CDS 1 2025

LIVE

MATHS

MENSURATION 3D

CLASS 1

NAVJYOTI SIR

Crack
EXAMS

13 Nov 2024 Live Classes Schedule

8:00AM	13 NOVEMBER 2024 DAILY CURRENT AFFAIRS	RUBY MA'AM
9:00AM	13 NOVEMBER 2024 DAILY DEFENCE UPDATES	DIVYANSHU SIR

SSB INTERVIEW LIVE CLASSES

9:30AM	OVERVIEW OF GROUP TASKS	ANURADHA MA'AM

NDA 1 2025 LIVE CLASSES

11:30AM	GK - MODERN HISTORY - CLASS 4	RUBY MA'AM
1:00PM	CHEMISTRY MCQ - CLASS 6	SHIVANGI MA'AM
4:00PM	MATHS - SEQUENCE & SERIES - CLASS 1	NAVJYOTI SIR
5:30PM	ENGLISH - ONE WORD SUBSTITUTION - CLASS 2	ANURADHA MA'AM

CDS 1 2025 LIVE CLASSES

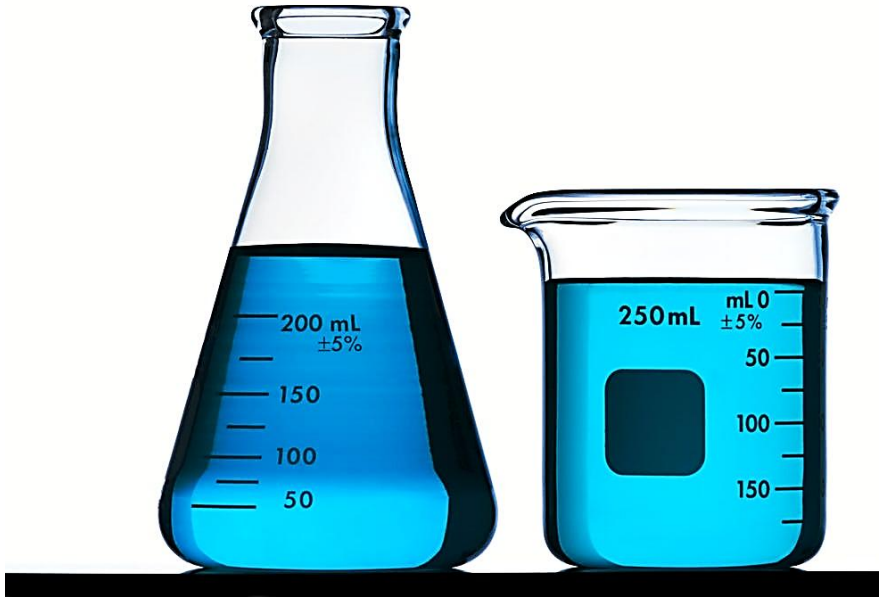
11:30AM	GK - MODERN HISTORY - CLASS 4	RUBY MA'AM
1:00PM	CHEMISTRY MCQ - CLASS 6	SHIVANGI MA'AM
5:30PM	ENGLISH - ONE WORD SUBSTITUTION - CLASS 2	ANURADHA MA'AM
7:00PM	MATHS - MENSURATION 3D - CLASS 1	NAVJYOTI SIR

AFCAT 1 2025 LIVE CLASSES

5:30PM	ENGLISH - ONE WORD SUBSTITUTION - CLASS 2	ANURADHA MA'AM

VOLUME (CAPACITY)

→ space occupied.



UNITS

$1m^3 = 1000$ Liter

$\Rightarrow 1m^3 = 10^3 L$ ✓

$\Rightarrow 1L = 10^{-3}\ m^3$

$1L = 10^{-3} \times 10^6\ cm^3$

$\Rightarrow 1L = 10^3\ cm^3$

$m^3 \xrightarrow{\times 1000} L \xrightarrow{\times 1000} cm^3$

1 km = 1000 m

1 m = 100 cm

1m = 100 cm

1m = 1000 mm

1 decimetre = 10 cm

1 km = 100 decametre

LSA, TSA AND CSA

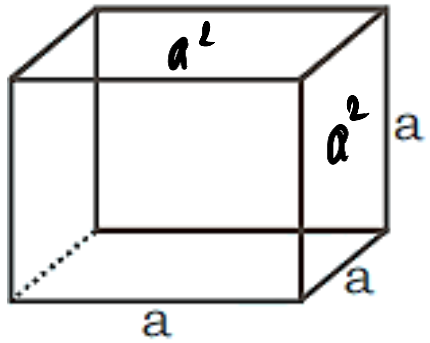
Lateral Surface Area : surrounding area except top and bottom.

(of figures having flat surface)

Curved Surface Area : : Area of only curved surfaces except top and bottom (of figures having curved surfaces like cylinder, cone etc.)

Total Surface Area : Area of all surfaces of a figure (LSA / CSA) + area of bases (top and bottom)

CUBE



edge length

6 faces, 8 corners (vertices), 12 edges,

(F) (V) (E)

$f + v - E = 2$ (polyhedron)

→ TSA = 6 × area of 1 face

$= 6a^2$ (each face is a square)

→ LSA = $4a^2$

→ Volume = $a \times a \times a = a^3$

diagonal = $\sqrt{3}\,a$

QUESTION

Find the total surface area of the cube whose main diagonal length is $16\sqrt{3}$ cm .

Also, find its volume.

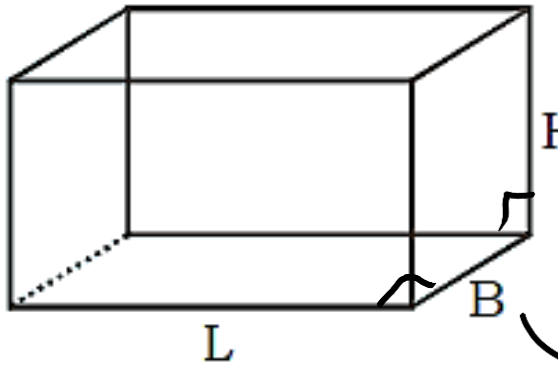
$\sqrt{3}a = 16\sqrt{3}$

$a = 16$

$TSA = 6a^2 = 6 \times 16^2 = 6 \times 256$

$Vol. = a^3 = (16)^3$

CUBOID



Height (depth) (h)

Breadth (width) (b)

Length (l)

Faces = 6

Vertices = 8

Edges = 12

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

$LSA = TSA - 2lb = 2(bh + hl) = 2h(b + l)$

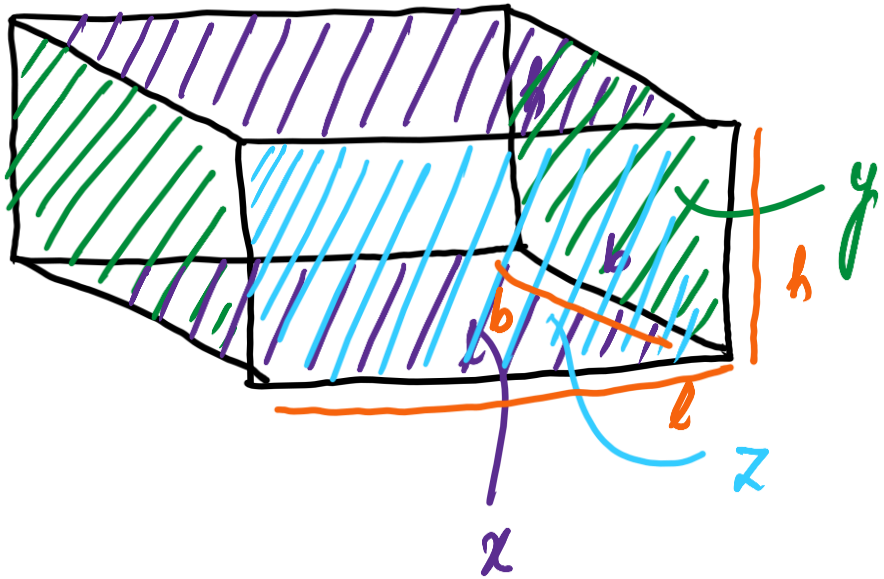
$Diagonal = \sqrt{l^2 + b^2 + h^2}$

$Volume = lbh$

SSBCrack EXAMS

QUESTION

Find the total volume of the cuboid if area of its adjacent faces are x, y and z sq. cm respectively.



$V = lbh$

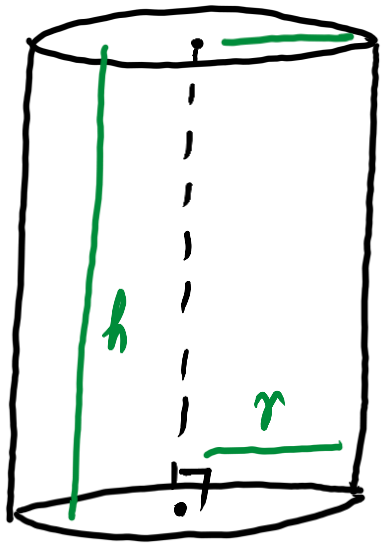
$$\begin{cases} x = lb \\ y = bh \\ z = hl \end{cases}$$

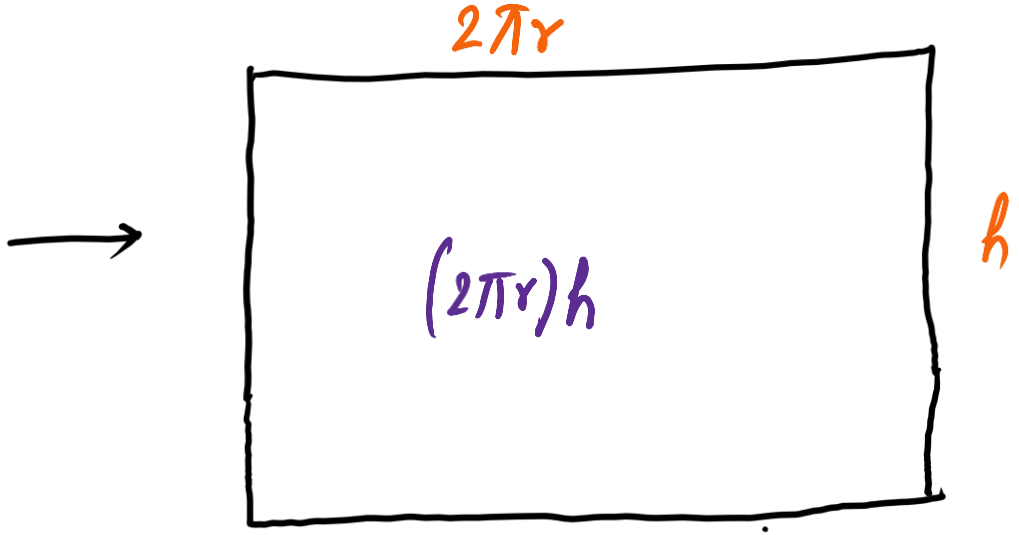
$xyz = (lb)(bh)(hl)$

$xyz = l^2b^2h^2$

$xyz = V^2 \Rightarrow \boxed{V = \sqrt{xyz}}$

CYLINDER





(right circular cylinder)

Volume = area of base × height

$\pi r^2 \times h = \pi r^2 h$

$CSA = 2\pi rh$

TSA = CSA + area of top & bottom circles

$= 2\pi rh + \pi r^2 + \pi r^2 = 2\pi rh + 2\pi r^2$

$TSA = 2\pi r(r+h)$

QUESTION

The radius of a right circular cylinder is 7 cm. Its height is 3 times its radius. Find the TSA , CSA and volume of cylinder.

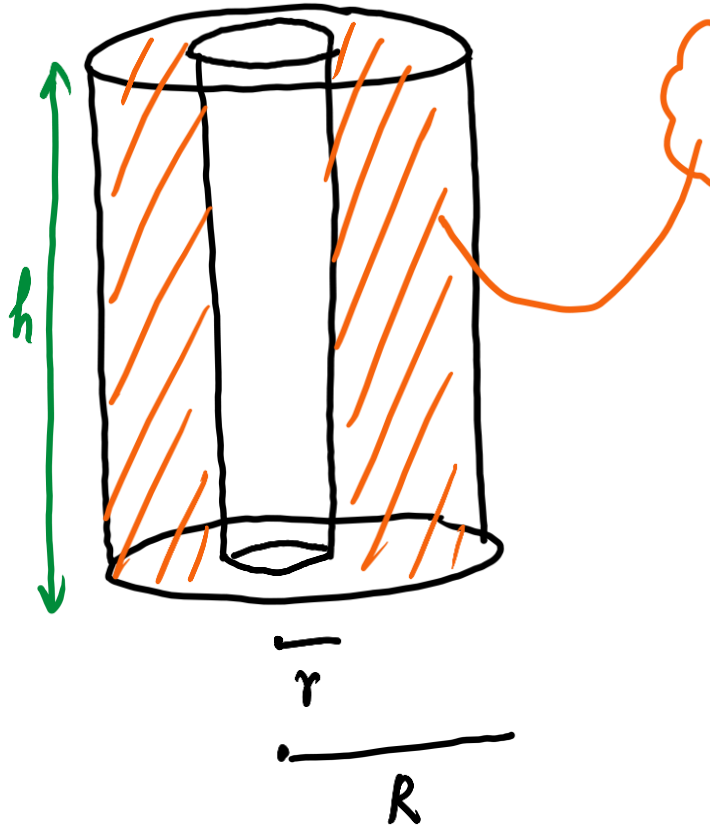
$r = 7\ cm \quad ; \quad h = 3 \times 7 = 21\ cm$

$CSA = 2\pi r h = 2 \times \frac{22}{7} \times 7 \times 21 = 44 \times 21\ cm^2$

$TSA = 2\pi r (r+h) = 44 (21+7) = 44 \times 28\ cm^2$

$Vol. = \pi r^2 h = \frac{22}{7} \times 7 \times 7 \times 21 = 154 \times 21\ cm^3$

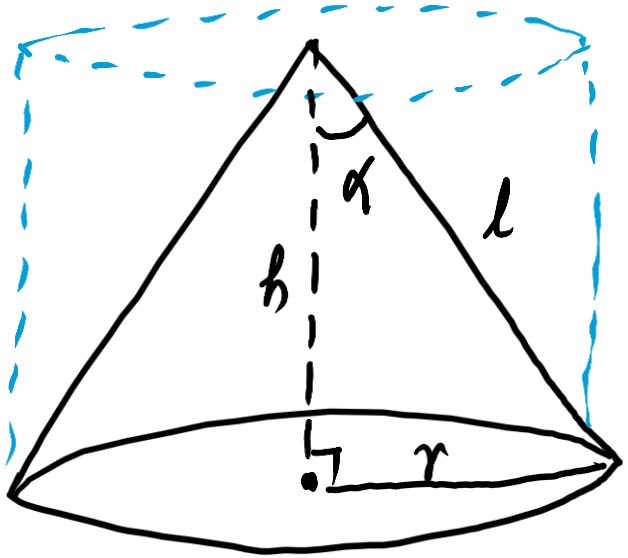
HOLLOW CYLINDER



Volume = Vol. of larger cylinder − Vol. of smaller cylinder

$= \pi R^2 h - \pi r^2 h = \pi h (R^2 - r^2)$

CONE



α – semi-vertical angle

l – slant height

$l^2 = r^2 + h^2 \Rightarrow \boxed{l = \sqrt{r^2 + h^2}}$

$CSA = \pi r l$

$TSA = CSA + \text{area of circle at bottom}$

$= \pi r l + \pi r^2 = \boxed{\pi r (l + r)}$

$\text{Volume} = \frac{1}{3}(\text{volume of cylinder on same } r \text{ and } h) = \boxed{\frac{1}{3}(\pi r^2 h)}$

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