MATHS

BOOKS - OSWAL PUBLICATION

SURFACE AREAS AND VOLUMES

Stand Alone Mcqs

1. A surahi is the combination of

A. a sphere and a cylinder

B. a hemisphere and a cylinder

C. two hemispheres

D. a cylinder and a cone

Answer: A

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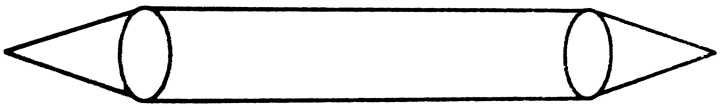
2. The sharpe of a gilli, the gilli-danda game (see figure) is a combination of



A. two cylinders

B. a cone and a cylinder

C. two cones and a cylinder

D. two cylinders and a cone

Answer: C

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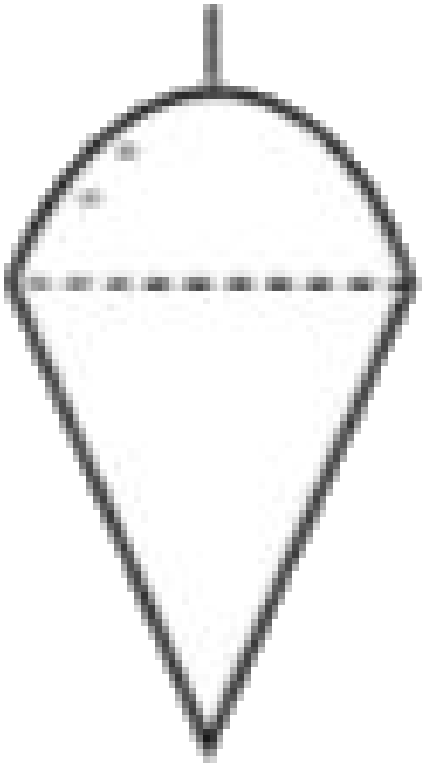
3. A plumbline (Sahul) is the combination of :



A. a cone and a cylinder

B. a hemisphere and a cone

C. frustum of a cone and a cylinder

D. sphere and cylinder

Answer: B

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4. If two solid hemispheres of same base radius r are joined together along their bases, them curved surface area of the this new solid is

A. $4\pi r^2$

B. $6\pi r^2$

C. $3\pi r^2$

D. $8\pi r^2$

Answer: A

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5. A right circular cylinder of radius r cm and height h cm (where , h gt 2r) just encloses a sphere of diameter

A. r cm

B. 2r cm

C. h cm

D. 2h cm

Answer: B

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6. In a right circular cone, the corss - section made by a plane parallel to the base is a

A. circle

B. frustum of a cone

C. sphere

D. hemisphere

Answer: A

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7. If volume of two spheres are in the ratio $64:27$, then the ratio of their surface area is

A. $3:4$

B. $4:3$

C. $9:16$

D. $16:9$

Answer: D

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8. The surface areas of two spheres are in the ratio $16:9$. The ratio of their volumes is

A. $64:27$

B. $16:9$

C. $4:3$

D. $16^3:9^3$

Answer: A

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9. Twelve solid spheres of the same size are made by melting a solid metallic cylinder of

base diameter 2 cm height 16 cm . The diameter of each sphere is .

A. 4 cm

B. 3 cm

C. 2 cm

D. 6 cm

Answer: C

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10. During conversion of a solid from one shape to another, the volume the new shape will

A. increase

B. decrease

C. remains unaltered

D. be doubled

Answer: C

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11. The number of solid spheres, each of diameter 6 cm that can be made by melting a solid metal cylinder of height 45 cm and diameter 4 cm is (a) 3 (b) 5 (c) 4 (d) 6

A. 3

B. 5

C. 4

D. 6

Answer: B

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Assertion And Reason Based Mcqs

1. Assertion (A) : If the height of the cone is 24 cm and diameter of the base is 14 cm, then the slant height of the cone is 15 cm.

Reason (R) : If r be the radius of the cone and h be the height of the cone, then slant height $= \sqrt{(h^2 + r^2)}$.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: D

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2. Assertion (A) : The radii of two cone are in the ratio 2:3 and their volumes in the ratio 1:3. Then ratio of their heights is 3:2.

Reason (R) : Volume of cone $= \frac{1}{3}\pi r^2 h$

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: D

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3. Assertion (A) : The volume and surface Area of a sphere are related to each other by radius.

Reason (R) : Relation between Surface Area S and Volume V is $S^3 = 36\pi V^2$.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: A

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4. Assertion (R) : If the volume of two spheres are in the ratio 27 : 8. Then their surface area are in the ratio 3:2.

Reason (R) : Volume of sphere $= \frac{4}{3}\pi r^3$ and its surface area $= 4\pi r^2$.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: D

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5. Assertion (A) : A solid is in the form of a cone standing on a hemisphere with both their radii being equal to $1\ cm$ and the height of the cone is equal to its radius. The volume of the solid is $\pi\ cm^3$.

Reason (R) : Volume of cone $= \frac{1}{3}\pi r^2 h$ and volume of hemi-sphere $= \frac{2}{3}\pi r^3$

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: A

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6. Assertion (A) : A solid iron in the form of a cuboid of dimensions $49cm \times 33cm \times 24cm$ is melted to form a solid sphere. Then the

radius of sphere will be 21 cm.

Reason (R) : Volume of cylinder $= \pi r^2 h, r$ is the radius of the cylinder and h is the height of the cylinder.

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: B

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7. Assertion (R) : There are 1000 balls of diameter 0.6 cm which can be formed by melting a solid sphere of radius 3 cm.

Reason (R) : Number of spherical balls = (Volume of Bigger solid sphere)/(Volume of 1 spherical ball)

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: A

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8. Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere. The entire top is 5 cm in height and the diamete

A. Both A and R are true and R is the correct explanation of A.

B. Both A and R are true and R is not the correct explanation of A.

C. A is true but R is false

D. A is false but R is true

Answer: C

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Case Based Mcqs

1. 

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2

domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

How much cloth material will be required to cover 2 big domes each of radius 2.5 metres?

A. $75m^2$

B. $78.57m^2$

C. $87.47m^2$

D. $25.8m^2$

Answer: B

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2. 

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find

combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes .Write the formula to find the volume of a cylindrical pillar

A. $\pi r^2 h$

B. $\pi r l$

C. $\pi r(l + r)$

D. $2\pi r$

Answer: A

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3. 

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had

interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

Find the lateral surface area of two pillars if height of the pillar is 7m and radius of the base is 1.4m.

A. $112.3cm^2$

B. $123.2m^2$

C. $90m^2$

D. $345.2cm^2$

Answer: B

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4. 

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2

domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

How much is the volume of a hemisphere if the radius of the base is 3.5m?

A. $85.9m^3$

B. $80m^2$

C. $98m^3$

D. $89.83m^3$

Answer: D

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5. 

Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find

combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical.7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.

What is the ratio of sum of volumes of two hemispheres of radius 1cm each to the volume of a sphere of radius 2 cm?

A. $1:1$

B. $1:8$

C. $8:1$

D. $1:16$

Answer: B

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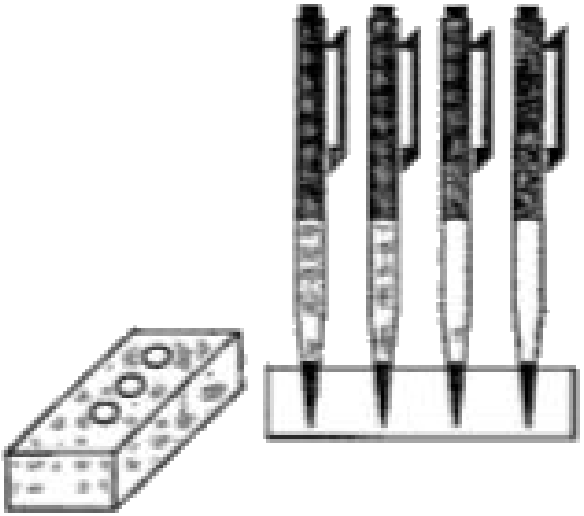
6. Read the following text and answer the following questions on the basis of the same :

A pen stand made of wood is in the shape of a cuboid with 4 conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The radius of each of the

depressions is 0.5 cm and the depth is 1.4 cm



Find the diameter of each conical depression.

A. 1 cm

B. 1.5 cm

C. 2.0 cm

D. 2.5 cm

Answer: A

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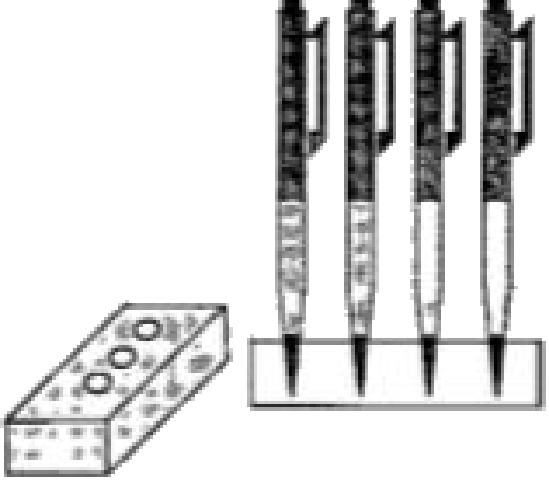

Find the volume of the cuboid

A. $520cm^3$

B. $550cm^3$

C. $525cm^3$

D. $528cm^3$

Answer: C

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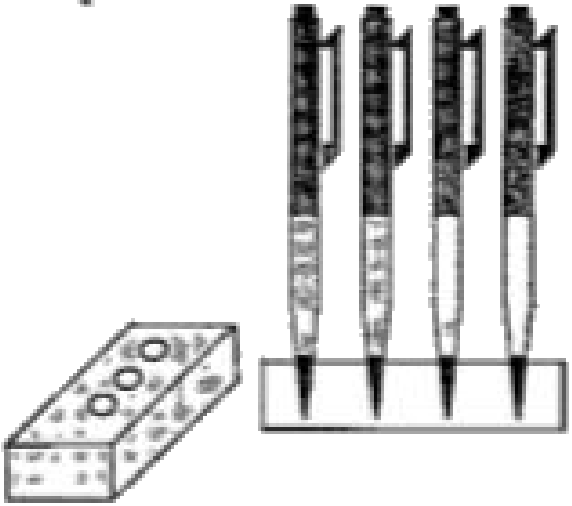

Write the formula to find out volume of conical depression

A. $\frac{1}{2}\pi r^2 h$

B. $2\pi r^2 h$

C. $\pi r^2 h$

D. $\frac{1}{3}\pi r^2 h$

Answer: D

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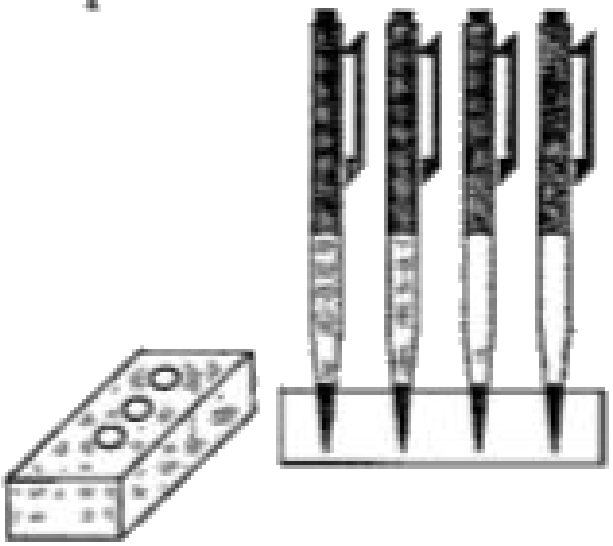
9. Read the following text and answer the following questions on the basis of the same :

A pen stand made of wood is in the shape of a cuboid with 4 conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The radius of each of the depressions is 0.5 cm and the depth is 1.4 cm



Find the volume of wood taken out to make four cavities.

A. $30.5cm^3$

B. $3.02cm^3$

C. $32.5cm^3$

D. $1.47cm^3$

Answer: D

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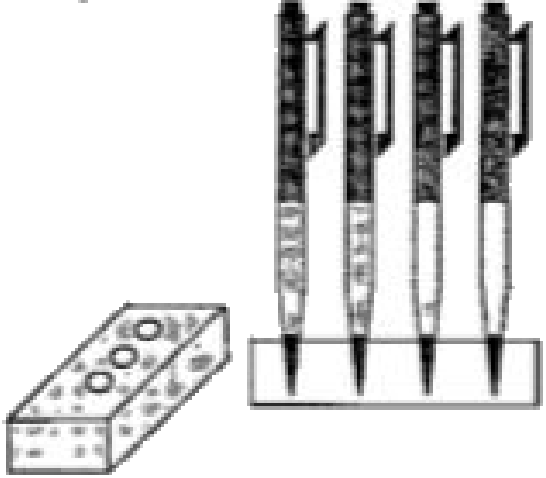
10. Read the following text and answer the following questions on the basis of the same :

A pen stand made of wood is in the shape of a cuboid with 4 conical depressions to hold pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The radius of each of the depressions is 0.5 cm and the depth is 1.4 cm



Find the volume of wood in the entire stand

A. $523.53cm^3$

B. $493cm^3$

C. $490cm^3$

D. $493.2cm^2$

Answer: A

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Example

1. 50 circular plates each of radius 7 cm and thickness 5 mm are placed one above another to form a solid right circular cylinder. Find the total surface area of the cylinder so formed.

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2. Find the number of spherical lead shots, each of diameter 6 cm that can be made from a solid cubiod of lead having dimensions $24cm \times 22cm \times 12cm$

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Self Assessment 1

1. The curved surface area of cylinder is $264m^2$ and its volume is $924m^3$.Find the ratio of its

height to its diameter.

A. $3:7$

B. $7:3$

C. $1:3$

D. $7:1$

Answer:

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2. If the volume of a parallelopiped whose three coterminal edges are represented by vectors, then λ=_____.

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3. If the area of the triangle is 4sq units, then x is

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Self Assessment 1 Multiple Choice Questions

1. Solve for x when $3^{3x} \cdot 2^{x+8} = 6^{2x+4}$.

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2. The radius of a sphere is r cm. Its divided into two equal parts. The whole surface area of two parts is _____.

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3. The total surface area of open cuboidal box is _____.

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Self Assessment 1 Very Short Answer Type Questions

1. The angle between given planes

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2. If the areas of three adjacent faces of a cuboid are x, y, z respectively, then the volume of the cuboid is xyz (b) $2xyz$ (c) $\sqrt{xyz}$ (d) $3\sqrt{xyz}$

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3. If the radii of two cylinders are in the ratio 2:3 and their heights are in the ratio 5:3, then find the ratio of their volumes.

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4. Volume and surface area of a solid hemisphere are numerically equal. What is the diameter of the hemisphere. ?

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5. Find the number of coins, 1.5 cm in diameter and 0.2 cm thick, to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm.

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6. A cylinder and a cone have equal radii of their bases and equal heights. If their curved surface areas are in the ratio 8:5, show that the radius of each is to the height of each as 3:4.

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Self Assessment 1 Short Answer Type Questions Ii

1. The sum of radius of base and height of a solid right circular is 37 cm . If the total surface area of the solid cylinder is 1628 sq.cm ,find the volume of the cylinder , (use $\pi = \frac{22}{7}$)

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2. A glass is in the shape of a cylinder of radius 7 cm and height 10 cm. Find the volume of

juice in litre required to fill 6 such glasses. [Use $\pi = \frac{22}{7}$]

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3. A metallic cylinder has radius 3 cm and height 5 cm. To reduce its weight, a conical hole is drilled in the cylinder. The conical hole has a radius of $\frac{3}{2}$cm and its depth $\frac{8}{9}$ cm. Calculate the ratio of the volume of metal left in the cylinder to the volume of metal taken out in conical shape.

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4. The internal and external diameters of a hollow hemispherical vessel are 16 cm and 12 cm respectively. If the cost of painting $1cm^2$ of the surface area is Rs 5.00, find the total cost of painting the vessel all over. (Use $\pi = 3.14$)

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5. A milk tanker cylindrical in shape having diameter 2 m and length 4.2 m supplies milk

to the two booths in the ratio 3:2. One of the milk booths has cuboidal vessel having base area 3.96 sq. m. and the other has a cylindrical vessel having radius 1 m. Find the level of milk in each of the vessels. [Use$\pi = \frac{22}{7}$]

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6. 150 spherical marbles, each of diameter 1.4 cm are dropped in a cylindrical vessel of diameter 7 cm containing some water, which

are completely immersed in water. Find the rise in the level of water in the vessel.

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Self Assessment 2 Multiple Choice Questions

1. A rectangular sheet of paper 40 cm $\times$ 22 cm , is rolled to form a hollow cylinder of height 40 cm . The radius of the cylinder (in cm) is

A. 3.5

B. 7

C. $\frac{80}{7}$

D. 5

Answer:

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2. The number of solid spheres , each of diameter 6 cm , that can be made by melting a

solid metal cylinder of height of 45 cm and diameter 4 cm , is

A. 3

B. 5

C. 4

D. 6

Answer:

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Self Assessment 2 Fill In The Blanks

1. A sphere of radius 6 cm is melted and made three small spheres of radius 3 cm, 4 cm and r cm respectively, the value of r is .....

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2. A solid metallic block of dimensions $4cm \times 6cm \times 8cm$ is melted and recast into solid cubical blocks of edge 2 cm each. The number of recasted cubical blocks will be .....

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3. A solid sphere of radius r is melted and recast into the shape of a solid cylinder of heighty ‘r’. Then the radius of base of solid cylinder will be.....

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Self Assessment 2 Very Short Answer Type Questions

1. 12 solid spheres of the same size are made by melting a solid metallic cone of base radius 1 cm and height of 48 cm. Find the radius of each sphere.

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2. A solid sphere of radius r is melted and recast into the shape of a solid cone of height r. Find radius of the base of the cone.

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3. If a cone is cut into two parts by a horizontal plane passing through the mid-points of its axis, find the ratio of the volume of the upper part and the cone.

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Self Assessment 2 Short Answer Type Questions

1. A solid metallic cylinder of radius 3.5 cm and height 14 cm is melted and recast into a

number of small solid metallic balls, each of radius $\frac{7}{12} cm$. Find the number of balls so formed.

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2. Find the number of coins, 1.5 cm in diameter and 0.2 cm thick, to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm.

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3. A metallic spherical shell of internal and external diameters 4 cm and 8 cm, respectively is melted and recast into the form a cone of base diameter 8 cm. The height of the cone is

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Self Assessment 2 Short Answer Type Questions Ii

1. Two spheres of same metal weight 1 kg and 7 kg. The radius of the smaller sphere is 3 cm.

The two spheres are melted to form a single big sphere. Find the diameter of the new sphere.

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2. A solid sphere of radius 3 cm is melted and then recast into small spherical balls each of diameter 0.6 cm. Find the number of balls.

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3. A solid metallic cone of radius 2 cm and height 8 cm is sphere. Find the radius of sphere.

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Self Assessment 2 Long Answer Type Questions

1. 504 cones, each of diameter 3.5 cm and height 3 cm, are melted and recast into a metallic sphere. Find the diameter of the

sphere and hence find its surface area. [Use $\pi = \frac{22}{7}$]

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2. A copper rod of diameter 1 cm and length 8 cm is drawn in to a wire of length 18 m of uniform thickness. Find the thickness of wire.

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3. A solid cylinder of diameter 12 cm and height 15 cm is melted and recast into toys in the shape of a cone of radius 3 cm and height 9 cm. Find the number of toys so formed.

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Self Assessment 2 Case Study Based Questions

1. 

How much cloth material will be required to cover 1 big central dome of radius 4.5 meters ? (Take $\pi = \frac{22}{7}$)

A. $127.28m^2$

B. $172.17m^2$

C. $170.17m^2$

D. $120.17m^2$

Answer:

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2.

Write the formula to find the volume of a cylindrical pillar:

A. $\pi r^2 h$

B. $\pi r l$

C. $\pi r(l + r)$

D. $2\pi r$

Answer: A

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3. 

Find the lateral surface area of two pillars of height of the pillar is 6 m and radius of the base is 1.2 m.

A. $89.5m^2$

B. $90.5m^2$

C. $91.5m^2$

D. $88.5m^2$

Answer: B

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4.

How much is the volume of a hemisphere if the radius of the base is 2.5 m?

A. $30.7m^3$

B. $32.0m^3$

C. $32.73m^3$

D. $37.3m^3$

Answer: C

Watch Video Solution

5. 

Write the formula to find the volume of a hemispherical domes.

A. $\frac{2}{3}\pi r^3$

B. $\frac{4}{3}\pi r^3$

C. $2\pi r^2$

D. $\frac{2}{5}\pi r^3$

Answer:

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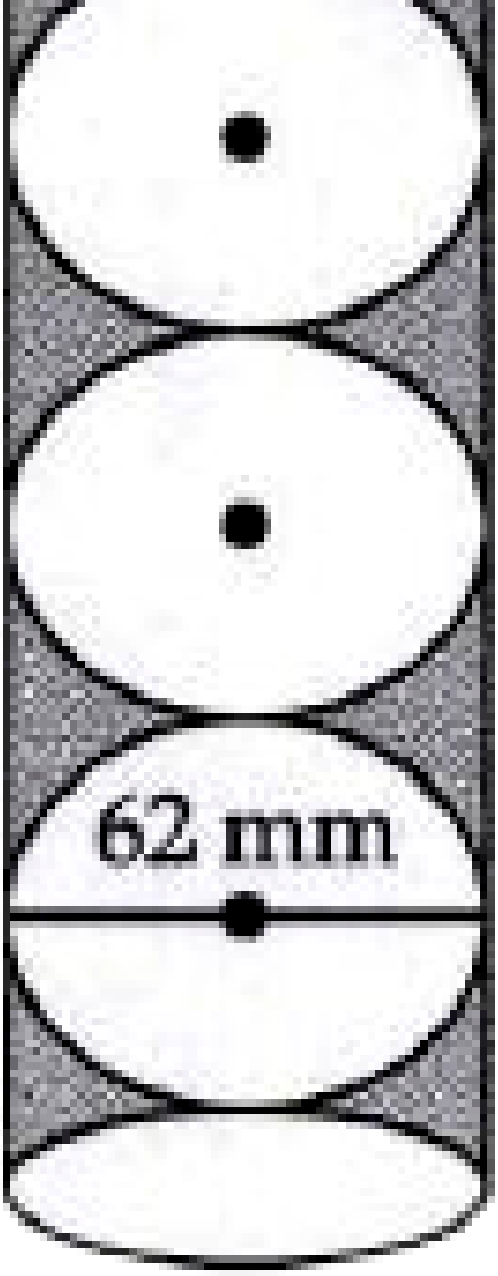
6. Five tennis balls, diameter 62 mm are placed in cylindrical card tubes .Find the radius of the tennis balls :



A. 30 mm

B. 29 mm

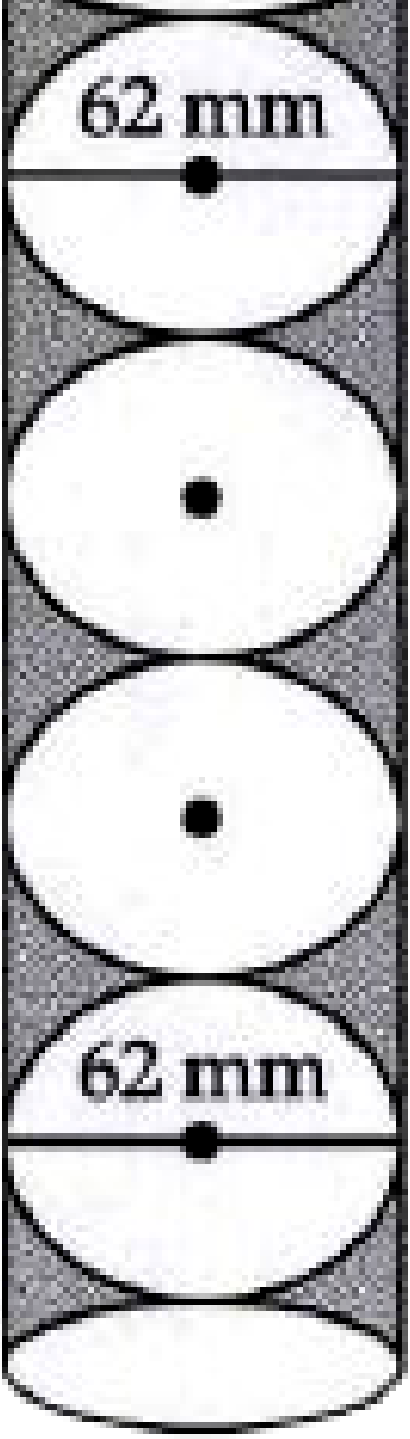
C. 31mm

D. 32 mm

Answer:

Watch Video Solution

7. Five tennis balls, diameter 62 mm are placed in cylindrical card tubes.Volume of 1 ball is equal to :


62 mm
62 mm

A. $125cm^3$

B. $123.5cm^3$

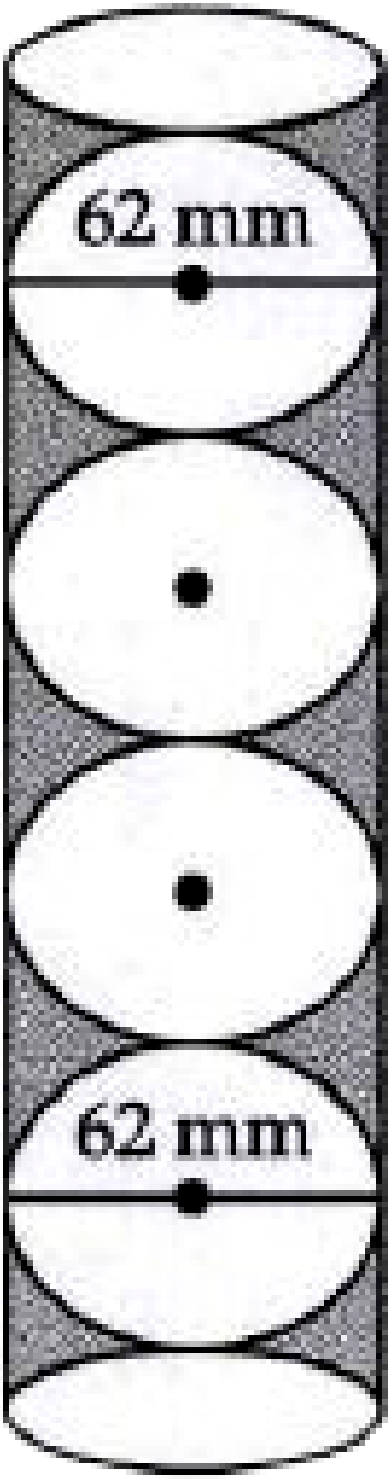
C. $120.30cm^3$

D. $124.84cm^3$

Answer:

Watch Video Solution

8. Five tennis balls, diameter 62 mm are placed in cylindrical card tubes. Find the height of the tube :


62 mm
62 mm

A. 300 mm

B. 320 mm

C. 310 mm

D. 301 mm

Answer:

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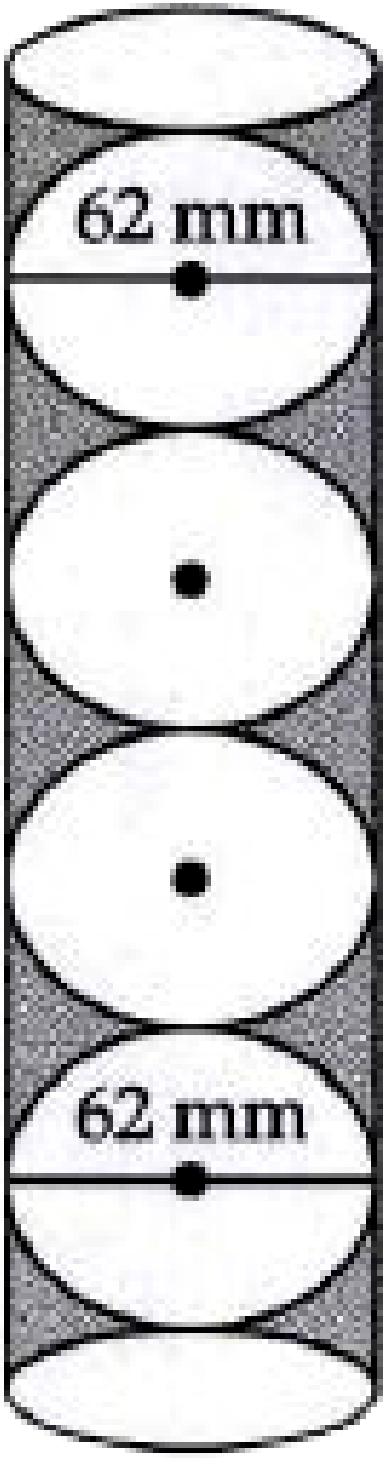
9. Five tennis balls, diameter 62 mm are placed in cylindrical card tubes.Find the volume of the

tube :


62 mm
62 mm

A. $963cm^3$

B. $966.3cm^3$

C. $939.23cm^3$

D. $936.29cm^3$

Answer:

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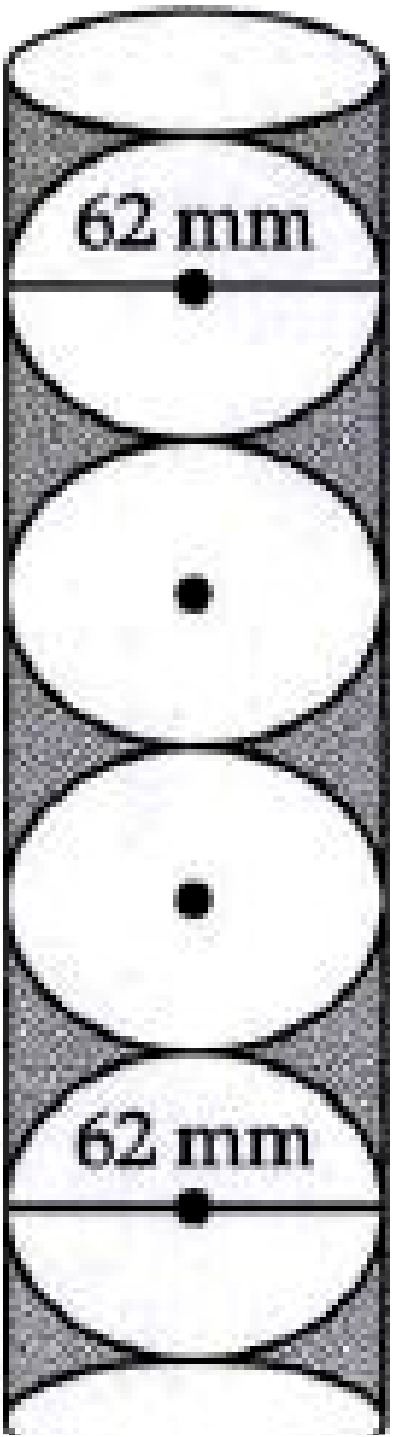
10. Five tennis balls, diameter 62 mm are placed in cylindrical card tubes. Find the volume of unfilled space (shaded area) in the

tube:



Find the volume of unfilled space (shaded area) in the tube.

A. $310.9cm^3$

B. $312.\ 09cm^3$

C. $301.90cm^3$

D. $321.09cm^3$

Answer:

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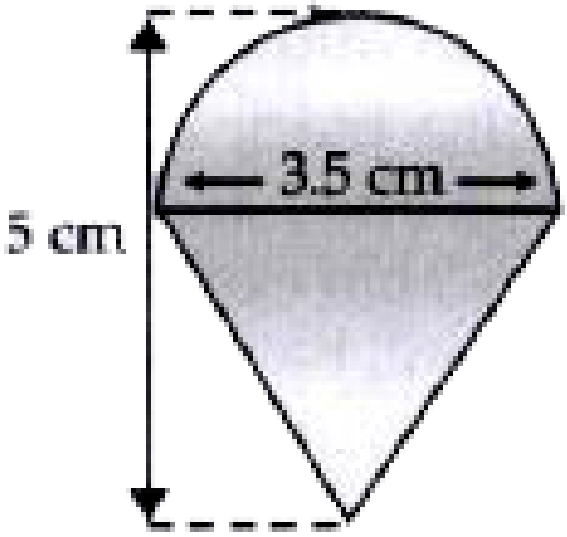
11. Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere (see figure). The entire top is 5 cm in height and the diameter of the to is 3.5 cm. What will be the radius of

hemispherical portion having diameter 3.5cm ?



A. $1.75cm$

B. $1.25cm$

C. $1.5cm$

D. $1.15cm$

Answer:

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12. Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere. The entire top is 5 cm in height and the diamete

A. $16.875cm^2$

B. $15.875cm^2$

C. $19.25cm^2$

D. $19.875cm^2$

Answer:

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13. Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone

surmounted by a hemisphere. The entire top is 5 cm in height and the diamete

A. $20.35cm^2$

B. $21.25cm^2$

C. $23.45cm^2$

D. $28.15cm^2$

Answer:

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14. Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere. The entire top is 5 cm in height and the diamete

A. $nr2h$

B. $!nr2h$

C. $\frac{1}{2}\pi r^2 h$

D. $4nr2h$

Answer:

Watch Video Solution

15. Rasheed got a playing top (lattu) as his birthday present, which surprisingly had no colour on it. He wanted to colour it with his crayons. The top is shaped like a cone surmounted by a hemisphere. The entire top is 5 cm in height and the diamete

A. $40.225cm^2$

B. $41.625cm^2$

C. $39.6cm^2$

D. $38.225cm^2$

Answer:

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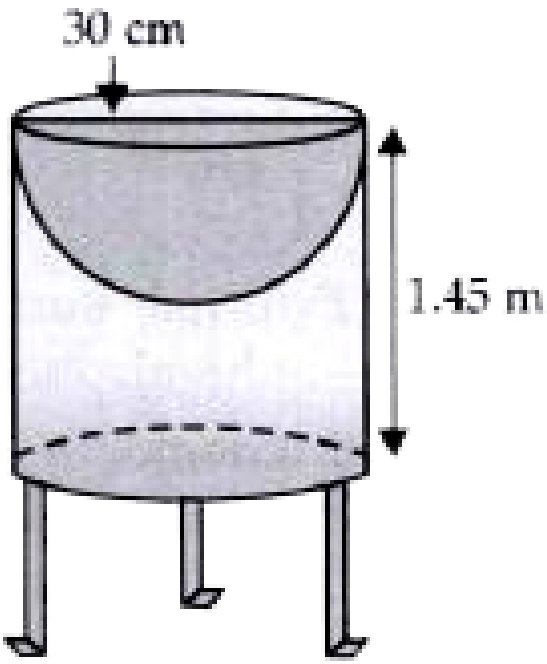
16. Mayank made a bird-bath for his garden in the shape of a cylinder with a hemispherical depr ession at one end . The height of the cylinder is 1.45 m and its radius is 30 cm.



Find the surface area of hemi spherical depression.

A. $5671.14cm^2$

B. $5654.\ 24cm^2$

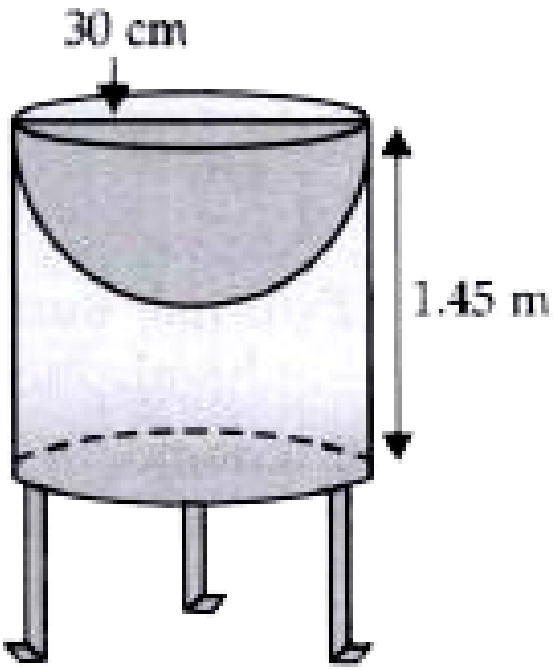
C. $5624.\ 14cm^2$

D. $5625.24cm^2$

Answer:

Watch Video Solution

17. Mayank made a bird-bath for his garden in the shape of a cylinder with a hemispherical depr ession at one end . The height of the cylinder is 1.45 m and its radius is 30 cm.



Find the curved surface area of cylindrical portion.

A. $2.7242852m^2$

B. $2.734285m^2$

C. $2.754285m^2$

D. $2.764285m^2$

Answer:

Watch Video Solution

18. Mayank made a bird-bath for his garden in the shape of a cylinder with a hemispherical depression at one end. The height of the cylinder is 1.45 m and its radius is 30 cm. Find the total surface area of the bird-bath.

A. $35, 828.56cm^2$

B. $35228.50cm^2$

C. $35628.56cm^2$

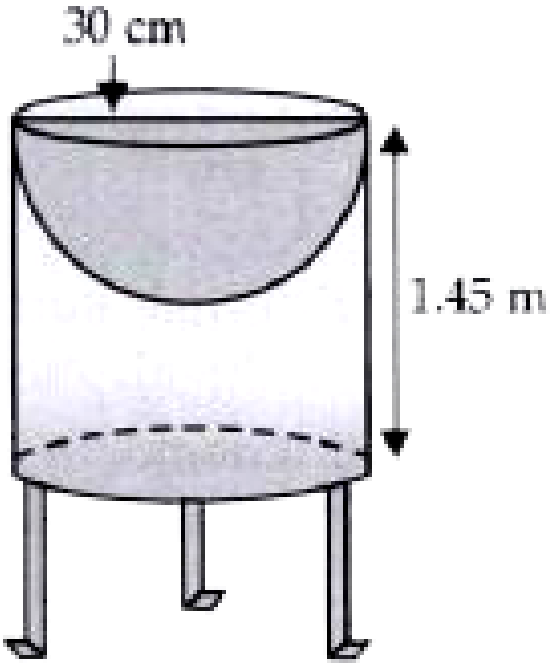
D. $35128.50cm^2$

Answer:

Watch Video Solution

19. Mayank made a bird-bath for his garden in the shape of a cylinder with a hemispherical depr ession at one end . The height of the cylinder is 1.45 m and its radius is 30 cm. Find

the total surface area of bird bath.



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20. Diameter of a right circular cylinder is 10 cm and hight is 14 cm,find its lateral surface.

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21. If the total surface arecl of a solid hemisphere is $462cm^2$ find its volume

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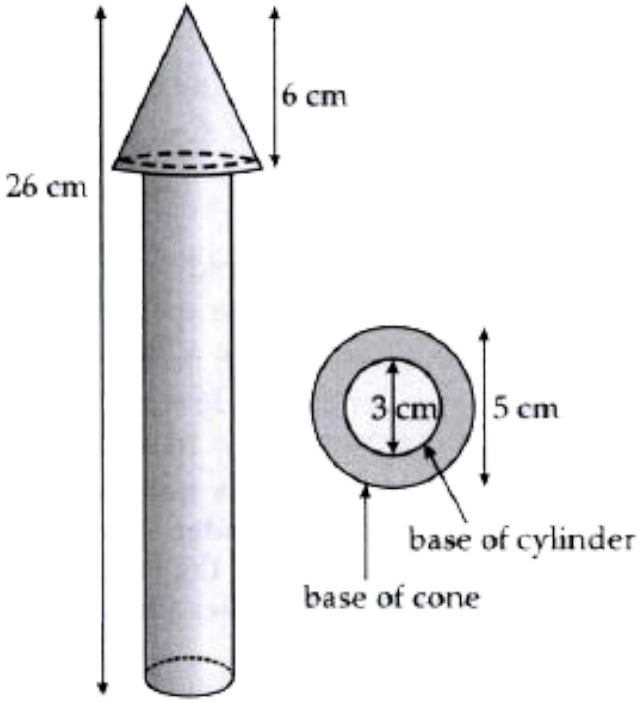
22. A wooden toy rocket is in the shape of a cone mounted on a cylinder, as shown in figure. The height of the entire rocket is 26 cm, while the height of the conical part is 6 cm. The base of the conical partition has a

diameter of 5 cm, while the base diameter of the cylindrical protion is 3 cm.Find the slant height of conical portion.



A. $\frac{5}{2}cm$

B. $\frac{7}{2}cm$

C. $\frac{11}{2}cm$

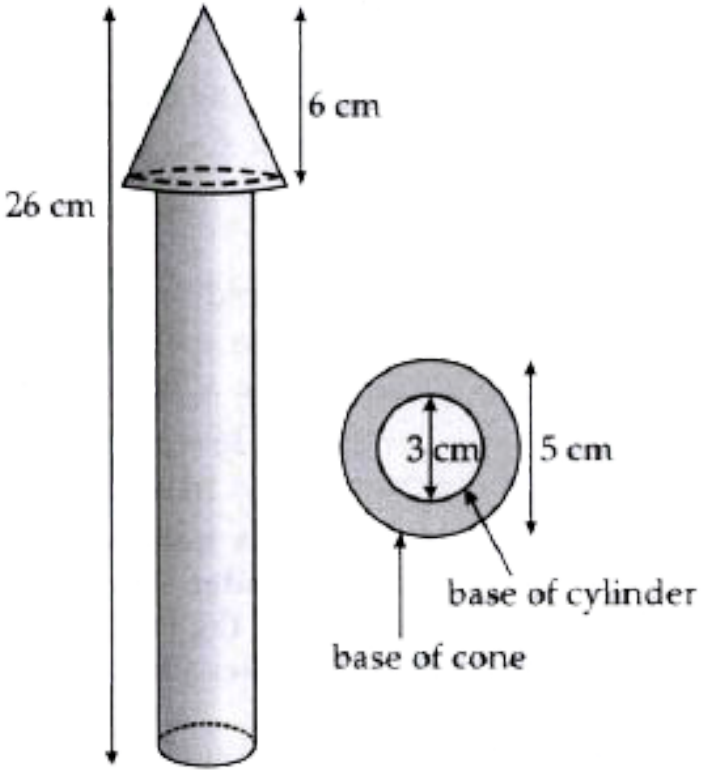
D. $\frac{13}{2}cm$

Answer: D

Watch Video Solution

23. A wooden toy rocket is in the shape of a cone mounted on a cylinder, as shown in figure. The height of the entire rocket is 26 cm, while the height of the conical part is 6 cm. The base of the conical partition has a

diameter of 5 cm, while the base diameter of the cylindrical protion is 3 cm.



If the conical portion is to be painted orange, find the area to be painted orange. Find the area of the rockeeet peainted with each of these colours? (Take π = 3.14)

A. $61.585cm^2$

B. $62.585cm^2$

C. $63.585cm^2$

D. $64.585cm^2$

Answer:

Watch Video Solution

24. A wooden toy rocket is in the shape of a cone mounted on a cylinder as shown in Fig. 16.36. The height of the entire rocket is 26 cm,

while the height of the conical part is 6 cm. The base of the conical portion has a diameter of 5 cm, while the base diameter of the cylindrical portion is 3 cm. If the conical portion is to be painted orange and the cylindrical portion yellow, find the area of the rocket painted with each of these colours. (Take $\pi = 3.14$)

A. $191.465cm^2$

B. $193.465cm^2$

C. $196.465cm^2$

D. $195.465cm^2$

Answer:

Watch Video Solution

Ncert Corner Exercise 13 1

1. 2 cubes each of volume $64\ cm^3$ are joined end to end. Find the surface area of the resulting cuboid.

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2. A vessel in the form of a hollow hemisphere mounted by a hollow cylinder. The diameter of the hemisphere is 14 cm and the total height of the vessel is 13 cm. Find the inner surface area of the vessel.

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3. A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius.

The total height of the toy is 15.5 cm. Find the total surface area of the toy.

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4. A cubical block of side 7 cm is surmounted by a hemisphere. What is the greatest diameter the hemisphere can have? Find the surface area of the solid.

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5. A hemispherical depression is cut out from one face of a cubical wooden block such that the diameter l of the hemisphere is equal to the edge of the cube. Determine the surface area of the remaining solid.

Watch Video Solution

6. A medicine capsule is in the shape of acylinder with two hemispheres stuck to each of its ends. The length of the entire capsule is

14 mm and the diameter of the capsule is 5 mm. Find its surface area.

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7. A tent is in the shape of a cylinder surmounted by a conical top. If the height and diameter of the cylindrical part are 2.1 m and 4 m, and slant height of the top is 2.8 m, find the area of the canvas used for making the tent. Also, find the cost of canvas of the tent at the rate of Rs $500\ per\ m^2$.

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8. From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the same height and same diameter is hollowed out. Find the total surface area of the remaining solid to the nearest cm^2 .

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9. A wooden article was made by scooping out a hemisphere from each end of a solid

cylinder, as shown in Fig. 16.37. If the height of the cylinder is 10 cm, and its base is of radius 3.5 cm, find the total surface area of the article.

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Ncert Corner Exercise 13 2

1. A solid is in the shape of a cone standing on a hemisphere with both their radii being equal to 1 cm and the height of the cone is equal to

its radius. Find the volume of the solid in terms of π .

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2. Rachel, an engineering student, was asked to make a model shaped like a cylinder with two cones attached at its two ends by using a thin aluminium sheet. The diameter of the model is 3 cm and its length is 12 cm. If each cone has a height of 2 cm

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3. A gulab jamun, contains sugar syrup up to about 30% of its volume. Find approximately how much syrup would be found in 45 gulab jamuns, each shaped like a cylinder with two hemispherical ends with length 5 cm and diameter 2.8 cm

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4. A pen stand made of wood is in the shape of a cuboid with four conical depressions to hold

pens. The dimensions of the cuboid are 15 cm by 10 cm by 3.5 cm. The radius of each of the depressions is 0.5 cm and the depth is 1.4 cm. Find the volume o

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5. A vessel is in the form of an inverted cone. Its height is 8 cm and the radius of its top, which is open, is 5 cm. It is filled with water up to the brim. When lead shots, each of which is

a sphere of radius 0.5 cm are dropped into the vessel, on

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6. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that $1cm^3$ of iron has approximately 8 gm mass. (Use $\prod$ = 3.14)

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7. A solid consisting of a right circular cone of height 120 cm and radius 60 cm standing on a hemisphere of radius 60 cm is placed upright in a right circular cylinder full of water such that it touches the bottoms. Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm.

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8. A spherical glass vessel has a cylindrical neck 8 cm long, 2 cm in diameter: the diameter of the spherical part is 8.5 cm. By measuring the amount of water it holds, a child finds its volume to be $345\ cm^3$. Check whether she is correct, taking the above as the inside measurements and $\pi = 3.16$.

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Ncert Corner Exercise 13 3

1. A metallic sphere of radius 4.2 cm is melted and recast into the shape of a cylinder of radius 6 cm. Find the height of the cylinder.

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2. 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.

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3. A 20 m deep well with diameter 7 m is dug and the earth from digging is evenly spread out to form a platform 22 m by 14 m. Find the height of the platform.

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4. A well of diameter 3 m is dug 14 m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 4 m to form an embankment. Find the height of the embankment.

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5. A container shaped like a right circular cylinder having diameter 12 cm and height 15 cm is full of ice-cream. The ice-cream is to be filled into cones of height 12 cm and diameter 6 cm, having a hemispherical shape on the top. Find the number of such cones which can be filled with ice-cream.

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6. How many silver coins, 1.75 cm in diameter and of thickness 2 mm, must be melted to form a cuboid of dimensions $5.5cm \times 10cm \times 3.5cm$?

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7. A cylindrical bucket, 32 cm high and with radius of base 18 cm, is filled with sand. This bucket is emptied out on the ground and a conical heap of sand is formed. If the height of

the conical heap is 24 cm, find the radius and slant height of the heap.

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8. Water in a canal, 6 m wide and 1.5 m deep, is flowing with a speed of 10 km/h. How much area will it irrigate in 30 minutes, if 8 cm of standing water is needed?

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9. A farmer connects a pipe of internal diameter 20 cm from a canal into a cylindrical tank in her field, which is 10 m in diameter and 2 m deep. If water flows through the pipe at the rate of 3 km/h, in how much time will the tank be filled?

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Ncert Corner Exercise 13 4

1. A drinking glass is in the shape of a frustum of a cone of height 14 cm. The diameters of its two circular ends are 4 cm and 2 cm. Find the capacity of the glass.

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2. The slant height of a frustum of a cone is 4 cm and the perimeters (circumference) of its circular ends are 18 cm and 6 cm. Find the curved surface area of the frustum.

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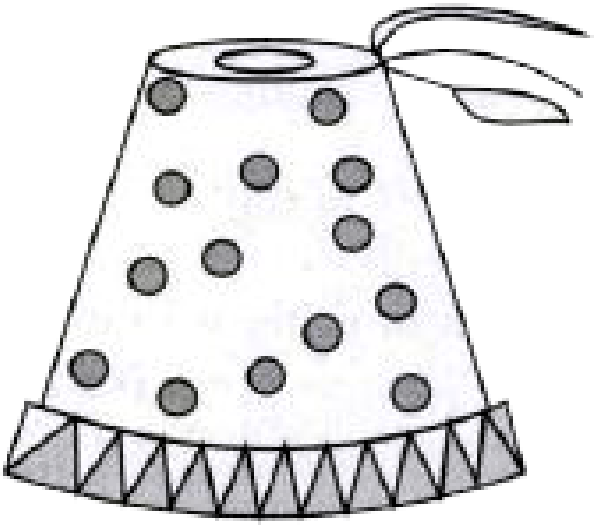
3. A fez, the cap used by the Turks, is shaped like the frustum of a cone (see Figure). If its radius on the open side is 10 cm, radius at the upper base is 4 cm and its slant height is 15 cm, find the area of material used for making

it.



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4. A container opened at the top and made up of a meta! sheet, is in the form of a frustum of a cone of height 16 cm with radii of its lower

and upper ends as 8 cm and 20 cm respectively. Find the cost of milk which can completely fill the container, at the rate of ? 50 per litre. Also find the cost of meta! sheet used to make the container, if it costs Rs. 10 per $100cm^2$? (Take π = 3.14).

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5. A solid metallic right circular cone 20 cm high with vertical angle $60o$ is cut into two parts at the middle point of its height by a

plane parallel to the base. If the frustum, so obtained, be drawn into a wire of diameter $\frac{1}{16}\ cm$, find the length of the wire.

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Ncert Corner Exercise 13 5

1. A copper wire, 3 mm in diameter, is wound about a cylinder whose length is 12 cm, and diameter 10 cm, so as to cover the curved surface of the cylinder. Find the length and

mass of the wire, assuming the density of copper to be `8. 88g"\ "p e r"\

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2. A right triangle, whose sides are 3 cm and 4 cm (other than hypotenuse) is made to revolve about its hypotenuse. Find the volume and surface area of the double cone so formed.

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3. A cistern, internally measuring $150\ cm \times 120\ cm \times 110\ cm$ has $129600\ cm^3$ of water in it. Porous bricks are placed in the water until the cistern is full to the brim. Each brick absorbs one seventeenth of its own volume of water. How many bricks can be put in without the water overflowing, each brick being $22.5\ cm \times 7.5\ cm \times 6.5\ cm$?

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4. In one fortnight of a given month, there was a rainfall of 10 cm in a river valley. If the area of the valley is $97280\ km^2$, show that the total rainfall was approximately equivalent to the addition to the normal water of three rivers each 10

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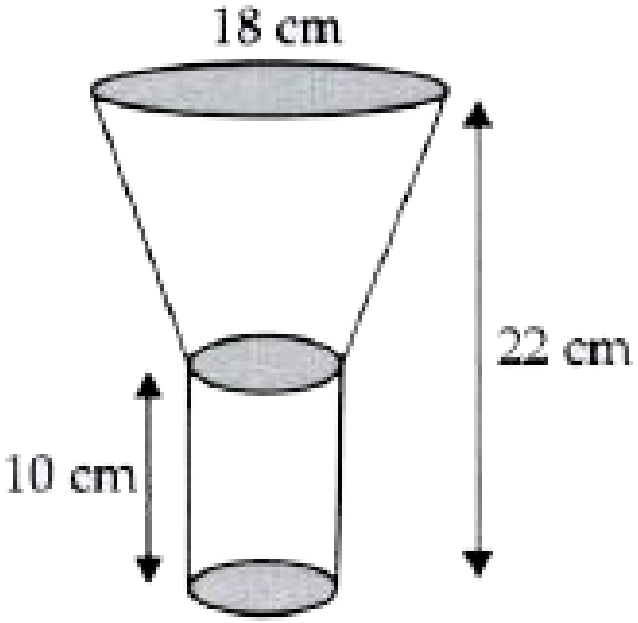
5. An oil funnel made of tin sheet consists of a 10 cm long cylindrical portion attached to a

frustum of a cone. If the total height is 22 cm, diameter of the cylindrical portion is 8 cm and the diameter of the top of the funnel is 18 cm, find the area of the tin sheet required to make the funnel



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6. Derive the formula for the curved surface area and total surface area of the frustum of a cone.

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7. Derive the formula for the volume of the frustum of a cone.

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Ncert Exemplar Exercise 13 1

1. A cylindrical pencil sharpend at one edge is the combination of

A. a cone and a cylinder

B. frustum of a cone and a cylinder

C. a hemisphere and a cylinder

D. two cylinders

Answer: A

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2. A surahi is the combination of

A. a sphere and a cylinder

B. a hemisphere and a cylinder

C. two hemispheres

D. a cylinder and a cone

Answer: A

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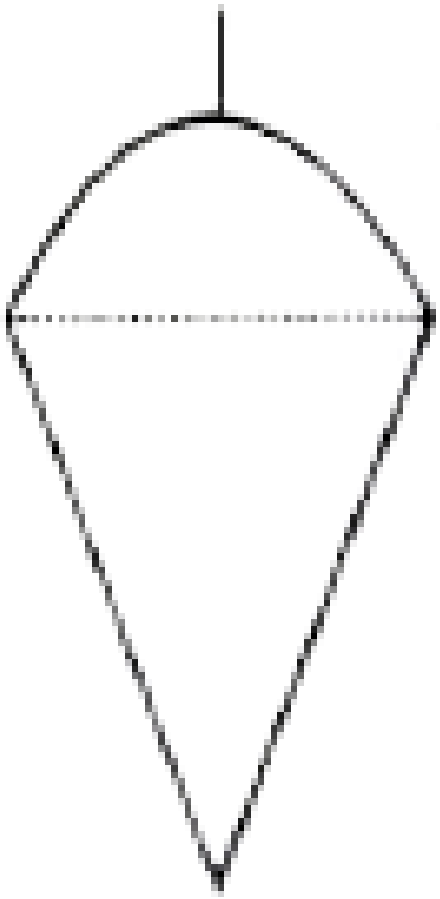
3. A plumbline (Sahul) is the combination of



A. a cone and a cylinder

B. a hemisphere and a cone

C. frustum of a cone and a cylinder

D. sphere and cylinder

Answer: B

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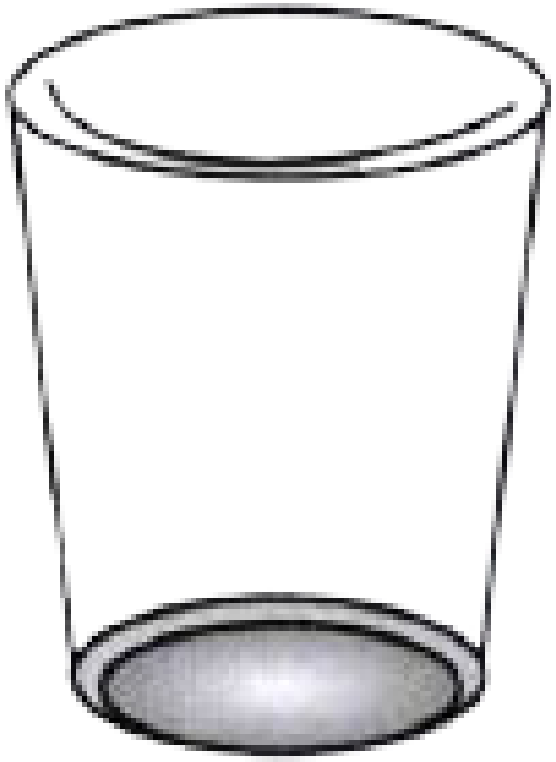
4. The shape of a glass (tumbler) (see Figure) is usually in the form of



A. a cone

B. frustum of a cone

C. a cylinder

D. a sphere

Answer: B

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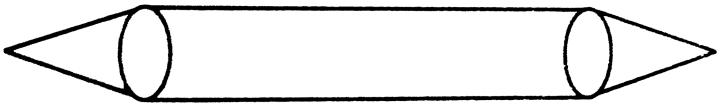
5. The sharpe of a gilli, the gilli-danda game (see figure) is a combination of



A. two cylinders

B. a cone and a cylinder

C. two cones and a cylinder

D. two cylinders and a cone

Answer: C

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6. A shuttle cock used for playing badminton has the shape of the combintion of

A. a cylinder and a sphere

B. a cylinder and a hemisphere

C. a sphere and a cone

D. frustum of a cone and a hemisphere

Answer: D

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7. A cone is cut through a plane parallel to its base and then the cone that is formed on one side of that plane is removed . The new part that is left over on the other side of the plane is called.

A. a frustum of cone

B. cone

C. cylinder

D. sphere

Answer: A

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8. If a hollow cube of internal edge 22 cm is filled with spherical marbles of diameter 0.5 cm and it is assumed that $\frac{1}{8}$ space of the cube

remains unfilled. Then, the number of marbles that the cube can accommodate is

A. 142296

B. 142396

C. 142496

D. 142596

Answer: A

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9. A metallic spherical shell of internal and external diameters 4 cm and 8 cm, respectively is melted and recast into the form a cone of base diameter 8 cm. The height of the cone is

A. 12 cm

B. 14 cm

C. 15 cm

D. 18 cm

Answer: B

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10. A solid piece of iron in the form of a cuboid of dimensions (49 $\times$ 33cm $\times$ 24 cm) is moulded to form a solid sphere . The radius of the sphere is

A. 21 cm

B. 23 cm

C. 25 cm

D. 19 cm

Answer: D

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11. A mason constructs a wall of dimension $270cm \times 300cm \times 350cm$ with the bricks each of size $22.5cm \times 11.25cm \times 8.75cm$ and it is assumed that $\frac{1}{8}$ space is coverd by the mortra. Then, the number of bricks used to construct the wall is .

A. 11100

B. 11200

C. 11000

D. 11300

Answer: B

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12. Twelve solid spheres of the same size are made by melting a solid metallic cylinder of base diameter 2 cm height 16 cm . The diameter of each sphere is .

A. 4 cm

B. 3 cm

C. 2 cm

D. 6 cm

Answer: C

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13. The radii the top and bottom of a bucket of slant height 45 cm are 28 cm and 7 cm

respectively . The curved surface area of the bucket is

A. $4950cm^2$

B. $4951cm^2$

C. $4952cm^2$

D. $4953cm^2$

Answer: A

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14. A medicine -capsule is the shape of a cylinder of diameter 0.5 cm with two hemisphere stuck to each of its ends. The length of entire capsule is 2cm. The capacity of the capsule is

A. $0.36cm^3$

B. $0.35cm^3$

C. $0.34cm^3$

D. $0.33cm^3$

Answer: A

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15. If two solid hemispheres of same base radius r are joined together along their bases, them curved surface area of the this new solid is

A. $4\pi r^2$

B. $6\pi r^2$

C. $3\pi r^2$

D. $8\pi r^2$

Answer: A

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16. A right circular cylinder of radius r cm and height h cm (where , h gt 2r) just encloses a sphere of diameter

A. r cm

B. 2r cm

C. h cm

D. 2h cm

Answer: B

17. During conversion of a solid from one shape to another, the volume the new shape will

A. increase

B. decrease

C. remains unaltered

D. be doubled

Answer: C

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18. The diameters of the two circular ends of the bucket are 44 cm and 24 cm. The height of the bucket is 35 cm . The capacity of the bucket is

A. 32.7L

B. 33.7L

C. 34.7 L

D. 37.7 L

Answer: A

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19. In a right circular cone, the corss - section made by a plane parallel to the base is a

A. circle

B. frustum of a cone

C. sphere

D. hemisphere

Answer: A

 Watch Video Solution

20. If volume of two spheres are in the ratio $64:27$, then the ratio of their surface area is

A. $3:4$

B. $4:3$

C. $9:16$

D. $16:9$

Answer: D

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Ncert Exemplar Exercise 13 2

1. Two identical solid hemisphers of equal base radiu r cm are stuck together along their bases. The total surface area of the combination is $6\pi r^2$.

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2. A solid cylinder of radius r and height h is palced over other cylinder same height and radius . The total surface area of the shape so formed is $4\pi rh + 4\pi r^2$.

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3. Asolid cone of radius r and height h is placed over a solid cylinder having same base radius and height as that of a cone,. The total

surface area of the combined solid is $\pi\left[\sqrt{r^2+h^2}+3r+2h\right]$

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4. A solid ball is exactly fitted inside the cubical box of side a. The volume of the ball is .

A. πa^3

B.

C.

D.

Answer:

Watch Video Solution

5. The volume of the frustum of a cone is $\frac{1}{3}\pi h\left[r_1^2 + r_2^2 - r_1 r_2\right]$, where h is vertical height of the frustum and $r_1 r_2$ are the radii of the ends.

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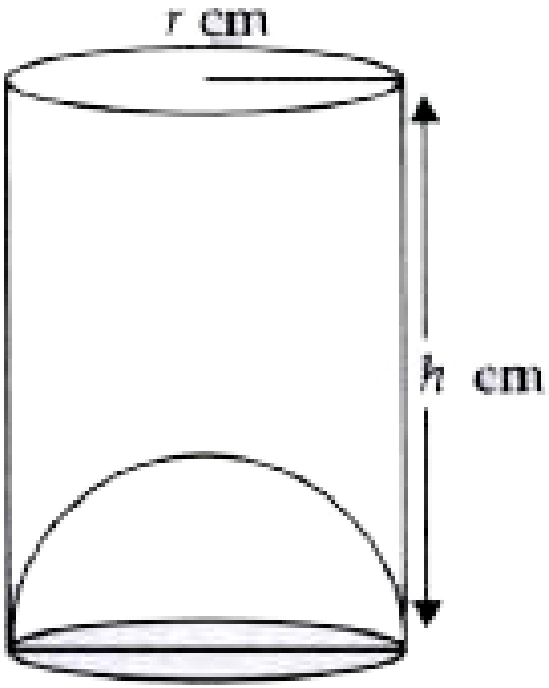
6. The capacity of a cylindrical vessel with a hemispherical portion raised upward, at the bottom as shown in the given is $\frac{\pi r^2}{3}(3h - 2r)$.



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7. The curved surface area of frustum of a cone is $\pi/(r_1 + r_2)$, where $l = \sqrt{h^2 + (r_1 + r_2)^2}$, r_1 and r_2 are the radii of two ends of the frustum and h s the vertical height.

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8. An open metallic bucket is the shape of a frustum of a cone mounted on a hollow cuylinderical base made of the same metallic

sheet . The surface area of the metallic sheet used is equal to curved surface area of frustum of a cone + area of circular base + curved surface area of cylinder.

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Ncert Exemplar Exercise 13 3

1. Three metallic solid cubes whose edges are 3 cm ,4 cm and 5 cm melted and formed into a

single cube . Find the edge of the cube formed.

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2. How many shots each having diameter 3 cm can be made form a cuboidal lead solid of dimensions $9cm \times 11cm \times 12cm$?

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3. A bucket is in the form of a frustum of a cone and hold 28.490 litres of water. The radii of the top and bottom are 28 cm and 21 cm respectively. Find the height of the bucket.

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4. A cone of radius 8cm and height 12cm is divided into two parts by a plane through the mid-point of its axis parallel to its base. Find the ratio of the volumes of the two parts.

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5. Two identical cubes each of volume $64cm^3$ are joined together end to end. What is the surface area of the resulting cuboid?


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6. From a solid cube of side 7 cm, a conical cavity of height 7 cm and radius 3 is hollwed out. Find the volume of the remaining solid.


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7. Two cones with same base radius 8 cm and height 15 cm are joined together along their bases. Find the surface area of the shape so formed.

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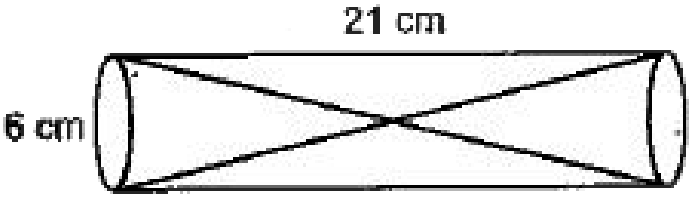
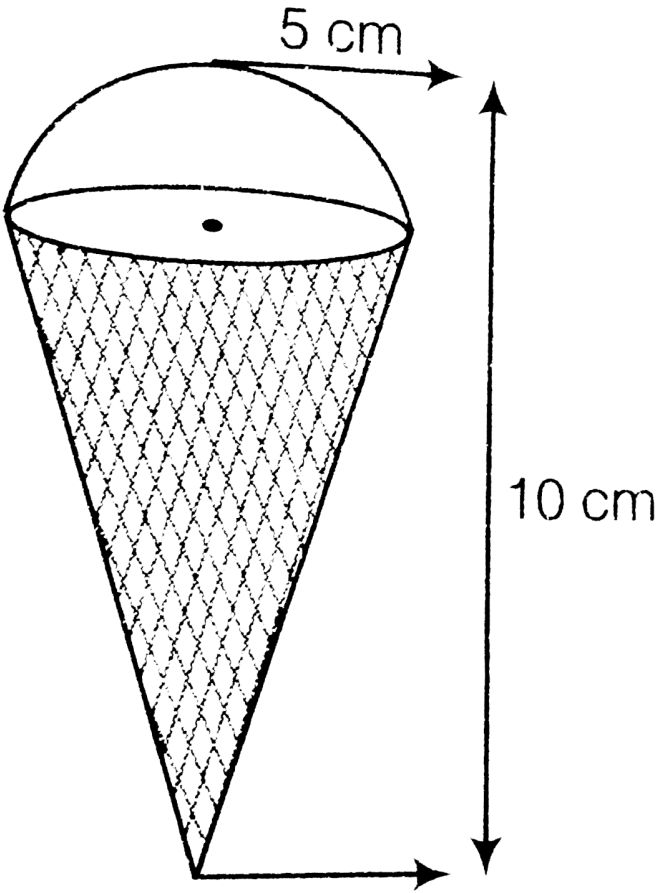
8. Two solid cones A and B are placed in a cylindrical tube as shown in the given figure. The ratio of their capacities are 2 : 1. Find the

heights and capacities of the cones. Also, find the volume of the remaining portion of the cylinder.



Watch Video Solution

9. An ice-ceram cone full of ice-cream having radius 5 cm height 10 cm as shown if figure.



Calculate the volume of ice-cream, provided that its $\frac{1}{6}$ part is left unfilled with ice-cream.

Watch Video Solution

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

Watch Video Solution

11. How many spherical lead shots each of diameter 4.2 cm can be obtained from a solid rectangular lead piece with dimensions 66 cm, 42 cm and 21 cm?

Watch Video Solution

12. How many spherical lead shots of diameter 4 cm can be made out of a solid cube of lead whose edge measures 44 cm?

Watch Video Solution

13. A wall 24 m long, 0.4 m thick and 6 m high is constructed with the bricks each of dimension $25cm \times 16cm \times 10cm$. If the

mortar occupies $\frac{1}{10}th$ of the volume of the wall then find the number of bricks used in constructing the well.

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14. Find the number of metallic circular discs with 1.5 cm base diameter and of height 0.2 cm to be melted to form a right circular cylinder of height 10 cm and diameter 4.5 cm.

Watch Video Solution

Ncert Exemplar Exercise 13 4

1. A solid metallic hemisphere of radius 8 cm is melted and recasted into a right circular cone of base radius 6 cm. Determine the height of the cone.

Watch Video Solution

2. A rectangular water tank of base $11m \times 6m$ contains water up to a height of 5 m. If the water in the tank is transferred to a cylindrical

tank of radius 1.75 m, find the height of the water level in the tank.

Watch Video Solution

3. How many cubic centimetres of iron are there in an open box whose external dimensions are 36cm, 25cm and 16.5cm, the iron being 1.5cm thick throughout? If 1 cubic cm of iron weighs 15g, find the weight of the empty box in kg.

Watch Video Solution

4. The barrel of a fountain pen, cylindrical in shape, is 7 cm long and 5 mm in diameter. A full barrel of ink in the pen will be used up on writing 330 words on an average. How many words would use up a bottle of ink containing one fifth of a litre ?

Watch Video Solution

5. Water flows at the rate of 10 m/min from a cylindrical pipe 5 mm in diameter. How long

will it take to fill up a conical vessel whose diameter at the base is 40 cm and depth is 24 cm?

Watch Video Solution

6. A heap of rice is in the form of a cone of diameter 9 m and height 3.5 m. Find the volume of rice. How much canvas cloth is required to just cover the heap?

Watch Video Solution

7. A factory manufacture 120000 pencils daily. The pencils are cylindrical in shape each of leght 25 cm and circuference of base as 1.5 cm .Determine the cost of colouring the curved surface of the pencils manufactured in one day at ₹ 0.25 per dm^2

Watch Video Solution

8. Water is flowing at the rate of 15 km/hour through a pipe of diameter 14 cm into a cuboidal pond which is 50 m long and 44 m

wide. In what time will the level of water in the pond rise by 21 cm ?

Watch Video Solution

9. A solid iron rectangular block of dimensions 4.4m, 2.6m and 1m is cast into a hollow cylindrical pipe of internal radius 30cm and thickness 5cm. Find the length of the pipe.

Watch Video Solution

10. 500 persons have to dip in a rectangular tank which is 80 m long and 50 m broad. What is the rise in the level of water in the tank, if the average displacement of water by a person is $0.04\ m^3$?

Watch Video Solution

11. Metal spheres, each of radius 2 cm, are packed into a rectangular box of internal dimension $16\ cm \times 8\ cm \times 8\ cm$ when 16

spheres are packed the box is filled with preservative liquid. Find the volume of this liquid.

Watch Video Solution

12. A milk container of height 16 cm is made of metal sheet in the form of a frustum of a cone with radii of its lower and upper ends as 8 cm and 20 cm, respectively. Find the cost of milk at the rate of ₹22 per L which the container can hold.

Watch Video Solution

13. A cylindrical bucket, 32 cm high and with radius of base 18 cm, is filled with sand. This bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, find the radius and slant height of the he

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14. A rocket is in the form of a right circular cylinder closed at the lower end and surmounted by a cone with the same radius as that of cylinder. The diameter and height of cylinder are 6 cm and 12 cm, respectively. If the slant height of the conical portion is 5 cm, then find the total surface area and volume of the rocket, (use $\pi = 3.14$)

Watch Video Solution

15. A bulinding is in the form of a cylinder surmounted by a hemispherical valuted dome and surroumted by a hemispherical valulated dome and contains $41\frac{19}{21}m^3$ of air. If the internal diameter of dome is equal to its total height above the floor, find the height of the bulinding ?

Watch Video Solution

16. A hemispherical bowl of internal radius 9 cm is full of liquid . The liquid is to be filled into cylindrical shaped bottles each fo radius 1.5 cm and height 4 cm. How many bottles are needed to empty the bowl?

Watch Video Solution

17. A solid right circular cone of height 120 cm and radius 60 cm is placed in a right circular cylinder full of water of height 180 cm such

that it touches the bottom Find the volume of water left in the cylinder if the radius of the cylinder is equal to the radius to the cone.

Watch Video Solution

18. A water flows through a cylindrical pipe, whose inner radius is 1 cm, at the rate of $80cm^{-1}$ in an empty cylindrical tank, the radius of whose base is 40 cm. What is the rise of water level in tank in half an hour?

Watch Video Solution

19. The rain water from a roof af dimensions $22m \times 20m$ drains into a cylindrical vessel having diameter of bases 2 m and height 3.5 m. If the rain water collected form the roof just fill the cylindrica vessl, them find the rainfull (in cm).

Watch Video Solution

20. A pen stand made of wood is in the shape of a cuboid with four conical depressions and

a cubical depression to hold the pens and pins,

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Board Corner Very Shory Answer Type Questions

1. Volume and surface area of a solid hemisphere are numerically equal. What is the diameter of the hemisphere. ?

Watch Video Solution

Board Corner Shory Answer Type Questions

1. Water in a canal, 6 m wide and 1.5 m deep, is flowing with a speed of 10 km/h. How much area will it irrigate in 30 minutes, if 8 cm of standing water is needed?

Watch Video Solution

2. A solid is in the form of a cylinder with hemispherical ends. The total height of the solid is 20 cm and the diameter of the cylinder

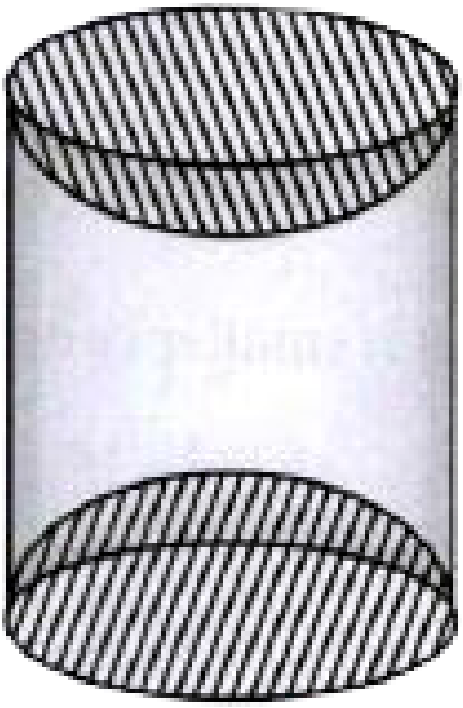
is 7 cm. Find the total volume of the solid. (Use $F = \frac{22}{7}$)

Watch Video Solution

3. Two spheres of same metal weight 1 kg and 7 kg. The radius of the smaller sphere is 3 cm. The two spheres are melted to form a single big sphere. Find the diameter of the new sphere.

Watch Video Solution

4. A wooden article was made by scooping out a hemisphere from each end of a solid cylinder, as shown in fig. If the height of the cylinder is 10 cm and its base is of radius 3.5 cm. Find the total surface area of the article.



Watch Video Solution

5. A heap of rice is in the form of a cone of of base diameter 24m and height 3.5 m. Find the volume of the rice. How much canvas cloth is required to just cover the heap

Watch Video Solution

6. The $\frac{3}{4}$ th part of a conical vessel of internal radius 5 cm and height 24 cm is full of water.

The water emptied into a cylindrical vessel with internal radius 10 cm. Find the height of water in cylindrical vessel.

Watch Video Solution

7. A metallic solid sphere of radius 10.5 is melted and recasted in to smaller solid cones each of radius 3.5 cm and height 3 cm .How many cones will be made?

Watch Video Solution

8. A solid metallic sphere of diameter 16 cm is melted and recast into a number of smaller cones each of radius 4 cm and height 8 cm. Find the number of cones so formed.

Watch Video Solution

9. The dimentsions of a solid iron cuboid are $4.4m \times 2.6m \times 1.0m$ .It is melted and recast into a hollow cylindrical pipe of 30 cm inner radius and thickness 5cm .Find the length of the pipe.

Watch Video Solution

10. Water in a canal 5.4 m wide and 1.8 m deep is following with a speed of $25km/hr$ How much area can it irriagae in 40 munutes if 10 cm of standing watr is required for irrigation?

Watch Video Solution

11. From a solid cylinder whose height is 2.4 cm and diameter 1.4 cm, a conical cavity of the

same height and same diameter is hollowed out. Find the total surface area of the remaining solid to the nearest cm^2 .

Watch Video Solution

12. A toy is in the form of a cone of radius 3.5 cm mounted on a hemisphere of same radius. The total height of the toy is 15.5 cm. Find the total surface area of the toy.

Watch Video Solution

Board Corner Long Answer Type Questions

1. A bucket is in form of a frustum of a cone with a copacity of $12308.8cm^3$of water. The radii of the tope bottom circular ends are 20 cm and 12 cm respectively. Find the height of the bucket and the area of the metal sheet used in its making. [Use $\pi = 3.14$.]

Watch Video Solution

2. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that $1cm^3$ of iron has approximately 8 gm mass. (Use $\prod$ = 3.14)

Watch Video Solution

3. A cylindrical container of radius 6 cm and height 15 cm is filled with ice-cream. The whole

ice-cream has to be distributed to 10 children in equal cones with hemispherical tops. If the height of the conical portion is four times the radius of its base, find the radius of the ice-cream cone.

Watch Video Solution

4. The diameters of the lower and upper ends of a bucket in the form of a frustum of a cone are $10cm$ and $30cm$ respectively.If its height is

$24cm$,find : (i) The area of the metal sheet used to make the bucket.

Watch Video Solution

5. The diameters of the lower and upper ends of a bucket in the form of a frustum of a cone are 10 cm and 30 cm respectively. If its height is 24 cm, find its volume. [Use π = 3.14]

Watch Video Solution

6. The height of a cone is 10 cm. The cone is divided into two parts using a plane parallel to its base at the middle of its height. Find the ratio of the volumes of the two parts.

 Watch Video Solution

7. The height of a cone is 30 cm .A small cone is cut off at the top by a plane parallel to the base . If its volume be $\frac{1}{27}$ of the volume of the

given cone, at what height above the base the section has been made?

Watch Video Solution

8. In a hospital used water is collected in a cylindrical tank of diameter 2 m and hight 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 tank is filled completely then what will be the height of standing water

used for irigating the park write your views on recycling of water.

Watch Video Solution

9. In a rain water harvesting system the rain water form a roof of 22 m $\times$ 20m drains in to a cylindrical tank having diameter of base 2m and height 3.5 m . If the tank is full find the rainfall in cm . Write your views on water conservation .

Watch Video Solution

Multiple Choice Questions

1. A rectangular sheet of paper $40cm \times 22$ cm is rolled to form a hollow cylinder of height 40 cm. The radius of the cylinder (in cm) is :

A. 3.5

B. 7

C. 2

D. 5

Answer: A

View Text Solution

2. The number of solid spheres each of diameter 6 cm that can be made by melting a solid metal cylinder of height 45 cm and diameter 4 cm are :

A. 3

B. 5

C. 4

D. 6

Answer: B

View Text Solution

3. The surface area of two spheres are in the ratio $16:9$. The ratios of their volumes is :

A. $64:27$

B. $16:9$

C. $4:3$

D. $16^3 : 9^3$

Answer: A

View Text Solution

4. A solid right - circular cone is cut into two parts at the middle of its height by a plane parallel to its base . The ratio of the volume of the smaller cone to the whole cone is :

A. $1 : 2$

B. $1:4$

C. $1:6$

D. $1:8$

Answer: D

View Text Solution

5. If the radius of the base of a right-circular cylinder is halved keeping the height same then the ratio of the volume of the cylinder

thus obtained to the volume of the original cylinder is :

A. $1:2$

B. $2:1$

C. $1:4$

D. $4:1$

Answer: C

View Text Solution

6. The radius of the largest circular cone that can be cut out from a cube of edge 4.2 cm is :

A. 4.2 cm

B. 2.1 cm

C. 8.4 cm

D. 1.05 cm

Answer: B

View Text Solution

7. A sphere of diameter 18 cm is dropped into a cylindrical vessel of diameter 36 cm partly filled with water . If the sphere is completely submerged then the water level rises (in cm) by :

A. 3

B. 4

C. 5

D. 6

Answer: A

View Text Solution

8. A solid is hemispherical at the bottom and conical (of same radius) above it . If the surface area of the two are equal then the ratio of the radius and the slant height of the conical part is :

A. $2:1$

B. $1:2$

C. $1:4$

D. $4:1$

Answer: B

View Text Solution

9. A toy is in the form of a cone mounted on a hemisphere of common base radius 7 cm . If the total height of the toy is 31 cm, then the height of the cone is :

A. 31 cm

B. 38 cm

C. 7 cm

D. 24 cm

Answer: D

View Text Solution

10. A solid sphere of radius r is melted and casted into the shape of a solid cone of height r, then the radius of the cone's base is :

A. 2r

B. 3r

C. 4r

D. 6r

Answer: A

View Text Solution

11. Three cubes each of side 12 cm are joined end to end . The total surface area of the resulting solid is :

A. 2016cm^2

B. 3150cm^2

C. 1575cm^2

D. 1008cm^2

Answer: A

View Text Solution

12. Volumes of two spheres are in the ratio $125:216$. The ratio of their surface areas is :

A. $5:6$

B. $25:36$

C. $1:2$

D. $5:2$

Answer: A

View Text Solution

13. Volume of a metallic sphere of radius 3 cm is :

A. $36\pi \text{cm}^3$

B. $108\pi \mathrm{cm}^3$

C. $54\pi \mathrm{cm}^3$

D. $6\pi \mathrm{cm}^3$

Answer: A

View Text Solution

14. The ratio between volume of two spheres is $8:27$. What will be ratio between their surface areas ?

A. $4:9$

B. $4:5$

C. $2:1$

D. $5:3$

Answer: A

View Text Solution

15. A cone of height 24 cm and radius 6 cm at base is made up of clay . A child reshapes it in

form of a sphere . The radius of the sphere will be :

A. 7 cm

B. 5 cm

C. 8 cm

D. 6 cm

Answer: D

View Text Solution

16. If the surface area of a sphere is 616cm^2 , then the radius of the sphere is :

A. 14 cm

B. 7 cm

C. 3.5 cm

D. None of these

Answer: B

View Text Solution

17. A right circular cylinder of radius r cm and height h cm $(h > 2r)$ just encloses a sphere of diameter equal to :

A. r cm

B. 2r cm

C. 3r cm

D. 4r cm

Answer: B

View Text Solution

18. The diameter of the Moon is approximately one-fourth of the diameter of the Earth . What is the ratio (approximate) of their volumes ?

A. $1:16$

B. $1:64$

C. $1:4$

D. $1:128$

Answer: B

View Text Solution

19. A solid spherical ball of iron of radius 4 cm is melted to form spheres of radius 4 cm is melted to form spheres of radius 2 cm each . The number of spheres, so formed is :

A. 8

B. 9

C. 10

D. 16

Answer: A

View Text Solution

20. If the volume of a cube is 729cm^3 , what is the length of its diagonal ?

A. $9\sqrt{2}$ cm

B. $9\sqrt{3}$ cm

C. 18 cm

D. $18\sqrt{3}$ cm

Answer: B

View Text Solution

21. The curved surface area of a right circular cone of radius 14 cm is 440 sq.cm. What is the slant height of the cone ?

A. 10 cm

B. 11 cm

C. 12 cm

D. 13 cm

Answer: A

View Text Solution

22. Two cones have their heights in the ratio of $1:3$ and radii $3:1$. The ratio of their volumes is :

A. $1:1$

B. $1:3$

C. $3:1$

D. $2:3$

Answer: C

View Text Solution

23. If the volumes of two cones are in the ratio of $1:4$ and their diameters are in the ratio of $4:5$, then the ratio of their heights is :

A. $1:5$

B. $5:4$

C. $5:16$

D. $25:64$

Answer: D

View Text Solution

24. A cone of height 7 cm and base radius 3 cm is curved from a rectangular block of wood 10 cm $\times 5\text{cm} \times 2\text{cm}$.

The percentage of wood wasted is :

A. $34\ \%$

B. $46\ \%$

C. $54\ \%$

D. $66\ \%$

Answer: A

View Text Solution

25. A cylinder with base radius of 8 cm and height of 2 cm is melted to form a cone of height 6 cm . The radius of the cone will be :

A. 4 cm

B. 5 cm

C. 6 cm

D. 8 cm

Answer: D

View Text Solution

26. A cylinder with base radius 7 cm and height 3 cm is melted to form a cone of height 9 cm . Then radius of the cone is :

A. 5 cm

B. $\frac{7}{2}$ cm

C. 7 cm

D. 6 cm

Answer: C

View Text Solution

27. The volume of two spheres are in the ratio $64:27$ then the ratio of their surface areas is :

A. $4:3$

B. $9:16$

C. $3:4$

D. $16:9$

Answer: D

View Text Solution

28. A solid sphere of radius 8 cm can be recasted into ..... Balls of radius 2 cm .

A. 40 cm

B. 64 cm

C. 12 cm

D. 10 cm

Answer: B

View Text Solution

29. The total surface area of a hemisphere of radius r is :

A. πr^2

B. $2\pi r^2$

C. $3\pi r^2$

D. $\frac{2}{3}\pi r^2$

Answer: C

View Text Solution

30. A solid piece of iron of dimensions $49\text{cm} \times 33\text{cm} \times 24$ cm is moulded into a sphere . The radius of the sphere is :

A. 21 cm

B. 28 cm

C. 35 cm

D. None of these

Answer: A

View Text Solution

31. A cylindrical vessel 32 cm high and 18 cm as the radius of the base, is filled with sand . This bucket is emptied on the ground and a conical heap of sand is formed . If the height of the conical heap is 24 cm, the radius of its base is :

A. 12 cm

B. 24 cm

C. 36 cm

D. 48 cm

Answer: C

View Text Solution

32. A solid is hemispherical at the bottom and conical (of same radius) above it . If the surface area of the two parts are equal, then the ratio of its radius and the slant height of the conical part is :

A. $1:2$

B. $2:1$

C. $1:4$

D. $4:1$

Answer: A

View Text Solution

33. If the surface area of a sphere is 616cm^2 , then its diameter (in cm) is :

A. 7

B. 14

C. 28

D. 56

Answer: B

View Text Solution

34. If each edge of a cube is increased by $50\ \%$ the percentage increase in the surface area is :

A. $50\ \%$

B. $75\ \%$

C. $100\ \%$

D. $125\ \%$

Answer: D

View Text Solution

35. A right circular cylinder of radius r cm and height h cm $(h > 2r)$ just encloses a sphere of diameter :

A. r cm

B. 2r cm

C. h cm

D. 2h cm

Answer: B

View Text Solution

36. Twelve solid spheres of the same size are made by melting a solid metallic cylinder of

base diameter 2 cm and height 16 cm . The diameter of each sphere is :

A. 4 cm

B. 3 cm

C. 2 cm

D. 6 cm

Answer: C

View Text Solution

37. A cylindrical pencil sharpened at one edge is the combination of :

A. A cone and a cylinder

B. Frustum of a cone and a cylinder

C. A hemisphere and a cylinder

D. Two cylinders

Answer: A

View Text Solution

38. Volumes of two spheres are in the ratio $64:27$. The ratio of their surface areas is :

A. $3:4$

B. $4:3$

C. $9:16$

D. $16:9$

Answer: D

View Text Solution

39. A right triangle with sides 3 cm, 4 cm and 5 cm is rotated about the side of 3 cm to form a cone . The volume of the cone so formed is :

A. $12\pi \text{cm}^3$

B. $15\pi \text{cm}^3$

C. $16\pi \text{cm}^3$

D. $20\pi \text{cm}^3$

Answer: C

View Text Solution

40. The surface area of a sphere is 154cm^2 .

The volume of the sphere is :

A. 179.66cm^3

B. 1500cm^3

C. 1789cm^3

D. None of these

Answer: A

View Text Solution

41. A solid consists of a circular cylinder surmounted by a right circular cone . The height of the cone is h . If the total volume of the solid is 3 times the volume of the cone, then the height of the cylinder is :

A. $\frac{2}{3}h$

B. $\frac{3}{2}h$

C. h

D. 2h

Answer: A

View Text Solution

42. The number of solid spheres, each of diameter 6 cm that could be moulded to form a solid metal cylinder of height 45 cm and diameter 4 cm is :

A. 3

B. 4

C. 5

D. 6

Answer: C

View Text Solution

43. If two solid-hemispheres of same base radius r are joined together along their bases, then curved surface area of this new solid is :

A. $4\pi r^2$

B. $6\pi r^2$

C. $3\pi r^2$

D. $8\pi r^2$

Answer: A

View Text Solution

44. The area of the base of a rectangular tank is 6500cm^2 and the volume of water contained in it is $2.6m^3$. The depth of water in the tank is :

A. 3.5 m

B. 4m

C. 5m

D. 8m

Answer: B

View Text Solution

45. If the height of a bucket in the shape of frustum of a cone is 16 cm and the diameters of its two circular ends are 40 cm and 16 cm, then its slant height is :

A. 20 cm

B. $12\sqrt{5}$ cm

C. $8\sqrt{13}$ cm

D. 16 cm

Answer: A

View Text Solution

46. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is :

A. $60\pi \text{cm}^2$

B. $68\pi \text{cm}^2$

C. $120\pi \text{cm}^2$

D. $136\pi \text{cm}^2$

Answer: D

View Text Solution

47. The diameter of a sphere is 6 cm. It is melted and drawn into a wire of diameter 2 mm. The length of the wire is :

A. 12 m

B. 18 m

C. 36 m

D. 66 m

Answer: D

View Text Solution

48. During conversion of a solid from one shape to another, the volume of the new shape will :

A. Decrease

B. Increase

C. Remain unaltered

D. Be doubled

Answer: C

View Text Solution

49. A medicine capsule is in the shape of a cylinder of diameter 0.5 cm with a hemisphere stucked at each end . The length of the entire

capsule is 2 cm . The capacity of the capsule is

:

A. 0.33cm^2

B. 0.34cm^2

C. 0.35cm^2

D. 0.36cm^2

Answer: D

View Text Solution

50. The diameter of a sphere is 14 cm . Its volume is :

A. 1428cm^3

B. 1439cm^3

C. 1437.3cm^3

D. 1440cm^3

Answer: C

View Text Solution

51. The diameter of a sphere is 6 cm . It is melted and drawn in to a wire of diameter 2 mm. The length of the wire is :

A. 12 m

B. 18 m

C. 36 m

D. 66 m

Answer: C

View Text Solution

52. The radii of two cylinders are in the ratio $2:3$ and their heights are in the ratio $5:3$. The ratio of their volumes is :

A. $27:20$

B. $20:27$

C. $4:9$

D. $9:4$

Answer: B

View Text Solution

53. The volumes of two spheres are in the ratio $64:27$. The ratio of their surface areas is :

A. $1:2$

B. $2:3$

C. $9:16$

D. $16:9$

Answer: D

View Text Solution

54. A metallic sphere of radius 10.5 cm is melted and then recast into small cones, each of radius 3.5 cm and height 3 cm . The number of such cones is :

A. 63

B. 126

C. 21

D. 130

Answer: B

View Text Solution

55. Water flows at the rate of 10 metre per minute from a cylindrical pipe 5 mm in diameter . How long will it take to fill up a conical vessel whose diameter at the base is 40 cm and depth 24 cm ?

A. 48 minutes 15 sec

B. 51 minutes 12 sec

C. 52 minutes 1 sec

D. 55 minutes

Answer: B

View Text Solution

56. The surface area of a sphere is same as the curved surface area of a right circular cylinder whose height and diameter are 12 cm each . The radius of the sphere is :

A. 3 cm

B. 4 cm

C. 6 cm

D. 12 cm

Answer: C

View Text Solution

57. If three metallic spheres of radii 6 cm, 8 cm and 10 cm are melted to form a single sphere, the diameter of the sphere is :

A. 12 cm

B. 24 cm

C. 30 cm

D. 36 cm

Answer: B

View Text Solution

58. The volume of the greatest sphere that can be cut off from a cylindrical log of wood of base radius 1 cm and height 5 cm is :

A. $\frac{4}{3}\pi$

B. $\frac{10}{3}\pi$

C. 5π

D. $\frac{20}{3}\pi$

Answer: A

View Text Solution

59. A sphere of radius 6 cm is dropped into a cylindrical vessel partly filled with water . The radius of the vessel is 8 cm . If the sphere is

submerged completely, then the surface of the water rises by :

A. 4.5 cm

B. 3 cm

C. 4 cm

D. 2 cm

Answer: A

View Text Solution

60. 12 spheres of the same size are made from melting a solid cylinder of 16 cm diameter and 2 cm height . The diameter of each sphere is :

A. $\sqrt{3}$ cm

B. 2 cm

C. 3 cm

D. 4 cm

Answer: D

View Text Solution

61. What is the formula required to use for T.S.A. of an article which is made by dragging out a hemisphere from each end of a solid cylinder ?

A. C.S.A. of the cylinder -2 (C.S.A. of the hemisphere)

B. C.S.A. of the cylinder +C.S.A. of the hemisphere

C. C.S.A. of the cylinder+2(C.S.A. of the hemisphere)

D. C.S.A. of the cylinder - C.S.A. of the hemisphere

Answer: C

View Text Solution

62. A rectangular sheet of paper 40 cm $\times$ 22 cm is rolled to form a hollow cylinder of height 40 cm. The radius of the cylinder (in cm) is:

A. 3.5

B. 5.3

C. 2.5

D. 5

Answer: A

View Text Solution

63. The surface area of two spheres are in the ratio 16:9. The ratios of their volumes is:

A. $64:27$

B. $16:9$

C. $4:3$

D. $16^3:9^3$

Answer: A

View Text Solution

64. A solid right-circular cone is cut into two parts at the middle of its height by a plane parallel to its base. The ratio of the volume of the smaller cone to the whole cone is:

A. $1:2$

B. $1:4$

C. $1:6$

D. $1:8$

Answer: D

View Text Solution

65. If the radius of the base of a right-circular cylinder is halved keeping the height same then the ratio of the volume of the cylinder

thus obtained to the volume of the original cylinder is:

A. $1:2$

B. $2:1$

C. $1:4$

D. $4:1$

Answer: C

View Text Solution

66. The radius of the largest circular cone that can be cut out from a cube of edge 4.2 cm is:

A. 4.2 cm

B. 2.1 cm

C. 8.4 cm

D. 1.05 cm

Answer: B

View Text Solution

67. A sphere of diameter 18 cm is dropped into a cylindrical vessel of diameter 36 cm partly filled with water. If the sphere is completely submerged then the water level rises (in cm) by:

A. 3

B. 4

C. 5

D. 6

Answer: A

View Text Solution

68. A solid is hemispherical at the bottom and conical (of same radius) above it. If the surface area of the two are equal then the ratio of the radius and the slant height of the conical part is:

A. $2:1$

B. $1:2$

C. $1:4$

D. $4:1$

Answer: B

View Text Solution

69. A toy is in the form of a cone mounted on a hemisphere of common base radius 7 cm. If the total height of the toy is 31 cm, then the height of the cone is:

A. 31 cm

B. 7 cm

C. 38 cm

D. 24 cm

Answer: D

View Text Solution

70. Volumes of two spheres are in the ratio 125 : 216. The ratio of their surface areas is:

A. $5:6$

B. $25:36$

C. $1:2$

D. $5:2$

Answer: B

View Text Solution

71. If the surface area of a sphere is 616 cm^2, then the radius of the sphere is:

A. 14 cm

B. 7 cm

C. 3.5 cm

D. None of these

Answer: B

View Text Solution

72. A right circular cylinder of radius r cm and height h cm $(h > 2r)$ just encloses a sphere of diameter equals to:

A. r cm

B. 2r cm

C. 3r cm

D. 4r cm

Answer: B

View Text Solution

73. The diameter of the Moon is approximately one-fourth of the diameter of the Earth. What is the ratio (approximate) of their volumes?

A. $1:16$

B. $1:64$

C. $1:4$

D. $1:128$

Answer: B

View Text Solution

74. If the volume of a cube is 729 cm^3, what is the length of its diagonal?

A. $9\sqrt{2}$ cm

B. $9\sqrt{3}$ cm

C. 18 cm

D. $18\sqrt{3}$ cm

Answer: B

View Text Solution

75. The curved surface area of a right circular cone of radius 14 cm is 440 sq. cm. what is the slant height of the cone?

A. 10 cm

B. 11 cm

C. 12 cm

D. 13 cm

Answer: A

View Text Solution

76. If the volumes of two cones are in the ratio of 1:4 and their diameters are in the ratio of 4:5, then the ratio of their heights is:

A. $1:5$

B. $5:4$

C. $5:16$

D. $25:64$

Answer: D

View Text Solution

77. A cone of height 7 cm and base radius 3 cm is curved from a rectangular block of wood 10

cm $\times$ 5 cm $\times$ 2 cm

The percentage of wood wasted is:

A. 0.34

B. 0.46

C. 0.54

D. 0.66

Answer: A

View Text Solution

78. The total surface area of a hemisphere of radius r is:

A. πr^2

B. $2\pi r^2$

C. $3\pi r^2$

D. $\frac{2}{3}\pi r^2$

Answer: C

View Text Solution

79. A cylindrical vessel 32 cm high and 18 cm as the radius of the base, is filled with sand. This bucket is emptied on the ground and a conical heap of sand is formed. If the height of the conical heap is 24 cm, the radius of its base is:

A. 12 cm

B. 24 cm

C. 36 cm

D. 48 cm

Answer: C

View Text Solution

80. If each edge of a cube is increased by 50%, the percentage increase in the surface area is:

A. 0.5

B. 1

C. 0.75

D. 1.25

Answer: D

View Text Solution

81. A cylindrical pencil sharpened at one edge is the combination of:

A. a cone and a cylinder.

B. frustum of a cone and a cylinder.

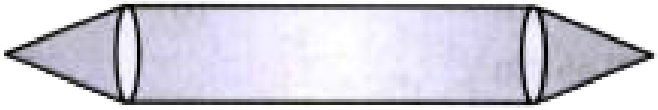
C. a hemisphere and a cylinder.

D. two cylinders.

Answer: A

View Text Solution

82. The shape of a gilli, in the gilli-danda game see the given figure is a combination of:



A. two cylinders

B. a cone and a cylinder

C. two cones and a cylinder.

D. two cylinders and a cone.

Answer: C

View Text Solution

83. A right triangle with sides 3 cm, 4 cm and 5 cm is rotated about the side of 3 cm to form a cone. The volume of the cone so formed is:

A. 12 πcm^3

B. 15 πcm^3

C. 16 πcm^3

D. 20 πcm^3

Answer: C

View Text Solution

84. A solid consists of a circular cylinder surmounted by a right circular cone. The height of the cone is h. If the total volume of the solid is 3 times the volume of the cone, then the height of the cylinder is:

A. $\frac{2}{3}$h

B. $\frac{3}{2}$h

C. h

D. 2h

Answer: A

View Text Solution

85. If two solid-hemispheres of same base radius r are joined together along their bases, then curved surface area of this new solid is:

A. 4 πr^2

B. 6 πr

C. 3 πr^2

D. 8 πr^2

Answer: A

View Text Solution

86. The curved surface area of a right circular cone of height 15 cm and base diameter 16 cm is:

A. 60 πcm^2

B. 68 πcm^2

C. 120 πcm^2

D. 136 πcm^2

Answer: D

View Text Solution

87. The diameter of a sphere is 6 cm. It is melted and drawn into a wire of diameter 2 mm. The length of the wire is:

A. 12 m

B. 18 m

C. 36 m

D. 66 m

Answer: D

View Text Solution

88. A medicine capsule is in the shape of a cylinder of diameter 0.5 cm with a hemisphere stucked at each end. The length of the entire capsule is 2 cm. The capacity of the capsule is:

A. 0.33 cm^3

B. 0.34 cm^3

C. 0.35 cm^3

D. 0.36 cm^3

Answer: D

View Text Solution

89. The radii of two cylinders are in the ratio 2:3 and their heights are in the ratio 5: 3. The ratio of their volumes is:

A. $27:20$

B. $20:27$

C. $4:9$

D. $9:4$

Answer: B

View Text Solution

90. Water flows at the rate of 10 metre per minute from a cylindrical pipe 5 mm in diameter. How long will it take to fill up a conical vessel whose diameter at the base is 40 cm and depth 24 cm?

A. 48 minutes 15 sec

B. 51 minutes 12 sec

C. 52 minutes 1 sec

D. 55 minutes

Answer: B

View Text Solution

91. What is the formula required to use for T.S.A. of an article which is made by dragging

out a hemisphere from each end of a soild cylinder?

A. C.S.A. of the cylinder - 2(C.S.A. of the hemisphere)

B. C.S.A. of the cylinder + C.S.A. of the hemisphere

C. C.S.A. of the cylinder +2(C.S.A. of the hemisphere)

D. C.S.A. of the cylinder - C.S.A. of the hemisphere

Answer: C

View Text Solution

Very Short Answer Type Questions

1. Volume and surface area of a solid hemisphere are numerically equal . What is the diameter of hemisphere ?

View Text Solution

2. If the total surface area of a solid hemisphere is 462cm^2 , find its volume . $\left(\text{Use}\pi = \frac{22}{7}\right)$

View Text Solution

3. Two circular pieces of equal radii and maximum area touching each other are cut from a rectangular cardboard of dimensions $28\text{cm} \times 14\text{cm}$. Find the area of the remaining cardboard .

View Text Solution

4. A solid sphere of radius 10.5 cm is melted and recast into smaller solid cones, each of radius 3.5 cm and height 3 cm . Find the number of cones so formed .

$\left(\text{Use}\pi = \frac{22}{7}\right)$

View Text Solution

5. The volume of a hemisphere is 2425.5cm^3 . Find its curved surface area .

$\left(\text{Use}\pi = \frac{22}{7}\right)$

View Text Solution

6. Two cubes, each of volume 27cm^3 are joined end to end to form a solid . Find the surface area of the resulting cuboid .

View Text Solution

7. 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 .

View Text Solution

8. Two cubes each of side 4 cm are joined end to end to form a solid . Find the surface area of the resulting cuboid .

View Text Solution

9. The dimensions of a metallic cuboid are $100\text{cm} \times 80\text{cm} \times 64$ cm . It is melted and recast into a cube . Find the surface area of the cube .

View Text Solution

10. A conical vessel, whose internal radius is 5cm and height 24 cm is full of water . The water is emptied into a cylindrical vessel with

internal radius 10 cm . Find the height to which the water rises in the cylindrical vessel .

View Text Solution

11. A hemispherical bowl of internal radius 9 cm is full of liquid . The liquid is filled into small cylindrical bottles, each of diameter 3 cm and height 4 cm . How many bottles are needed to empty the bowl ?

View Text Solution

12. A solid metal cone with radius of base 12 cm and height 24 cm is melted to form solid spherical balls of siameter 6 cm each . Find the number of balls so formed .

View Text Solution

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

View Text Solution

14. A hemispherical bowl of internal diameter 30 cm is full of liquid . The liquid is filled into small cylindrical bottles each of diameter 5 cm and height 6 cm . How many bottles are needed to empty the bowl ?

View Text Solution

15. 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 .

View Text Solution

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

View Text Solution

17. Three solid metallic spheres of radii 3 cm, 4 cm and 5 cm respectively are melted to form a single solid sphere . Find the diameter of the resulting sphere .

View Text Solution

18. A cylindrical pipe has inner diameter of 7 cm and water flows through it at 192.51 litres

per minute . Find the rate of flow in the pipe in km/hr .

View Text Solution

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

View Text Solution

20. Two cubes each of volume 27 cm are joined together . Find the surface area of the resulting solid ?

A. 109.4cm^2

B. 126cm^2

C. 150cm^2

D. 189.4cm^2

Answer: B

View Text Solution

21. A cylinder and a cone are of the same base radius and height . Calculate the ratio of the volume of the cylinder and the cone .

View Text Solution

22. Two types of water tankers are available in a shop . One is in a cubic form of dimensions $1m \times 1m \times 1m$ and another is in the cylindrical form of height 1 m and diameter 1 m . Calculate the volume of both the

containers .

(Use $\pi = 3.14$)

View Text Solution

23. Volume and surface area of a solid hemisphere are numerically equal. What is the diameter of hemisphere?

View Text Solution

24. If the total surface area of a solid hemisphere is 462 cm^2, find its volume. (Use $\pi = \frac{22}{7}$)

View Text Solution

25. The volume of a hemisphere is 2425.5 cm^3. Find its curved surface area. (Use $\pi = \frac{22}{7}$)

View Text Solution

26. Two cubes, each of volume 27 cm^3 are joined end to end to form a solid. Find the surface area of the resulting cuboid.

View Text Solution

27. A conical vessel, whose internal radius is 5 cm and height 24 cm is full of water. The water is emptied into a cylindrical vessel with internal radius 10 cm. Find the height to which the water rises in the cylindrical vessel.

View Text Solution

28. A hemispherical bowl of internal radius 9 cm is full of liquid. The liquid is filled into small cylindrical bottles, each of diameter 3 cm and height 4 cm. How many bottles are needed to empty the bowl?

View Text Solution

29. A cylindrical pipe has inner diameter of 7 cm and water flows through it at 192.51 litres

per minute. Find the rate of flow in the pipe in km/hr.

View Text Solution

30. A cylinder and a cone are of the same base radius and height. Calculate the ratio of the volume of the cylinder and the cone.

View Text Solution

31. Two types of water tankers are available in a shop. One is in a cubic form of dimensions 1m $\times$ 1m $\times$ 1m and another is in the cylindrical form of height 1 mand diameter 1 m. Calculate the volume of both the tankers. (Use π=3.14)

View Text Solution

Short Answer Type Questions

1. A 5 m wide cloth is used to make a conical tent of base diameter 14 m and height 24 m . Find the cost of cloth used at the rate of Rs. 25 per m .

[Use $\pi = \frac{22}{7}$]

View Text Solution

2. A girl empties a cylindrical bucket, full of sand, of base radius 18 cm and height 32 cm on the floor to form a conical heap of sand. If

the height of this heap is 24 cm, find the slant height correct to two decimal places .

View Text Solution

3. The largest possible sphere is carved out of a solid wooden cube of side 7 cm. Find the volume of the wood left .

[Use $\pi = \frac{22}{7}$]

View Text Solution

4. Due to heavy floods in a state thousands were rendered homeless . 50 Schools collectively of fered to the state government to provide place and the canvas for 1500 tents to be fixed by the government and decided to share the whole expenditure equally . The lower part of each tent is cylindrical of base radius 2.8 m and height 3.5 m, with conical upper part of same base radius but of height 2.1 m . If the canvas used to make the tents costs Rs. 120 per sq. m, find the amount

shared by each school to set-up the tents .

[Use $\pi = \frac{22}{7}$]

View Text Solution

5. A housing society collects rain water from the roof of its building of area $22m \times 20$ m in a cylindrical vessel of diameter 2 m and height 3.5 m and then pumps this water into the main water tank so that everyone can use it . On a particular day, the rain water collected

from the roof just fills the cylindrical vessel to the brim . Calculate the rainfall in cm .

View Text Solution

6. A hemispherical bowl of internal radius 9 cm is full of water . Its contents are emptied in a cylindrical vessel of internal radius 6 cm . Find the height of the water in the cylindrical vessel .

View Text Solution

7. From a solid cylinder of height 7 cm and base diameter of 12 cm, a conical cavity of same height and same base diameter is hollowed out . Find the total surface area of the remaining solid .

[Use 'pi=(22)/(7)`]

View Text Solution

8. The dimensions of a solid iron cuboid are $4.4m \times 2.6m \times 1.0m$. It is melted and recast into a hollow cylindrical pipe of 30 cm inner

radius and thickness 5 cm . Find the length of the pipe .

View Text Solution

9. A solid toy is in the form of a right circular cylinder with a hemispherical shape at one end and a cone at the other . Their common diameter is 4.2 cm and the heights of the cylindrical and conical portions are 12 cm and 7 cm respectively . Find the volume of the

given toy .

[Use $\pi = \frac{22}{7}$]

View Text Solution

10. A solid is made up of a cube surmounted by a hemisphere . If the edges of the cube equal to 5cm each and the diameter of the hemisphere is 4.2 cm, find the total surface area .

[Use $\pi = \frac{22}{7}$]

View Text Solution

11. A hemispherical bowl of internal diameter 36 cm contains liquid . This liquid is filled into 72 cylindrical bottles of diameter 6 cm . Find the height of each bottle, if 10% liquid is wasted in this transfer .

View Text Solution

12. 504 cones each of diameter 3.5 cm and height 3 cm are melted and recast into a metallic sphere . Find the diameter of the

sphere and hence find its surface area .

[Use $\pi = \frac{22}{7}$]

View Text Solution

13. The sum of the radius of base and height of a solid right circular cylinder is 37 cm . If the total surface area of the solid cylinder is 1628 sq. cm, find te volume of the cylinder

[Use $\pi = \frac{22}{7}$]

View Text Solution

14. A well of diameter 4 m is dug 21 m deep. The earth taken out of it has been spread evenly all around it in the shape of a circular ring of width 3 m to form an embankment. Find the height of the embankment.

View Text Solution

15. The internal and external radii of a hollow sphere are 3 cm and 5 cm respectively. The sphere is melted to form a solid cylinder of height $\frac{8}{3}$ cm. Find the diameter and the

curved surface area of the cylinder.

[Use $\pi = \frac{22}{7}$]

View Text Solution

16. The diameter of a metallic sphere is 6 cm. The sphere is melted and drawn into a wire of uniform cross- section. If the length of the wire is 36 m, find its radius.

View Text Solution

17. The difference between the outer and inner curved surface area of a hollow right- circular cylinder 14 cm long is 88cm^2 cm. If the volume of metal used in making the cylinder is 176cm^2 cm, find the outer and inner diameters of the cylinder.

[Use $\pi = \frac{22}{7}$]

View Text Solution

18. A sphere of diameter 12 cm, is dropped in a right circular cylindrical vessel, partly filled with water. If the sphere is completely submerged in water, the water level in the cylindrical vessel rises by $3\frac{5}{9}$ cm. Find the diameter of the cylindrical vessel.

View Text Solution

19. From a solid cylinder of height 10 cm and base radius of 6 cm, a conical cavity of same

height and same base diameter is hollowed out . Find the volume and the total surface area of the remaining solid .

[Use $\pi = 3.14$]

View Text Solution

20. Cylindrical vessal with internal diameter 10 cm and height 10.5 cm is full of water . A solid cone of base diameter 7 cm and height 6 cm is completely immersed in the vessel . Find the

volume of water displaced and the volume remaining . [Use $\pi = \frac{22}{7}$]

View Text Solution

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

View Text Solution

22. A 5 m wide cloth is used to make a conical tent of base diameter 14 m and height 24 m. Find the cost of cloth used at the rate of ₹ 25 per m. Use $\pi = \frac{22}{7}$

View Text Solution

23. The largest possible sphere is carved out of a solid wooden cube of side 7 cm. Find the volume of the wood left. [Use $\pi = \frac{22}{7}$]

View Text Solution

24. Due to heavy flood in a state, thousands were rendered homeless. 50 'schools collectively offered to the state government to provide place and the canvas for 1500 tents to be fixed by the government and decided to share the whole expenditure equally. The lower part of each tent is cylindrical of base radius 2.8 m and height 3.5 m, with conical upper part of same base radius but of height 2.1 m. If the canvas used to make the tents costs ₹ 120 per sq. m, find the amount shared by each school to set-up the tents.

View Text Solution

25. A hemispherical bowl of internal radius 9 cm is full of water. Its contents are emptied in a cylindrical vessel of internal radius 6 cm. Find the height of the water in the cylindrical vessel.

View Text Solution

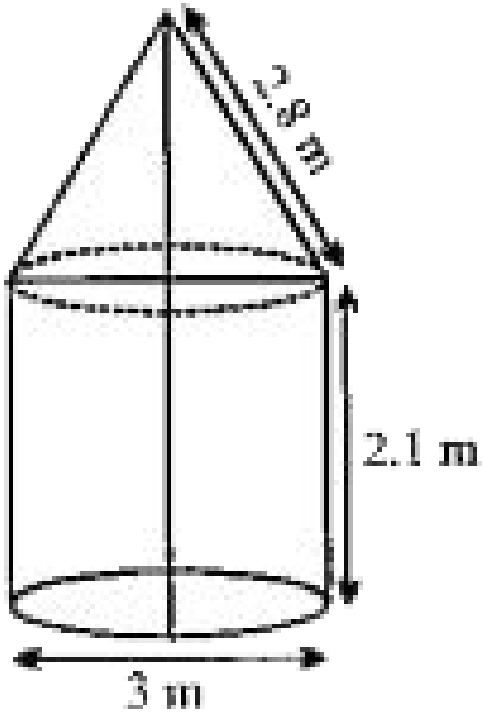
26. From a solid cylinder of height 7 cm and base diameter of 12 cm, a conical cavity of same height and same base diameter is hollowed out. Find the total surface area of the remaining solid. [Use $\pi = \frac{22}{7}$]

View Text Solution

27. In given figure a tent is in the shape of a cylinder surmounted by a conical top of same diameter. If the height and diameter of

cylindrical part are 2.1 m and 3 m respectively and the slant height of conical part is 2.8 m, find the cost of canvas needed to make the tent if the canvas is available at the rate of ₹ 500 per sq. metre.

[Use $\pi = \frac{22}{7}$]



View Text Solution

28. A hemispherical bowl of internal diameter 36 cm contains liquid. This liquid is filled into 72 cylindrical bottles of diameter 6 cm. Find the height of each bottle, if 10% liquid is wasted in this transfer.

View Text Solution

29. A cubical block of side 10 cm is surmounted by a hemisphere. What is the largest diameter that the hemisphere can have ? Find the cost of painting the total surface area of the solid so formed, at the rate of ₹ 5 per 100 sq. cm. [Use $\pi = 3.14$]

View Text Solution

30. The sum of the radius of base and height of a solid right circular cylinder is 37 cm. If the

total surface area of the solid cylinder is 1628 sq. cm, find the volume of the cylinder. [Use $\pi = \frac{22}{7}$]

View Text Solution

31. The difference between the outer and inner curved surface area of a hollow right-circular cylinder 14 cm long is 88 cm^2. If the volume of metal used in making the cylinder is 176 cm^3, find the outer and inner diameters of the cylinder. [Use $\pi = \frac{22}{7}$]

View Text Solution

32. Cylindrical vessel with internal diameter 10 cm and height 10.5 cm is full of water. A solid cone of base diameter 7 cm and height 6 cm is completely immersed in the vessel. Find the volume of water displaced and the volume remaining. [Use $\pi = \frac{22}{7}$]

View Text Solution

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

View Text Solution

34. A juice-seller serves his customers using a glass whose inner diameter is 5 cm but the bottom of the glass has a raised hemispherical

portion that reduces its capacity. If the height of the glass is 10 cm, find the apparent and actual capacities of the glass. [Use $\pi = 3.14$]

View Text Solution

Long Answer Type Questions

1. A hemispherical depression is cut out from one face of a cubical block of side 7 cm such that the diameter of the hemisphere is equal to the edge of the cube . Find the surface area

of the remaining solid .

[Iuse $\pi = \frac{22}{7}$]

View Text Solution

2. Sushant has a vessel in the shape of an inverted cone that is open at the top . Its height is 11 cm and the radius of the top is 2.5 cm . It is full of water and metallic spherical balls of diameter 0.5 cm are put in the vessel such that $\frac{2}{5}$ th of the water flows out . Find

the number of balls that were put in the vessel

.

View Text Solution

3. Two spheres of same metal weigh 1 kg and 7 kg . The radius of the smaller sphere is 3 cm the two spheres are melted to form a single big sphere . Find the diameter of the new sphere .

View Text Solution

4. Three cubes of a metal whose edges are in the ratio of $3:4:5$ are melted and converted into a single cube whose diagonal is $12\sqrt{3}$ cm. Find the edges of the three cubes .

View Text Solution

5. Water is flowing through a cylindrical pipe of internal diameter 2 cm into a cylindrical tank of base radius 40 cm at the rate of 0.4 m/s . Determine the rise in the water leval in the tank in half an hour .

View Text Solution

6. A hemispherical tank full of water is emptied by a pipe at the rate of $\frac{25}{7}$ l/s . How much time will it take to empty half the tank if the diameter of the base of the tank is 3 m ?

View Text Solution

7. A military tent of height 8.25 m is in the form of a right circular cylinder of base

diameter 30 m and height 5.5 m surmounted by a right circular cone of the same base radius . Find the length of the canvas used in making the tent, if the breadth of the canvas is 1.5 m

View Text Solution

8. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm . Find the mass of the

pole, given that 1cm^3 of iron has approximately 8 gm mass .

(Use $\pi = 3 \cdot 14$)

View Text Solution

9. A solid is in the shape of a cone surmounted on a hemisphere the radius of each of them being 3.5 cm and the total height of the solid is 9.5 cm .

Find the volume of the solid .

[Use $\pi = \frac{22}{7}$]

View Text Solution

10. Water is flowing at the rate of 15 km/hr through a pipe of diameter 14 cm into a cuboidal pond which is 50 m long and 44 m wide . In what time will the level of water in the pond rise by 21 cm ?

View Text Solution

11. From a solid right circular cylinder of height 2.4 cm and radius 0.7 cm, a right circular cone

of same height and same radius is cut out . Find the total surface area of the remaining solid .

View Text Solution

12. From a solid cylinder of height 15 cm and diameter 16 cm, a conical cavity of the same height and same diameter is hollowed out . Find the total surface area of the remaining solid .

[Take $\pi = 3.14$]

View Text Solution

13. Water is flowing at the rate of 6 km/hr through a pipe of diameter 14 cm into a rectangular tank which is 60 m long and 22 m wide . In what time will the level of water in the pond rise by 7 cm ?

View Text Solution

14. A hollow sphere of internal and external diameters 4 cm and 8 cm respectively is

melted to form a cone of base diameter 8 cm . Find the height and slant height of the cone .

View Text Solution

15. A toy is in the shape of a cone mounted on a hemisphere the radius of each of them being 3.5 cm and the total height of the solid is 15.5 cm . Find the volume and total surface area of the toy .

[Use $\pi = \frac{22}{7}$]

View Text Solution

16. A cylindrical tub of radius 5 cm and length 9.8 cm is full of water . A solid in the form of a right circular cone mounted on a hemisphere is immersed into the tub . If the radius of the hemisphere is 3.5 cm and the height of the cone is 5 cm, find the volume of water left in the tub .

[Use $\pi = \frac{22}{7}$]

View Text Solution

17. A solid cylinder of diameter 12 cm and height 15 cm is melted and recast into 12 toys in the shape of a right - circular cone mounted on a hemisphere . Find the radius of the hemisphere if the total height of the cone is 3 times the radius .

View Text Solution

18. A well of diameter 4 m is dug 14 m deep . The earth taken out is spread evenly all

around the well to form a 40 cm high embankment . Find the width of the embankment .

View Text Solution

19. Water if flowing at the rate of 2.52 km/h through a cylindrical pipe into a cylindrical tank, the radius of whose base in 40 cm. If the increase in the level of water in the tank, in half an hour is 3.15 m, find the internal diameter of the pipe .

View Text Solution

20. A solid is composed of a cylinder with hemispherical ends . If the whole length of the solid is 104 cm and the radius of each of its hemispherical ends is 7 cm, find the cost of polishing its surface at the rate of Rs. 10 per dm^2 .

[Use $\pi = \frac{22}{7}$]

View Text Solution

21. A tent is in the form of a right circular cylinder of base radius 14 m and height 3 m is surmounted by a right circular cone of the same base radius . The total height of the tent is 13.5 m . Find the cost of the canvas used in making the tent at Rs. 80 per square metre and the cost of painting it at Rs. 2 per square metre .

[Use $\pi = \frac{22}{7}$]

View Text Solution

22. A container shaped like a cylinder having diameter 12 cm and height 15 cm is full of ice-cream . This ice -cream is to be filled into cones of height 12 cm and diameter 6 cm having a hemispherical shape on the top . Find the number of such cones that can be filled with ice-cream .

[Use $\pi = \frac{22}{7}$]

View Text Solution

23. A gulabjamun when ready for eating contains sugar syrup of about $30\,\%$ of its volume . Find approximately how much syrup would be found in 45 such gulabjamuns if each of them is shaped like a cylinder with two hemispherical ends . The complete length of each of them is 5 cm and the diameteris 2.8 cm [Use $\pi = \frac{22}{7}$]

View Text Solution

24. A solid is in the form of a right circular cone mounted on a hemisphere . The radius of the hemisphere is 2.1 cm and the height of the cone is 4 cm . The solid is placed in a cylindrical tub full of water in such a way that the whole solid is submerged in water . If the radius of the cylinder is 5 cm and its height is 9.8 cm, find the volume of water left in the tub . [Use $\pi = \frac{22}{7}$]

View Text Solution

25. A solid is in the form of a cylinder with hemispherical ends . The total height of the solid is 20 cm and the diameter of the cylinder is 7 cm . Find the total volume of the solid .

[Use $\pi = \frac{22}{7}$]

View Text Solution

26. A farmer connects a pipe of internal diameter 25 cm from a canal into a cylindrical tank which is 12 m in diameter and 2.5 m deep . If the water flows through the pipe at the

rate of 3.6 km/hr in how much time will the tank be completely filled ? Also find the cost of water if the irrigation department charges at the rate of Rs. $0.07 \text{per } \mathrm{m}^3$

[Use $\pi = \frac{22}{7}$]

View Text Solution

27. A juice - seller serves his customers using a glass whose inner diameter is 5 cm but the bottom of the glass has a raised hemispherical portion that reduces its capacity . If the height

of the glass is 10 cm find the apparent and actual capacities of the glass . [Use $\pi = 3.14$]

View Text Solution

28. A hemispherical depression is cut out from one face of a cubical block of side 21 cm such that the diameter of the hemisphere is equal to the edge of the cube . Find the volume and the total surface area of the remaining solid . [Use $\pi = \frac{22}{7}$]

View Text Solution

29. Sushant has a vessel in the shape of an inverted cone that is open at the top. Its height is 11 cm and the radius of the top is 2.5 cm. It is full of water and metallic spherical balls of diameter 0.5 cm are put in the vessel such that $\frac{2}{5}$ th of the water flows out. Find the number of balls that were put in the vessel.

View Text Solution

30. Water is flowing through a cylindrical pipe of internal diameter 2 cm into a cylindrical tank of base radius 40 cm at the rate of 0.4 m /s. Determine the rise in the water level in the tank in half an hour.

View Text Solution

31. A hemispherical tank full of water is emptied by a pipe at the rate of $\frac{25}{7} l / s$. How

much time will it take to empty half the tankif the diameter of the base of the tank is 3 m?

View Text Solution

32. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that 1 cm^3 of iron has approximately 8 gm mass. (Use $\pi = 3.14$)

View Text Solution

33. A well of diameter 4 m is dug 14 m deep. The earth taken out is spread evenly all around the well to form a 40 cm high embankment. Find the width of the embankment.

View Text Solution

34. A gulabjamun when ready for eating contains sugar syrup of about 30% of its volume. Find approximately how much syrup

would be found in 45 such gulabjamuns if each of them is shaped like a cylinder with two hemispherical ends. The complete length of each of them is 5 cm and the diameter is 2.8 cm. [Use $\pi = \frac{22}{7}$]

View Text Solution

35. Six tennis balls of diameter 62 mm are placed in cylindrical tube given in the figure. Find the volume of the six balls and the internal volume of unfilled space in the tube

and express this as a percentage of the volume of the tube.

View Text Solution

36. A sector of a circle of radius 6 cm has an angle of 120°. It is rolled up so that the two bounding radii are joined together to form a cone. Find volume of cone and T.S.A. of the cone.

View Text Solution

37. A right triangle with side 3 cm and 4 cm is revolved around its hypotenuse. Find the volume of double cone thus generated. (Use $\pi = 3.14$)

View Text Solution

Evaluation And Analysis Based Questions

1. Six tennis balls of diameter 62 mm are placed in cylindrical tube (Fig.) . Find the volume of the six balls and the internal volume

of unfilled space in the tube and express this as a percentage of the volume of the tube .

View Text Solution

2. A sector of a circle of radius 6 cm has an angle of 120° . It is rolled up so that the two bounding radii are joined together to form a cone . Find volume of cone and T.S.A. of the cone .

View Text Solution

3. A vessel is in the form of an inverted cone . Its height is 8 cm and the radius of its top, which is open, is 5 cm . If is filled with water up to the brim . When lead shots each of which is a sphere of radius 0.5 cm are dropped into the vessel, one fourth of the water flows out . Find the number of lead shots sropped in the vessel .

View Text Solution

4. A right cylindrical container of radius 6 cm and height 15 cm is full of ice-cream, which has to be distributed to 10 children in equal cones having hemispherical shape on the top . If the height of the conical portion is four times its base radius, find the radius of the ice-cream cone .

View Text Solution

Assertion And Reasoning Based Questions

1. Assertion : A hemisphere of radius 7 cm is to be painted outside on the surface . The total cost of painting at it Rs. 5 per cm^2 is Rs. 2300

Reason : The total surface area hemisphere is $3\pi r^2$

A. Both the Assertion and the Reason are correct and Reason is the correct explanation of the Assertion .

B. Both the Assertion and the Reason are correct but Reason is not the correct explanation of the Assertion .

C. Assertion is true but Reason is false

D. Both Assertion and Reason is false

Answer: C

View Text Solution

2. Assertion : The number of coins 1.75 cm in diameter and 2 mm thick from a melted cuboid $(10\text{cm} \times 5.5\text{cm} \times 3.5\text{cm})$ is 400 .

Reason : Volume of a cylinder of base radius r and height h is given by

$V = \left(\pi r^2 h\right)$ cubic units .

And, area of a cuboid = $\left(l \times b \times h\right)$ square units .

A. Both the Assertion and the Reason are correct and Reason is the correct explanation of the Assertion .

B. Both the Assertion and the Reason are correct but Reason is not the correct explanation of the Assertion .

C. Assertion is true but Reason is false

D. Both Assertion and Reason is false

Answer: A

View Text Solution

3. Assertion : A hemisphere of radius 7 cm is to be painted outside on the surface. The total cost of painting at it ₹ 5 per cm^2 is ₹ 2300.

Reason: The total surface area hemisphere is $3\pi r^2$

A. Both the Assertion and the Reason are correct and the Reason is the correct explanation of the Assertion.

B. The Assertion and the Reason are correct but the Reason is not the correct explanation of the Assertion.

C. Assertion is true but the Reason is false.

D. Assertion is false but the Reason is true.

Answer: D

View Text Solution

Passage Based Questions

1. Vijay has rain water harvesting plant on his roof . After rain, all the water that is collected on the roof of $22m \times 20m$ is drained into the cylindrical tank having diameter of base 2m and height 3.5 m . It rained heavily last night and in the morning the tank is just full .

(i) How much water is collected in the tank (in litres) ?

(ii) Find the rainfall in cm ?

View Text Solution

2. A wooden toy is in the shape of a right circular cylinder with hemisphere on one end and a cone on the other . The height and radius of cylinder part are 13 cm and 5 cm respectively . The radii of the hemispherical and conical parts are same as that of the cylindrical part . Height of the conical part is 12 cm . The conical portion and the hemispherical portion is to be painted green and cylindrical portion is to be painted red .

Based on the given information answer the following questions .

(i) How much area of the toy is painted with red colour ?

(ii) How much area of the toy is painted with green colour ?

(iii) Find the total surface area of the toy .

View Text Solution

3. Vijay has rain water harvesting plant on his roof. After rain, all the water that is collected

on the roof of 22 m $\times$ 20 m is drained into the cylindrical tank having diameter of base 2 m and height 3.5 m. It rained heavily last night and in the morning the tank is just full.

How much water is collected in the tank (in litres)?

View Text Solution

4. Vijay has rain water harvesting plant on his roof. After rain, all the water that is collected on the roof of 22 m $\times$ 20 m is drained into

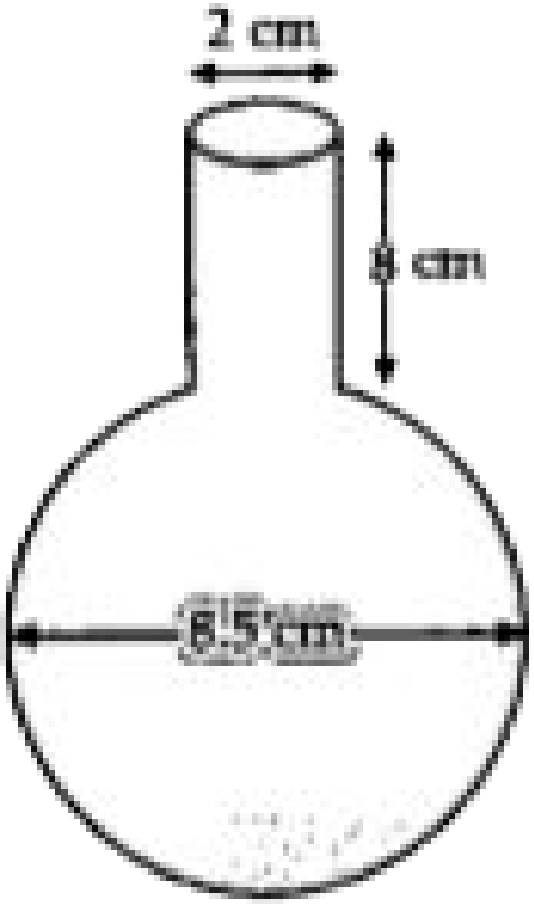
the cylindrical tank having diameter of base 2 m and height 3.5 m. It rained heavily last night and in the morning the tank is just full.

Find the rainfall in cm?

View Text Solution

5. A thirsty crow saw a spherical glass vessel with cylindrical neck 8 cm long and 2 cm in diameter. The diameter of spherical part is 8.5 cm. The vessel is half filled with water. But due to long neck of vessel crow was not able to

drink water from it. He saw few spherical marbles of diameter 1 cm lying near by the vessel. He start dropping them inside the vessel one by one.



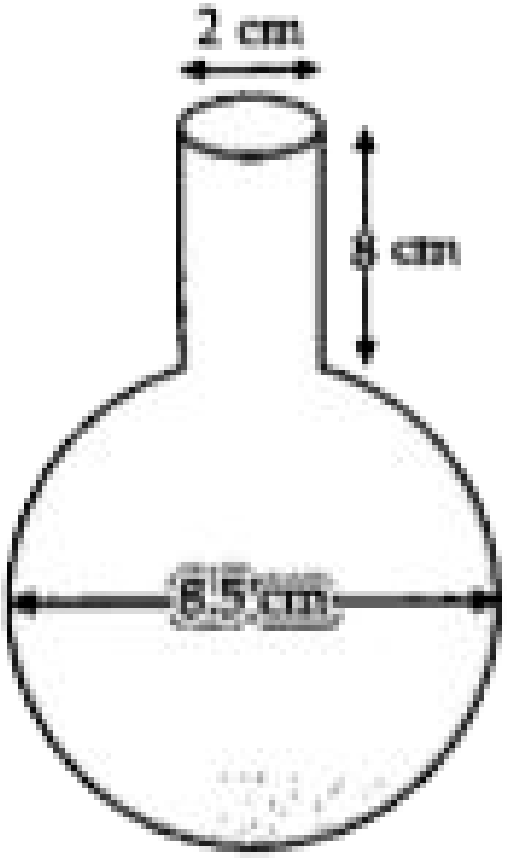
Based on the given information, answer the following questions:

What is the total volume of the vessel?

View Text Solution

6. A thirsty crow saw a spherical glass vessel with cylindrical neck 8 cm long and 2 cm in diameter. The diameter of spherical part is 8.5 cm. The vessel is half filled with water. But due to long neck of vessel crow was not able to drink water from it. He saw few spherical

marbles of diameter 1 cm lying near by the vessel. He start dropping them inside the vessel one by one.



Based on the given information, answer the following questions:

How many marbles crow has to drop inside the vessel to drink the water?

View Text Solution

Self Assessment

1. If the diameter of a sphere is 14 cm , then what is its curved surface area ?

View Text Solution

2. The radius and height of a right - circular cone are 12 cm and 9 cm respectively . What is the curved surface area of that cone ?

View Text Solution

3. The volume of a right - circular cylinder is 352cm^2 and the height is 7 cm . Find the radius of the base .

View Text Solution

4. If the radii of a sphere and a right - circular cylinder are 3 cm each and if their volumes are equal as well, then find the height of the cylinder .

View Text Solution

5. The curved surface area and the volume of a right circular cylinder are numerically equal . Find the radius of a cylinder .

View Text Solution

6. The volumes of a sphere and cylinder are equal . The diameter of the base of the cylinder is equal to the diameter of the sphere . Find the ratio between the radius of the base and the height of the cylinder .

View Text Solution

7. $77\mathrm{m}^2$ of canvas is required to make a conical tent of slant height 7 m . Find the area of the base .

View Text Solution

8. The volume of the right - circular cone of height 24 cm is 1232cm^2 . Find the lateral surface area of the cone .

View Text Solution

9. Two cubes each of volume 64cm^3 are joined end to end to form a solid . Find the surface area and volume of the resulting cuboid .

View Text Solution

10. 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 .

View Text Solution

11. A 20 m deep well with diameter 7 m is dug and the earth from digging is evenly spread

out to form a platform of 22 m by 14 m . Find the height of the platform .

View Text Solution

12. A copper wire 3 mm in diameter is wound about a cylinder whose length is 1.2 m and diameter 10 cm so as to cover the curved surface of the cylinder . Find the length and mass of the wire, assuming the density of the copper wire to be 8.88 g/cm .

View Text Solution

13. Selvi's house has an overhead tank in the shape of a cylinder . It is filled up by pumping water from an underground tank that is cuboid in shape . The dimensions of the cuboid are $1.57\text{m} \times 1.44\text{m} \times 0.95\text{m}$. The radius of the overhead tank is 60 cm and its height is 95 cm . Find the height of the water - level in the underground tank after the overhead tank has been filled up completely . Compare the capacities of both the tanks .

(Use $\pi = 3.14$)

View Text Solution

14. How many coins 1.75 cm in diameter and 2 mm thickness must be melted to form a cuboid of dimensions $5.5\text{cm} \times 10\text{cm} \times 3.5\text{cm}$?

View Text Solution

15. Water in a canal 6 m deep and 1.5 m wide is flowing at a speed of 10 km/hr . How much

area will it irrigate in 30 minutes, if 8 cm of standing water is needed for irrigation ?

View Text Solution

16. A farmer connects a pipe of internal diameter 20 cm from a canal into a cylindrical tank which is 10 m in diameter and 2 m deep . If the water flows through the pipe at the rate of 3 km/hr then in how much time will the tank be completely filled ?

View Text Solution

17. A wooden toy rocket is in the shape of a cone mounted on a cylinder . The height of the entire rocket is 26 cm while the height of the conical part is 6 cm. The base of the conical portion has a diameter of 5 cm while the diameter of the cylinder is 3 cm . If the conical portion is to be painted orange and the cylindrical portion yellow, find the area of the rocket painted with each of these colours .

[Use $\pi = 3.14$]

View Text Solution

18. A wooden toy was made from the rest of the solid cylinder after scooping out a hemisphere of same radius from each of it . If the height of the cylinder is 10 cm and its base radius is 3.5 cm, find the total surface area .

[Use $\pi = \frac{22}{7}$]

View Text Solution

19. A tent is in the form of a right-circular cylinder of base diameter 4 m and height 2.1

m surmounted by a right circular cone of the same base radius and slant height 2.8 cm . Find the area of the canvas used and the cost of canvas at Rs. 500 per square metre .

View Text Solution

20. A solid is in the shape of a cone mounted on a hemisphere, the radius of each of them being 1 cm and the total height of the cone equal to its radius . Find the volume of the solid in terms of π .

View Text Solution

21. If the diameter of a sphere is 14 cm, then what is its curved surface area?

View Text Solution

22. The radius and height of a right-circular cone are 12 cm and 9 cm respectively. What is the curved surface area of that cone?

View Text Solution

23. The volume of a right-circular cylinder is 352 cm^3 and the height is 7 cm. Find the radius of the base.

View Text Solution

24. If the radii of a sphere and a right-circular cylinder are 3 cm each and if their volumes are equal as well, then find the height of the cylinder.

View Text Solution

25. The curved surface area and the volume of a right circular cylinder are numerically equal. Find the radius of the cylinder.

View Text Solution

26. The volumes of a sphere and cylinder are equal. The diameter of the base of the cylinder is equal to the diameter of the sphere. Find the ratio between the radius of the base and the height of the cylinder:

View Text Solution

27. 77 m^2 of canvas is required to make a conical tent of slant height 7 m. Find the area of the base.

View Text Solution

28. The volume of the right-circular cone of height 24 cm is 1232 cm^3. Find the lateral surface area of the cone.

View Text Solution

29. Two cubes each of volume 64 cm^3 are joined end to end to form a solid. Find the surface area and volume of the resulting cuboid.

View Text Solution

30. A 20 m deep well with diameter 7 m is dug and the earth from digging is evenly spread

out to form a platform of 22 m by 14 m. Find the height of the platform.

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View Text Solution

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View Text Solution

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View Text Solution

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cylindrical portion yellow, find the area of the rocket painted with each of these colours. [Use $\pi = 3.14]$

View Text Solution

36. A wooden toy was made from the rest of the solid cylinder after scooping out a hemisphere of same radius from eachofit. If the heightofthe cylinderis 10 cm and its base radius is 3.5 cm, find the total surface area. [Use $\pi = \frac{22}{7}]$

View Text Solution

37. A tent is in the form of a right-circular cylinder of base diameter 4 m and height 2.1 m surmounted by a right circular cone of the same base radius and slant height 2.8 m. Find the area of the canvas used and the cost of canvas at ₹ 500 per square metre.

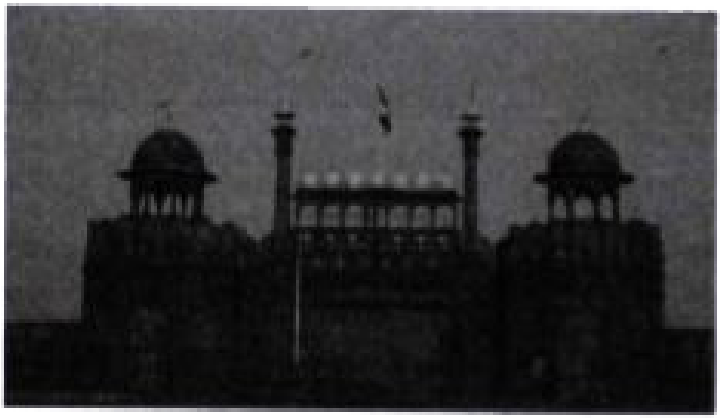
View Text Solution

38. A solid is in the shape of a cone mounted on a hemisphere, the radius of each of them being 1 cm and the total height of the cone equal to its radius. Find the volume of the solid in terms of π

View Text Solution

Case Based Questions

1. Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.



How much cloth material will be required to cover 2 big domes each of radius 2.5 metres? (Take $\pi = 22/7$)

A. 75 m^2

B. 78.57 m^2

C. 87.47 m^2

D. 25.8 m^2

Answer: B

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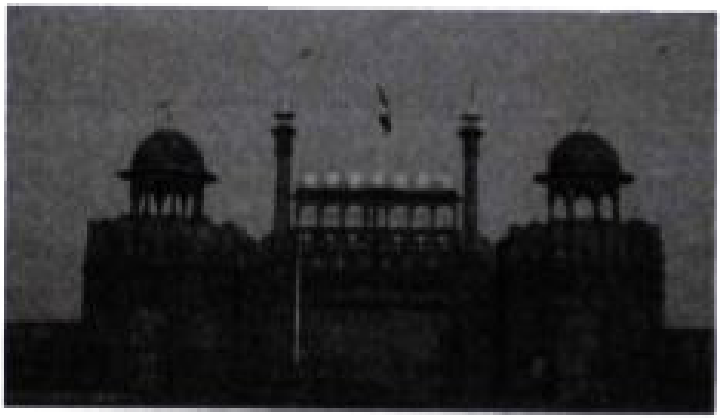
2. Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also

2 domes at the corners which are hemispherical 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.



The formula to find the volume of a cylindrical pillar:

A. $\pi r^2 h$

B. $\pi r l$

C. $\pi r(l + r)$

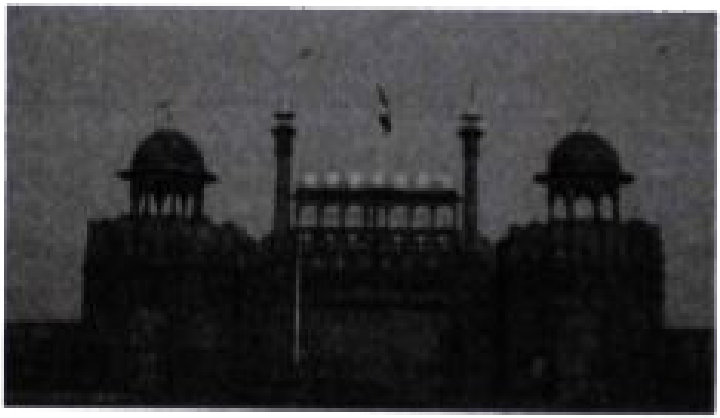
D. $2\pi r$

Answer: A

View Text Solution

3. Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students.

Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.



The formula to find the volume of a cylindrical pillar is $\pi r^2 h$

(iii) The lateral surface area of two pillars if height of the pillar is 7 m and radius of the base is 1-4 m is:

A. 112.3 m^2

B. 90 m^2

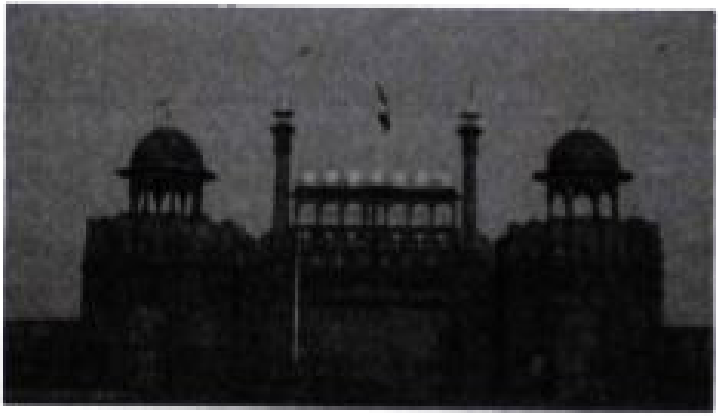
C. 123.2 m^2

D. 345.2 m^2

Answer: B

View Text Solution

4. Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also 2 domes at the corners which are hemispherical 7 smaller domes at the centre. Flag hoisting ceremony on Independence Day takes place near these domes.



The volume of a hemisphere if the radius of the base is 3.5 m, is:

A. 85.9 m^3

B. 80 m^3

C. 98 m^3

D. 89.83 m^3

Answer: D

View Text Solution

5. Mathematics teacher of a school took her 10th standard students to show Red fort. It was a part of their Educational trip. The teacher had interest in history as well. She narrated the facts of Red fort to students. Then the teacher said in this monument one can find combination of solid figures. There are 2 pillars which are cylindrical in shape. Also

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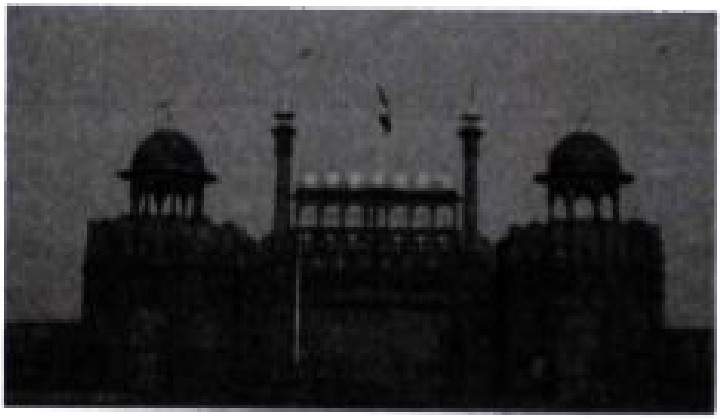


The ratio of sum of volumes of two hemispheres of radius 1 cm each to the volume of a sphere of radius 2 cm?

A. 1 : 1

B. $1:8$

C. $8:1$

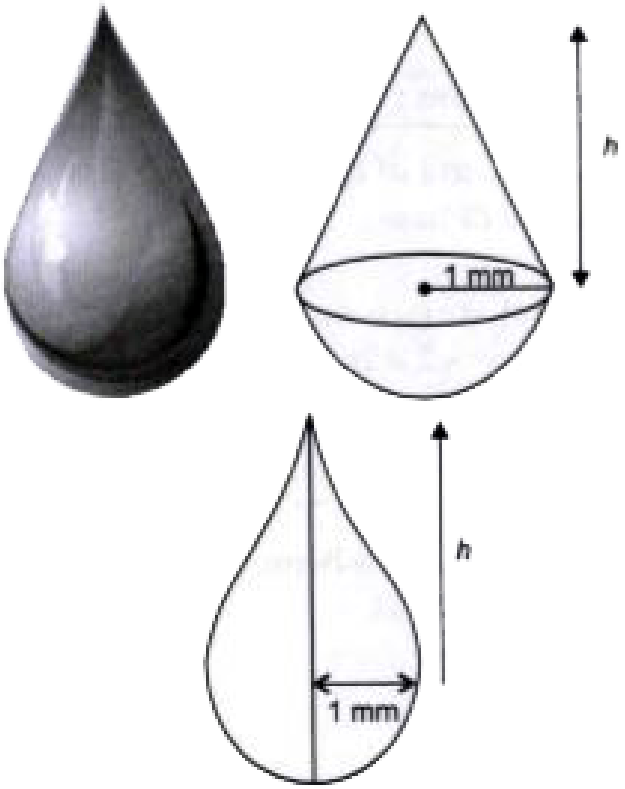
D. $1:16$

Answer: B

View Text Solution

6. In the month of December 2020, it rained heavily throughout the day over the city of Hyderabad. Anil observed the raindrops as they reached him. Each raindrop was in the

shape of a hemisphere surmounted by a cone of the same radius of 1 mm. Volume of one of such drops is 3.14 mm^3. Anil collected the rain water in a pot having a capacity of 1099 cm^3. [Use $\sqrt{2}$ = 1.4].



The total height of the drop is:

A. 1 mm

B. 2 mm

C. 3 mm

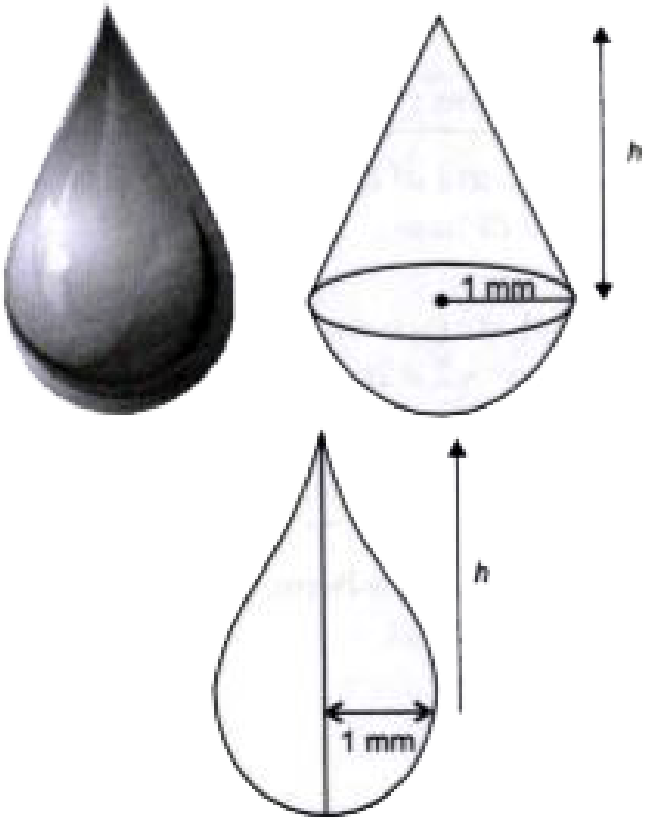
D. 4 mm

Answer: B

View Text Solution

7. In the month of December 2020, it rained heavily throughout the day over the city of Hyderabad. Anil observed the raindrops as they reached him. Each raindrop was in the shape of a hemisphere surmounted by a cone of the same radius of 1 mm. Volume of one of

such drops is 3.14 mm^3. Anil collected the rain water in a pot having a capacity of 1099 cm^3. [Use $\sqrt{2}$ = 1.4].



The curved surface area of the drop is:

A. 8.74 mm^2

B. $9.12mm^2$

C. 10.68 mm^2

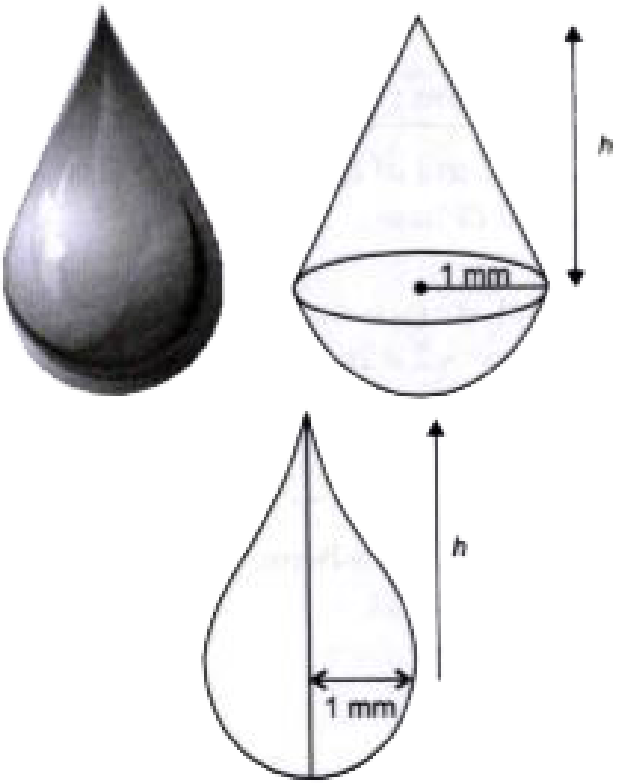
D. 12.54 mm^2

Answer: C

View Text Solution

8. In the month of December 2020, it rained heavily throughout the day over the city of Hyderabad. Anil observed the raindrops as

they reached him. Each raindrop was in the shape of a hemisphere surmounted by a cone of the same radius of 1 mm. Volume of one of such drops is 3.14 mm^3. Anil collected the rain water in a pot having a capacity of 1099 cm^3. [Use $\sqrt{2}$ = 1.4].



As the drop fell into the pot, it changed into a sphere. What was the radius of this sphere?

A. $(3/4)^{1/3}$

B. $(4/3)^{1/3}$

C. $3^{1/3}$

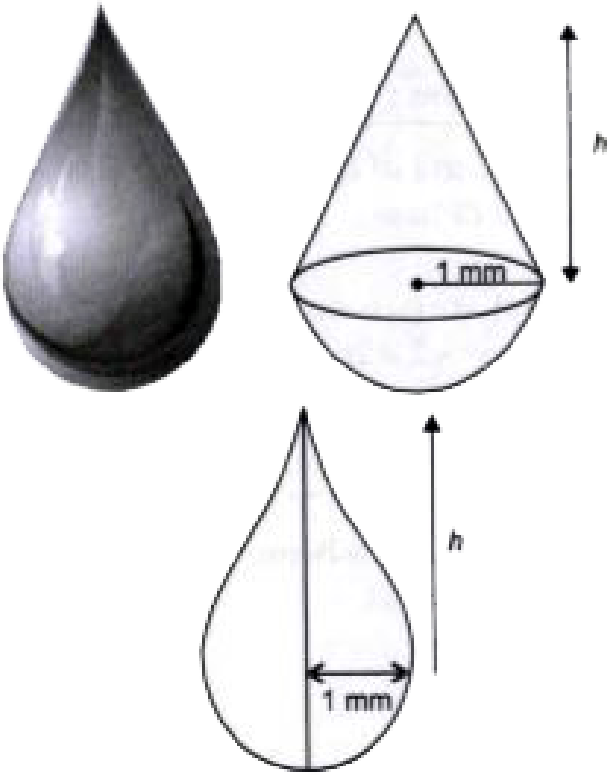
D. $4^{1/3}$

Answer: A

View Text Solution

9. In the month of December 2020, it rained heavily throughout the day over the city of Hyderabad. Anil observed the raindrops as they reached him. Each raindrop was in the shape of a hemisphere surmounted by a cone

of the same radius of 1 mm. Volume of one of such drops is 3.14 mm^3. Anil collected the rain water in a pot having a capacity of 1099 cm^3. [Use $\sqrt{2}$ = 1.4].



How many drops will fill the pot completely:

A. 260000

B. 280000

C. 320000

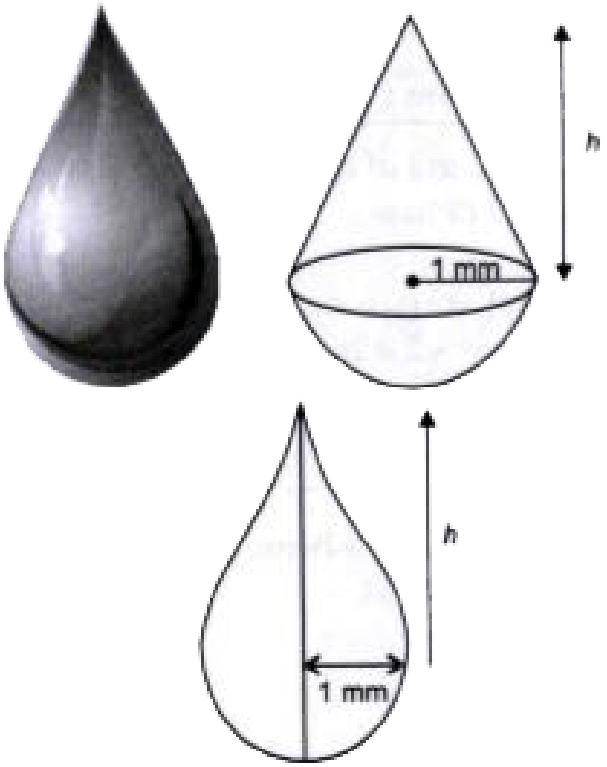
D. 350000

Answer: D

View Text Solution

10. In the month of December 2020, it rained heavily throughout the day over the city of Hyderabad. Anil observed the raindrops as

they reached him. Each raindrop was in the shape of a hemisphere surmounted by a cone of the same radius of 1 mm. Volume of one of such drops is 3.14 mm^3. Anil collected the rain water in a pot having a capacity of 1099 cm^3. [Use $\sqrt{2}$ = 1.4].



The total surface area of a hemisphere of radius r is:

A. $2/3\pi r^3$

B. $4/3\pi r^3$

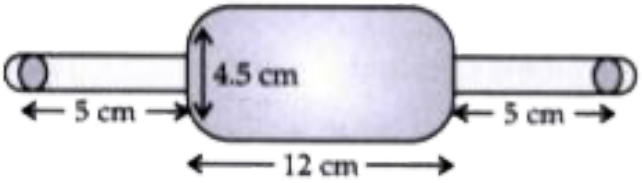
C. $2\pi r^2$

D. $3\pi r^2$

Answer: D

View Text Solution

11. Aparna is studying in X standard. While helping her mother in kitchen, she saw rolling pin made of steel and empty from inner side, with two small hemispherical ends as shown in the figure.



Find the curved surface area of two identical cylindrical parts, if the diameter is 2.5 cm and length of each part is 5 cm:

A. 475 cm^2

B. 877 cm^2

C. 78.57 cm^2

D. 259.19 cm^2

Answer: B

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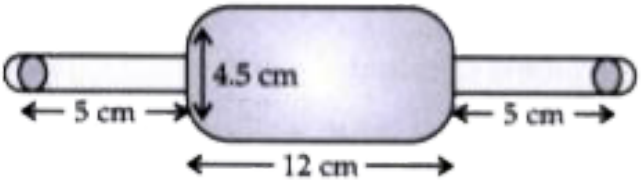
12. Aparna is studying in X standard. While helping her mother in kitchen, she saw rolling pin made of steel and empty from inner side, with two small hemispherical ends as shown in the figure.



Find the volume of big cylindrical part:

A. 190.93 cm^3

B. 77 cm^3

C. 75 cm^3

D. 83.5 cm^2

Answer: A

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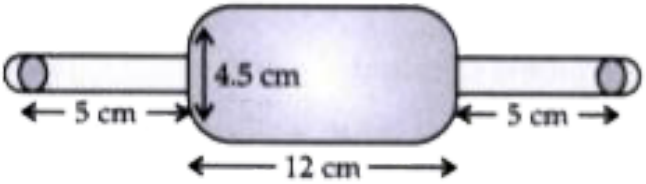
13. Aparna is studying in X standard. While helping her mother in kitchen, she saw rolling pin made of steel and empty from inner side, with two small hemispherical ends as shown in

the figure.



Volume of two hemispherical ends having diameter 2.5 cm, is:

A. 4.75 cm^3

B. 2.76 cm^2

C. 8.18 cm^3

D. 75 cm^3

Answer: B

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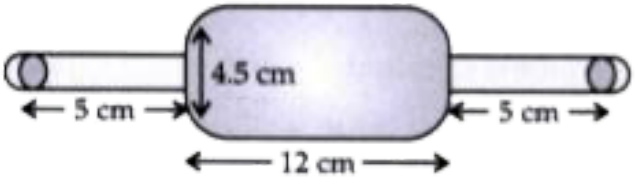
14. Aparna is studying in X standard. While helping her mother in kitchen, she saw rolling pin made of steel and empty from inner side, with two small hemispherical ends as shown in the figure.



Curved surface area of two hemispherical ends, is:

A. 17.5 cm^2

B. 7.9 cm^2

C. 19.64 cm^2

D. 15.5 cm^2

Answer: C

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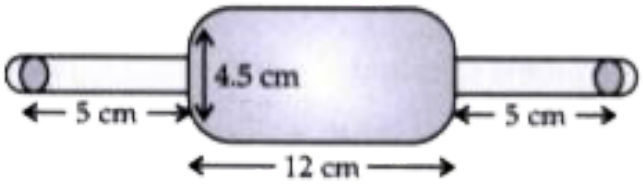
15. Aparna is studying in X standard. While helping her mother in kitchen, she saw rolling pin made of steel and empty from inner side, with two small hemispherical ends as shown in

the figure.



Find the difference of volumes of bigger cylindrical part and total volume of the two small hemispherical ends:

A. 175.50 cm^3

B. 182.75 cm^3

C. 76.85 cm^3

D. 96 cm^3

Answer: B

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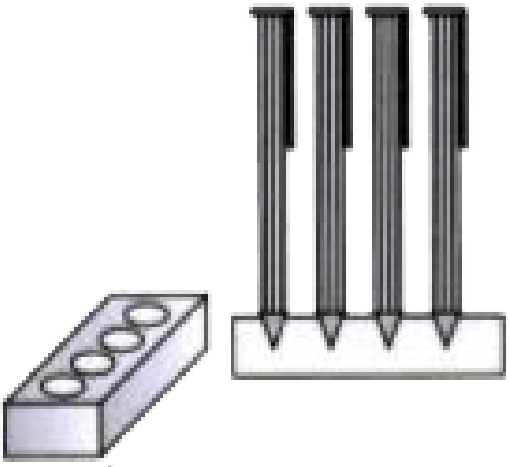
16. A carpenter used to make and sell different kinds of wooden pen stands like rectangular, cuboidal, cylindrical, conical. Aarav went to his shop and asked him to make a pen stand as explained below. Pen stand must be of the cuboidal shape with three conical depressions, which can hold 3 pens. The dimensions of the cuboidal part must be 20 cm $\times$ 15 cm $\times$ 5

cm and the radius and depth of each conical depression must be 0.6 cm and 2.1 cm respectively. Based on the above information, answer the following questions.



The volume of the cuboidal part is:

A. 1250 cm^3

B. 1500 cm^3

C. 1625 `cm^3

D. 1600 cm^3

Answer: B

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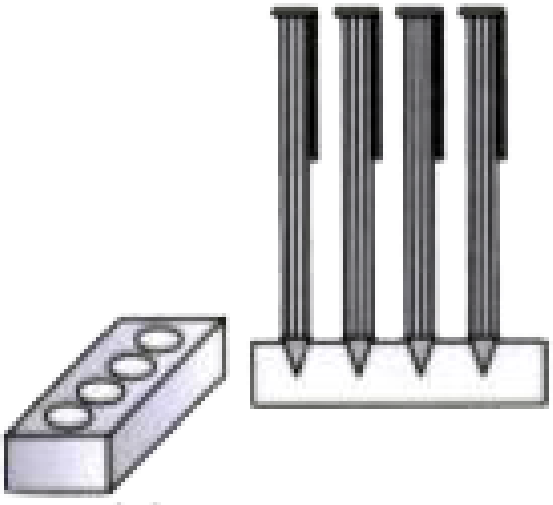
17. A carpenter used to make and sell different kinds of wooden pen stands like rectangular, cuboidal, cylindrical, conical. Aarav went to his shop and asked him to make a pen stand as explained below. Pen stand must be of the

cuboidal shape with three conical depressions, which can hold 3 pens. The dimensions of the cuboidal part must be 20 cm $\times$ 15 cm $\times$ 5 cm and the radius and depth of each conical depression must be 0.6 cm and 2.1 cm respectively. Based on the above information, answer the following questions.



Total volume of conical depressions is:

A. 2.508 cm^3

B. 1.5 cm^3

C. 2.376 cm^3

D. 3.6 cm^3

Answer: C

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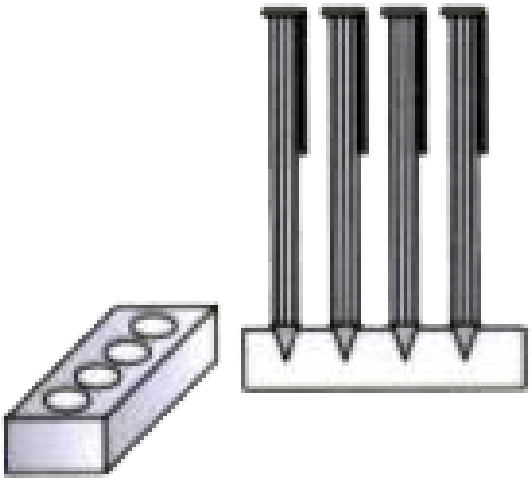
18. A carpenter used to make and sell different kinds of wooden pen stands like rectangular, cuboidal, cylindrical, conical. Aarav went to his

shop and asked him to make a pen stand as explained below. Pen stand must be of the cuboidal shape with three conical depressions, which can hold 3 pens. The dimensions of the cuboidal part must be 20 cm $\times$ 15 cm $\times$ 5 cm and the radius and depth of each conical depression must be 0.6 cm and 2.1 cm respectively. Based on the above information, answer the following questions.



Volume of the wood used in the entire stand is:

A. 631.31 cm^3

B. 1502.376 cm^3

C. 3564 cm^3

D. 1497.624 cm^3

Answer: D

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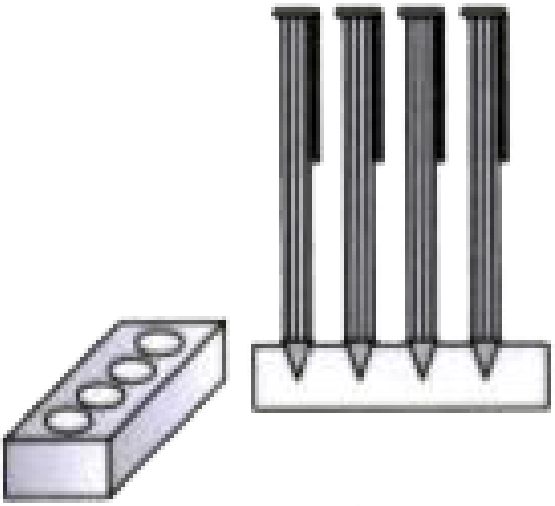
19. A carpenter used to make and sell different kinds of wooden pen stands like rectangular, cuboidal, cylindrical, conical. Aarav went to his shop and asked him to make a pen stand as explained below. Pen stand must be of the cuboidal shape with three conical depressions, which can hold 3 pens. The dimensions of the cuboidal part must be 20 cm $\times$ 15 cm $\times$ 5

cm and the radius and depth of each conical depression must be 0.6 cm and 2.1 cm respectively. Based on the above information, answer the following questions.



Total surface area of cone of radius r is given by:

A. $\pi rl + \pi r^2$

B. $2\pi rl + \pi r^2$

C. $\pi r^2 l + \pi r^2$

D. $\pi rl + 2\pi r^3$

Answer: A

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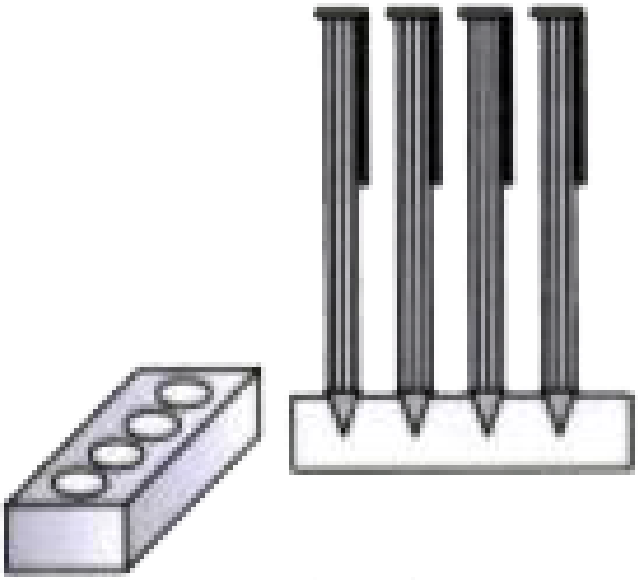
20. A carpenter used to make and sell different kinds of wooden pen stands like rectangular, cuboidal, cylindrical, conical. Aarav went to his shop and asked him to make a pen stand as

explained below. Pen stand must be of the cuboidal shape with three conical depressions, which can hold 3 pens. The dimensions of the cuboidal part must be 20 cm $\times$ 15 cm $\times$ 5 cm and the radius and depth of each conical depression must be 0.6 cm and 2.1 cm respectively. Based on the above information, answer the following questions.



If the cost of wood used is ₹ 5 per cm^3, then the total cost of making the pen stand is:

A. ₹8450.50

B. 7480

C. ₹9962.14

D. ₹7488.12

Answer: D

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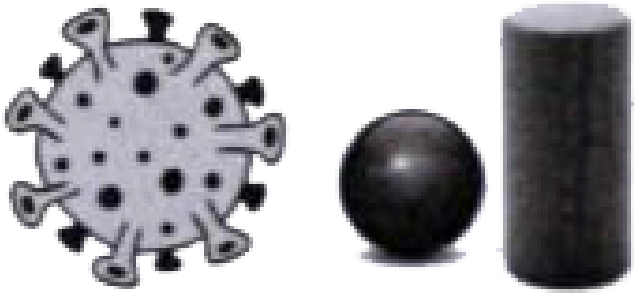
21. Arun a X standard student makes a project on corona virus in science for an exhibition in his school. In this project, he picks a sphere which has volume 38808 cm^3 and 11 cylindrical shapes, each of volume 1540 cm^3 with length 10 cm.



Diameter of the base of the cylinder is:

A. 7 cm

B. 14 cm

C. 12 cm

D. 16 cm

Answer: B

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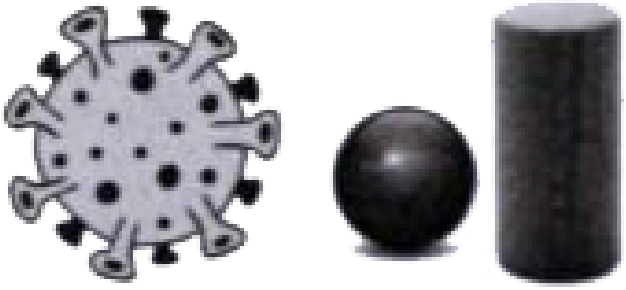
22. Arun a X standard student makes a project on corona virus in science for an exhibition in his school. In this project, he picks a sphere which has volume 38808 cm^3 and 11 cylindrical shapes, each of volume 1540 cm^3 with length 10 cm.



Diameter of the sphere is:

A. 40 cm

B. 42 cm

C. 21 cm

D. 20 cm

Answer: B

View Text Solution

23. Arun a X standard student makes a project on corona virus in science for an exhibition in his school. In this project, he picks a sphere

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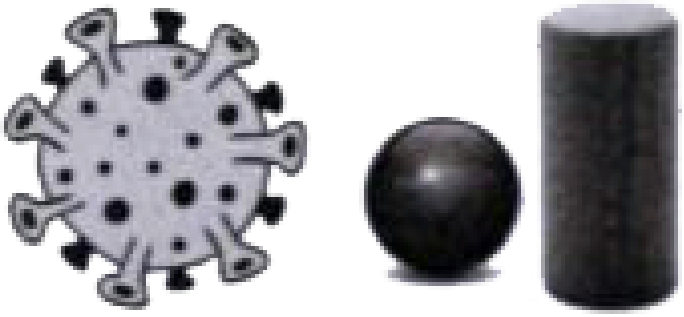

Total volume of the shape formed is:

A. $85541cm^3$

B. $24625cm^3$

C. $45738cm^3$

D. $55748cm^3$

Answer: D

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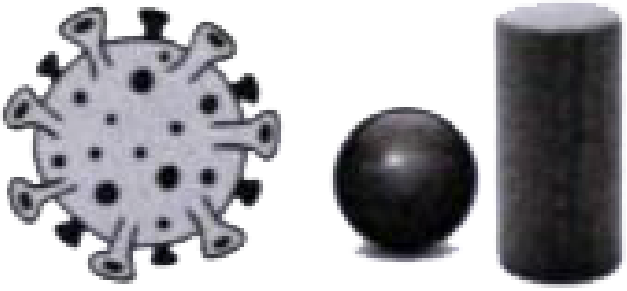
24. Arun a X standard student makes a project on corona virus in science for an exhibition in his school. In this project, he picks a sphere which has volume 38808 cm^3 and 11 cylindrical shapes, each of volume 1540 cm^3 with length 10 cm.



Curved surface area of the one cylindrical shape is

A. $850cm^2$

B. $221cm^2$

C. $440cm^2$

D. $540cm^2$

Answer: C

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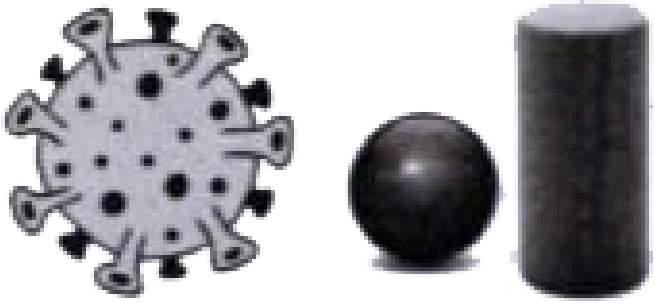
25. Arun a X standard student makes a project on corona virus in science for an exhibition in his school. In this project, he picks a sphere which has volume 38808 cm^3 and 11 cylindrical shapes, each of volume 1540 cm^3 with length 10 cm.



Total area covered by cylindrical shapes on the surface of sphere is:

A. $1694cm^2$

B. $1580cm^2$

C. $1896cm^2$

D. $1740cm^2$

Answer: A

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