Surface Area and volume of cuboid and cube-18.1

1.

Sol:

It is given that

Cuboid length $=80cm=L$

Breath $=40cm=$

Height $=20cm=h$

WKT,

Total surface area $=2[lb+bh+hl]$

$=2[(80)(40)+40(20)+20(80)]$

$=2[3200+800+1600]$

$=2[5600]$

$=11,200m^2$

Lateral surface area $=2[l+b]h=2[80+40]20$

$=40(120)$

$=4800cm^2$

2.

Sol:

Cube of edge $a=10cm$

WKT,

Cube lateral surface area $=4a^2$

$=4\times10\times10 \quad [\because a=10]$

$=400cm^2$

Total surface area $a=6a^2$

$=6\times(10)^2$

$=600cm^2$

3.

Sol:

Cube total surface area $=6a^2$

Where, $a=$edge of cube

And, lateral surface area $=LSA=4a^2$

Where $a=$ edge of cube

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$\therefore$ Ratio of TSA and LSA $= \frac{6a^2}{4a^2}$ is $\frac{3}{2}$ is $3:2$

4.

Sol:

Given that mary wants to paste the paper on the outer surface of the box; The quantity of the paper required would be equal to the surface area of the box which is of the shape of cuboid. The dimension of the box are

Length $(l) = 80cm$ Breath $(b) = 40cm$ and height (h) = 2cm

The surface area of thee box $= 2[lb + bh + hl]$

$= 2[80(40) + 40(20) + 20(80)]$

$= 2(5600) = 11,200cm^2$

The area of the each sheet of paper $= 40 \times 10cm^2$

$= 1600cm^2$

$\therefore$ Number of sheets required $= \frac{Surface\ areaa\ of\ box}{area\ of\ one\ sheet\ of\ paper}$

$= \frac{11,200}{1600} = 7$

5.

Sol:

Total area to be washed $= lb + 2(l + b)h$

Where length $(l) = 5m$

Breath $(b) = 4cm$

Height $(h) = 3cm$

$\therefore$ Total area to be white washed $= (5 \times 4) + 2(5 + 4) \times 3$

$= 20 + 54 = 74m^2$

Now,

Cost of white washing $1m^2$ is Rs $7 \cdot 50$

$\therefore$ Cost of white washing $74m^2$ is $Rs(74 \times 7 \cdot 50)$

$= Rs\ 555$

6.

Sol:

Length of new cuboid $= 3a$

Breadth of cuboid $= a$

Height of new cuboid $=a$

The total surface area of new cuboid

$\Rightarrow (TSA)_1 = 2[lb+bh+hl]$

$\Rightarrow (TSA)_1 = 2[3a\times a + a\times a + 3a\times a]$

$\Rightarrow (TSA)_1 = 14a^2$

Total surface area of three cubes

$\Rightarrow (TSA)_2 = 3\times 6a^2 = 18a^2$

$\therefore \frac{(TSA)_1}{(TSA)_2} = \frac{14a^2}{18a^2} = \frac{7}{9}$

$\therefore$ Ratio is $7:9$

7.

Sol:

Edge of cube $=4cm$

Volume of $4cm$ cube $=(4cm)^3 = 64cm^2$

Edge of cube $=1cm$

Volume of $1cm$ cube $=(1cm)^3 = 1cm^3$

$\therefore$ Total number of small cubes $=\frac{64cm^3}{1cm^3} = 64$

$\therefore$ Total surface area of $64cm$ all cubes

$=64\times 6\times (1cm)^2$

$=384cm^2$

8.

Sol:

Length of the hall $=18m$

Width of hall $=112m$

Now given,

Area of the floor and the flat roof = sum of the areas of four walls.

$\Rightarrow 2lb = 2lh + 2bh$

$\Rightarrow lb = lh + bh$

$\Rightarrow h = \frac{lb}{l+b} = \frac{18\times 12}{18+12} = \frac{216}{30}$

$=7\cdot 2m.$

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9.

Sol:

Given that

Hameed is giving 5 outer faces of the tank covered with titles he would need to know the surface area of the tank, to decide on the number of tiles required.

Edge of the cubic tank $= 1\cdot 5m = 150cm = a$

So, surface area of tank $= 5 \times 150 \times 150 cm^2$

Area of each square title $= \dfrac{surface\ area\ of\ \tan k}{area\ of\ each\ title}$

$= \dfrac{5 \times 150 \times 150}{25 \times 25} = 180$

Cost of 1 dozen titles i.e., cost of 12 tiles = Rs 360

Therefore, cost of 12 balls titles $= Rs\ 360$

$\therefore$ cost of one tube $= \dfrac{360}{12} = Rs\ 30$

$\therefore$ The cost of 180 tiles $= 180 \times Rs\ 30$

$= Rs\ 5,400$

10.

Sol:

Let d be the edge of the cube

$\therefore$ surface area of cube $= 6 \times a^2$

i.e, $S_1 = 6a^2$

According to problem when edge increased by 50% then the new edge becomes

$= a + \dfrac{50}{100} \times a$

$= \dfrac{3}{2} a$

New surface area becomes $= 6 \times \left(\dfrac{3}{2} a\right)^2$

i.e., $S_2 = 6 \times \dfrac{9}{4} a^2$

$S_2 = \dfrac{27}{2} a^2$

$\therefore$ Increased in surface Area $= \dfrac{27}{2} a^2 - 6aa^2$

$= \dfrac{15}{2} a^2$

So, increase in surface area $= \dfrac{\frac{15}{2}a^2}{6a^2} \times 100$

$= \dfrac{15}{12} \times 100$

$= 125\%$

11.

Sol:

Let the ratio be x

$\therefore$ length $= 2x$

Breath $= 3x$

Height $= 4x$

$\therefore$ Total surface area $= 2[lb + bh + hl]$

$= 2\left[6x^2 + 12x^2 + 8x^2\right]$

$= 52x^2m^2$

When cost is at Rs 8 per m^2

$\therefore$ Total cost of $52x^2m^2 = Rs\, 8 \times 52x^2$

$= Rs\ 416x^2$

And when the cost is at $95\, per\ m^2$

$\therefore$ Total cost of $52x^2m^2 = Rs\ 9 \cdot 5 \times 52x^2$

$= Rs\ 499x^2$

$\therefore$ Different in cost $= Rs\ 494x^2 - Rs\ 416x^2$

$\Rightarrow 1248 = 494x^2 - 416x^2$

$\Rightarrow 78x^2 = 1248$

$\Rightarrow x^2 = 16$

$\Rightarrow x = 4$

12.

Sol:

Given length $= 12m$, Breadth $= 9m$ and Height $= 4m$.

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

$= 2[12 \times 9 + 9 \times 4 + 12 \times 4]$

$= 2[108 + 36 + 48]$

$= 384m^2$

Now length of iron sheet $= \dfrac{384}{width\ of\ \ iron\ sheet}$

$= \dfrac{384}{2} = 192m.$

Cost of iron sheet = length of sheet $\times$cost rate

$= 192 \times 5 = Rs\ 960.$

13.

Sol:

Given that

Shelter length = 4m

Breadth = 3m

Height = $2 \cdot 5m$

The tarpaulin will be required for to P and four sides of the shelter

Area of tarpaulin in required $= 2(lb + bh + hl)$

$= \left[2(4) \times 2 \cdot 5 + (3 \times 2 \cdot 5)\right] + 4 \times 3\right] m^2$

$= \left[2(10 + 7 \cdot 5) + 12\right] m^2$

$= 47m^2 = 47m^2.$

14.

Sol:

Given

Length $= 1 \cdot 48m = 148cm.$

Breath $= 1 \cdot 16m = 116cm$

Height $= 8 \cdot 3dm = 83cm$

Thickness of wood = 3cm

$\therefore$ inner dimensions:

Length $(148 - 2 \times 3)cm = 142cm$

Breadth $(116 - 2 \times 3)cm = 110cm$

Height $= (83 - 3)cm = 80cm.$

Inner surface area $= 2(l + b) + lb$

$= 2\left[(142) + 100\right) 80 + 142 \times 110 cm^2$

$= 2(252)[80] + 142 \times 110 cm^2 = 55,940 cm^2$

$= 559\ 40 m^2$

Hence, cost of painting inner surface area

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$= 5,5940 \times Rs\ 50$

$= Rs\ 279 \cdot 70$

15.

Sol:

Given that

Length of room = 12m.

Let a height of room be ‘n’ m.

Area of 4 walls $= 2(l+b) \times h$

According to question

$\Rightarrow 2(l+b) \times h \times 1 \cdot 35 = 340 \cdot 20$

$\Rightarrow 2(12+b) \times h \times 1 \cdot 35 = 340 \cdot 20$

$\Rightarrow (12+b) \times h = \frac{170 \cdot 10}{1 \cdot 35} = 126$ ....(1)

Also area of floor $= l \times b$

$\therefore l \times b \times 0 \cdot 85 = 91 \cdot 80$

$\Rightarrow 12 \times b \times 0 \cdot 85 = 91 \cdot 80$

$\Rightarrow b = 9m$ ......(2)

Substituting $b = 9m$ in equation (1)

$\Rightarrow (12 \times 9) \times h = 126$

$\Rightarrow h = 6m$

16.

Sol:

Given length of room $= 12 \cdot 5m$

Breadth of room $= 9m$

Height of room $= 7m$

$\therefore$ Total surface area of 4 walls

$= 2(l+b) \times h$

$= 2(12 \cdot 5 + 9) \times 7$

$= 301m^2$

Area of 2 doors $= 2[2 \cdot 5 \times 1 \cdot 2]$

$= 6m^2$

Area to be painted on 4 walls

$= 301 - (6+6)$

$= 301 - 12 = 289m^2$

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$\therefore$ cost of painting $= 289 \times 3 \cdot 50$

$Rs\ 1011 \cdot 5.$

17.

Sol:

Let the length be 4x and breadth be 3x

Height $= 5 \cdot 5m$ [given]

Now it is given that cost of decorating 4 walls at the rate of $Rs\ 6 \cdot 601m^2$ is $Rs\ 5082$

$\Rightarrow$ Area of four walls $\times$rate = total cost of painting

$$\Rightarrow 7x = \frac{5082}{5 \cdot 5 \times 2 \cdot 6 \times 2}$$

$\Rightarrow 7x = 10$

$\Rightarrow x = 10$

Length $= 4x = 4 \times 10 = 40m$

Breadth $= 3x = 3 \times 10 = 30m$

18.

Sol:

External length of book shelf $= 85cm = l$

Breadth $= 25cm$

Height $= 110cm.$

External surface area of shelf while leaving front face of shelf

$= \left(h + 2\left(lb + bh\right)\right)$

$= \left[85 \times 110 + 21\left(85 \times 25 + 25 \times 110\right)\right] cm^2$

$= 19100cm^2$

Area of front face $= \left(85 \times 110 - 75 \times 100 + 2\left(75 \times 5\right)\right) cm^2$

$= 1850 + 750cm^2$

$= 2600cm^2$

Area to be polished $= 19100 + 2600cm^2$

$= 21700cm^2$

Cost of polishing $1cm^2$ area = $Rs\ 0 \cdot 20$

Cost of polishing $21700cm^2$ area $= Rs\left[21700 \times 0 \cdot 20\right]$

$= Rs\ 4340$

Now, length (l), breath (b), height (h) of each row of book shelf is 75cm, 20cm and 30cm

$= \left(\frac{110 - 20}{3}\right)$respectively.

Area to be painted in row $= 2(l+h)b + lh$

$= [2(75+30)\times 20 + 75\times 30]cm^2$

$= (4200+2250)cm^2$

$= 6450cm^2$

Area to be painted in 3 rows $= (3\times 6450)cm^2$

$= 19350cm^2$

Cost of painting $1cm^2$ $area = Rs\ 0\cdot 10.$

Cost of painting 19350 $area = Rs(19350\times 0\cdot 10) - Rs1935$

Total expense required for polishing and painting the surface of the bookshelf

$= Rs(4340+1935) = Rs\ 6275.$

19.

Sol:

We know that

Total surface area of one brick $= 2(lb+bh+hl)$

$= 2[22\cdot 5\times 10 + 10\times 7\cdot 5 + 22\cdot 5\times 75]cm^2$

$= 2[468\cdot 75)cm^2$

$= 937\cdot 5cm^2$

Let n number of bricks be painted by the container

Area of brick $= 937\cdot 50\ cm^2$

Area that can be painted in the container

$= 93755m^2 = 93750\,cm^2$

$93750 = 937\cdot 5n$

$n = 100$

Thus, 100 bricks can be painted out by the container.

Surface Area and volume of cuboid and cube – 18.2

1.

Sol:

Given length $= 6cm$

Breath $= 56m$

Height $= 4\cdot 5m$

Volume of the tank $= l \times b \times h = 6 \times 5(4\cdot 5) = 135m^3$ It is given that

$1m^3 = 1000$ liters

$\therefore 135m^3 = (135 \times 1000)$ liters

$= 1,35,000$ liters

$\therefore$ The tank can hold $1,35,000$ liters of water

2.

Sol:

Given that

Length of vessel (l) = 10m

Width of vessel (b) = 8m

Let height of the cuboidal vessel be 'h'

Volume of vessel $= 380m^3$

$\therefore l \times b \times h = 380$

$10 \times 8 \times h = 380$

$h = 4\cdot 75$

$\therefore$ height of the vessel should be $4\cdot 75m$.

3.

Sol:

Given length of the cuboidal P it $(l) = 8m$

Width $(b) = 6m$

Depth $(h) = 3m$

Volume of cuboid pit $= l \times b \times h = (8 \times 6 \times 3)m^3$

$= 144m^3$

Cost of digging $1m^3 = Rs\ 30$

Cost of digging $144m^3 = 144(Rs\ 30) = Rs\,4320$.

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4.

Sol:

Given that

Length $= a$

Breadth $= b$

Height $= c$

Volume $(v) = l \times b \times h$

$= a \times b \times c = abc$

Surface area $= 2(lb + bh + hl)$

$= 2(ab + bc + ac)$

Now, $\frac{2}{5}\left[\frac{1}{a} + \frac{1}{b} + \frac{1}{c}\right] = \frac{2}{2(ab + bc + ca)} \frac{[ab + bc + ca]}{abc}$

$= \frac{1}{abc} = \frac{1}{v}$

5.

Sol:

Let a, b, d be the length, breath and height of cuboid then,

$x = ab$

$y = bd,$

$z = da, \; and$

$v = abd \qquad [v = l \times b \times h]$

$\Rightarrow xyz = ab \times bc \times ca = (abc)^2$

And $v = abc$

$v^2 = (abc)^2$

$v^2 = xyz$

6.

Sol:

WKT, if x, y, z denote the areas of three adjacent faces of a cuboid

$\Rightarrow x = l \times b, y = b \times h, z = l \times h.$

Volume V is given by

$V = l \times b \times h.$

Now, $xyz = l \times b \times b \times h \times l \times h = V^2$

Here $x = 8$

$y = 18$

And $z = 25$

$\therefore v^2 = 8 \times 18 \times 25 = 3600$

$\Rightarrow v = 60 cm^3.$

7.

Sol:

We have,

$b = 2h \; and \; b = \frac{1}{2}.$

$\Rightarrow \frac{l}{2} = 2h$

$\Rightarrow l = 4h$

$\Rightarrow l = 4h, b = 2h$

Now,

Volume $= 512 \; dm^3$

$\Rightarrow 4h \times 2h \times h = 512$

$\Rightarrow h^3 = 64$

$\Rightarrow h = 4$

So, $1 = 4 \times h = 16 dm$

$b = 2 \times h = 8 dm$

And $h = 4 dm$

8.

Sol:

Radius of water flow $= 2km \; per \; hour = \left(\frac{2000}{60}\right) m / \min$

$= \left(\frac{100}{3}\right) m / \min$

Depth (h) of river = 3m

Width (b) of river = 40m

Volume of water followed in 1 min $= \frac{100}{3} \times 40 \times 3 m^2 - 4000 m^3$

Thus, 1 minute $4000 \; m^3 = 4000000$ liters of water will fall in sea.

9.

Sol:

Given that,

Water in the canal forms a cuboid of

width $(h) = 300d\ m = 3m$

height $= 12\ m = 1\cdot 2m$

length of cuboid is equal to the distance travelled in 30 min with the speed of 100 km per hour

$\therefore$ length of cuboid $= 100 \times \frac{30}{60} km = 50000$ meters

So, volume of water to be used for irrigation $= 50000 \times 3 \times 1\cdot 2m^3$

Water accumulated in the field forms a cuboid of base area equal to the area of the field and height equal to $\frac{8}{100}$ *meters*

$\therefore$ Area of field $\times \frac{8}{100} = 50,000 \times 3 \times 1\cdot 2$

$\Rightarrow$ Area of field $= \frac{50000 \times 3 \times 1\cdot 2 \times 100}{8}$

$= 2,250000$ meters

10.

Sol:

Let the length of each edge by of the new cube be a cm

Then,

$a^3 = \left(6^3 + 8^3 + 10^3\right) cm^3$

$\Rightarrow a^3 = 1728$

$\Rightarrow a = 12$

$\therefore$ Volume of new cube $= a^3 = 1728cm^3$

Surface area of the new cube $= 5a^2 = 6 \times 12^2 cm^2$

$= 864cm^2$.

Diagonals of the new cube $= \sqrt{3a} = 12\sqrt{3}cm.$

11.

Sol:

Given that

Volume of cube $= 512cm^3$

$\Rightarrow side^3 = 512$

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$\Rightarrow side^3 = 8^3$

$\Rightarrow side = 8cm$

Dimensions of new cuboid formed

$l = 8 + 8 = 16cm, b = 8cm, h = 8cm$

Surface area $= 2\left(lb + bh + hl\right)$

$= 2\left[16(8) + 8(8) + 16(8)\right] = 2\left[256 + 64\right]$

$= 640cm^2$

$\therefore$ Surface area is $640cm^2$.

12.

Sol:

Given that

Volume of gold $= 0 \cdot 5m^3$

Area of gold sheet = 1 hectare = 10000 m^2

$\therefore$ Thickness of gold sheet $= \dfrac{Volume\ of\ \ gold}{Area\ of\ \ gold\ \ sheet}$

$= \dfrac{0 \cdot 5m^3}{1 Hectare}$

$= \dfrac{0 \cdot 5m^3}{1000000m^2}$

$= \dfrac{5}{10000} \times 10m$

$= \dfrac{100}{20000} m$

Thickness of gold sheet $= \dfrac{1}{200} cm.$

13.

Sol:

Volume of large cube = $V_1 + V_2 + V_3$

Let the edge of the third cube be x cm

$123^3 = 6^3 + 8^3 + x^3$ [Volume of cube $= side^3$]

$1728 = 216 + 512 + x^3$

$\Rightarrow x^3 = 1728 - 728 = 1000$

$\Rightarrow x = 10cm$

$\therefore$ Side of third side $= 10cm..$

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14.

Sol:

Given that

Volume of cinema hall $=100\times50\times18m^3$

Volume air required by each person $=150m^3$

Number of person who can sit in the hall

$$=\frac{volume\ of\ \ cinema\ \ hall}{volume\ of\ \ air\ \ req\ \ each\ \ person}$$

$$=\frac{100\times50\times18m^3}{150m^3}=600 \qquad [\because V=l\times b\times h]$$

$\therefore$ number of person who can sit in the hall

$=600$ members

15.

Sol:

Let the length of the block be 1cm

Then, volume $=l\times28\times5\ cm^3$

$\therefore$ weight $=140\times0\cdot25\ kg$

According to the question

$\Rightarrow112=1401\times0\cdot25$

$$\Rightarrow l=\frac{112}{140\times0\cdot25}=3\cdot2cm$$

16.

Sol:

Given external dimensions of cuboid are

$l=25cm, b=18cm, h=15cm.$

$\therefore$ External volume $=l\times b\times h$

$=25\times15\times15cm^3$

$=6750cm^3.$

Internal volume $=l\times b\times h$

$=21\times14\times11cm^3$

$=3234cm^3$

$\therefore$ Volume of liquid that can be placed $=3234cm^3$

Now, volume of wood = external volume – Internal volume

$=6750-3324$

$=3516cm^3$

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17.

Sol:

Given internal dimensions are

$l = 48 - 2\times \text{thickness} = 48 - 3 = 45cm$

$b = 36 - 3 = 33cm$

$h = 30 - 3 = 27\,cm$

$\therefore$ Internal volume $= 45\times 33\times 27cm^3$

Volume of brick $= 5\times 3\times 0\cdot 75cm^3$

Hence, number of bricks $= \dfrac{Internal\ volume}{volume\ of\ 1\ brick}$

$= \dfrac{45\times 33\times 27}{6\times 3\times 0\cdot 37}$

$= \dfrac{38880}{13\cdot 5}$

$= 2970$

$\therefore$ 2970 bricks can be kept inside the box

18.

Sol:

Outer dimensions

$l = 36\ cm$

$b = 25\ cm$

$h = 16\cdot 5cm$

Inner dimensions

$l = 36 - (2\times 1\cdot 5) = 33cm$

$b = 25 - (3) = 22cm$

$h = 16\cdot 5 - 1\cdot 5 = 15cm$

Volume of iron = outer volume – inner volume

$= (36\times 25\times 16\cdot 5 - 33\times 12\times 15)cm^3 = 3960cm^3$

Weight of iron $= 3960\times 1\cdot 59m = 59400gm = 59\cdot 4kg$

19.

Sol:

Volume of cube $= S^3 = 9^3 = 729cm^3$

Area of base $l\times b = 15\times 12 = 180cm^2$

Rise in water level $= \frac{Volume\ of\ cube}{Area\ of\ base\ of\ rectangular\ vessel}$

$= \frac{729}{180} = 4\cdot 05cm$

20.

Sol:

Let the length of each edge of the cube be x cm

Then,

Volume of cube = volume of water inside the tank + volume of water that over flowed

$x^3 = (5\times 5\times 1) + 2 = 25 + 2$

$x^3 = 27$

$x = 3cm$

Hence, volume of cube = $27cm^3$

And edge of cube $= 3cm.$

21.

Sol:

Volume of earth dug out $= 50\times 40\times 7\,m^3$

$= 14000m^3$

Let the height of the field rises by h meters

$\therefore$ volume of filed (cuboidal) = Volume of earth dugout

$\Rightarrow 200\times 150\times h = 1400$

$\Rightarrow h = \frac{1400}{200\times 150} = 0\cdot 47m.$

22.

Sol:

Let the level of the field be risen by h meters volume of the earth taken out from the pit

$= 7\cdot 5\times 6\times 0\cdot 8m^3$

Area of the field on which the earth taken out is to be spread $= 18\times 15 - 7\cdot 5\times 6 = 225m^2$

Now, area of the field $Yh =$ volume of the earth taken out from the pit

$\Rightarrow 225\times h = 7\cdot 5\times 6\times 0\cdot 8$

$\Rightarrow h = \frac{36}{225} = 0\cdot 16m = 16cm.$

23.

Sol:

Let the level of water be risen by h cm.

Then,

Volume of water in the tank $= 8000 \times 2500 \times h cm^2$

Area of cross – section of the pipe $= 25 cm^2$.

Water coming out of the pipe forms a cuboid of base area $25cm^2$ and length equal to the distance travelled in 45 minutes with the speed 16km/hour.

i.e., length $= 16000 \times 100 \times \frac{45}{60} cm$

$\therefore$ Volume of water coming out of pipe in 45 minutes

$= 25 \times 16000 \times 100 \left(\frac{45}{60}\right)$

Now, volume of water in the tank $=$ volume of water coming out of the pipe in 45 minutes

$\Rightarrow 8000 \times 2500 \times h = 16000 \times 100 \times \frac{45}{60} \times 25$

$\Rightarrow h = \frac{16000 \times 100 \times 45 \times 25}{8000 \times 2500 \times 60} cm = 1 \cdot 5 cm.$

24.

Sol:

Given that,

Flow of water $= 15 km/hr$

$= 15000 m/hr$.

Volume of water coming out of the pipe in one hour

$= \frac{20}{100} \times \frac{20}{100} \times \pm 5000 = 600 m^3$

Volume of the tank $= 80 \times 60 \times 6 \cdot 5$

$= 31200 m^3$

$\therefore$ Time taken to empty the tank

$= \frac{Volume\ of\ \tan k}{volume\ of\ water\ co\min g\ out\ of\ the\ pipe\ in\ one\ hour}$

$= \frac{31200}{600}$

$= 52\ hours.$

25.

Sol:

Given that

Length of the cuboidal tank $(l) = 20m$

Breath of the cuboidal tank $(b) = 15m.$

Height of the tank $= l \times b \times h = (20 \times 15 \times 6)m^3$

$= 1800m^3$

$= 1800000$ liters.

Water consumed by people of village in one day

$= 4000 \times 150$ *litres.*

$= 600000$ *litres.*

Let water of this tank lasts for n days

Water consumed by all people of village in n days = capacity of tank

$n \times 600000 = 1800000$

$n = 3$

Thus, the water of tank will last for 3 days.

26.

Sol:

Volume of each cube = edge $\times$ edge $\times$ edge

$= 3 \times 3 \times 3cm^3 = 27cm^3.$

Number of cubes in the surface structure $= 15$

$\therefore$ Volume of the structure $= 27 \times 15cm^3$

$= 405cm^3.$

27.

Sol:

Given go down length $(l_1) = 40m.$

Breath $(b_1) = 25m.$

Height $(h_1) = 10m.$

Volume of go down $= l_1 \times b_1 \times h_1 = 40 \times 25 \times 10m^3$

$= 10000m^3$

Wood of wooden crate $= l_2 \times b_2 \times h_2$

$= 1 \cdot 5 \times 1 \cdot 25 \times 0 \cdot 25m^3 = 0 \cdot 9375m^3$

Let m wooden creates be stored in the go down volume of m wood crates = volume of go down

$0 \cdot 9375 \times n = 10000$

$n = \frac{10000}{0 \cdot 9375} = 10,666 \cdot 66,$

Thus, $10,666 \cdot 66$ wooden crates can be stored in go down.

28.

Sol:

Given that

The wall with all its bricks makes up the space occupied by it we need to find thee volume of the wall, which is nothing but cuboid.

Here, length $= 10m = 1000cm$

Thickness $= 24cm$

Height $= 4m = 400cm$

$\therefore$ The volume of the wall

$= length \times breadth \times height$

$= 1000 \times 24 \times 400 cm^3$

Now, each brick is a cuboid with length = 24cm,

Breadth $= 12cm \ and \ height = 8cm.$

So, volume of each brick = length $\times$ breadth $\times$ height

$= 24 \times 12 \times 8 cm^3.$

So, number of bricks required $= \frac{Volume \ of \ the \ wall}{Volume \ of \ each \ brick}$

$= \frac{1000 \times 24 \times 400}{24 \times 12 \times 8}$

$= 4166 \cdot 6.$

So, the wall requires 167 bricks.

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