

RS Aggarwal solutions for class 8 mathematics chapter 20
Volume and surface area of solids

EXERCISE 20A

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1. Find the volume, lateral surface area and the total surface area of the cuboid whose dimensions are:

- (i) Length=22cm, breadth=12cm and height=7.5cm
- (ii) Length=15m, breadth=6m and height=9dm
- (iii) Length=24m, breadth=25cm and height=6m
- (iv) Length=48cm, breadth=6dm and height=1m

Solutions:

- (i) Given Length=22cm, breadth=12cm and height=7.5cm
We know that volume of cuboid= length \times breadth \times height
 $V = (22 \times 12 \times 7.5)$
 $V = 1980\text{cm}^3$
We know that total surface area of cuboid= $2(lb + bh + hl)$
Surface area = $2(22 \times 12 + 12 \times 7.5 + 7.5 \times 22)$
Surface area = $2(264 + 165 + 90)$
Total Surface area = 1038cm^2
We know that lateral area of cuboid= $2[(l + b) \times h]$
Lateral surface area = $2[(22 + 12) \times 7.5]$
Lateral surface area = 510cm^2
- (ii) Given Length=15m, breadth=6m and height=9m
We know that volume of cuboid= length \times breadth \times height
 $V = (15 \times 6 \times 0.9)$
 $V = 81\text{m}^3$
We know that total surface area of cuboid= $2(lb + bh + hl)$
Surface area = $2(15 \times 6 + 6 \times .9 + .9 \times 15)$
Surface area = $2(90 + 13.5 + 5.4)$
Total Surface area = 217.8m^2
We know that lateral surface area of cuboid= $2[(l + b) \times h]$
Lateral surface area = $2[(15 + 6) \times 0.9]$
Lateral surface area = 37.8m^2
- (iii) Given Length=24m, breadth=25cm and height=6m
We know that volume of cuboid= length \times breadth \times height
 $V = (24 \times 0.25 \times 6)$
 $V = 36\text{m}^3$
We know that total surface area of cuboid= $2(lb + bh + hl)$

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$$\text{Surface area} = 2 (24 \times .25 + .25 \times 6 + 6 \times 24)$$

$$\text{Surface area} = 2 (6 + 155 + 1.5)$$

$$\text{Total Surface area} = 303\text{m}^2$$

$$\text{We know that lateral area of cuboid} = 2 [(l + b) \times h]$$

$$\text{Lateral surface area} = 2 [(24 + .25) \times 6]$$

$$\text{Lateral surface area} = 291 \text{ m}^2$$

- (iv) Given Length=48cm, breadth=6dm and height=1m
 We know that volume of cuboid= length \times breadth \times height
 $V = (0.48 \times 0.6 \times 1)$
 $V = 0.288\text{m}^3$
 We know that total surface area of cuboid= $2(lb + bh + hl)$
 $\text{Surface area} = 2 (0.48 \times 0.6 + 0.6 \times 1 + 1 \times 0.48)$
 $\text{Surface area} = 2 (.288 + 0.6 + 0.48)$
 $\text{Total Surface area} = 2.736\text{m}^2$
 We know that lateral surface area of cuboid= $2 [(l + b) \times h]$
 $\text{Lateral surface area} = 2 [(0.48 + 0.6) \times 1]$
 $\text{Lateral surface area} = 2.16 \text{ m}^2$

- 2. The dimensions of a rectangular water tank are 2m 75cm by 1m 80cm by 1m 40cm. How many litres of water does it hold when filled to the brim?**

Solution:

We know that 1m=100cm

Dimension of the tank is 2m 75cm and 1m 80cm and 1m 40cm

Which can be written as 275cm \times 180 cm \times 140 cm

Also we know that volume of cuboid = length \times breadth \times height

$$V = 275 \times 180 \times 140$$

$$V = 6930000\text{cm}^3$$

And we know that $1000\text{cm}^3 = 1\text{L}$

Therefore V=6930 liters of water it holds when filled to the brim.

- 3. A solid rectangular piece of iron measures 1.05m \times 70cm \times 1.5cm. Find the weight of this piece in kilograms if 1cm^3 of iron weighs 8 grams.**

Solution:

We know that 1m=100cm

Dimension of the tank is 1.05m and 70cm and 1.5cm.

Also we know that volume of cuboid = length \times breadth \times height

$$V = 105 \times 70 \times 1.5$$

$$V = 11025\text{cm}^3$$

And we know that $1\text{cm}^3 = 8 \text{ grams}$

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Weight of iron piece = $11025 \times 8 = 88200\text{g}$

But $1\text{kg} = 1000\text{g}$

Weight of iron piece = 88.2kg

4. The area of courtyard is 3750 m^2 . Find the cost of covering it with gravel to a height of 1cm if the gravel costs ₹ 6.40 per cubic meter.

Solution:

We know that $1\text{cm} = 0.01\text{m}$

Given that area of courtyard is 3750 m^2

Volume of the gravel = area \times height

$$V = 3750 \times 0.01 = 37.5\text{ m}^3$$

Also given that the cost of covering it with gravel to a height of 1cm if the gravel costs ₹ 6.40 per cubic meter.

There the cost is $37.5 \times 6.40 = ₹ 240$

5. How many persons can be accommodated in a hall of length 16m , breadth 12.5m and height 4.5m , assuming that 3.6 m^3 of air is required for each person?

Solution:

We know that volume of cuboid = length \times breadth \times height

$$V = 16 \times 12.5 \times 4.5 = 900\text{ m}^3$$

Also given that 3.6 m^3 of air is required for each person

Therefore, total number of persons can be accommodated in a hall is

Total volume/ volume required by each person

$$= 900/3.6$$

$$= 250\text{ people.}$$

6. A cardboard box is 1.2m long, 72cm wide and 54cm high. How many bars of soap can be put it into it if each bar measures $6\text{cm} \times 4.5\text{ cm} \times 4\text{ cm}$?

Solution:

We know that volume of cuboid = length \times breadth \times height

$$V = 120 \times 72 \times 54 = 466560\text{ cm}^3$$

$$\text{Volume of each bar soap} = 6 \times 4.5 \times 4 = 108\text{ cm}^3$$

Therefore, total number of soaps can be accommodated in a box is

Volume of the box/ volume of each soap

$$= 466560/108$$

$$= 4320\text{ bars}$$

7. The size of matchbox is $4\text{cm} \times 2.5\text{ cm} \times 1.5\text{ cm}$. What is the volume packet containing 144 matchboxes? How many such packets can be place in a carton of size $1.5\text{cm} \times 84\text{cm} \times 60\text{ cm}$?

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Solution:

We know that volume of cuboid = length \times breadth \times height

Volume occupied by single matchbox = $4 \times 2.5 \times 1.5 = 15 \text{ cm}^3$

Volume of a packet containing 144 matchbox = $15 \times 144 = 2160 \text{ cm}^3$

Volume of carton is $1.5\text{cm} \times 84\text{cm} \times 60 \text{ cm} = 756000 \text{ cm}^3$

Therefore, total number of packets can be accommodated in a carton is

Volume of the carton/ volume of the box

= $756000/2160$

= 350 packets

- 8. How many planks of size $2\text{cm} \times 25\text{cm} \times 8 \text{ cm}$ can be prepared from a wooden block 5m long, 70cm broad and 32 cm thick, assuming that there is no wastage?**

Solution:

We know that volume of cuboid = length \times breadth \times height

Volume of the block = $500 \times 70 \times 32 = 112000 \text{ cm}^3$

Volume of each plank = $200 \times 25 \times 8 = 40000 \text{ cm}^3$

Therefore, total number of planks that can be made

= Volume of the block/ volume of the each plank

= $112000/40000$

= 38 planks

- 9. How many bricks, each of size $25 \text{ cm} \times 13.5\text{cm} \times 6 \text{ cm}$, will be required to build a wall 8 m long, 5.4 m high and 33cm thick?**

Solution:

We know that volume of cuboid = length \times breadth \times height

Volume of the brick = $25 \times 13.5 \times 6 = 2025 \text{ cm}^3$

Volume of the wall = $800 \times 540 \times 33 = 14256000 \text{ cm}^3$

Therefore, total number of bricks required

= Volume of the wall/ volume of the each brick

= $14256000/2025$

= 7040 bricks

- 10. A wall 15m long, 30cm wide and 4m high is made of bricks, each measuring $22 \text{ cm} \times 12.5\text{cm} \times 7.5 \text{ cm}$. If $1/12$ of the total volume of the wall consists of mortar, how many bricks are there in the wall?**

Solution:

We know that volume of cuboid = length \times breadth \times height

Volume of the wall = $150 \times 30 \times 400 = 18000000 \text{ cm}^3$

The quantity of mortar = $1/12 \times 18000000 = 1500000$

Volume of bricks = $18000000 - 1500000 = 16500000 \text{ cm}^3$

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Volume of single brick = $22 \times 12.5 \times 7.5 = 2062.5 \text{ cm}^3$
Therefore, total number of bricks required
= total volume of the bricks/ volume of the each brick
= $16500000/2062.5$
= 8000 bricks

- 11. Find the capacity of rectangular cistern in liters whose dimensions are $11.2 \text{ m} \times 6 \text{ m} \times 5.8 \text{ m}$. Find the area of the iron sheet required to make the cistern.**

Solution:

We know that volume of cuboid = length \times breadth \times height

Volume of the cistern = $11.2 \times 6 \times 5.8$

$$= 389.76 \text{ m}^3$$

$$= 389.76 \times 1000$$

$$= 389760 \text{ liters.}$$

Area of the sheet that required to make the cistern = total surface area of the cistern

we know that total surface area of cuboid = $2(lb + bh + hl)$

$$= 2(11.22 \times 6 + 6 \times 5.8 + 5.8 \times 11.2)$$

$$= 2(67.2 + 64.96 + 34.8)$$

$$= 333.92 \text{ cm}^2$$

- 12. The volume of a block of gold is 0.5 m^3 . If it is hammered into a sheet to cover an area of 1 hectare, find the thickness of the sheet.**

Solution:

Given that volume of the block of gold is 0.5 m^3

We know that 1 hectare = 10000 m^2

Thickness of the sheet = volume/ area

$$= 0.5/1000$$

$$= 0.0005 \text{ m}$$

$$= 0.005 \text{ cm}$$

- 13. The rainfall recorded on a certain day was 5cm. Find the volume of water that fell on a 2-hectare field.**

Solution:

Given that rainfall recorded in a certain day = $5 \text{ cm} = 0.05 \text{ m}$

Area of the field = 2 hectare

We know that 1 hectare = 10000 m^2

$$\text{Area} = 2 \times 10000$$

$$\text{Area} = 20000 \text{ m}^2$$

Total rain in the field = area of the field \times height of the field

$$= 0.05 \times 20000 = 1000 \text{ m}^3$$

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- 14. A river 2m deep and 45m wide is flowing at the rate of 3km/h. Find the quantity of water that runs into the sea per minute.**

Solution:

Given that rate of flow 3km/h

Area of cross section of river = $45 \times 2 = 90 \text{ m}^2$

Rate of flow 3km/h = $3 \times 1000/60 = 50 \text{ m/min}$

Volume of water is flowing in cross section in 1 minute is = 90×50
= 4500 m^3 per minute

- 15. A pit 5m long and 3.5m wide is dug to a certain depth. If the volume of earth taken out of it is 14 m^3 , what is the depth of the pit?**

Solution:

We know that volume of cuboid = length \times breadth \times height

Let the depth of the pit is $x \text{ m}$.

Therefore, $V = 5 \times 3.5 \times x$

But volume is 14 m^3

$x = V / 5 \times 3.5$

$x = 14 / 5 \times 3.5$

$x = 0.8 \text{ m} = 80 \text{ cm}$

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EXERCISE 20B

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1. Find the volume, curved surface area and total surface area of each of the cylinders whose dimensions are:

- (i) Radius of the base = 7cm and height = 50cm
(ii) Radius of the base = 5.6m and height = 1.25 m
(iii) Radius of the base = 14dm and height = 15m

Solution:

- (i) We know that volume of the cylinder = $\pi r^2 h$
Here $r = 7\text{cm}$ $h = 50\text{cm}$
 $V = \frac{22}{7} \times 7 \times 7 \times 50$
 $V = 22 \times 7 \times 50$
 $V = 7700 \text{ cm}^3$
Also we know that curved surface area of cylinder = $2 \pi r h$
Curved surface area = $2 \times \frac{22}{7} \times 7 \times 50$
Curved surface area = 2200 cm^2
We know that total surface area of cylinder = $2 \pi r(r + h)$
Total surface area = $2 \times \frac{22}{7} \times 7 (7 + 50)$
Total surface area = 2580 cm^2
- (ii) We know that volume of the cylinder = $\pi r^2 h$
Here $r = 5.6\text{m}$ $h = 1.25\text{m}$
 $V = \frac{22}{7} \times 5.6 \times 5.6 \times 1.25$
 $V = 123.2 \text{ m}^3$
Also we know that curved surface area of cylinder = $2 \pi r h$
Curved surface area = $2 \times \frac{22}{7} \times 5.6 \times 1.25$
Curved surface area = 44 m^2
We know that total surface area of cylinder = $2 \pi r(r + h)$
Total surface area = $2 \times \frac{22}{7} \times 5.6 (5.6 + 1.25)$
Total surface area = 241.12 m^2
- (iii) We know that volume of the cylinder = $\pi r^2 h$
Here $r = 14\text{dm}$ $h = 15\text{cm}$
 $V = \frac{22}{7} \times 1.4 \times 1.4 \times 15$
 $V = 92.4 \text{ cm}^3$
Also we know that curved surface area of cylinder = $2 \pi r h$
Curved surface area = $2 \times \frac{22}{7} \times 1.4 \times 15$

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$$\text{Curved surface area} = 132 \text{ cm}^2$$

We know that total surface area of cylinder = $2\pi r(r + h)$

$$\text{Total surface area} = 2 \times 22/7 \times 1.4 (1.4 + 15)$$

$$\text{Total surface area} = 144.32 \text{ cm}^2$$

2. A milk tank is in the form of cylinder whose radius is 1.5m and height is 10.5 m. find the quantity of milk in liters that can be stored in the tank.

Solution:

Given $r = 1.5\text{m}$ and $h = 10.5\text{ m}$

To find the quantity of milk stored is equal to volume of the cylinder

But we know that volume of the cylinder = $\pi r^2 h$

$$V = 22/7 \times 1.5 \times 1.5 \times 10.5$$

$$V = 74.25 \text{ m}^3$$

But $1 \text{ m}^3 = 1000\text{L}$

Therefore quantity of milk is 74250 L

3. A wooden cylindrical pole is 7m high and its base radius is 10cm. Find its weight if the wood weighs 225kg per cubic meter.

Solution:

Given $r = 7\text{m}$ and $h = 10\text{ cm}$

But we know that volume of the cylinder = $\pi r^2 h$

$$V = 22/7 \times 0.1 \times 0.1 \times 7$$

$$V = 0.22 \text{ cm}^3$$

Given weight of the wood 225kg per cubic meter

$$\text{Weight of the pole} = 0.22 \times 225 = 49.5 \text{ kg}$$

4. Find the height of the cylinder whose volume is 1.54m^3 and diameter of the base is 140cm?

Solution:

Given that volume of the cylinder = 1.54m^3

Diameter = 140cm

Therefore, radius = diameter/2 = $140/2 = 70\text{cm} = 0.7\text{m}$

But we know that Volume of cylinder = $\pi r^2 h$

$$1.54 = 22/7 \times 0.7 \times 0.7 \times h$$

$$h = 1\text{m}$$

5. The volume of a circular iron rod of length 1m is 3850 cm^3 . Find its diameter.

Solution:

Given volume of circular iron rod is 3850 cm^3

But we know that Volume of cylinder = $\pi r^2 h$

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

$$r^2 = 3850 \times \frac{7}{100} \times \frac{1}{22}$$

$$r = 1.75 \times 7$$

$$r = 3.5\text{cm}$$

$$\text{Therefore diameter} = 2 \times r$$

$$\text{Diameter} = 2 \times 3.5 = 7\text{cm}$$

6. A closed cylindrical tank of diameter 12m and height 5m is made from a sheet of metal. How much sheet of metal will be required?

Solution:

Given that diameter = 12m

Therefore $r = \text{diameter} / 2 = 12/2 = 6\text{ m}$

Also given that height is 5m

Now we have to find the total surface area

We know that total surface area of cylinder = $2 \pi r(r + h)$

$$\text{Total surface area} = 2 \times \frac{22}{7} \times 6 (6 + 5)$$

$$\text{Total surface area} = 528\text{ m}^2$$

7. The circumference of the base of a cylinder is 88cm and its height is 60cm. Find the volume of the cylinder and its curved surface area.

Solution:

Given that circumference of the base of a cylinder is 88cm

Height of cylinder = 60cm

Curved surface area = circumference \times height

$$= 88 \times 60$$

$$= 5280\text{ cm}^2$$

Circumference = $2 \pi r$

$$60 = 2 \times \frac{22}{7} \times r$$

$$r = 14\text{cm}$$

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

$$V = \frac{22}{7} \times 14 \times 14 \times 60$$

$$V = 36960\text{ cm}^3$$

8. The lateral surface area of a cylinder of length 14m is 220 m^2 . Find the volume of the cylinder.

Solution:

Given that length is 14m and lateral surface area is 220 m^2

Lateral surface area of cylinder = $2 \pi r h$

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

$$r = 2.5\text{m}$$

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

$$V = 22/7 \times 14 \times 14 \times 60$$

$$V = 36960 \text{ cm}^3$$

9. The volume of a cylinder of height 8cm is 1232cm^3 . Find its curved surface area and total surface area.

Solution:

Given that height of the cylinder is 8cm and volume is 1232cm^3 .

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

$$1232 = 22/7 \times r \times r \times 8$$

$$r^2 = 1232 \times 7/8$$

$$r = 7\text{cm}$$

Also we know that curved surface area of cylinder = $2 \pi r h$

$$\text{Curved surface area} = 2 \times 22/7 \times 7 \times 8$$

$$\text{Curved surface area} = 252 \text{ cm}^2$$

We know that total surface area of cylinder = $2 \pi r(r + h)$

$$\text{Total surface area} = 2 \times 22/7 \times 7 (7 + 8)$$

$$\text{Total surface area} = 2580 \text{ cm}^2$$

10. The radius and height of a cylinder are in the ratio 7:2. If the volume of the cylinder is 8316cm^3 , find the surface area of cylinder.

Solution:

Given that radius and height of a cylinder are in the ratio 7:2

Hence radius/height = 7/2

$$r = (7/2) h$$

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

$$8316 = 22/7 \times (7/2) h \times (7/2) h \times h$$

$$h^3 = 216$$

$$h = 6\text{cm}$$

$$\text{Therefore } r = 21\text{cm}$$

We know that total surface area of cylinder = $2 \pi r(r + h)$

$$\text{Total surface area} = 2 \times 22/7 \times 21 (21 + 6)$$

$$\text{Total surface area} = 3564 \text{ cm}^2$$

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EXERCISE 20C

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Select the correct answer in each of the following:

1. The maximum length of a pencil that can be kept in rectangular box of dimensions $12\text{cm} \times 9\text{cm} \times 8\text{cm}$, is
(a) 13cm (b) 17cm (c) 18cm (d) 19cm

Solution:

(b) 17cm

Explanation:

We know that length of diagonal of the cuboid = $\sqrt{l^2 + b^2 + h^2}$
 $= \sqrt{12^2 + 9^2 + 8^2}$
 $= \sqrt{144 + 81 + 64}$
 $= 17$

2. The total surface area of a cube is 150 cm^2 . Its volume is
(a) 216 cm^3 (b) 125 cm^3 (c) 64 cm^3 (d) 1000 cm^3

Solution:

(b) 125 cm^3

Explanation:

Total surface area of the cube = $6a^2$
 $150 = 6a^2$
 $a^2 = 150/6 = 25$
 $a = 5$
Volume of the cube = a^3
 $V = 5^3 = 125$

3. The volume of a cube is 343 cm^3 . Its total surface area is
(a) 196 cm^2 (b) 49 cm^2 (c) 294 cm^2 (d) 147 cm^2

Solution:

(c) 294 cm^2

Explanation:

Volume of the cube = a^3
 $343 = a^3$
 $a = 7\text{cm}$
Total surface area of the cube = $6a^2$

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$$= 6 (7)^2$$
$$= 294$$

4. The cost of painting the whole surface area of a cube at the rate of 10 paise per cm^2 is ₹ 264.40. then, the volume of the cube is
(a) 6859 cm^3 (b) 9261 cm^3 (c) 8000 cm^3 (d) 10648 cm^3

Solution:

(b) 9261 cm^3

Explanation:

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

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

$$246.6 = 6a^2 \times 10$$

$$a^2 = 4.41$$

$$a = 2.1$$

Volume of the cube = a^3

$$V = (2.1)^3$$

5. How many bricks, each measuring 25cm × 11.25cm × 6cm, will be needed to build a wall 8m long, 6m high and 22.5 cm thick?
(a) 5600 (b) 6000 (c) 6400 (d) 7200

Solution:

(c) 6400

Explanation:

We know that volume of cuboid = length × breadth × height

Volume of brick = 25cm × 11.25cm × 6cm

$$= 1678.5 \text{ cm}^3$$

Volume of the wall = 80 × 60 × 22.5

$$= 10800000 \text{ cm}^3$$

$$\text{Number of bricks} = 10800000 / 1678.5 = 6400$$

6. How many cubes of 10cm edge can be put in a cubical box of 1m edge?
(a) 10 (b) 100 (c) 1000 (d) 10000

Solution:

(c) 1000

Explanation:

Volume of the cube = a^3

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Volume of the smaller cube = 10^3
= 1000
Volume of the box = a^3
= $(100)^3$
= 1000000
Total number of cubes = $1000000/1000$
= 1000

7. The edges of a cuboid have their volumes in the ratio 1:2:3 and its surface area is 88cm^2 . The volume of the cuboid is
(a) 48 cm^3 (b) 64 cm^3 (c) 96 cm^3 (d) 120 cm^3

Solution:

(a) 48 cm^3

Explanation:

Let a be the length of smallest edge.

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

We know that total surface area of cuboid = $2(lb + bh + hl)$

Surface area = $2(2a^2 + 3a^2 + 6a^2)$

$$88 = 22a^2$$

$$a = 2$$

$$2a = 4$$

$$3a = 6$$

We know that volume of cuboid = length \times breadth \times height

$$V = 2 \times 4 \times 6$$

$$V = 48$$

8. Two cubes have their volumes in the ratio 1:27. The ratio of their surface areas is
(a) 1:3 (b) 1:9 (c) 1:27 (d) none of these

Solution:

(b) 1:9

Explanation:

Volume in the ratio 1:27

$$1/27 = 1/3 = a^3/b^3$$

$$b/a = 3$$

Therefore on squaring 1:9

9. The surface area of a $10\text{cm} \times 4\text{cm} \times 6\text{cm}$ brick is

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- (a) 84cm^2 (b) 124cm^2 (c) 164cm^2 (d) 180cm^2

Solution:

(c) 164cm^2

Explanation:

We know that total surface area of cuboid = $2(lb + bh + hl)$
 $= 2(40 + 30 + 12)$
 $= 164$

10. The surface area is 9m long, 40cm wide and 20cm high. If 1 cubic meter of iron weighs 50 kg, what is the weight of the beam?

- (a) 56kg (b) 48kg (c) 36kg (d) 27kg

Solution:

(c) 36kg

Explanation:

We know that volume of cuboid = length \times breadth \times height

$$V = 9 \times 0.2 \times 0.4$$

$$V = 0.72\text{m}^3$$

$$\text{Weight} = 0.72 \times 50 = 36\text{kg}$$

11. A rectangular water reservoir contains 42000 liters of water. If the length of reservoir is 6m and its breadth is 3.5m, the depth of the reservoir is

- (a) 2m (b) 5m (c) 6m (d) 8m

Solution:

(a) 2m

Explanation:

We know that volume of cuboid = length \times breadth \times height

$$h = \text{volume} / lb$$

$$h = 42/6 \times 3.5$$

$$h = 2$$

12. The dimensions of a room are $10\text{cm} \times 8\text{cm} \times 3.3\text{cm}$. How many men can be accommodated in this room if each man requires 3m^3 of space?

- (a) 99 (b) 88 (c) 77 (d) 75

Solution:

(b) 88

Explanation:

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We know that volume of cuboid = length \times breadth \times height

$$V = 10 \times 8 \times 3.3$$

$$V = 264\text{m}^3$$

$$\text{Total number of people can be accommodated} = 264/3 = 88$$

13. A rectangular water tank is 3m long, 2m wide and 5m high. How many liters of water can it hold?

- (a)30000 (b)15000 (c)25000 (d)35000

Solution:

- (a)30000

Explanation:

We know that volume of cuboid = length \times breadth \times height

$$V = 3 \times 2 \times 5$$

$$V = 30\text{m}^3$$

$$V = 30000\text{l}$$

14. The area of the cardboard needed to make a box of size 25cm \times 15cm \times 8cm will be

- (a)390cm² (b) 1390cm² (c)2780cm² (d) 1000cm²

Solution:

- (b) 1390cm²

Explanation:

We know that total surface area of cuboid = $2(lb + bh + hl)$

$$= 2(375 + 120 + 200)$$

$$= 1390$$

15. The diagonal of a cube measures $4\sqrt{3}$ cm. its volume is

- (a)8cm³ (b) 16cm³ (c)27cm³ (d) 64cm³

Solution:

- (d) 64cm³

Explanation:

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

$$a = 4$$

$$\text{Volume of cube} = a^3 = 4^3 = 64\text{ cm}^3$$