EXERCISE 13.1 - Question No. 1

A plastic box 1.5 m long, 1.25 m wide and 65 cm deep is to be made. It is to be open at the top. Ignoring the thickness of the plastic sheet, determine: (i) The area of the sheet required for making the box. (ii) The cost of sheet for it, if a

EXERCISE 13.1 - Question No. 2

The length, breadth and height of a room are 5 m, 4 m and 3 m respectively. Find the cost of white washing the walls of the room and the ceiling at the rate of $Rs\ 7.50\ per\ m^2$.

EXERCISE 13.1 - Question No. 3

The floor of a rectangular hall has a perimeter 250 m. If the cost of painting the four walls at the rate of $Rs\ 10\ per\ m^2$ is Rs 15000, find the height of the hall. [Hint : Area of the four walls = Lateral surface area.]

EXERCISE 13.1 - Question No. 4

The paint in a certain container is sufficient to paint an area equal to $9.375\ m^2$. How many bricks of dimensions $22.5\ cm \times 10\ cm \times 7.5\ cm$ can be painted out of this container? (i) Which box has the greater lateral

EXERCISE 13.1 - Question No. 5

A cubical box has each edge 10 cm and another cuboidal box is 12.5 cm long, 10 cm wide and 8 cm high. (i) Which box has the

greater lateral surface area and by how much? (ii) Which box has the smaller total surface area and by how much?

EXERCISE 13.1 - Question No. 6

A small indoor greenhouse (herbarium) is made entirely of glass panes (including base) held together with tape. It is 30 cm long, 25 cm wide and 25 cm high. (i) What is the area of the glass? (ii) How much of tape is needed for all the 12 edges?

EXERCISE 13.1 - Question No. 7

Shanti Sweets Stall was placing an order for making cardboard boxes for packing their sweets. Two sizes of boxes were required. The bigger of dimensions $25cm \times 20cm \times 5cm$ and the smaller of dimensions 15 $cm \times 12 \times 5$For all the overlap in total surface area 5% is required extra. If the cost of the cardboard is Rs 4 for $1000cm^2$Find the cost of the cardboard for 250 boxes

EXERCISE 13.1 - Question No. 8

Parveen wanted to make a temporary shelter for her car, by making a box-like structure with tarpaulin that covers all the four sides and

the top of the car (with the front face as a flap which can be rolled up). Assuming that the stitching margin

EXERCISE 13.2 - Question No. 1

The curved surface area of a right circular cylinder of height 14 cm is 88 cm^2 . Find the diameter of the base of the cylinder.

EXERCISE 13.2 - Question No. 2

It is required to make a closed cylindrical tank of height 1 m and base diameter 140 cm from a metal sheet. How many square metres

of the sheet are required for the same?

EXERCISE 13.2 - Question No. 3

A metal pipe is 77 cm long. The inner diameter of a cross section is 4 cm, the outer diameter being 4.4 cm. Find its (i) inner curved surface area, (ii) outer curved surface area, (iii) total surface area

EXERCISE 13.2 - Question No. 4

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 .

EXERCISE 13.2 - Question No. 5

A cylindrical pillar is 50 cm in diameter and 3.5 m in height. Find the cost of painting the curved surface of the pillar at the rate of Rs 12.50 per m^2 .

EXERCISE 13.2 - Question No. 6

Curved surface area of a right circular cylinder is 4. $4m^2$. If the radius of the base of the cylinder is 0.7 m, find its height.

EXERCISE 13.2 - Question No. 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 .

EXERCISE 13.2 - Question No. 8

In a hot water heating system, there is a cylindrical pipe of length 28 m and diameter 5 cm. Find the total radiating surface in the system.

EXERCISE 13.2 - Question No. 9

Find (i) the lateral or curved surface area of a closed cylindrical petrol storage tank that is 4.2 m in diameter and 4.5 m high. (ii) how much steel was actually used, if $\frac{1}{12}$ of the steel actually used was wasted in making the tank

EXERCISE 13.2 - Question No. 10

In Fig. 13.12, you see the frame of a lampshade. It is to be covered with a decorative cloth. The frame has a base diameter of 20 cm

and height of 30 cm. A margin of 2.5 cm is to be given for folding it over the top and bottom of the frame. Find how much cloth is required for covering the lampshade

EXERCISE 13.2 - Question No. 11

The students of a Vidyalaya were asked to participate in a competition for making and decorating penholders in the shape of a cylinder with a base, using cardboard. Each penholder was to be of radius 3 cm and height 10.5 cm. The Vidyalaya was to supply the competitors with cardboard. If there were 35 competitors, how much cardboard was required to be bought for the competition?

EXERCISE 13.3 - Question No. 1

Diameter of the base of a cone is 10.5 cm and its slant height is 10 cm. Find its curved surface area.

EXERCISE 13.3 - Question No. 2

Find the total surface area of a cone, if its slant height is 21 m and diameter of its base is 24 m.

EXERCISE 13.3 - Question No. 3

Curved surface area of a cone is 308 cm^2 and its slant height is 14 cm. Find (i) radius of the base and (ii) total surface area of the cone.

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EXERCISE 13.3 - Question No. 4

A conical tent is 10 m high and the radius of its base is 24 m. Find (i) slant height of the tent. (ii) cost of the canvas required to make the tent, if the cost of 1 m^2 canvas is Rs 70.

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EXERCISE 13.3 - Question No. 5

What length of tarpaulin 3 m wide will be required to make conical tent of height 8 m and base radius 6 m? Assume that the extra length of material that will be required for stitching margins and wastage in cutting is approximately 20 cm

EXERCISE 13.3 - Question No. 6

The slant height and base diameter of a conical tomb are 25 m and 14 m respectively. Find the cost of white-washing its curved surface at the rate of Rs 210 per 100 m^2 .

EXERCISE 13.3 - Question No. 7

A jokers cap is in the form of a right circular cone of base radius 7 cm and height 24 cm. Find the area of the sheet required to make 10 such caps.

EXERCISE 13.3 - Question No. 8

A bus stop is barricaded from the remaining part of the road, by using 50 hollow cones made of recycled cardboard. Each cone has

a base diameter of 40 cm and height 1 m. If the outer side of each of the cones is to be painted and the cost of pain

EXERCISE 13.4 - Question No. 1

Find the surface area of a sphere of radius: (i) 10.5 cm (ii) 5.6 cm (iii) 14 cm

EXERCISE 13.4 - Question No. 2

Find the surface area of a sphere of diameter: (i) 14 cm (ii) 21 cm (iii) 3.5 m

EXERCISE 13.4 - Question No. 3

Find the total surface area of a hemisphere of radius 10 cm

EXERCISE 13.4 - Question No. 4

The radius of a spherical balloon increases from 7 cm to 14 cm as air is being pumped into it. Find the ratio of surface areas of the balloon in the two cases.

EXERCISE 13.4 - Question No. 5

A hemispherical bowl made of brass has inner diameter 10.5 cm.

Find the cost of tin-plating it on the inside at the rate of Rs 16 per

$100cm^2$.

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EXERCISE 13.4 - Question No. 6

Find the radius of a sphere whose surface area is 154 cm^2

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EXERCISE 13.4 - Question No. 7

The diameter of the moon is approximately one fourth of the diameter of the earth. Find the ratio of their surface areas.

EXERCISE 13.4 - Question No. 8

A hemispherical bowl is made of steel, 0.25 cm thick. The inner radius of the bowl is 5 cm. Find the outer curved surface area of the bowl.

EXERCISE 13.4 - Question No. 9

A right circular cylinder just encloses a sphere of radius r (see Fig. 13.22). Find (i) surface area of the sphere, (ii) curved surface area of the cylinder, (iii) ratio of the areas obtained in (i) and (ii).

EXERCISE 13.5 - Question No. 1

A matchbox measures $4\ cm \times 2.5\ cm \times 1.5\ cm$. What will be the volume of a packet containing 12 such boxes

EXERCISE 13.5 - Question No. 2

A cuboidal water tank is 6 m long, 5 m wide and 4.5 m deep. How many litres of water can it hold? ($1\ m^3 = 1000l$)

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EXERCISE 13.5 - Question No. 3

A cuboidal vessel is 10 m long and 8 m wide. How high must it be made to hold 380 cubic metres of a liquid?

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EXERCISE 13.5 - Question No. 4

Find the cost of digging a cuboidal pit 8 m long, 6 m broad and 3 m deep at the rate of $Rs\ 30\ per\ m^3$.

EXERCISE 13.5 - Question No. 5

The capacity of a cuboidal tank is 50000 litres of water. Find the breadth of the tank, if its length and depth are respectively 2.5 m and 10 m

EXERCISE 13.5 - Question No. 6

A village, having a population of 4000, requires 150 litres of water per head per day. It has a tank measuring $20m \times 15m \times 6m$. For how many days will the water of this tank last?

EXERCISE 13.5 - Question No. 7

A godown measures $40\ m\ \times\ 25\ m\ \times\ 10\ m$. Find the maximum number of wooden crates each measuring $1.5\ m\ \times\ 1.25\ m\ \times\ 0.5\ m$ that can be stored in the godown.

EXERCISE 13.5 - Question No. 8

A solid cube of side 12 cm is cut into eight cubes of equal volume. What will be the side of the new cube? Also, find the ratio between their surface areas.

EXERCISE 13.5 - Question No. 9

A river 3 m deep and 40 m wide is flowing at the rate of 2 km per hour. How much water will fall into the sea in a minute?

EXERCISE 13.6 - Question No. 1

The circumference of the base of a cylindrical vessel is 132 cm and its height is 25 cm. How many litres of water can it hold? ($1000cm^3 = 1l$)

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EXERCISE 13.6 - Question No. 2

The inner diameter of a cylindrical wooden pipe is 24 cm and its outer diameter is 28 cm. The length of the pipe is 35 cm. Find the mass of the pipe, if 1 cm3 of wood has a mass of 0.6 g.

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EXERCISE 13.6 - Question No. 3

A soft drink is available in two packs (i) a tin can with a rectangular base of length 5 cm and width 4 cm, having a height of 15 cm and (ii) a plastic cylinder with circular base of diameter 7 cm and height 10 cm. Which container has greater capacity and by how much?

EXERCISE 13.6 - Question No. 4

If the lateral surface of a cylinder is 94. 2 cm^2 and its height is 5 cm, then find (i) radius of its base (ii) its volume.

EXERCISE 13.6 - Question No. 5

It costs Rs 2200 to paint the inner curved surface of a cylindrical vessel 10 m deep. If the cost of painting is at the rate of $Rs\ 20\ per\ m^2$, find (i) inner curved surface area of the vessel, (ii) radius of the base, (iii) capacity of

EXERCISE 13.6 - Question No. 6

The capacity of a closed cylindrical vessel of height 1 m is 15.4 litres. How many square metres of metal sheet would be needed to make it?

EXERCISE 13.6 - Question No. 7

A lead pencil consists of a cylinder of wood with a solid cylinder of graphite filled in the interior. The diameter of the pencil is 7 mm and the diameter of the graphite is 1 mm. If the length of the pencil is 14 cm, find the volume of the wood and that of the graphite.

EXERCISE 13.6 - Question No. 8

A patient in a hospital is given soup daily in a cylindrical bowl of diameter 7 cm. If the bowl is filled with soup to a height of 4 cm,

how much soup the hospital has to prepare daily to serve 250 patients?

EXERCISE 13.7 - Question No. 1

Find the volume of the right circular cone with (i) radius 6 cm, height 7 cm (ii) radius 3.5 cm, height 12 cm

EXERCISE 13.7 - Question No. 2

Find the capacity in litres of a conical vessel with (i) radius 7 cm, slant height 25 cm (ii) height 12 cm, slant height 13 cm

EXERCISE 13.7 - Question No. 3

The height of a cone is 15 cm. If its volume is 1570 cm^3 , find the radius of the base.

EXERCISE 13.7 - Question No. 4

If the volume of a right circular cone of height 9 cm is $48\pi cm^3$, find the diameter of its base.

EXERCISE 13.7 - Question No. 5

A conical pit of top diameter 3.5 m is 12 m deep. What is its capacity in kilolitres?

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EXERCISE 13.7 - Question No. 6

The volume of a right circular cone is$9856cm^3$. If the diameter of the base is 28 cm, Find (i) height of the cone (ii) slant height of the cone (iii) curved surface area of the cone

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EXERCISE 13.7 - Question No. 7

A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 12 cm. Find the volume of the solid so obtained.

EXERCISE 13.7 - Question No. 8

A right triangle ABC with sides 5 cm, 12 cm and 13 cm is revolved about the side 5 cm, then find the volume of the solid so obtained. Find also the ratio of the volumes of the two solids obtained in by revolving about the side 12 cm and 5 cm

EXERCISE 13.7 - Question No. 9

A heap of wheat is in the form of a cone whose diameter is 10.5 m and height is 3 m. Find its volume. The heap is to be covered by canvas to protect it from rain. Find the area of the canvas required

EXERCISE 13.8 - Question No. 1

Find the volume of a sphere whose radius is (i) 7 cm (ii) 0.63 m

EXERCISE 13.8 - Question No. 2

Find the amount of water displaced by a solid spherical ball of diameter (i) 28 cm (ii) 0.21 m

EXERCISE 13.8 - Question No. 3

The diameter of a metallic ball is 4.2 cm. What is the mass of the ball, if the density of the metal is 8. 9 $g\ per\ cm^3$?

EXERCISE 13.8 - Question No. 4

The diameter of the moon is approximately one-fourth of the diameter of the earth. What fraction of the volume of the earth is the volume of the moon?

EXERCISE 13.8 - Question No. 5

How many litres of milk can a hemispherical bowl of diameter 10.5 cm hold?

EXERCISE 13.8 - Question No. 6

A hemispherical tank is made up of an iron sheet 1 cm thick. If the inner radius is 1 m, then find the volume of the iron used to make the tank

EXERCISE 13.8 - Question No. 7

Find the volume of a sphere whose surface area is 154 cm^2

EXERCISE 13.8 - Question No. 8

A dome of a building is in the form of a hemisphere. From inside, it was white-washed at the cost of Rs 498.96. If the cost of white-washing is Rs 2.00 per square metre, find the (i) inside surface area of the dome, (ii) volume of the air inside the dome.

EXERCISE 13.8 - Question No. 9

Twenty seven solid iron spheres, each of radius r and surface area S are melted to form a sphere with surface area S'. Find the (i) radius r' of the new sphere, (ii) ratio of $SandS'$.

EXERCISE 13.8 - Question No. 10

A capsule of medicine is in the shape of a sphere of diameter 3.5 mm. How much Medicine $\left(\in \ mm^3 \right)$ is needed to fill this capsule?

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EXERCISE 13.9 - Question No. 1

A wooden bookshelf has external dimensions as follows:

$Height \ = \ 110 \ cm$, $Depth \ = \ 25 \ cm$, $Breadth \ = \ 85 \ cm$ (see Fig. 13.31). The thickness of the plank is 5 cm everywhere. The external faces are to be polished and inner faces are to be

painted.rate of polishing 20 paise per cm^2 and painting is $10 paise per cm^2$.Find the total expenses of painting.

EXERCISE 13.9 - Question No. 2

The front compound wall of a house is decorated by wooden spheres of diameter 21 cm, placed on small supports as shown in Fig 13.32. Eight such spheres are used for this purpose, and are to be painted silver. Each support is a cylinder of radius 5cm and height 7cm and is painted black.Find the cost of paint required if silver paint cost 25 paisa per cm^2 and black paint cost 5 paisa per cm^2

EXERCISE 13.9 - Question No. 3

The diameter of a sphere is decreased by 25%. By what per cent does its curved surface area decrease?

SOLVED EXAMPLES - Question No. 1

Mary wants to decorate her Christmas tree. She wants to place the tree on a wooden box covered with coloured paper with picture of Santa Claus on it (see Fig. 13.4). She must know the exact quantity of paper to buy for this purpose. If the box has length, breadth and

height as 80 cm, 40 cm and 20 cm respectively how many square sheets of paper of side 40 cm would she require?

SOLVED EXAMPLES - Question No. 2

Hameed has built a cubical water tank with lid for his house, with each outer edge 1.5 m long. He gets the outer surface of the tank excluding the base, covered with square tiles of side 25 cm (see Fig. 13.5). Find how much he would spend for the tiles, if the cost of the tiles is Rs 360 per dozen.

SOLVED EXAMPLES - Question No. 3

Savitri had to make a model of a cylindrical kaleidoscope for her science project. She wanted to use chart paper to make the curved surface of the kaleidoscope. (see Fig 13.10). What would be the area of chart paper required by her, if she wanted

SOLVED EXAMPLES - Question No. 4

Find the curved surface area of a right circular cone whose slant height is 10 cm and base radius is 7 cm

SOLVED EXAMPLES - Question No. 5

The height of a cone is 16 cm and its base radius is 12 cm. Find the curved surface area and the total surface area of the cone

SOLVED EXAMPLES - Question No. 6

A corn cob (see Fig. 13.17), shaped somewhat like a cone, has the radius of its broadest end as 2.1 cm and length (height) as 20 cm. If each $1cm^2$ of the surface of the cob carries an average of four grains, find how many grains you would find on the entire cob?

SOLVED EXAMPLES - Question No. 7

Find the surface area of a sphere of radius 7 cm.

SOLVED EXAMPLES - Question No. 8

Find (i) the curved surface area and (ii) the total surface area of a hemisphere of radius 21 cm.

SOLVED EXAMPLES - Question No. 9

The hollow sphere, in which the circus motorcyclist performs his stunts, has a diameter of 7 m. Find the area available to the motorcyclist for riding.

SOLVED EXAMPLES - Question No. 10

A hemispherical dome of a building needs to be painted (see Fig. 13.21). If the circumference of the base of the dome is 17.6 m, find the cost of painting it, given the cost of painting is Rs 5 per 100 cm^2

SOLVED EXAMPLES - Question No. 11

A wall of length 10 m was to be built across an open ground. The height of the wall is 4 m and thickness of the wall is 24 cm. If this wall is to be built up with bricks whose dimensions are $24\ cm \times 12\ cm \times 8\ cm$, how

SOLVED EXAMPLES - Question No. 12

A child playing with building blocks, which are of the shape of cubes, has built a structure as shown in Fig. 13.25. If the edge of

each cube is 3 cm, find the volume of the structure built by the child.

SOLVED EXAMPLES - Question No. 13

The pillars of a temple are cylindrically shaped (see Fig. 13.26). If each pillar has a circular base of radius 20 cm and height 10 m, how much concrete mixture would be required to build 14 such pillars?

SOLVED EXAMPLES - Question No. 14

At a Ramzan Mela, a stall keeper in one of the food stalls has a large cylindrical vessel of base radius 15 cm filled up to a height of 32 cm with orange juice. The juice is filled in small cylindrical glasses (see Fig. 13.27) of radius 3 cm up to a height of 8 cm, and sold for Rs 3 each. How much money does the stall keeper receive by selling the juice completely?

SOLVED EXAMPLES - Question No. 15

The height and the slant height of a cone are 21 cm and 28 cm respectively. Find the volume of the cone

SOLVED EXAMPLES - Question No. 16

Monica has a piece of canvas whose area is 551 m^2 . She uses it to have a conical tent made, with a base radius of 7 m. Assuming that all the stitching margins and the wastage incurred while cutting, amounts to approximately1 m^2 ,

SOLVED EXAMPLES - Question No. 17

Find the volume of a sphere of radius 11.2 cm

SOLVED EXAMPLES - Question No. 18

A shot-putt is a metallic sphere of radius 4.9 cm. If the density of the metal is $7.8 gpercm^3$, find the mass of the shot-putt

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SOLVED EXAMPLES - Question No. 19

A hemispherical bowl has a radius of 3.5 cm. What would be the volume of water it would contain?

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