8–10 triangle

The three diameters are:

6 cm, 8 cm and 10 cm

Total perimeter:

$$= \pi/2 \times (6 + 8 + 10)$$

$$= 12\pi$$

✓ **Answer: 37.7 cm**

(viii) Large semicircle + three smaller semicircles

Large semicircle diameter:

$$4 + 4 + 4 = \mathbf{12\text{ cm}}$$

Three smaller semicircles each have diameter **4 cm**.

Total:

$$= 12\pi/2 + 3 \times 4\pi/2$$

$$= 6\pi + 6\pi$$

$$= 12\pi$$

✓ **Answer: 37.7 cm**

(ix) Large semicircle + two smaller semicircles

Large semicircle diameter:

$$10 + 10 = \mathbf{20\text{ cm}}$$

Two smaller semicircles each have diameter **10 cm**.

Total curved length:

$$= 20\pi/2 + 10\pi/2 + 10\pi/2$$

$$= 20\pi$$

✓ **Answer: 62.9 cm**

6. Car Tyre

Question: The diameter of a car tyre is **56 cm**.

(i) How far does the car travel in one revolution?

Distance = circumference

$$= \pi d$$

$$= 22/7 \times 56$$

$$= 176 \text{ cm}$$

(ii) How many revolutions does the tyre make if the car travels 10 km?

$$10 \text{ km} = 1,000,000 \text{ cm}$$

Number of revolutions:

$$= 1,000,000 / 176$$

$$\approx 5681.82$$



Answers:

(i) 176 cm

(ii) Approximately 5682 revolutions

The two parts of Question 6 are given on page 130 of the textbook.

7. Perimeter of the Flower Petals

(i) Square flower

Side of square = **14 cm**

Each curved arc is a quarter circle of radius 7 cm.

There are 8 quarter-circle arcs.

$$\text{Total} = 8 \times (1/4 \times 2\pi \times 7)$$

$$= 28\pi$$



Answer: 88 cm

(ii) Hexagonal flower

Side of regular hexagon = **42 cm**.

Each petal consists of two arcs of radius 42 cm, each subtending 60° .

There are 6 petals = 12 such arcs.

Length of one arc:

$$= \frac{60}{360} \times 2\pi \times 42$$

$$= 14\pi \text{ cm}$$

Total:

$$= 12 \times 14\pi$$

$$= 168\pi$$

✓ **Answer: 528 cm**

The textbook asks for the total perimeter of all petals in both flower figures.

8. Ratio of Perimeters and Radii

Question: The ratio of the perimeters of two circles is **5 : 4**. Find the ratio of their radii.

Since:

$$C = 2\pi r$$

Circumference is directly proportional to radius.

Therefore:

$$r_1 : r_2 = 5 : 4$$

✓ **Answer: 5 : 4**

The textbook gives this as Question 8 of Exercise 6.1.



COMPLETE ANSWER KEY

Q.	Answer
1	7 cm
2(i)	44 cm
2(ii)	62.9 cm
2(iii)	75.4 cm
3(i)	3.67 cm
3(ii)	13.2 m
4	46.3 cm
5(i)	348.6 m
5(ii)	35.4 cm
5(iii)	62.9 cm
5(iv)	56.6 cm
5(v)	88 cm
5(vi)	88 cm
5(vii)	37.7 cm
5(viii)	37.7 cm
5(ix)	62.9 cm
6(i)	176 cm
6(ii)	≈ 5682 revolutions
7(i)	88 cm
7(ii)	528 cm

★ Chapter 6.1 Must-Remember Formulas

○ Circumference = $2\pi r = \pi d$

🌙 Arc length = $(\theta/360^\circ) \times 2\pi r$

🥧 Sector perimeter = Arc length + $2r$

📏 Diameter = $2r$

The textbook develops these circumference and arc-length relationships immediately before Exercise 6.1.