

STD: VIII

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WORK SHEET

MATHEMATICS

(1)

MENSURATION

(Note: - Do the following sum in class/work sheet)

1. A suitcase with measures $80\text{ cm} \times 48\text{ cm} \times 24\text{ cm}$, is to be covered with a tarpaulin cloth. How many metres of tarpaulin of width 96 cm is required to cover 100 such suitcases?

Solution:- Here $l = 80\text{ cm}$, $b = 48\text{ cm}$, $h = 24\text{ cm}$

Total surface area of the suitcase

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

$$= 2((80 \times 48) + (48 \times 24) + (24 \times 80))\text{ cm}^2.$$

$$= 2(3840 + 1152 + 1920)\text{ cm}^2.$$

$$= 2(6912)\text{ cm}^2$$

$$= 13824\text{ cm}^2$$

\therefore Length of tarpaulin required to cover 1 suitcase

$$= \frac{\text{Total surface area of the suitcase}}{\text{width of tarpaulin}}$$

$$= \frac{13824}{144} = \boxed{144\text{ cm}}$$

\therefore Length of tarpaulin required to cover 100 such suitcase

$$= 144 \times 100\text{ cm}$$

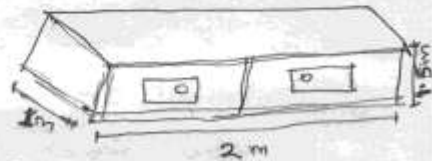
$$= \boxed{14400\text{ cm}}$$

Do this (Home work Note)

- ① Find the side of a cube whose surface area is 600 cm^2 .

- ② Rukhsar painted the outside of

the cabinet of measure $1\text{ m} \times 2\text{ m} \times 1.5\text{ m}$ How much surface area did she cover if she painted all except the bottom of the cabinet.



2. Daniel is painting the walls and ceiling of a cuboidal hall with length, breadth, and height of 15m, 10m, and 7m respectively. From each can of paint 100m² of area is painted. How many cans of paint will she need to paint the room?

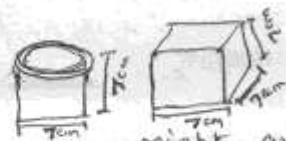
Solution:- Given $l = 15\text{m}$, $b = 10\text{m}$, $h = 7\text{m}$.

$$\begin{aligned} \text{Surface area to be painted} &= 2(lb + bh + hl) - (l \times b) \\ &= 2(15 \times 10 + 10 \times 7 + 7 \times 15) \text{m}^2 - (15 \times 10) \text{m}^2 \\ &= 2(150 + 70 + 105) \text{m}^2 - (150 \text{m}^2) \\ &= 2(325) \text{m}^2 - 150 \text{m}^2 \\ &= 650 \text{m}^2 - 150 \text{m}^2 \\ &= 500 \text{m}^2. \end{aligned}$$

$$\begin{aligned} \therefore \text{Number of cans needed} &= \frac{\text{Surface area to be painted}}{\text{Area painted by 1 can}} \\ &= \frac{500 \text{ m}^2}{100 \text{ m}^2} \\ &= 5 \end{aligned}$$

\therefore She will need 5 cans of paint to paint the room.

Do this (Home Work)



- Describe how the two figures at the right are alike and how they are different. Which box has larger lateral surface area?
- A closed cylindrical tank of radius 7m and height 3m is made from a sheet of metal. How much sheet metal is required?

1. The lateral surface area of a hollow cylinder is 4224 cm^2 . It is cutting along its height and formed a rectangular sheet of width 33 cm . Find perimeter of a rectangular sheet?

Solution:

Here, Lateral surface area of the hollow cylinder = 4224 cm^2 .

\Rightarrow Area of the rectangular sheet = 4224 cm^2 .

Given, **Length** = **Width** = 33 cm .

$$\text{Length} \times 33 = 4224$$

$$\text{Length} = \frac{4224}{33} = \boxed{128 \text{ cm}}$$

\therefore Perimeter of the rectangular sheet = $2(l+b)$

$$= 2(128 + 33) \text{ cm}$$

$$= 2(161) \text{ cm}$$

$$= 322 \text{ cm}.$$

2. A road roller takes 750 complete revolutions to move once over to level road!

Find the area of the road if the diameter of a road roller is 84 cm and length is 1 m .



Solution:- Given Diameter of a road roller = 84 cm

\therefore Radius of a road roller = $\frac{84}{2} = 42 \text{ cm}$

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

$\Rightarrow 1 \text{ m} = 100 \text{ cm}$

\therefore Lateral surface area of the road roller = $2\pi rh$

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

$$= 2 \times 22 \times 6 \times 100 = 26,400 \text{ cm}^2$$

$$= 26,400 \text{ cm}^2 \text{ (1 complete revolution)}$$

2. Area of Covered in 750 complete revolution

$$= 26,400 \times 750 \text{ cm}^2$$
$$= 19,800,000 \text{ cm}^2.$$

$$= \frac{1,98,04,000}{100 \times 100} \text{ m}^2 = \boxed{1,980 \text{ m}^2}$$

2. A company packages its milk powder in cylindrical container whose base has diameter of 14 cm and height 20 cm. Company places a label around the surface of the container. If the label placed 2 cm from top and bottom, what is the area of the label.



Given: - Diameter = 14 cm \Rightarrow $r = 7 \text{ cm}$

Height = 20 cm

$$\therefore \text{Curved surface area} = 2\pi rh$$
$$= 2 \times \frac{22}{7} \times 7 \times 20$$
$$= 2 \times 22 \times 20$$
$$= 44 \times 20$$
$$= \boxed{880 \text{ cm}^2}$$

\therefore Surface area of the label $r=7$ $h=2$

$$= 880 \text{ cm}^2 - 2 \left(2 \times \frac{22}{7} \times 7 \times 2 \right) \text{ cm}^2$$

$$= 880 \text{ cm}^2 - 2 (2 \times 22 \times 2) \text{ cm}^2$$

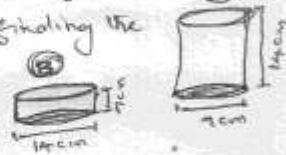
$$= 880 \text{ cm}^2 - 2 (44 \times 2) \text{ cm}^2$$

$$= 880 \text{ cm}^2 - 2 (88) \text{ cm}^2$$

$$= 880 - 176 \text{ cm}^2$$

$$= \boxed{704 \text{ cm}^2}$$

1. Diameter of cylinder A is 7cm, and height is 14cm, Diameter of cylinder B is 14cm and height is 7cm. without doing any calculation can you suggest whose volume is greater? Verify it by finding the volume both the cylinder. check whether the cylinder with greater volume also has greater surface area?



Volume of cylinder A	Volume of cylinder B
$r = 7/2, h = 14$ $\therefore \text{Volume} = \pi r^2 h$ $= \frac{22}{7} \times \frac{7}{2} \times \frac{7}{2} \times 14$ $= 11 \times 7 \times 7$ $= 11 \times 49 = \boxed{539 \text{ cm}^3}$	$r = 7, h = 7$ $\text{Volume} = \pi r^2 h$ $= \frac{22}{7} \times 7 \times 7 \times 7$ $= 22 \times 7 \times 7$ $= 22 \times 49$ $= \boxed{1078 \text{ cm}^3}$

\therefore Volume B is greater.

Surface of A	Surface of B
$r = 7/2, h = 14$ $\text{Surface} = 2\pi r(r+h)$ $= 2 \times \frac{22}{7} \times \frac{7}{2} \times (\frac{7}{2} + 14)$ $= 2 \times 11 \times 35/2$ $= 11 \times 35$ $= \boxed{385 \text{ cm}^2}$	$r = 7, h = 7$ $\text{Surface} = 2\pi r(r+h)$ $= 2 \times \frac{22}{7} \times 7 \times (7+7)$ $= 2 \times 22 \times 14$ $= 44 \times 14$ $= \boxed{616 \text{ cm}^2}$

DO THIS

- i. Find the height of cuboid whose base area is 180 cm^2 . and volume is 900 cm^3 .

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

Given Diameter = 140 cm
radius = 70 cm

$$\begin{aligned}\text{Area of the base} &= \pi r^2 \\ &= \frac{22}{7} \times 70 \times 70 \\ &= 22 \times 10 \times 70 \\ &= 22 \times 700 \\ &= 15400 \text{ cm}^2\end{aligned}$$

$$\begin{aligned}\text{Given } \therefore \text{ volume of the cylinder} &= 1.54 \text{ m}^3 \\ &= 1.54 \times 100 \times 100 \times 100 \text{ cm}^3 \\ &= 1540000 \text{ cm}^3\end{aligned}$$

$$\text{Height} = \frac{\text{Volume of the cylinder}}{\text{Area of the base of the cylinder}}$$

$$= \frac{1540000 \text{ cm}^3}{15400 \text{ cm}^2} = 100 \text{ cm}$$
$$= \boxed{1 \text{ m}}$$

\therefore Height of the cylinder = 1 m

3. A milk tank is in the form cylinder whose radius is 1.5 m and length is 7 m . Find the quantity of milk in litres that can be stored in the tank?



Given: $r = 1.5 \text{ m}$, $h = 7 \text{ m}$

$$\text{Capacity} = \pi r^2 h$$

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

$$= 22 \times 1.5 \times 1.5 = 49.5 \text{ m}^3$$

$$= 49.5 \times 1000 \text{ L} = \boxed{49500 \text{ Litre}} \quad (\because 1 \text{ m}^3 = 1000 \text{ L})$$

\therefore The quantity of milk that can be stored in the tank is 49500 Litres

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Mathematics:-
(Worksheet)

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4. Water is pouring into a cuboidal reservoir at the rate of 60 litres per minute. If the volume of reservoir is 108 m^3 , Find the number hours it will take to fill the reservoir.



Given : Volume of reservoir = 108 m^3

$$= 108 \times 1000 \text{ L}$$
$$= 108000 \text{ L}$$

Water poured per minute = 60 L

\therefore Time taken to full the reservoir

$$= \frac{\text{Volume of the reservoir}}{\text{Water poured per minute}}$$

$$= \frac{108000}{60} \text{ m}$$

$$= \frac{108000}{60 \times 60} \text{ hours}$$

$$= \frac{1080}{6 \times 6} = 30 \text{ hours}$$

\therefore The number of hours it will take to fill the reservoir is 30.

(Home work note)

1. a cuboid is of $60 \text{ cm} \times 5 \text{ cm} \times 30 \text{ cm}$. How many small cubes with side 6 cm can be placed in the given cuboid.
2. If each edge of a cube is doubled
 - (i) How many times will its surface area increase?
 - (ii) How many times will its volume increase?