**RS Aggarwal Solutions for Class 10 Maths Chapter 19 Exercise 19.2:** The Entrancei academic team has produced a comprehensive answer for Chapter 19: Volume and Surface Area of Solids in the RS Aggarwal textbook for Class 10. Complete the NCERT exercise questions and utilise them as a guide. Solutions for Entrancei NCERT Class 10 Maths problems in the exercise require assistance to be completed. For maths in class 10, Entrancei published NCERT answers.

The RS Aggarwal class 10 solution for chapter-19 Volume and Surface Area of Solids Exercise-19B is uploaded for reference only; do not copy the solutions. Before going through the solution of chapter-19 Volume and Surface Area of Solids Exercise-19B, one must have a clear understanding of the chapter-19 Volume and Surface Area of Solids. Read the theory of chapter-19 Volume and Surface Area of Solids and then try to solve all numerical of exercise-19B.

# RS Aggarwal Solutions for Class 10 Maths Chapter 19 Exercise 19.2 Overview

In Chapter 19 of RS Aggarwal's Class 10 Maths textbook, students delve into the fascinating realm of Volume and Surface Areas of Solids. Exercise 19.2 specifically focuses on applying mathematical principles to calculate these crucial properties.

The chapter begins by introducing fundamental concepts such as volume and surface area, laying the groundwork for more complex calculations later on. Understanding volume involves grasping how much space a solid object occupies, while surface area pertains to the total area covering the object's outer layer.

Exercise 19.2 builds upon these basics by presenting problems that require students to compute volumes and surface areas of various solids, including cubes, cuboids, cylinders, cones, and spheres. Each type of solid comes with its specific formulas, which students are encouraged to apply systematically to solve the exercises.

# RS Aggarwal Solutions for Class 10 Maths Chapter 19 Exercise 19.2

Below we have provided RS Aggarwal Solutions for Class 10 Maths Chapter 19 Exercise 19.2 for the ease of the students –

**Question**

**A cone of height 20 cm and radius of base 5 cm is made up of modelling clay. A child reshapes it in the form of a sphere. Find the diameter of the sphere.**

**Solution**

We have,

The radius of the cone, $r$ = 5cm and the height of the cone, $h$ = 20cm

Let the radius of the sphere be R.

As,

Volume of sphere = Volume of cone

⇒43πR3=13πr2h⇒R3=πr2h×33×4π⇒R3=r2h4⇒R3=5×5×204⇒R3=125⇒R=3√125=5 cm
⇒ Diameter of the sphere = 2R = 2 x 5 = 10 cm

So, the diameter of the sphere is 10cm

**Question**

**A spherical cannon ball 28 cm in diameter is melted and recast into a right circular conical mould, base of which is 35 cm in diameter. Find the height of the cone.**

**Solution**

Sphere radius = 282=14cm
volume of sphere = 43 π r3
=43π×14×14×14
It is melted and recast to a conical shape
it's radius = 352=17.5cm
= 13π×r2×h
= 13π×17.5×17.5×h
Now according to the question
volume of sphere =volume of cone
43π×14×14×14=13π×17.5×17.5×h
43×14×14×14=13×17.5×17.5×h
3658.6=102.08×h
3658.6102.08=h
∴h=35.84 cm

**Question**

**Metallic spheres of radii 6 cm, 8 cm and 10 cm respectively are melted to form a single solid sphere. Find the radius of the resulting sphere.**

**Solution**

Let r1,r2,r3 be the radius of the given 3 spheres & R be the radius of a single solid sphere.

Given :

r1=6 cm,r2=8 cm,r3=10 cm

Volume of first metallic sphere (V1)=43π(r1)3=43π(6)3

Volume of second metallic sphere (V2)=43π(r2)3=43π(8)3

Volume of third metallic sphere (V3)=43π(r3)3=43π(10)3

Volume of single solid sphere (V)=43πR3

A .T.Q

Volume of 3 metallic spheres= volume of single solid sphere

V1+V2+V3=V43π(6)3+43π(8)3+43π(10)3=43πR343π(63+83+103)=43πR3216+512+1000=R31728=R3(12×12×12)=R3123=R3R=12

Hence, the radius of the resulting sphere = 12 cm

**Question**

**The radii of internal and external surfaces of a hollow spherical shell are 3 cm and 5 cm respctively. It is melted and recast into a solid cylinder of diameter 14 cm. Find the height of the cylinder.**

**Solution**

We have,

The internal base radius of the spherical shell, r1=3 cm,

The external base radius of the spherical shell, r2=5 cm and

The base radius of solid cylinder, r=142=7 cm

Let the height of the cylinder be h.

As,Volume of solid cylinder = Volume of spherical shell

⇒πr2h=43πr32−43πr31⇒πr2h=43π(r32−r31)⇒r2h=43(r32−r31)⇒49×h=43(125−27)⇒h=43×9
849∴h=83

So, the height of the cylinder is 83

**Question**

**The internal and external diameters of a hollow hemispherical shell are 6cm and 10cm respectively. It is melted and recast into a solid cone of base diameter 14cm. Find the height of the cone so formed.**

**Solution**

Now, according t the question,

Volume of hollow hemispherical shell = Solid cone

ie. Volume of outer hemispherical shell - Volume of inner hemispherical shell= Solid cone

⇒23π(102)3−23π(62)3=13π(142)2h

⇒23π[(5)3−(3)3]=13π(7)2h

⇒2[125−27]=(49)h

⇒2×9849=h

∴h=4cm

**Question**

**A copper rod of diameter 2 cm and length 10 cm is drawn into a wire of uniform thickness and length 10 m. Find the thickness of the wire.**

**Solution**

A copper rod of diameter 2 cm and length 10 cm is drawn into a wire of uniform thickness and length 10 m. Find the thickness of the wire.

volume will be same
so
π 12×10=π× r2 1000

π 12×10=π× r2 1000

r2=1100

r=110=0.1cm

**Question**

**A hemispherical bowl of internal diameter 30 cm contains some liquid. This liquid is to be filled into cylindrical-shaped bottles each of diameter 5 cm and height 6 cm. Find the number of bottles necessary to empty the bowl.**

**Solution**

Inner diameter of the bowl = 30 cm

Inner radius of the bowl = 15 cm

Volume of liquid in it =23π×r3=23π×153 cm3

Radius of each cylinder bottle = 2.5 cm and its height = 6 cm.

Volume of each cylindrical bottle =πr2h=π×(52)2×6 cm2=254×6π=75π2 cm3

Required number of bottles=Volume of liquid

Volume of each cylindrical bottle=23×π×15×15×15752×π=60

Hence, bottles required = 60

**Question**

**A solid metallic sphere of diameter 21 cm is melted and recast into a number of smaller cones, each of diameter 3.5 cm and height 3 cm. Find the number of cones so formed.**

**Solution**

Diameter of the sphere = 21 cm

So, radius of sphere =212

Radius of sphere = 10.5 cm

Volume of sphere =43πr3=43×227×10.5×10.5×10.5=4851 cm3

Diameter of cone = 3.5 cm

So, radius of cone =3.52

Radius of cone = 1.75 cm

Volume of cone =13πr2h=13×227×1.75×1.75×3=9.625 cm3

Number cones formed =48519.625=504

**Question**

**Water in a canal, 5.4 m wide and 1.8 m deep, is flowing with a speed of 25 km/hr. How much area can it irrigate in 40 minutes, if 10 cm of standing water is required for irrigation?**

**Solution**

Breadth , b = 5.4 m

Height[depth] , h = 1.8 m

Speed of canal = 25kmhr

Length of canal in 1 hour = 25 km

Length of canal in 60 minutes = 25 km [ 1 hr = 60 min ]

Length of canal in 1min=2560

Length of canal in 40 min = 2560×40
= 16.67km [ approx . ]

= 16670 m

Volume of canal = l timesb timesh .

= 16670×5.4×1.8m
= 162032.4metres

Height of standing water = 10 cm = 0.1 metres

Volume of water in canal = Volume of area irrigated

Volume of area irrigated = Area irrigated × height

162032.4 metres = Area irrigated × 0.1
Area irrigated = 162032.40.1

= 1620324m2

$1 m^2 = 0.0001$ hectares

Area irrigated = 162.0324 hectares

**Question**

**In a hospital, used water is collected in a cylindrical tank of diameter 2 m and height 5 m. After recycling, this water is used to irrigate a park of hospital whose length is 25 m and breadth is 20 m. If the tank is filled completely then what will be the height of standing water used for irrigating the park? Write your views on recycling of water.**

**Solution**

Diameter of cylinder (d) = 2 m

Radius of cylinder (r) = 1 m

Height of cylinder (H) = 5 m

Volume of cylindrical tank, $V_c=\pi r^2 H=\pi\times(1)^2\times 5=5\pi$ m

Length of the park (l) = 25 m

Breadth of park (b) = 20 m

the height of standing water in the park = h

Volume of water in the park $=lbh=25\times 20\times h$

Now water from the tank is used to irrigate the park. So,

The volume of the cylindrical tank = Volume of water in the park

$\Rightarrow 5\pi=25\times 20\times h \Rightarrow h=\frac{5\pi}{25\times 20} \Rightarrow h=\frac{\pi}{100} \Rightarrow h=0.0314$ m

Through recycling of water, better use of the natural resource occurs without wastage. It helps in reducing and preventing pollution. It thus helps in conserving water. This keeps the greenery alive in urban areas like in parks gardens etc.

**Question**

**A copper wire of diameter 6 mm is evely wrapped on a cylinder of length 18 cm and diameter 49 cm to cover its whole surface. Find the length and the volume of the wire. If the density of copper be 8.8 g per cu-cm, find the weight of the wire.**

**Solution**

Diameter of copper wire = 6 mm, ie its radius = 3 mm

Length of cylinder = 18 cm = 180 mm
Diameter of cylinder = 49 cm = 490 mm

Number of turns of copper wire =1806=30

length of one turn =2πr=2π(4902)=227×490=1540 mm

So total length of copper wire =30×1540=46200 mm

Therefore volume of copper wire =πr2h=π×(3)2×46200=1305612 mm3

Volume in cm3=1305.612 cm3

Specific gravity of wire =8.8 g/cm3

So weight of wire =1305.612×8.8=11489.3856=11489.38 kg

**Question**

**Marbles of diameter 1.4 cm are dropped into a cylindrical beaker of diameter 7 cm, containing some water. Find the number of marbles taht should be dropped into the beaker so that the water level rises by 5.6 cm.**

**Solution**

Diameter of marble = 1.4 cm
radius = 1.4/2 = 0.7 cm
volume of 1 marble = {4}/{3} \pi r^3 = {4}/{3} \pi (0.7)^3
let number of marbles required = nbase diameter of beaker = 7cm
radius = 7/2 = 3.5 cm
height rise in water = 56 cm

volume change = volume of n marbles

So 1500 marbles should be dropped.

# Benefits of RS Aggarwal Solutions for Class 10 Maths Chapter 19 Exercise 19.2

RS Aggarwal Solutions for Class 10 Maths Chapter 19 Exercise 19.2 on Volume and Surface Areas of Solids offer several benefits to students:

**Structured Learning**: The solutions provide a structured approach to learning the concepts of volume and surface area. Each problem is meticulously solved, guiding students step-by-step through the calculations.

**Clear Explanation**: Solutions are presented in a clear and easy-to-understand manner. This clarity helps students grasp the underlying concepts and methods used to calculate volumes and surface areas of various solids.

**Practice Opportunities**: The exercises in Chapter 19.2 offer ample practice opportunities. By solving a variety of problems involving different types of solids (cubes, cuboids, cylinders, cones, spheres), students reinforce their understanding and gain confidence in applying formulas correctly.

**Application in Real Life**: The problems are designed to illustrate practical applications of volume and surface area calculations in everyday scenarios. This application-oriented approach helps students appreciate the relevance and importance of these mathematical concepts beyond the classroom.

**Preparation for Exams**: RS Aggarwal Solutions are crafted to align with the CBSE syllabus and exam patterns. By mastering the problems in Chapter 19.2, students are well-prepared to tackle similar questions that may appear in their examinations.