NCERT SOLUTIONS OF Mensuration Exercise 4

Question 1

Given a cylindrical tank, in which situation will you find surface area and in which situation volume.

(a) To find how much it can hold.

(b) Number of cement bags required to plaster it.

(c) To find the number of smaller tanks that can be filled with water from it.

Answer

(a) We need to calculate the volume to find the capacity

(b) As plastering will cover the surface so we need surface area to know this

(c) Volume will give the capacity and that can be compared with capacity of smaller tanks

Question 2

Diameter of cylinder A is 7 cm, and the height is 14 cm. Diameter of cylinder B is 14 cm and height is 7 cm. Without doing any calculations can you suggest whose volume is greater? Verify it by finding the volume of both the cylinders. Check whether the cylinder with greater volume also has greater surface area?

Answer

As cylinder A's radius is half of radius of cylinder B so its volume will be lesser than that of cylinder B. Although Cylinder B's height is half of height of cylinder A but as you know while calculating the volume we need to square the radius so halving the radius has a greater impact than halving the height.

Volume = $\pi r^2 H$

Volume of Cylinder A= $(22/7)(7/2)^2$ 14=539

Volume of Cylinder B= (22/7)(7)^2 7=1078

So Volume Of Cylinder B is greater than Volume of cylinder A

Total Surface Area of Cylinder is given by

= 2πr(r+H)

Total Surface Area of Cylinder A= 385 cm^2

Total Surface Area of Cylinder B= 616 cm^2

So Cylinder will greatest volume has greater surface area

Question 3

 Find the height of a cuboid whose base area is 180 cm^2 and volume is 900 cm^3?

Answer

Volume of cuboid is given by

=LBH

= Base Area x Height

Now given here

V=900cm^3 and Base Area=180cm^2

So

900=180H

Or H=5cm

Question 4

 A cuboid is of dimensions 60 cm × 54 cm × 30 cm. How many small cubes with side 6 cm can be placed in the given cuboid?

Answer:

Number of small cubes will be given by

= (Volume of Big Cube)/(Volume of small cube)

=60×54×30/6×6×6

=450

Question 5

Find the height of the cylinder whose volume is 1.54 m³ and diameter of the base is 140 cm ?

Answer

Volume of cylinder is given by

$=\pi r^2 h$

Here V=1.54 m^3

r= 70 cm=.7 m

So

(22/7) (.7)^2 H= 1.54

H=1 m

Question 6

A milk tank is in the form of cylinder whose radius is 1.5 m and length is 7 m. Find the quantity of milk in litres that can be stored in the tank?

Answer

Volume of Milk Tank= $\pi r^2 H$

=49.5 m^3

Now As we know, 1 cubic metre = 1000 litres

So, 49.5 m^3 = 49500 litres

Question 7

If each edge of a cube is doubled,

(i) how many times will its surface area increase?

(ii) how many times will its volume increase?

Answer:

Let a be the side of the cube

Surface Area of Cube= 3a^2

Volume of Cube=a^3

(i) So Whenever sides are doubled in any structure then area becomes 4 times the original structure

(ii) Volume becomes 8 times of the original volume if sides are doubled in any structure

Question 8

Water is pouring into a cuboidal reservoir at the rate of 60 liters per minute. If the volume of reservoir is 108 m³, find the number of hours it will take to fill the reservoir.

Answer: 108 cubic meter = 108000 liter

So, time = Volume Rate per minute

=108000/60 minutes

= 108000/(60 ×60)

=30 hours