Chapter : 20. VOLUME AND SURFACE AREA OF SOLIDS

Exercise : 20A

Question: 1

Find the volume,

Solution:

(i) We know that,

Volume of cuboid = Length × Breadth × Height

= (22 × 12 × 7.5)

= 1980 cm^3

We also know that,

Total Surface Area of cuboid = 2 (lb + bh + hl)

= 2 (22 × 12) + (22 × 7.5) + (12 × 7.5)

= 2 (264 + 165 + 90)

= 1038 cm^2

Now,

Lateral surface area of cuboid = [2 (l + b) × h]

= 2 (22 + 12) × 7.5

= 510 cm^2

(ii) We know that,

Volume of cuboid = Length × Breadth × Height

= (15 × 6 × 0.9)

= 81 m^3

We also know that,

Total Surface Area of cuboid = 2 (lb + bh + hl)

= 2 (15 × 6) + (15 × 0.9) + (6 × 0.9)

= 2 (90 + 13.5 + 5.4)

= 217.8 m^2

Now,

Lateral surface area of cuboid = [2 (l + b) × h]

= 2 (15 + 6) × 0.9

= 37.8 m^2

(iii) We know that,

Volume of cuboid = Length × Breadth × Height

= (24 × 0.25 × 6)

= 36 m^3

We also know that,

Total Surface Area of cuboid = 2 (lb + bh + hl)

= 2 (24 × 0.25) + (24 × 6) + (0.25 × 6)

= 2 (6 + 144 + 1.5)

= 303 m^2

Now,

Lateral surface area of cuboid = [2 (l + b) × h]

= 2 (24 + 0.25) × 6

= 291 m^2

(iv) We know that,

Volume of cuboid = Length × Breadth × Height

= (0.48 × 0.6 × 1)

= 0.288 m^3

We also know that,

Total Surface Area of cuboid = 2 (lb + bh + hl)

= 2 (0.48 × 0.6) + (0.48 × 1) + (0.6 × 1)

= 2 (0.288 + 0.48 + 0.6)

= 2.736 m^2

Now,

Lateral surface area of cuboid = [2 (l + b) × h]

= 2 (0.48 + 0.6) × 1

= 2.16 m^2

Question: 2

The dimensions of

Solution:

We know that,

1m = 100 cm

Therefore,

Dimensions of the tank will be: 2m 75cm × 1m 80 cm × 1m 40cm

= 275 cm × 180 cm × 140 cm

We know that,

Volume of cuboid = Length × Breadth × Height

= 275 × 180 × 140

= 6930000 cm^3

We also know that,

1000 cm^3 = 1L

Therefore,

Volume = $\frac{6930000}{1000}$

= 6930 Litres

Question: 3

A solid rectangul

Solution:

We know that,

1m = 100cm

Therefore,

Dimensions of the iron piece will be: 105 cm × 70 cm × 1.5 cm

We know that,

Volume of cuboid = Length × Breadth × Height

Total volume of the piece of iron = 105 × 70 × 1.5

= 11025 cm^3

We also know that,

1 cm^3 = 8 gms

Therefore,

Weight of the piece = 11025 × 8

= 88200 g

= $\frac{88200}{1000}$

= 88.2 kg

Question: 4

The area of a cou

Solution:

We know that,

1cm = 0.01m

Therefore,

Volume of the gravel used = Area × Height

= 3750 × 0.01

= 37.5 m^3

It is given in the question that cost of the gravel is Rs. 6.40 per cubic meter

Therefore,

Total cost of covering = (37.5 × 6.4)

= Rs. 240

Question: 5

How many persons

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Total volume of hall = 16 × 12.5 × 4.5

= 900 m^3

It is given in the question that 3.6 m^3 of air is required for each person

Therefore,

Total number of persons that can be accommodated in the hall = $\frac{\text{Total volume}}{\text{Volume required by each person}}$

= $\frac{900}{3.6}$

= 250 people

Question: 6

A cardboard box i

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Firstly, we have to find out volume of cardboard box

Volume of cardboard box = 120 × 72 × 54

= 466560 cm^3

Now,

Volume of each bar of soap = 6 × 4.5 × 4

= 108 cm^3

Therefore,

Total number of bars of soap that can be accommodated in that box = $\frac{\text{Volume of the box}}{\text{Volume of each soap}}$

= $\frac{466560}{108}$

= 4320 bars

Question: 7

The size of a mat

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Firstly, we have to find out volume occupied by a single matchbox

Volume occupied by a single matchbox = (4 × 2.5 × 1.5)

= 15 cm^3

Now,

Volume of a packet containing 144 matchboxes = (15 × 144)

= 2160 cm^3

Also,

Volume of carton = (150 × 84 × 60)

= 756000 cm^3

Therefore,

Total number of packets that can be placed in a carton = $\frac{\text{Volume of the carton}}{\text{Volume of a packet}}$

$= \frac{75600}{2160}$

= 350 packets

Question: 8

How many planks o

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Total volume of the block = (500 × 70 × 32)

= 1120000 cm^3

Total volume of each plank = 200 × 25 × 8

= 40000 cm^3

Hence,

Total number of planks that can be made = $\frac{\text{Total volume of the block}}{\text{Volume of each plank}}$

$= \frac{1120000}{40000}$

= 28 planks

Question: 9

How many bricks,

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Firstly,

Volume of the brick = 25 × 13.5 × 6

= 2025 cm^3

Now,

Volume of the wall = 800 × 540 × 33

= 14256000 cm^3

Hence,

Total number of bricks required = $\frac{\text{Volume of the wall}}{\text{Volume of each brick}}$

$= \frac{14256000}{2025}$

= 7040 bricks

Question: 10

A wall 15 m long,

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Volume of the wall = 1500 × 30 × 400

= 18000000 cm^3

Total quantity of mortar = $\frac{1}{12} \times 18000000$

= 1500000 cm^3

Therefore,

Volume of bricks = 18000000 – 1500000

= 16500000 cm^3

Now,

Volume of a single brick = 22 × 12.56 × 7.5

= 2062.5 cm^3

Therefore,

Total number of bricks = $\frac{\text{Total volume of the bricks}}{\text{Volume of a single brick}}$

= $\frac{16500000}{2062.5}$

= 8000 bricks

Question: 11

Find the capacity

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Volume of the cistern = 11.2 × 6 × 5.8

= 389.76 m^3

= 389.76 × 1000

= 389760 litres

Now,

Area of iron sheet that is required to make the cistern = Total surface area of the cistern

We also know that,

Total Surface Area of cuboid = 2 (lb + bh + hl)

= 2 (11.2 × 6 + 11.2 × 5.8 + 6 × 5.8)

= 2 (67.2 + 64.96 + 34.8)

= 333.92 cm^2

Question: 12

The volume of a b

Solution:

It is given that,

Volume of the block = 0.5 m^3

We know that,

1 hectare = 10000 m^2

Therefore,

Thickness of the sheet = volume/area

= 0.5/10000

= 0.00005 m

= 0.005 cm

= 0.05 mm

Question: 13

The rainfall reco

Solution:

It is given that,

Rain recorded in a certain day = 5 cm = 0.05 m

Area of the field = 2 hectare

= 2 × 10000 m^2

= 20000m^2

Therefore,

Total rain over the field = Area of the field × Height of the field

= 0.05 × 20000

= 1000 m^3

Question: 14

A river 2 m deep

Solution:

It is given in the question that,

Area of cross section of river = 45m × 2m = 90 m^2

Rate of flow = 3 km/hr

$$= \frac{3 \times (1000\ m)}{(60\ m)}$$

= 50 m/min

Therefore,

Volume of water flowing through the cross-section in one minute = 90 m^2 × 50 m/min

= 4500 m^3 per minute

Question: 15

A pit 5 m long an

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Let the depth of the pit be x m

Therefore,

Volume = 5 × 3.5 × x

It is given in the question that,

Volume = 14 m^3

Therefore,

Depth, x = $\frac{\text{Volume}}{\text{Length} \times \text{Width}}$

x = $\frac{14}{5 \times 3.5}$

= 0.8 m

= 80 cm

Question: 16

A rectangular wat

Solution:

It is given that,

Capacity of the water tank = 576 Litres = 0.576 m^3

Width = 90 cm = 0.9 m

Depth = 40 cm = 0.4 m

Therefore,

Length = $\frac{\text{Capacity}}{\text{Width} \times \text{Depth}}$

= $\frac{0.570}{0.9 \times 0.4}$

= 1.600 m

Question: 17

A beam of wood is

Solution:

It is given in the question that,

Volume of the beam = 1.35 m^3

Length = 5 m

Thickness = 36 cm = 0.36 m

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Width = $\frac{\text{Volume}}{\text{Thickness} \times \text{Length}}$

= $\frac{1.35}{5 \times 0.36}$

= 0.75 m

= 75 cm

Question: 18

The volume of a r

Solution:

We know that,

Volume = Height × Area

Given that,

Volume = 378 m^3

Area = 84 m^2

Therefore,

Height = $\frac{\text{Volume}}{\text{Area}}$

= $\frac{378}{84}$

= 4.5 m

Question: 19

A swimming pool i

Solution:

It is given in the question that,

Length of the pool = 260 m

Width of the pool = 140 m

Also,

Volume of water in the pool = 54600 cubic metres

Therefore,

Height of water = $\frac{\text{Volume}}{\text{Length} \times \text{Width}}$

= $\frac{54600}{200 \times 140}$

= 1.5 metres

Question: 20

Find the volume o

Solution:

Given that,

External length = 60 cm

External width = 45 cm

External height = 32 cm

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

External volume of the box = 60 × 45 × 32

= 86400 cm^3

It is also given that,

Thickness of the wood = 2.5 cm

Therefore,

Internal length = 60 – (2.5 × 2) = 55 cm

Internal width = 45 – (2.5 × 2) = 40 cm

Internal height = 32 – (2.5 × 2) = 27 cm

As we know that,

Volume of cuboid = Length × Breadth × Height

Thereore,

Internal volume of the box = 55 × 40 × 27

= 59400 cm^3

Hence,

Volume of wood = External volume – Internal volume

= 86400 – 59400

= 27000 cm^3

Question: 21

Find the volume o

Solution:

Given that,

External length = 36 cm

External width = 25 cm

External height = 16.5 cm

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

External volume of the box = 36 × 25 × 16.5

= 14850 cm^3

It is also given that,

Thickness of iron = 1.5 cm

Therefore,

Internal length = 36 – (1.5 × 2) = 33 cm

Internal width = 25 – (1.5 × 2) = 22 cm

Internal height = 16.5 – 1.5 = 15 cm (As the box is open)

As we know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Internal volume of the box = 33 × 22 × 15

= 10890 cm^3

Hence,

Volume of iron = External volume – Internal volume

= 14850 – 10890

= 3960 cm^3

Also given that,

1 cm^3 of iron = 8.5 grams

Therefore,

Total weight of the box = 3960 × 8.5

= 33660 grams

= 33.66 kilograms

Question: 22

A box with a lid

Solution:

Given that,

External length = 56 cm

External width = 39 cm

External height = 30 cm

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

External volume of the box = 56 × 39 × 30

= 65520 cm^3

It is also given that,

Thickness of the wood = 3 cm

Therefore,

Internal length = 56 – (3 × 2) = 50 cm

Internal width = 39 – (3 × 2) = 33 cm

Internal height = 30 – (3 × 2) = 24 cm

As we know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Capacity of box = Internal volume of the box = 55 × 40 × 27

= 39600 cm^3

Hence,

Volume of wood = External volume – Internal volume

= 65520 – 39600

= 25920 cm^3

Question: 23

The external dime

Solution:

Given that,

External length = 62 cm

External width = 30 cm

External height = 18 cm

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

External volume of the box = 62 × 30 × 18

= 33480 cm^3

It is also given that,

Thickness of the wood = 2 cm

Therefore,

Internal length = 62 – (2 × 2) = 58 cm

Internal width = 30 – (2 × 2) = 26 cm

Internal height = 18 – (2 × 2) = 14 cm

As we know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Capacity of box = Internal volume of the box = 58 × 26 × 14

= 21112 cm^3

Question: 24

A closed wooden b

Solution:

Given that,

External length = 80 cm

External width = 65 cm

External height = 45 cm

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

External volume of the box = 80 × 65 × 45

= 234000 cm^3

It is also given that,

Thickness of the wood = 2.5 cm

Therefore,

Internal length = 80 – (2.5 × 2) = 75 cm

Internal width = 65 – (2.5 × 2) = 60 cm

Internal height = 45 – (2.5 × 2) = 40 cm

As we know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Capacity of box = Internal volume of the box = 75 × 60 × 40

$= 180000 \text{ cm}^3$

Hence,

Volume of wood = External volume – Internal volume

= 234000 – 180000

$= 54000 \text{ cm}^3$

It is also given that,

100 cm^3 of wood weighs 8 g

Therefore,

Weight of wood $= \frac{54000}{100} \times 8$

= 4320 g

= 4.32 kg

Question: 25

Find the volume,

Solution:

(i) We have,

Length of the edge of the cube = a = 7 cm

We know that,

Volume of cube $= a^3 = 7^3 = 343 \text{ m}^3$

Also,

Lateral surface area of the cube $= 4a^2$

$= 4 \times 7 \times 7$

$= 196 \text{ m}^2$

Total surface area of the cube $= 6a^2$

$= 6 \times 7 \times 7$

$= 294 \text{ m}^2$

(ii) We have,

Length of the edge of the cube = a = 5.6 cm

We know that,

Volume of cube $= a^3 = (5.6)^3 = 175.616 \text{ cm}^3$

Also,

Lateral surface area of the cube $= 4a^2$

$= 4 \times 5.6 \times 5.6$

$= 125.44 \text{ cm}^2$

Total surface area of the cube $= 6a^2$

$= 6 \times 5.6 \times 5.6$

$= 188.16 \text{ cm}^2$

(iii) We have,

Length of the edge of the cube = a = 8 dm 5 cm = 85 cm

We know that,

Volume of cube = $a^3 = 85^3 = 614125\ cm^3$

Also,

Lateral surface area of the cube = $4a^2$

$= 4 \times 85 \times 85$

$= 28900\ cm^2$

Total surface area of the cube = $6a^2$

$= 6 \times 85 \times 85$

$= 43350\ cm^2$

Question: 26

The surface area

Solution:

Let us assume the edge of the cube be a

We know that,

Total surface area of the cube = $6a^2$

$6a^2 = 1176\ cm^2$

$a = \sqrt{\frac{1176}{6}}$

$a = \sqrt{196}$

a = 14 cm

We also know that,

Volume of the cube = $a^3 = (14)^3$

$= 2744\ cm^3$

Question: 27

The volume of a c

Solution:

Let us assume the edge of the cube be a

We know that,

Volume of the cube = a^3

$a^3 = 729\ cm^3$

$a = \sqrt[3]{729}$

a = 9 cm

We also know that,

Total surface area of cube = $6a^2$

$= 6 \times 9 \times 9$

$= 486\ cm^2$

Question: 28

The dimensions of

Solution:

We know that,

1 m = 100 cm

Also,

Volume of a cuboid = Length × Breadth × Height

Therefore,

Volume of the original block = 225 × 150 × 27

= 911250 cm^3

Given that,

Length of the edge of the cube = 45 cm

Therefore,

Volume of one cube = $a^3 = (45)^3$

= 91125 cm^3

Hence,

Total number of blocks that can be cast = $\frac{\text{Volume of the block}}{\text{Volume of the cube}}$

= $\frac{911250}{91125}$

= 10

Question: 29

If the length of

Solution:

Let us assume a be the length of the edge of the cube

We know that,

Volume of cube = a^3

Also,

Total surface area of the cube = $6a^2$

Now, if the length is doubled, then the new length becomes 2a

Now,

New volume = $(2a)^3 = 8a^3$

Also,

New surface area = $6\ (2a)^2 = 24\ a^2$

Therefore,

The total volume of the cube is increased by the actor of 8 whereas the surface area is increased by the factor of 4.

Question: 30

A solid cubical b

Solution:

It is given that,

Cost of wood = Rs. 500/m^3

Also,

Cost of the given block = Rs 256

We know that,

Volume of cube = a^3

Therefore,

Volume of the given block = $a^3 = \frac{256}{500}$

$= 0.512\ m^3$

$= 512000\ cm^3$

Also,

Length of its edge = a = $\sqrt[3]{0.512}$

= 0.8 m

= 80 cm

Exercise : 20B

Question: 1

Find the volume,

Solution:

(i) At first,

In order to find volume, we will use the following formula:

Volume of a cylinder = $\pi r^2 h$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Volume of the cylinder = $\pi(7)^2(50)$

$= \frac{22}{7} \times 7 \times 7 \times 50$

$= 22 \times 7 \times 50$

$= 7700\ cm^3$

Now,

In order to find curved surface area, we will use the following formula:

Curved surface area of cylinder = $2\pi rh$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Curved surface area of cylinde

r = $2\pi rh$

$= 2 \times \frac{22}{7} \times 7 \times 50$

= 22× 2× 50

= 2200 cm^2

Now,

In order to find the total surface area we will use the following formula:

Total surface area of cylinder = $2\pi r(r + h)$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Total surface area of cylinder = $2\pi r(r + h)$

$= 2 \times \frac{22}{7} \times 7(7 + 50)$

= 22× 2× 57

= 2508cm^2

(ii) At first,

In order to find volume we will use the following formula:

Volume of a cylinder = $\pi r^2 h$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Volume of the cylinder = $\pi(5.6)^2(1.25)$

$= \frac{22}{7} \times 5.6 \times 5.6 \times 1.25$

= 22× 0.8× 7× 50

= 123.2 cm^3

Now,

In order to find curved surface area we will use the following formula:

Curved surface area of cylinder = $2\pi rh$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Curved surface area of cylinder = $2\pi rh$

$= 2 \times \frac{22}{7} \times 5.6 \times 1.25$

= 22× 2× 0.8× 1.25

$= 44\ cm^2$

Now,

In order to find the total surface area we will use the following formula:

Total surface area of cylinder = $2\pi r(r + h)$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Total surface area of cylinder = $2\pi r(r + h)$

$= 2 \times \frac{22}{7} \times 5.6(5.6 + 1.25)$

$= 22\times 2\times 0.8\times 6.85$

$= 241.12\ cm^2$

(iii) At first,

We will convert the radius into metre

Radius = 14dm = 1.4m

Now,

In order to find volume we will use the following formula:

Volume of a cylinder = $\pi r^2 h$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Volume of the cylinder = $\pi(7)^2(50)$

$= \frac{22}{7} \times 1.4 \times 1.4 \times 15$

$= 22\times 0.2\times 1.4\times 1.5$

$= 92.4 cm^3$

Now,

In order to find curved surface area we will use the following formula:

Curved surface area of cylinder = $2\pi rh$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Curved surface area of cylinder = $2\pi rh$

$= 2 \times \frac{22}{7} \times 1.4 \times 1.5$

$= 22\times 2\times 0.2\times 1.5$

$= 132 cm^2$

Now,

In order to find the total surface area we will use the following formula:

Total surface area of cylinder = $2\pi r(r + h)$

Where,

'r' = radius of the base

'h' = height of the cylinder

Hence,

Total surface area of cylinder = $2\pi r(r + h)$

$= 2 \times \frac{22}{7} \times 1.4(1.4 + 1.5)$

= 22× 2× 0.2× 2.9

= 144.32cm^2

Question: 2

A milk tank is in

Solution:

It is given in the question that,

Radius of the cylindrical milk tank (r) = 1.5m

Height of the cylindrical milk tank (h) = 10.5m

Now,

In order to find the capacity of the tank we'll find the volume of the milk tank

Hence,

Volume of the cylindrical milk tank = = $\pi r^2 h$

$= \pi(1.5)^2(10.5)$

$= \frac{22}{7} \times 1.5 \times 1.5 \times 10.5$

= 74.25 m^3

Now,

We know that,

1 m^3 = 1000 L

∴74.25 m^3= 74250 L

Question: 3

A wooden cylindri

Solution:

It is given in the question that,

Radius of the cylindrical pole (r) = 10cm = 0.1m

Height of the cylindrical pole (h) = 7m

Now,

Volume of the cylindrical wooden pole = $\pi r^2 h$

$= \pi(0.1)^2(7)$

$= \frac{22}{7} \times 0.1 \times 0.1 \times 7$

= 0.22 cm^3

Now,

We know that,

Weight of the wood = 225 kg/m^3

∴ Weight of the pole = 0.22× 225

= 49.5 kg

Question: 4

Find the height o

Solution:

It is given in the question that,

Volume of cylinder = 1.54 m^3

Diameter of the base = 140 cm = 1.4m

Hence,

Radius of the base = $\frac{1.4}{2}$

= 0.7 m

Now,

Volume of cuboid = $\pi r^2 h$

1.54 = $\pi(0.7)^2(h)$

1.54 = $\frac{22}{7} \times 0.7 \times 0.7 \times h$

h = 1 m

Hence, height of the cuboid = 1m

Question: 5

The volume of a c

Solution:

It is given in the question that,

Volume of cylindrical rod = 3850 cm^3

Height of the rod = 1m = 100cm

Now,

In order to find the diameter of the rod we need to find the radius of the rod

Hence,

Volume of cuboid = $\pi r^2 h$

3850 = $\pi(r)^2(100)$

3850 = $\frac{22}{7} \times r^2 \times 100$

$r^2 = \frac{3850 \times 7}{100 \times 22}$

r = 1.75× 7

r = 3.5 cm

Hence,

Diameter = 2(radius)

= 2 × 3.5

= 7 cm

Question: 6

A closed cylindri

Solution:

It is given in the question that,

Diameter of the cylindrical tank = 14 m

Radius of the cylindrical tank = $\frac{14}{2}$

= 7 m

Height of the cylindrical tank = 5 m

Now,

In order to find the total area of the metal sheet required we need to find the total surface area of the tank.

Hence,

Total surface area of the cylindrical tank = $2\pi r(h + r)$

= 2 × $\frac{22}{7} \times 7(5 + 7)$

= 44×12

= 528 m^2

Question: 7

The circumference

Solution:

It is given in the question that,

Circumference of the base of the cylinder = 88cm

Height of the cylinder = 60cm

Hence,

Curved surface area = Circumference× height

= 88 × 60

= 5280 cm^2

Now,

The circumference of the base = $2\pi r$ = 88 cm

Hence,

The radius of the base(r) = $\frac{88}{2\pi}$

=$\frac{88\times7}{2\times22}$

= 14cm

Hence,

We can find the volume as follows:

Volume of the cylinder = $\pi r^2 h$

$= \frac{22}{7} \times (14)^2 \times 60$

= 22× 2× 14× 60

= 36960cm^3

Question: 8

The lateral surfa

Solution:

In the question it is given that

Length of the cylinder = 14 m

Which means,

That the height of the cylinder = 14m

Lateral surface area of the cylinder = $2\pi rh$

$220 = 2 \times \frac{22}{7} \times r \times 14$

$r = \frac{10}{4}$

r = 2.5 m

Hence,

We can find the volume as,

Volume of the cylinder = $\pi r^2 h$

$= \frac{22}{7} \times (2.5)^2 \times 14$

= 22× 2× 2.5× 2.5

= 275 m^3

Question: 9

The volume of a c

Solution:

It is given in the question that,

Height of the cylinder = 8cm

And,

Volume of the cylinder = $\pi r^2 h = 1232 \text{ cm}^3$

Hence,

We can find the radius as,

$r = \sqrt{\frac{1232}{\pi h}}$

$r = \sqrt{\frac{1232 \times 7}{22 \times 8}}$

r = √49

r = 7 cm

Now,

Curved surface area of the cylinder = $2\pi rh$

$= 2 \times \frac{22}{7} \times 7 \times 8$

= 252 cm^2

Therefore,

The total surface area of the cylinder = $2\pi r(r + h)$

$= 2 \times \frac{22}{7} \times 7 \times 15$

= 2× 22× 15

= 660 cm^2

Question: 10

The radius and he

Solution:

It is given in the question that,

The ratio of radius and height is 7 : 2

This means that,

$\frac{\text{radius}}{\text{height}} = \frac{7}{2}$

$\frac{r}{h} = \frac{7}{2}$

r = $\frac{7}{2}h$

Now,

We can find the volume of the cylinder as:

Volume of the cylinder = $\pi r^2 h$

8316 = $\pi\left(\frac{7}{2}h\right)^2 h$

8316 = $\frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times h^3$

$h^3 = \frac{8316 \times 2}{11 \times 7}$

h^3 = 216

h = 6

Hence,

Radius, r = $\frac{7}{2}h$

$= \frac{7}{2} \times 6$

= 21 cm

Therefore,

Total surface area of the cylinder = $2\pi r(r + h)$

$= 2 \times \frac{22}{7} \times 21 \times 27$

$= 2\times 22\times 3\times 27$

$= 3564\ cm^2$

Question: 11

The curved surfac

Solution:

In the above question it is given that

Curved surface area of the cylinder = $2\pi rh$ = 4400 cm^2

And,

The circumference of the base of the cylinder = $2\pi r = 110$ cm

Now,

The height of the cylinder = h = $\frac{\text{curved surface area}}{\text{circumference}}$

$= \frac{4400}{110}$

= 40 cm

Also,

Radius of the cylinder = r = $\frac{4400}{2\pi h}$

$= \frac{4400\times 7}{2\times 22\times 40}$

$= \frac{35}{2}$

Hence,

We can find the volume of the cylinder as:

Volume of the cylinder = $\pi r^2 h$

$= \frac{22}{7}\times\frac{35}{2}\times\frac{35}{2}\times 40$

$= 38500\ cm^3$

Question: 12

A particular bran

Solution:

In the above given question,

In order to find the greater capacity pack

At first, we'll calculate the volume of the cubic pack,

Length of the side of pack, a = 5cm

Height of the pack, h = 14cm

Hence,

Volume of the pack = a^2h

$= (5)^2(14)$

$= 5\times 5\times 14$

$= 350\ cm^3$

Now,

We’ll calculate the volume of the cylindrical pack,

Radius of the base, r = 35cm

Height of the cylinder, h = 12 cm

Hence,

Volume of the pack = $\pi r^2 h$

$= \frac{22}{7} \times 35 \times 35 \times 12$

$= 22\times 5\times 35\times 12$

$= 462\ cm^3$

Hence,

It’s clear that the pack with the circular has a greater capacity than the than the pack with square base.

And,

The deference between their volume= 462 – 350

$= 112\ cm^3$

Question: 13

Find the cost of

Solution:

It is given in the question that,

Diameter of the cylindrical pillars = 48 cm

Hence,

The radius of the cylindrical pillars $=\frac{48}{2}$

= 24 cm

= 0.24 m

Height of the cylindrical pillars = 7 m

Now,

Lateral surface area of one pillar = πdh

$= \frac{22}{7} \times 0.48 \times 7$

$= 10.56\ m^2$

Now,

The surface area to be painted = total surface area of 15 pillars

= 15 × 10.56

$= 158.4\ m^2$

Therefore,

The total cost of painting = Rs(158.4 × 2.5)

= Rs 396

Question: 14

A rectangular ves

Solution:

It can be concluded from the question that,

Volume of the rectangular vessel = $22 \times 16 \times 14$

= 4928 cm^3

Radius of the cylindrical vessel = 4cm

Volume of the cylindrical vessel = $\pi r^2 h$

Now,

Since, the water is poured from the rectangular vessel to a cylindrical vessel

Therefore, the volume of the water will remain same.

Hence,

Volume of the cylindrical vessel = volume of rectangular vessel

$\pi r^2 h = 4928$

$\frac{22}{7} \times 4 \times 4 \times \text{height} = 4928$

Height = 24.5

Question: 15

A piece of ductil

Solution:

It is given in the question that,

Diameter of the wire = 1cm

Hence,

Radius of the wire = 0.5 cm

Length or the height of the wire = 11 cm

Hence,

The volume of the wire = $\pi r^2 h$

$= \frac{22}{7} \times 0.5 \times 0.5 \times 11$

= 8.643 cm^3

Now,

We know that,

The volumes of both the cylinders would be the same.

And,

Diameter of the new wire = 1mm = 0.1 cm

Radius = 0.05cm

Therefore the new length of the wire would be = $\frac{\text{volume}}{\pi r^3}$

$= \frac{8.643 \times 7}{22 \times 0.05 \times 0.05}$

= 1100.02 cm

= 11 m

Question: 16

A solid cube of m

Solution:

It is given in the question that

Length of the edge, a = 2.2 cm

Hence,

Volume of the cube = a^3

= $(2.2)^3$

= 10.648 cm^3

Now,

Volume of the wire = $\pi r^2 h$

Radius of the wire = 1mm = 0.1cm

We know that,

Volume of the cube = volume of the wire

Hence,

Length of the wire = $\frac{\text{volume}}{\pi r^2}$

= $\frac{10.648 \times 7}{22 \times 0.1 \times 0.1}$

= 338.8 cm

Question: 17

How many cubic me

Solution:

It is given in the question that,

Diameter = 7m

Hence,

Radius = 3.5 m

Depth = 20 m

Volume of the earth to be dug out = $\pi r^2 h$

= $\frac{22}{7} \times 3.5 \times 3.5 \times 20$

= 770 m^3

Volume of the earth piled upon the given plot = 28× 11 × h

Therefore,

Height = $\frac{770}{28 \times 11}$

= $\frac{70}{28}$

= 2.5 m

Question: 18

A well of inner d

Solution:

Given that,

Inner diameter = 14 cm

Therefore,

Radius = 7 cm

Also, Depth = 12 m

Therefore,

Volume of earth dug out = $\Pi r^2 h$

$= \frac{22}{7} \times 7 \times 7 \times 12$

$= 1848\ m^3$

It is also given that,

Width of embankment = 7 m

Therefore,

Total radius = 7 + 7 = 14 m

Volume of embankment = Total volume – Inner volume

$= \Pi r_o^2 h - \Pi r_1^2 h$

$= \Pi h\ (r_o^2 - r_1^2)$

$= \frac{22}{7}\ h\ (14^2 - 7^2)$

$= \frac{22}{7}\ h\ (196 - 49)$

$= \frac{22}{7} h \times 147$

$= 21 \times 22h$

$= 462 \times h\ m^3$

Since,

Volume of embankment = Volume of earth dug out

Therefore,

1848 = 462 h

$h = \frac{1848}{462}$

h = 4 m

Therefore,

Height of the embankment = 4 m

Question: 19

A road roller tak

Solution:

It is given in the question that,

Diameter = 84 cm

Hence,

Radius = 42cm

Length = 1m = 100cm

Now,

Lateral surface area = $2\pi rh$

$= 2 \times \frac{22}{7} \times 42 \times 100$

$= 26400$ cm^2

Hence, the area of the road will be

= lateral surface area × no. of rotations

= 26400 × 750

$= 19800000$ cm^2

$= 1980$ m^2

Question: 20

A cylinder is ope

Solution:

It is given in the question that,

Thickness of the cylinder = 1.5 cm

External diameter of the cylinder = 12cm

Hence,

Radius = 6 cm

And,

Internal radius = 4.5cm

Height = 84cm

Hence,

We have the following measurements now,

Total volume = $\pi r^2 h$

$= \frac{22}{7} \times 6 \times 6 \times 84$

$= 9504$ cm^3

Inner volume of the cylinder = $\pi r^2 h$

$= \frac{22}{7} \times 4.5 \times 4.5 \times 84$

$= 5346$ cm^3

Hence,

The volume of the metal = total volume – internal volume

= 9504 – 5346

$= 4158$ cm^3

Therefore,

Weight of the iron = 4158 × 7.5

= 31.185 kg

Question: 21

The length of a m

Solution:

It is given in the question that,

Length = 1m

= 100cm

Inner diameter = 12 cm

Inner Radius = 6 cm

Hence,

Inner volume $=\Pi r_1^2 h$

Thickness = 1 cm

outer radius = 7 cm

Now,

We can calculate the following measurements:

Total volume $=\Pi r_2^2 h$

Now,

Volume of the tube = total volume – inner volume

$= \Pi r_2^2 h - \Pi r_1^2 h$

$= \Pi h(r_2^2 - r_1^2) = 3.14 \times 100 \times (7^2 - 6^2) = 3.14 \times 100 \times (49 - 36) = 314 \times 13 = 4082\ cm^3$

We have,

Density of the tube = 7.7 g/cm^3

Therefore,

Weight of the tube = volume × density

= 4082 × 7.7

= 31431g

= 31.43 kg

Exercise : 20C

Question: 1

The maximum lengt

Solution:

We know that,

Length of the diagonal of the cuboid $= \sqrt{l^2 + b^2 + h^2}$

$= \sqrt{12^2 + 9^2 + 8^2}$

$= \sqrt{144 + 81 + 64}$

$= \sqrt{289}$

= 17 cm

Therefore, option B is correct

Question: 2

The total surface

Solution:

We know that,

Total surface area of cube = $6a^2$

$6a^2 = 150\ cm^2$

a = $\sqrt{\frac{150}{6}}$

a = $\sqrt{25}$

a = 5 cm

Therefore,

Volume of the cube = $a^3 = 5^3 = 125\ cm^3$

Hence, option B is correct

Question: 3

The volume of a c

Solution:

Given that,

Volume of cube = $343\ cm^3$

$a^3 = 343\ cm^3$

a = $\sqrt[3]{343}$

a = 7 cm

We know that,

Total surface area of cube = $6a^2$

= 6 × 7 × 7

= $294\ cm^2$

Hence, option C is correct

Question: 4

The cost of paint

Solution:

Let the side of cube be 'a'

Hence total surface area of cube = $6a^2$

Cost of painting the cube = $6a^2 \times 10$

$264.6 = 60\ a^2$

$a^2 = \frac{264.6}{60}$

$a^2 = 4.41$

a = 2.1

Hence,

Volume of the cube= a^3

= $(2.1)^3$

$= 9.261\ cm^3$

Hence, option B is correct

Question: 5

How many bricks,

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Volume of each brick = 25 × 11.25 × 6

$= 1687.5\ cm^3$

Volume of wall = 800 × 600 × 22.5

$= 10800000\ cm^3$

Therefore,

Number of bricks = $\frac{10800000}{1687.5}$

= 6400

Hence, option C is correct

Question: 6

How many cubes of

Solution:

Volume of smaller cube = $a^3 = (10)^3 = 1000\ cm^3$

Volume of box = $(100)^3 = 1000000\ cm^3$

Therefore,

Total number of cubes = $\frac{1000000}{1000}$

= 1000

Hence, option C is correct

Question: 7

The edges of a cu

Solution:

Let a be the length of the smallest edge

Therefore,

The edges are in proportion a: 2a: 3a

We know that,

Surface area of cuboid = 2 (lb + bh + hl)

= 2 (a × 2a + a × 3a + 2a × 3a)

$= 2\ (2a^2 + 3a^2 + 6a^2)$

$= 22a^2$

$= 88\ cm^2$

$a = \sqrt{\frac{88}{22}}$

$= \sqrt{4} = 2$

Also,

2a = 2 × 2 = 4

And,

3a = 3 × 2 = 6

Therefore,

Volume = a × 2a × 3a

= 2 × 4 × 6

= 48 cm^3

Hence, option A is correct

Question: 8

Two cubes have th

Solution:

Given that,

Volumes are in the ration 1: 27

Therefore,

$\frac{\text{Volume 1}}{\text{Volume 2}} = \frac{1}{27} = \frac{a^3}{b^3}$

$a = \frac{b}{\sqrt[3]{27}}$

$a = \frac{b}{3}$

Or b = 3a

Or $\frac{b}{a} = 3$

We have to find out ratio of their surface areas:

$\frac{\text{Surface area 1}}{\text{Surface area 2}} = \frac{6a^2}{6b^2}$

$= \frac{a^2}{b^2}$

$= \frac{\left(\frac{b}{3}\right)^2}{b^2}$

$= \frac{1}{9}$

Therefore, the surface areas are in the ratio 1: 9

Hence, option B is correct

Question: 9

The surface area

Solution:

We know that,

Surface area of a cuboid = 2 (lb + bh + hl)

= 2 (10 × 4 + 10 × 3 + 4 × 3)

= 2 (40 + 30 + 12)

= 164 cm^2

Hence, option C is correct

Question: 10

An iron beam is 9

Solution:

We know that,

Volume of a cuboid = Length × Breadth × Height

= 9 × 0.4 × 0.2

= 0.72 m^3

Therefore,

Weight = 0.72 × 50

= 36 kg

Question: 11

A rectangular wat

Solution:

We know that,

Volume of a cuboid = Length × Breadth × Height

42000 L = 42 m^3 (As 1 m^3 = 1000 L)

Therefore,

Height (h) = $\frac{\text{Volume}}{\text{lb}}$

= $\frac{42}{6 \times 3.5}$

= 2 m

Hence, option A is correct

Question: 12

The dimensions of

Solution:

We know that,

Volume of a cuboid = Length × Breadth × Height

Therefore,

Volume of the room = 10 × 8 × 3.3

= 264 m^3

Space required by 1 person = 3 m^3

Therefore,

Total number of people that can be accommodated = $\frac{264}{3}$

= 88

Hence, option B is correct

Question: 13

A rectangular wat

Solution:

For this we have to find out volume of the water tank

We know that,

Volume of a cuboid = Length × Breadth × Height

Therefore,

Volume of water tank = 3 × 2 × 5

= 30 m^3

= 30000 L (As, 1 m^3 = 1000 L)

Hence, option A is correct

Question: 14

The area of the c

Solution:

We know that,

Surface area of cuboid = 2 (lb + bh + hl)

Therefore,

Area of the cardboard required to make a box = 2 (23 × 15 + 15 × 8 + 25 × 8)

= 2 (375 + 120 + 200)

= 1390 cm^2

Hence, option B is correct

Question: 15

The diagonal of a

Solution:

Given that,

Diagonal of the cube = $a\sqrt{3} = 4\sqrt{3}$ cm

i.e. a = cm

Therefore,

Volume of the cube = $a^3 = 4^3$

= 64 cm^3

Hence, option D is correct

Question: 16

The diagonal of a

Solution:

We know that,

Diagonal of the cube = $a\sqrt{3}$

= $9\sqrt{3}$

i.e. $a = 9$

Therefore,

Total surface area of the cube = $6a^2$

$= 6 \times 9 \times 9$

$= 486\ cm^2$

Hence, option B is correct

Question: 17

If each side of a

Solution:

Let the side of the cube be a units

Original volume = a^3

Now, when each side of the cube is doubled then its volume:

New side = 2a units

New Volume = $(2a)^3 = 8a^3$ cubic units

Therefore, the volume of the cube is 8 times than its original volume

Hence, option D is correct

Question: 18

If each side of a

Solution:

Let the side of the cube be "a" unit

Original Surface area = $6a^2$ sq units

Now, when each side of a cube is doubled than its surface area:

New surface area = $6\ (2a^2)$ sq units

$= 24a^2$ sq units

Therefore, the surface area of the cube is 4 times than its original area

Hence, option B is correct

Question: 19

Three cubes of ir

Solution:

We know that,

Volume of cube = a^3

Total Volume of cube = $6^3 + 8^3 + 10^3$

$= 216 + 512 + 1000$

$= 1728\ cm^3$

Therefore,

Edge of the new cube = $\sqrt[3]{1728}$

$= 12$ cm

Hence, option A is correct

Question: 20

Five equal cubes,

Solution:

Length of the cuboid so formed = 25 cm

Breadth of the cuboid = 5 cm

Height of the cuboid = 5 cm

We know that,

Volume of cuboid = Length × Breadth × Height

= 25 × 5 × 5

= 625 cm^3

Hence, option D is correct

Question: 21

A circular well w

Solution:

Given that,

Diameter of the circular well = 2 m

Radius = 1 m

Height = 14 m

Therefore,

Volume of cylindrical well = $\pi r^2 h$

= $\frac{22}{7}$ × 1 × 1 × 14

= 44 m^3

Hence, option D is correct

Question: 2

If the capacity o

Solution:

Given that,

Volume of cylindrical tank = 1848 m^3

Diameter = 14 m

So, Radius = 7 m

We know that,

Volume of cylinder = $\pi r^2 h$

1848 = $\frac{22}{7}$ × 7 × 7 × h

h = $\frac{1848}{22 \times 7}$

h = 12 m

Hence, option B is correct

Question: 23

The ratio of the

Solution:

We have,

$\frac{\text{Total surface area}}{\text{Lateral surface area}} = \frac{2\pi r\,(h+r)}{2\pi rh}$

$= \frac{h+r}{h}$

$= \frac{20+60}{60}$

$= \frac{4}{3}$

= 4: 3

Therefore, option C is correct

Question: 24

The number of coi

Solution:

Total number of coins = $\frac{\text{Volume of cylinder}}{\text{Volume of each coin}}$

$= \frac{\pi\times3\times3\times8}{\pi\times0.75\times0.75\times0.2}$

= 640

Hence, option D is correct

Question: 25

66 cm^3

Solution:

We have to find out length of the wire:

Length = $\frac{\text{Volume}}{\pi r^2}$

Diameter = 1mm (Given)

Therefore,

Radius = 0.05 cm

Length = $\frac{66\times7}{22\times0.05\times0.05}$

= 8400 cm

= 84 m

Hence, option B is correct

Question: 26

The height of a c

Solution:

We know that,

Volume of cylinder = πr^2h

Given that,

Diameter = 10 cm

Radius = 5 cm

Height = 14 cm

Therefore,

Volume = $\pi r^2 h$

$= \frac{22}{7} \times 5 \times 5 \times 14$

= 1100 cm^3

Hence, option A is correct

Question: 27

The height of a c

Solution:

We know that,

Total surface area of the cylinder = $2\pi r (r + h)$

Given that,

Diameter = 7 cm

So, Radius = 3.5 cm

Height = 80 cm

Therefore,

Total surface area = $2 \times \frac{22}{7} \times 3.5 (3.5 + 80)$

= 22 (83.5)

= 1837 cm^2

Hence, option A is correct

Question: 28

The height of a c

Solution:

We know that,

Curved surface area of the cylinder = $2\pi rh$

$264 = 2\pi rh$

$r = \frac{264 \times 7}{2 \times 22 \times 14}$

r = 3 cm

We know that,

Volume of cylinder = $\pi r^2 h$

$= \frac{22}{7} \times 3 \times 3 \times 14$

= 396 cm^3

Hence, option B is correct

Question: 29

The diameter of a

Solution:

Given that,

Diameter = 14v cm

So, Radius = 7 cm

We know that,

Curved surface area of cylinder = $2\pi rh$

$220\ cm^2 = 2\pi rh$

$h = \frac{220 \times 7}{2 \times 22 \times 7}$

h = 5 cm

Therefore,

Volume of cylinder = $\pi r^2 h$

$= \frac{22}{7} \times 7 \times 7 \times 5$

$= 770\ cm^3$

Hence, option A is correct

Question: 30

The ratio of the

Solution:

Given that,

$\frac{r1}{r2} = \frac{2}{3}$

Also,

$\frac{h1}{h2} = \frac{5}{3}$

We know that,

Volume of cylinder = $\pi r^2 h$

Therefore,

$\frac{V1}{V2} = \frac{\pi r1^2 h}{\pi r2^2 h}$

$= \frac{20}{27}$

Therefore, the volume of given two cylinders will be in the ration 20: 27

Hence, option C is correct

Exercise : CCE TEST PAPER-20

Question: 1

Find the volume o

Solution:

We know that,

Total surface area of a cube = $6a^2$

$384 = 6a^2$

$a = \sqrt{\frac{384}{6}}$

= 8 cm

Therefore,

Volume of cone = $a^3 = (8)^3$

= 512 cm^3

Question: 2

How many soap cak

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

Therefore,

Volume of a soap cake = 7 × 5 × 2.5

= 87.5 cm^3

Also,

Volume of the box = 56 × 40 × 25

= 56000 cm^3

Therefore,

Number of soap cakes = $\frac{56000}{87.5}$

= 640 units

Hence,

640 cakes of soap can be placed in a box of the given size

Question: 3

The radius and he

Solution:

Given that,

$\frac{\text{Radius}}{\text{Height}} = \frac{r}{h} = \frac{5}{7}$

We know that,

Volume of cylinder = $\pi r^2 h$

$= \frac{22}{7} \times \frac{5}{7}h \times \frac{5}{7}h \times h$

= 550 cm^3

Therefore,

$h = \sqrt[3]{\frac{550 \times 7 \times 7 \times 7}{22 \times 5 \times 5}}$

= 7 cm

Therefore,

$r = \frac{5}{7}h$

$= \frac{5}{7} \times 7$

= 5 cm

Question: 4

Find the number o

Solution:

Volume of coin = $\pi r^2 h = \frac{22}{7} \times 0.75 \times 0.75 \times 0.2$

Volume of cylinder = $\pi r^2 h = \frac{22}{7} \times 2.25 \times 2.25 \times 10$

Therefore,

Total number of coins = $\frac{\text{Volume of cylinder}}{\text{Volume of coin}}$

$= \frac{\frac{22}{7} \times 2.25 \times 2.25 \times 10}{\frac{22}{7} \times 0.75 \times 0.75 \times 0.2}$

= 450 coins

Thus, 450 coins must be melted to form the required cylinder

Question: 5

Find the surface

Solution:

Given that,

Length = 18 cm

Breadth = 10 cm

Height = 8 cm

We know that,

Total surface area of cuboid = 2 (lb + bh + hl)

= 2 (18 × 10 + 18 × 8 + 10 × 8)

= 2 (180 + 144 + 80)

= 808 cm^2

Question: 6

The curved surfac

Solution:

We know that,

Curved surface area of cylinder = $2\pi rh$

$264 = 2\pi rh$

$r = \frac{264}{2\pi h}$

$r = \frac{132}{\pi h}$ m

We also know that,

Volume of cylinder = $\pi r^2 h$

$= \pi \times \frac{132}{\pi h} \times \frac{132}{\pi h} \times h$

$= 924\ m^3$

Now,

$r = \frac{132}{\pi h}$

$= \frac{132 \times 7}{22 \times 6} = 7\ m$

Therefore,

Diameter of the pillar, $d = 7 \times 2 = 14\ m$

Question: 7

The circumference

Solution:

Given that,

Height = 15 cm

Circumference = $2\pi r$

$r = \frac{44 \times 7}{2 \times 22}$

= 7 cm

We know that,

Volume of cylinder = $\pi r^2 h$

$= \frac{22}{7} \times 7 \times 7 \times 15$

$= 2310\ cm^3$

Hence, option B is correct

Question: 8

The area of the b

Solution:

Given that,

Area of the base of the cylinder = $35\ cm^2$

Height = 8 cm

Therefore,

Volume = Base area × Height

= 35 × 8

$= 280\ cm^3$

Hence, option B is correct

Question: 9

A cuboid having d

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

= 16 × 11 × 8

$= 1408\ m^3$

Also,

Volume of cylinder = $\pi r^2 h = 1408\ m^3$

Therefore,

$h = \frac{1408 \times 7}{22 \times 4 \times 4}$

= 28 m

Hence, option A is correct

Question: 10

The dimensions of

Solution:

We know that,

Lateral surface area of cuboid = 2 [(l + b) × h]

= 2 [(8 + 6) × 4]

= 2 (56)

= 112 m^2

Hence, option C is correct

Question: 11

The length, bread

Solution:

We know that,

Volume of cuboid = Length × Breadth × Height

576 = 3x × 4x × 6x

$576 = 72x^3$

$x = \sqrt[3]{\frac{576}{72}}$

= 2

Therefore,

Total surface area of cuboid = 2 (lb + bh + hl)

= 2 (3x × 4x + 4x × 6x + 6x × 3x)

= 2 (48 + 96 + 72)

= 432 cm^2

Question: 12

The surface area

Solution:

We know that,

Surface area of cube = $6a^2$

$384 = 6a^2$

$a = \sqrt{\frac{384}{6}}$

$a = \sqrt{64}$

a = 8 cm

Therefore,

Volume of cube = $a^3 = 8^3$

= 512 cm^3

Hence, option A is correct

Question: 13

Fill in the blank

Solution:

(i) We know that,

Total surface area of the cuboid = 2 (lb + bh + hl

(ii) We know that,

Lateral surface area of cuboid = 2 [(l + b) × h]

(iii) We know that,

Lateral surface area of cube = $4a^2$

(iv) We know that,

Volume of cylinder = $\pi r^2 h$

(v) We know that,

Lateral surface area of cylinder = $2\pi rh$