MATHS

NCERT - NCERT MATHS (KANNADA ENGLISH)

SURFACE AREAS AND VOLUMES

Example

1. A corn cob shaped like a cone, has the radius of its broadest end as 1.4 cm and length

(height) as 12 cm. If each $1 cm^2$ of the surface of the cob carries an average of four grains, find how many grains approximately you would find on the entire cob.
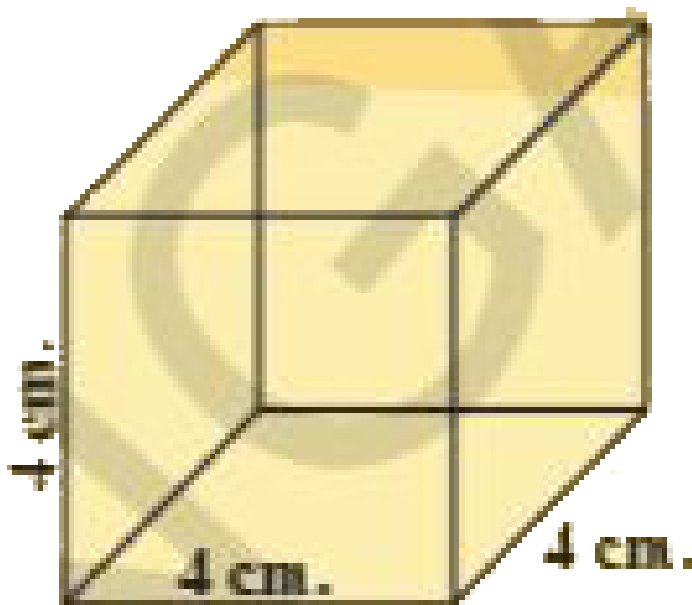
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2. A hemispherical bowl has a radius of 3.5 cm What would be the volume of water it would contains?

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1. Find the total Surface area and lateral surface area of the Cube with side 4 cm. (By using the formulae deduced above)

2. Each edge of a cube is increased by 50%. Find the percentage increase in the surface area.

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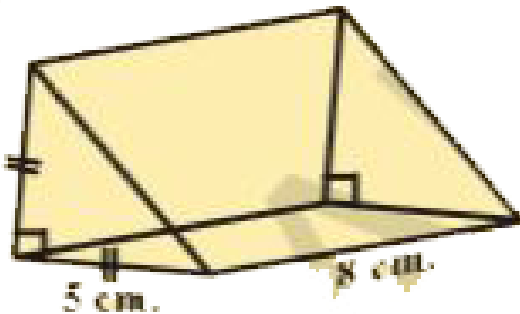**3.** Find the volume of cuboid if l=12 cm , b = 10 cm . And h=8cm.

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4. Find the volume of cube if,its edge is 10 cm.

5. Find the volume of isosceles right angled triangular prism in

5 cm.   8 cm.

6. Find the volume of a pyramid whose square base is 10 cm. and height 8 cm.

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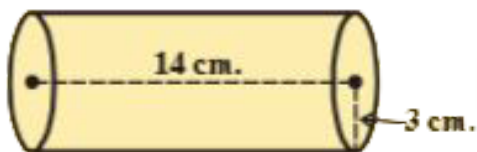**7.** The volume of cube is 1728 cubic cm. Find the volume of square pyramid of the same height.

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8. Find CSA of each of following cylinders

(i) $r = x cm, h = y cm$

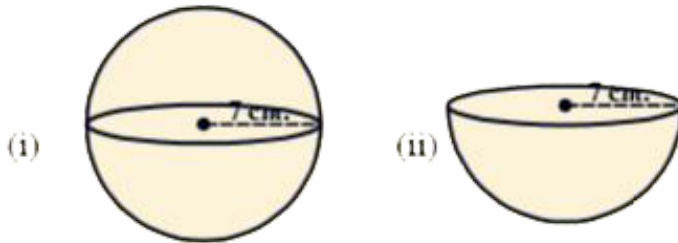(ii) $d = 7 cm, h = 10 cm$

(iii) $r = 3, h = 14 cm$

9. Find the surface area of each of the following figure.

(i)

(ii)

7 cm

7 cm

10. Find the volume of sphere of radius 6.3 cm

1. Find the edge of a cube whose volume is $1000cm^3$

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2. If the radius of a cylinder is doubled keeping its lateral surface area the same, then what is its height ?

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3. A hot water system (Geyser) consists of a cylindrical pipe of length 14 m and diameter 5 cm. Find the total radiating surface of hot water system.
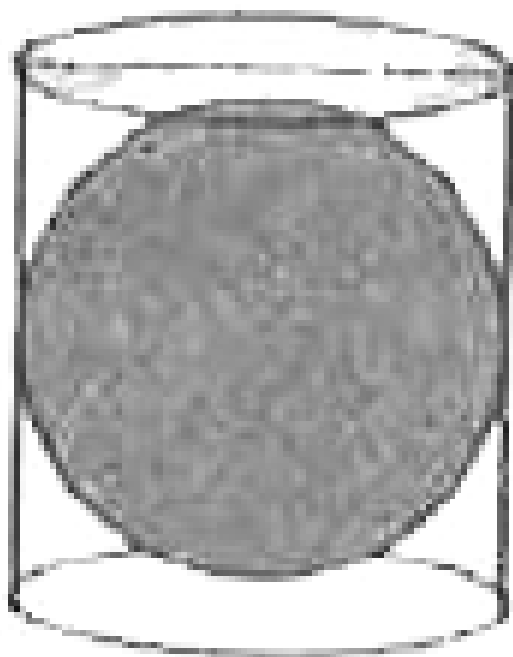
4. A right circular cylinder just encloses a sphere of radius r. Find

(i) Durface Area of the sphere

(ii) Curved surface area of the cylinder

(iii) Ratio of the areas obtained in (i) and (ii)

Exercise 10 1

1. The total surface area of a cube is 1350 sq.m Find its volume.

2. Find the area of four walls of a room (Assume that there are no doors or windows) if its length 12m. Breadth 10 m. and height 7.5 m.

3. The volume of a cuboid is $1200cm^3$ The length 15 cm .and breadth is 10 cm , Find its height

4. How does the total surface area of a box change if

(i) Each dimension is doubled?

(ii) Each dimension is tripled?

Express in words .Can you find the total

surface area of the box if each dimension is raised to n times?

5. The base of prism. Is triangular in shape with sides 3cm , 4cm , and 5cm , Find the volume of the prism if its height is 10 cm .

6. A regular square pyramid is 3m. Height and the perimeter of its base is 16 m. Find the volume of the payment.

7. An Olympic swimming pool is in the shape of a cuboid of dimensions 50m. Long and 25 m. wide. If it is 3m . Deep throughout , how many liters of water does it hold? ($1cu.\, m = 1000$ liters)

Exercise 10 2

1. A closed cylindrical tank of height 1.4 m. and radius of the base is 56 cm. is made up of a thick metal sheet. How much metal sheet is required (Express in square meters)

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2. The volume of a cylinder is $308cm^3$. Its heights is 8cm . Find its lateral surface area and total surface area.

3. A metal cuboid of dimension $22cm \times 15cm \times 7.5$ cm , was melted and cast into a cylinder of height 14 cm .What is its radius?

4. An overhead water tanker is in the shape of a cylinder has capacity of 61.6 cu.mts. The diameter of the tank is 5.6 m. Find the height of the tank.

5. A cylindrical piller has a diameter of 56 cm and is of 35 m high. There are 16 pillars around the building. Find the cost of painting the

curved surface area of all the pillars at the rate of rupes 5.50 per $1m^2$

6. The diameter of a roller is 84 cm and its length is 120 cm. It takes 500 complete revolutions to move once over to level a playground. Find the area of the playground in m^2.

7. The inner diameter of a circular well is 3.5 m.

It is 10 m deep . Find

(i) its inner curved surface area

(ii) The cost of plastering this curved surface

at the rate of Rs. $40 per m^2$

8. Find

(i) The total surface area of a closed cylindrical

petrol storage tank whose diameter $4.2m$.

and height 4.5 m.

9. A one side open cylinderical drum has inner radius 28 cm, and height 2.1 m .How much water you can store in the drum . Express in litres .(1 litre= 1000cc.)

10. The curved surface area of the cylinder is $1760cm^2$. And its volume is $12320cm^3$ Find its

height.

Exercise 10 3

1. The base area of a cone is $38.5 cm^2$ .Its volume is $77 cm^3$ Find its height .

2. The volume of a cone is $462m^3$. Its base radius is 7m. Find its height.

3. Curved surface area of a cone is $308cm^2$ and its slant height is 14 cm Find.

(i) radius of the base (ii) Total surface area of the cone.

4. The cost of painting the total surface area of a cone at 25 paise per cm^2 is rupes 176 .Find the volume of the cone ,If its slant height is 25 cm.

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5. From a circle of radius 15cm . A sector with angle $216°$ is cut out and its bounding radius are bent so as to form a cone . Find its volume.

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6. The height of a tent is 9m. Its base diameter is 24m. What is its slant height? Find the cost of canvas cloth required if it costs rupes 14 per sq.m.

7. The curved surface area of a cone is $1159\frac{5}{7}cm^2$ .Area of its base is $254\frac{4}{7}cm^2$ Find its volume.

8. A tent is cylindrical to a height of 4.8 m .and conical above it. The radius of the base is 4.5 m. and total height of the tent is 10.8 m . Find the canvas required for the tent in square meters.

9. What length of tarpaulin 3m wide be required to make a conical tent of height 8m and base radius 6m? Assume that extra length

of material that will be required for stitching margins and wastage in cutting is approxmately 20 cm (use $\pi = 3.14$)

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10. A Joker's cap is in the form of a right circular cone of base radius 7cm and height 27 cm. Find the area of the sheet required to make 10 such caps.

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11. Two similar cones have volumes 12π cu. Units and 96π cu. Units. If the curved surface area of the smaller cone is 15π sq. units ,What is the curved surface area of the larger one?

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Exercise 10 4

1. The radius of sphere is $3.5cm$ Find its surface area and volume .

2. The surface area of sphere is $1018\dfrac{2}{7}$. Sq.cm .

What is its volume?

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3. The length of equator of the globe is 44cm .

Find its surface area

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4. The diameter of a spherical ball is 21cm . How much leather is required to prepare 5 such balls.

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5. The ratio of radi of two sphere is 2: 3 Find the ratio of their surface areas and volumes.

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6. Find the total surface area of a hemisphere of radius 10 cm . (use $\pi = 3.14$

7. The diameter of a spherical balloon increases from 14cm . To 28 cm . As air is being pumped into it. Find the ratio of surface area to inner surface area of the balloons in the two cases.

8. A hemispherical bowl is made of brass .0.25 cm. thickness .The inner radius of the bowl is 5cm. Find the ratio of outer surface area to inner surface area.

9. The diameter of a lead ball is 2.1 cm The density of the lead used is $11.34g/c^3$ What is the weight of the ball ?

10. A metallic cylinder of diameter 5cm. And height $3\frac{1}{3}cm$ is melted and cast into a sphere. What is its diameter.

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11. How many litres of milk can a hemispherical bowl of diameter 10.5 cm . Hold ?

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12. A hemispherical bowl has diameter 9 cm. The liquid is poured into cylindrical bottles of diameter 3 cm. and height 3 cm. If a full bowl of liquid is filled in the bottles. Find how many bottles are required.