

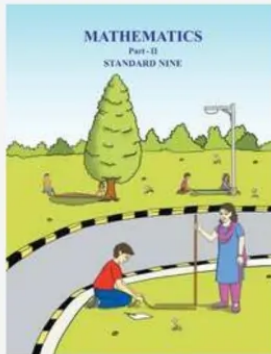
Maharashtra Board Solutions Class 9-Maths

(Part 2): Chapter 9.3- Surface Area and Volume

BOOK SOLUTIONS
CLASS 9
MATHS (PART 2)

CHAPTER 9.3
Surface Area and Volume

Maharashtra Board Solutions→



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Maharashtra Board Solutions Class 9-Maths

(Part 2): Chapter 9.3- Surface Area and Volume

Class 9: Maths Chapter 9.3 solutions. Complete Class 9 Maths Chapter 9.3 Notes.

Maharashtra Board Solutions Class 9-Maths (Part 2): Chapter 9.3- Surface Area and Volume

Maharashtra Board 9th Maths Chapter 9.3, Class 9 Maths Chapter 9.3 solutions

Question 1.

Find the surface areas and volumes of spheres of the following radii

i. 4 cm

ii. 9 cm

iii. 3.5 cm ($\pi = 3.14$)

i. Given: Radius (r) = 4 cm

To find: Surface area and volume of sphere

Solution:

$$\text{Surface area of sphere} = 4\pi r^2$$

$$= 4 \times 3.14 \times 4^2$$

$$\therefore \text{Surface area of sphere} = 200.96 \text{ sq.cm}$$

$$\text{Volume of sphere} = \frac{4}{3}\pi r^3$$

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$$= 43 \times 3.14 \times 4^2$$

$$\therefore \text{Volume of sphere} = 267.95 \text{ cubic cm}$$

ii. Given: Radius (r) = 9 cm

To find: Surface area and volume of sphere

Solution:

$$\text{Surface area of sphere} = 4\pi r^2$$

$$= 4 \times 3.14 \times 9^2$$

$$\therefore \text{Surface area of sphere} = 1017.36 \text{ sq.cm}$$

$$\begin{aligned}\text{Volume of sphere} &= \frac{4}{3} \pi r^3 \\ &= \frac{4}{3} \times 3.14 \times 9^3 \\ &= \frac{4}{3} \times 3.14 \times 9 \times 9 \times 9 \\ &= 4 \times 3.14 \times 3 \times 9 \times 9\end{aligned}$$

$$\therefore \text{Volume of sphere} = 3052.08 \text{ cubic cm}$$

iii. Given: Radius (r) = 3.5 cm

To find: Surface area and volume of sphere

Solution:

$$\text{Surface area of sphere} = 4\pi r^2$$

$$= 4 \times 3.14 \times (3.5)^2$$

$$\therefore \text{Surface area of sphere} = 153.86 \text{ sq.cm}$$

$$\text{Volume of sphere} = \frac{4}{3} \pi r^3$$

$$= \frac{4}{3} \times 3.14 \times (3.5)^3$$

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∴ Volume of sphere = 179.50 cubic cm

Question 2.

If the radius of a solid hemisphere is 5 cm, then find its curved surface area and total surface area, ($\pi = 3.14$)

Given: Radius (r) = 5 cm

To find: Curved surface area and total surface area of hemisphere

Solution:

i. Curved surface area of hemisphere = $2\pi r^2$

$$= 2 \times 3.14 \times 5^2$$

$$= 2 \times 3.14 \times 25$$

$$= 50 \times 3.14$$

$$= 157 \text{ sq.cm.}$$

ii. Total surface area of hemisphere = $3\pi r^2$

$$= 3 \times 3.14 \times 5^2$$

$$= 235.5 \text{ sq.cm.}$$

∴ The curved surface area and total surface area of hemisphere are 157 sq.cm, and 235.5 sq.cm, respectively.

Question 3.

If the surface area of a sphere is 2826 cm² then find its volume. ($\pi = 3.14$)

Given: Surface area of sphere = 2826 sq.cm.

To find: Volume of sphere

Solution:

i. Surface area of sphere = $4\pi r^2$

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$$\therefore 2826 = 4 \times 3.14 \times r^2$$

$$2826 = 282600 = 900$$

$$\therefore r^2 = 282600 \div 4 = 70650$$

$$\therefore r^2 = 225$$

$$\therefore r = \sqrt{225} \dots \text{[Taking square root on both sides]}$$

$$= 15 \text{ cm}$$

$$\text{ii. Volume of sphere} = \frac{4}{3} \pi r^3$$

$$= \frac{4}{3} \times 3.14 \times 15^3$$

$$= \frac{4}{3} \times 3.14 \times 15 \times 15 \times 15$$

$$= 4 \times 3.14 \times 5 \times 15 \times 15$$

$$= 14130 \text{ cubic cm.}$$

$$\therefore \text{The volume of the sphere is 14130 cubic cm.}$$

Question 4.

Find the surface area of a sphere, if its volume is 38808 cubic cm. ($\pi = \frac{22}{7}$)

Given: Volume of sphere = 38808 cubic cm.

To find: Surface area of sphere

Solution:

$$\text{i. Volume of sphere} = \frac{4}{3} \pi r^3$$

$$\therefore 38808 = \frac{4}{3} \times \frac{22}{7} \times r^3$$

$$\begin{aligned} \therefore r^3 &= \frac{38808 \times 3 \times 7}{4 \times 22} \\ &= \frac{9702 \times 3 \times 7}{22} \end{aligned}$$

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$$\therefore r^3 = 441 \times 21 = 21 \times 21 \times 21$$

$$\therefore r = 21 \text{ cm} \dots [\text{Taking cube root on both sides}]$$

ii. Surface area of sphere = $4\pi r^2$

$$= 4 \times 227 \times 21$$

$$= 4 \times 227 \times 21 \times 21$$

$$= 4 \times 22 \times 3 \times 21$$

$$= 5544 \text{ sq.cm.}$$

$$\therefore \text{The surface area of sphere is } 5544 \text{ sq.cm.}$$

Question 5.

Volume of a hemisphere is 18000π cubic cm. Find its diameter.

Given: Volume of hemisphere = 18000π cubic cm.

To find: Diameter of the hemisphere

Solution:

i. Volume of hemisphere = $\frac{2}{3}\pi r^3$

$$\therefore 18000\pi = \frac{2}{3}\pi r^3$$

$$\therefore 18000 = \frac{2}{3}r^3$$

$$\therefore r^3 = \frac{18000 \times 3}{2}$$

$$= 9000 \times 3$$

$$\therefore r^3 = 27000$$

$$\therefore r = \sqrt[3]{27000} \dots [\text{Taking cube root on both sides}]$$

$$= 30 \text{ cm}$$

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ii. Diameter = $2r$

$$= 2 \times 30 = 60 \text{ cm}$$

$\therefore$ The diameter of the hemisphere is 60 cm.



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Class 9 Maths

Part 2

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- Chapter 1.2- Basic Concepts in Geometry
- Chapter 1.3- Basic Concepts in Geometry
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The Maharashtra State Board of Secondary and Higher Secondary Education or MSBSHSE (Marathi: महाराष्ट्र राज्य माध्यमिक आणि उच्च माध्यमिक शिक्षण मंडळ), is an **autonomous and statutory body established in 1965**. The board was amended in the year 1977 under the provisions of the Maharashtra Act No. 41 of 1965.

The Maharashtra State Board of Secondary & Higher Secondary Education (MSBSHSE), Pune is an independent body of the Maharashtra Government. There are more than 1.4 million students that appear in the examination every year. The Maha State Board conducts the board examination twice a year. This board conducts the examination for SSC and HSC.

The Maharashtra government established the Maharashtra State Bureau of Textbook Production and Curriculum Research, also commonly referred to as Ebalbharati, in 1967 to take up the responsibility of providing quality textbooks to students from all classes studying under the Maharashtra State Board. MSBHSE prepares and updates the curriculum to provide holistic development for students. It is designed to tackle the difficulty in understanding the concepts with simple language with simple illustrations. Every year around 10 lakh students are enrolled in schools that are affiliated with the Maharashtra State Board.

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FAQs

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As of now, the MSCERT and Balbharti are responsible for the syllabus and textbooks of Classes 1 to 8, while Classes 9 and 10 are under the Maharashtra State Board of Secondary and Higher Secondary Education (MSBSHSE).

How many state boards are there in Maharashtra?

The Maharashtra State Board of Secondary & Higher Secondary Education, conducts the HSC and SSC Examinations in the state of Maharashtra through its nine Divisional Boards located at Pune, Mumbai, Aurangabad, Nasik, Kolhapur, Amravati, Latur, Nagpur and Ratnagiri.

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