UDAAN

2026

surface area and volume

MATHS LECTURE-4

BY-RITIK SIR

Topics *to be covered*

Aakhiri Class

A

Important Questions Part-03

#Q. A gulabjamun when completely ready for eating contains sugar syrup up to about 30% of its volume. Find approximately how much syrup would be found in 45 gulabjamuns shaped like a cylinder with two hemispherical ends, if the complete length of each of the gulabjamun is 5 cm and its diameter is 2.8 cm.

$V = 100 m^3$

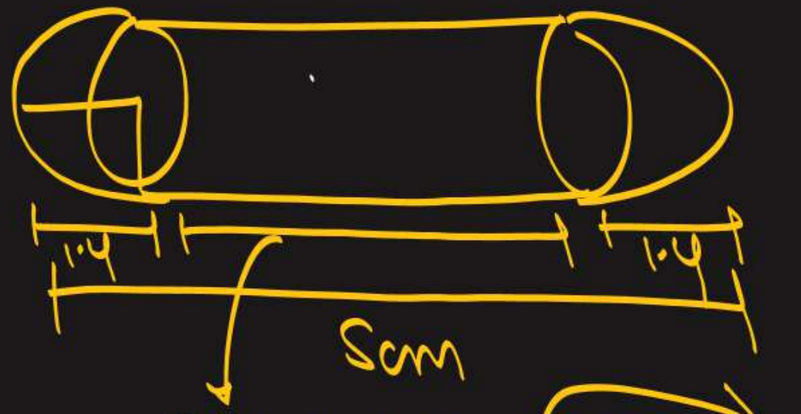
Sugar Syrup = 30% of volume

$= \frac{30}{100} \times 100$

$= 30 m^3$

NCERT

$d = 2.8 cm$, $r = 1.4 cm$



$5 - 1.4 - 1.4 = 2.2 cm$

#Q. A gulabjamun when completely ready for eating contains sugar syrup up to about 30% of its volume. Find approximately how much syrup would be found in 45 gulabjamuns shaped like a cylinder with two hemispherical ends, if the complete length of each of the gulabjamun is 5 cm and its diameter is 2.8 cm.

NCERT

Given:

Radius (r) of cylindrical part = Radius (r) of hemispherical part = $\frac{2.8}{2} = 1.4$ cm

Length of each hemispherical part = Radius of hemispherical part = 1.4 cm

Length (h) of cylindrical part = 5 – 2 × length of hemispherical part

$\Rightarrow 5 - 2 \times 1.4 = 2.2$ cm

Volume of one gulab jamun = Volume of cylindrical part + 2 × Volume of hemispherical part

We know that, volume of a cylinder is $\pi r^2 h$

and volume of a hemisphere is $\frac{2}{3}\pi r^3$

$\therefore$ Volume of one gulab jamun = $\pi r^2 h + 2 \times \frac{2}{3}\pi r^3 = \pi r^2 h + \frac{4}{3}\pi r^3$

$\Rightarrow \pi \times (1.4)^2 \times 2.2 + \frac{4}{3}\pi(1.4)^3$

$\Rightarrow \frac{22}{7} \times 1.4 \times 1.4 \times 2.2 + \frac{4}{3} \times \frac{22}{7} \times 1.4 \times 1.4 \times 1.4 \quad [\because \pi = \frac{22}{7}]$

$\Rightarrow 13.552 + 11.498 = 25.05 \text{ cm}^3$

Hence, volume of one gulab jamun = 25.05 cm^3

So, volume of 45 gulab jamuns = $45 \times 25.05 = 1,127.25 \text{ cm}^3$

Also, given that, volume of sugar syrup = 30% of volume of gulab jamun

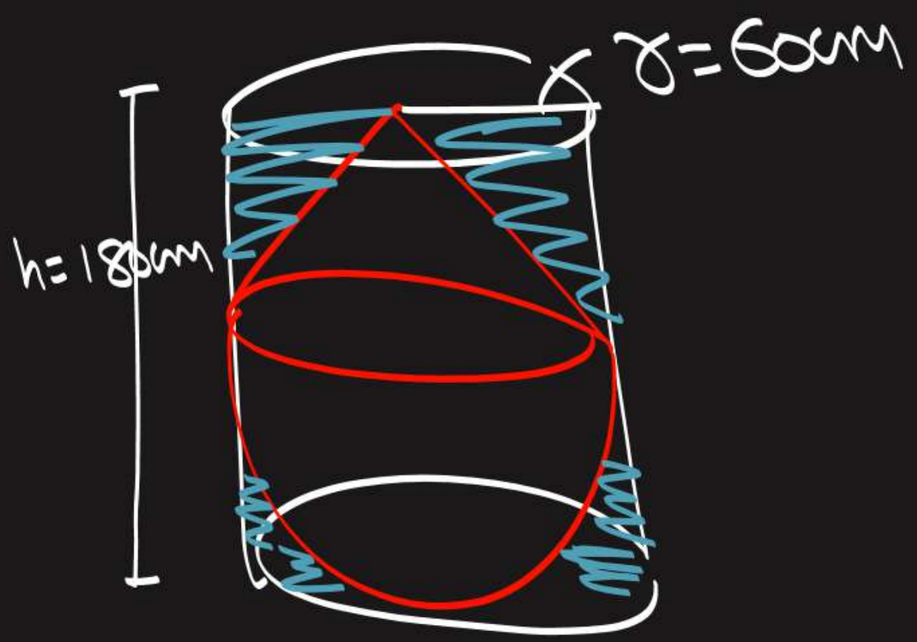
$\therefore$ Volume of the sugar syrup of 45 gulab jamuns = $\frac{30}{100} \times 1,127.25$

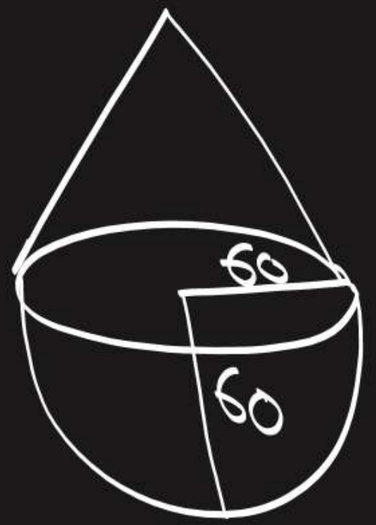
$\Rightarrow 338.17 \text{ cm}^3 \approx 338 \text{ cm}^3$

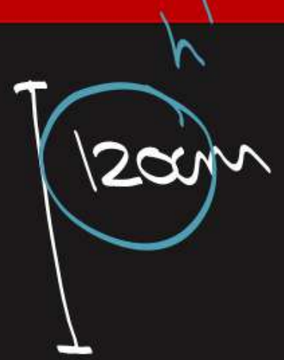
Hence, the amount of syrup in 45 gulab jamuns is approximately 338 cm^3.

#Q. A solid consisting of a right cone standing on a hemisphere is placed upright in a right circular cylinder full of water and touches the bottom. Find the volume of water left in the cylinder, if the radius of the cylinder is 60 cm and its height is 180 cm, the radius of the hemisphere is 60 cm and height of the cone is 120 cm, assuming that the hemisphere and the cone have common base.

NCERT





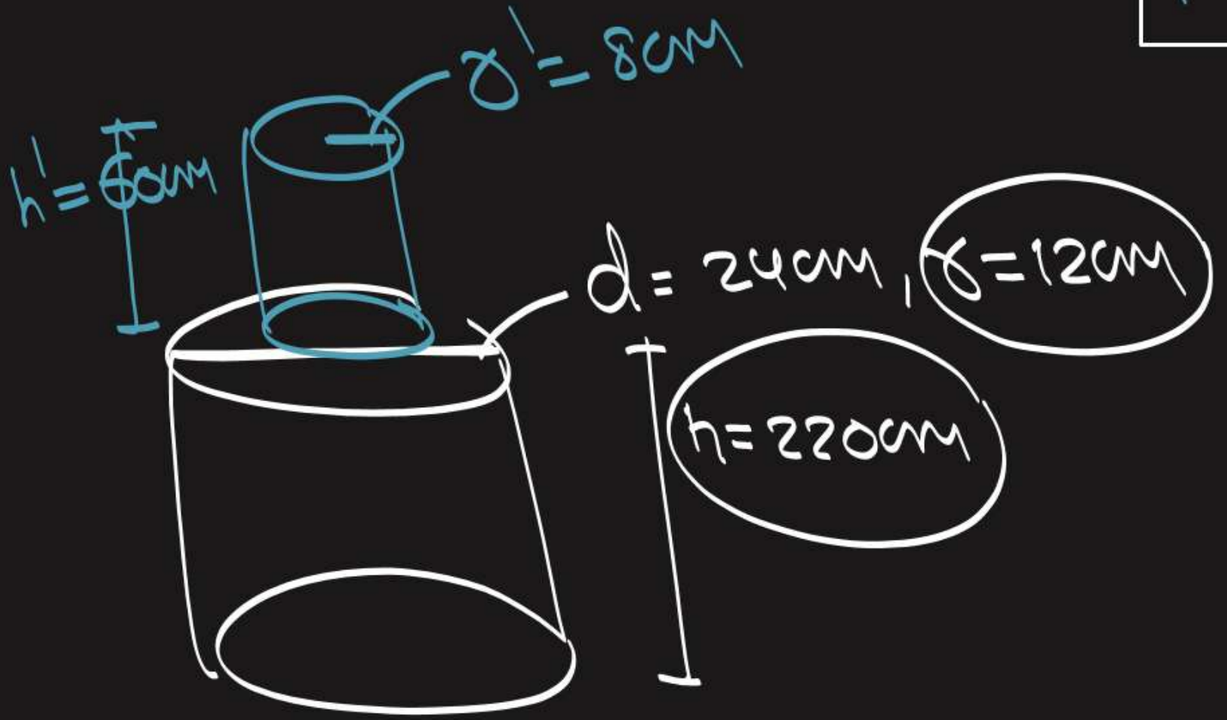


Volume left in the cylinder = $V_{cy} - [V_{cone} + V_{hemi}]$

$= \pi r^2 h - \left[\frac{1}{3}\pi r^2 h' + \frac{2}{3}\pi r^3\right]$

#Q. A solid iron pole consists of a cylinder of height 220 cm and base diameter 24 cm, which is surmounted by another cylinder of height 60 cm and radius 8 cm. Find the mass of the pole, given that 1 cm^3 of iron has approximately 8g mass. (Use $\pi = 3.14$)

$1\,cm^3 = 8g$



$V_{pole} = V_{small\,cy.} + V_{big\,cy.}$

$= \pi r'^2 h' + \pi r^2 h$

$= \pi [r'^2 h' + r^2 h]$

$= \frac{314}{100} [8 \cdot 8 \cdot 60 + 12 \cdot 12 \cdot 220]$

$= \frac{314}{100} [3840 + 31680]$

$$= \frac{314}{100} \times 35520$$

$$= \boxed{111532.8\ cm^3}$$

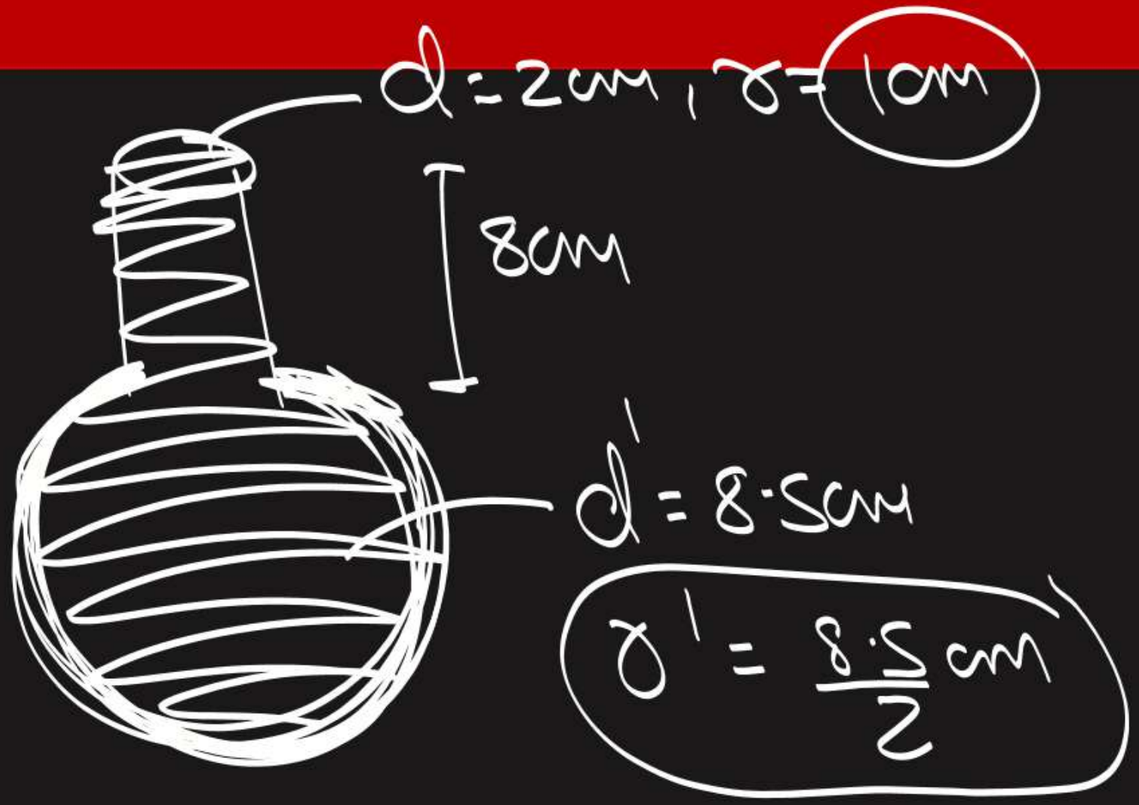
$$1\ cm^3 = 8g$$

$$111532.8\ cm^3 = (111532.8 \times 8)g$$

$$= 892262.4g$$

$$= \boxed{892.2624\ kg}$$

#Q. A spherical glass vessel has a cylindrical neck 8 cm long, 2 cm in diameter; the diameter of the spherical part is 8.5 cm. By measuring the amount of water it holds, a child finds its volume to be 345 cm^3. Check whether she is correct, taking the above as the inside measurements, and $\pi = 3.14$



V. of water this will hold
$= V_{cy} + V_{sphere}$

$= \pi r^2 h + \frac{4}{3}\pi (r')^3$


UDAAN
2025
REAL NUM
MATHS
BY-RITI
PhysicsWallah


UDAAN
Pair of Linear
Two V
MATHS
BY-RI
PhysicsWallah


UDAAN
2026
Trigonometr
MATHS
LECTURE
BY-RITIK SU
PhysicsWallah

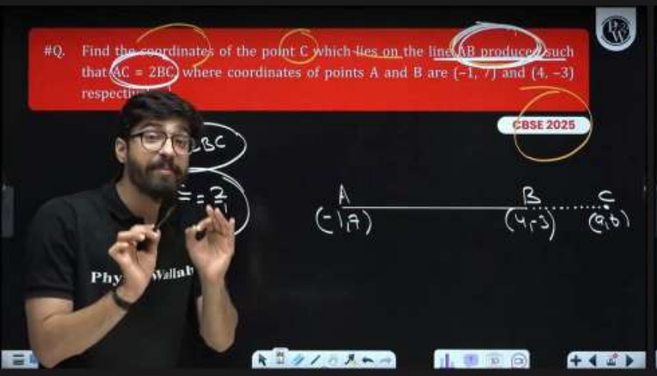

UDAAN
Quadratic
MA
BY-
PhysicsWallah


UDAAN
2026
Some Applications O
MATHS
BY-RITI
PhysicsWallah


UDAAN
Ari
BY-
PhysicsWallah

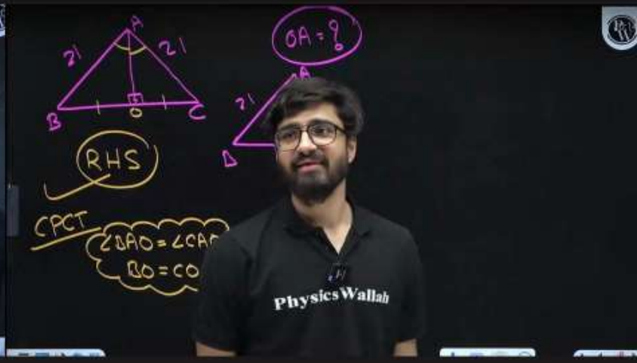

Th nk
Physics Wallah


Thank You Babuaas
Work Hard
m Big
Give Up
ysics Wallah


#Q. Find the coordinates of the point C which lies on the line AB produced such that AC = 2BC, where coordinates of points A and B are (−1, 7) and (4, −3) respectively.
CBSE 2025
A
B
C
(-1,7)
(4,-3)
(9,-13)


UDAAN
Circles
MATHS
LECTURE
BY-RITIK SU
Physics Wallah


UDAAN
2026
Probabi
MATHS
LEC
BY-RITIK
ics Wallah


OA = ?
21
21
RHS
CPCT
BO = CO
PhysicsWallah

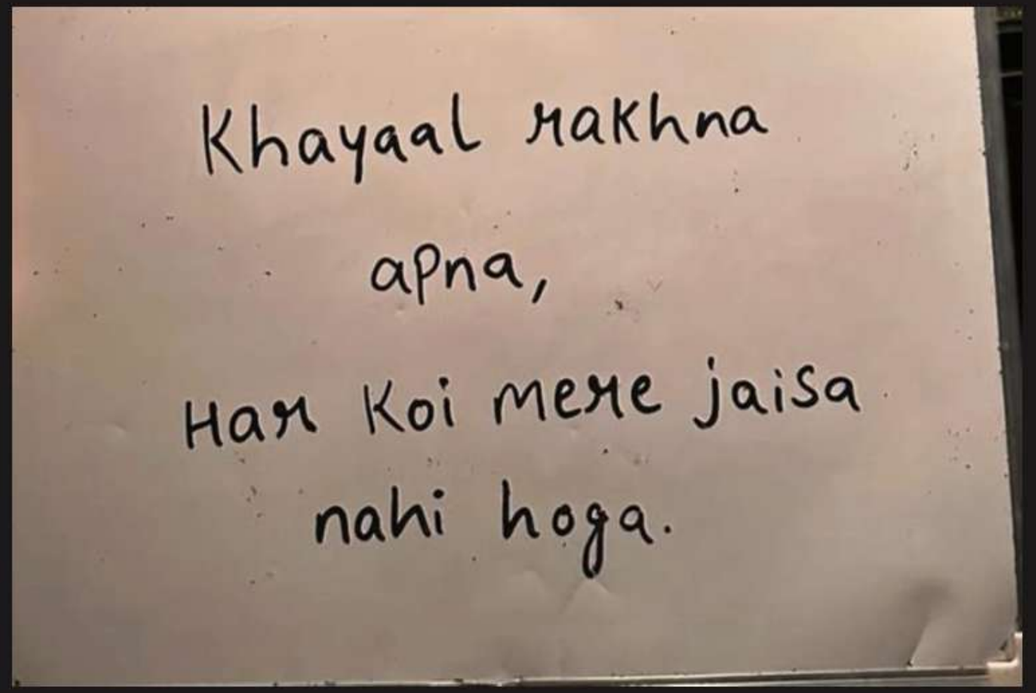
Consistency >>>> Motivation.

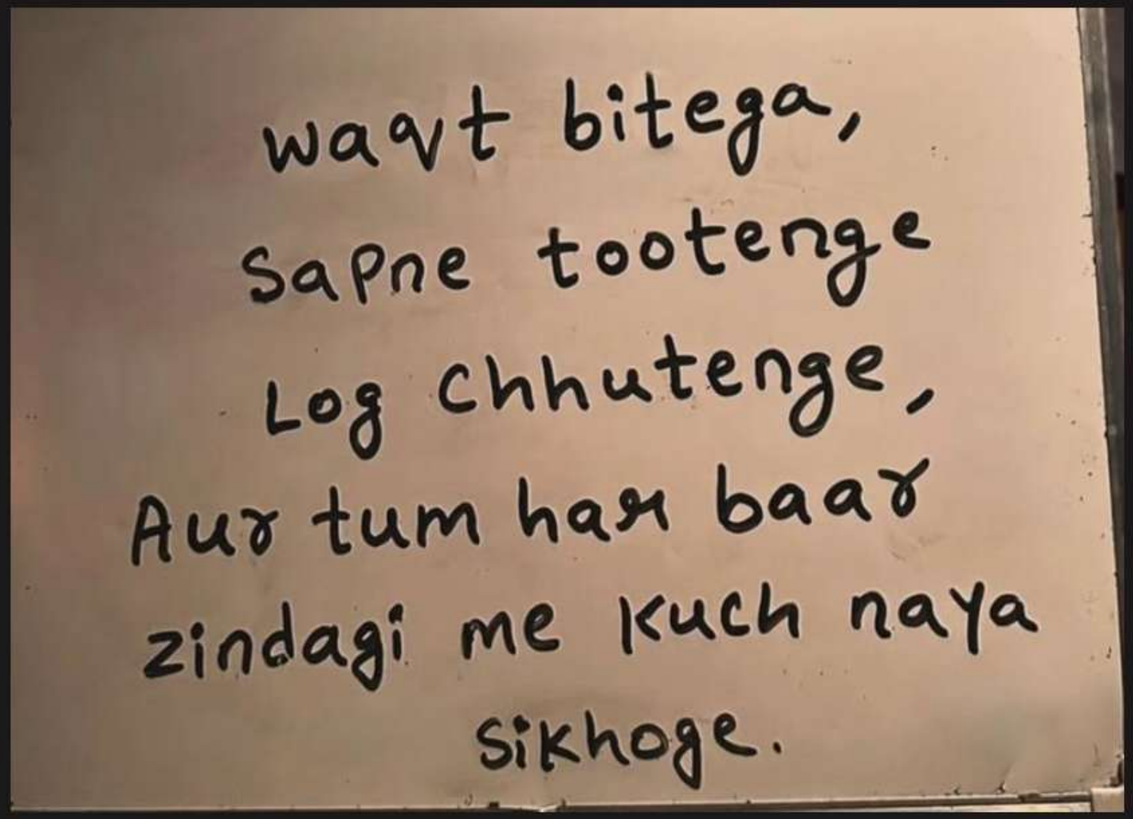
Class 11th Uday

Class 11th Arjung JEE, NEET

It started from "tumhara nam kiya hai ?"
and it ends with " Bhul Mat Jana yaara "


"Agar agla janam mile toh mein
firse tera dost ban na chahunga!


Khayaal rakhna
apna,
Har Koi mere jaisa
nahi hoga.


waqt bitega,
Sapne tootenge
Log chhutenge,
Aur tum har baar
zindagi me kuch naya
Sikhoge.


BABUAA DICTIONARY
•EPLS •GTSG!! •CH!
•RHEH Aree ae faguniyaa
Work Hard
Dream Big
Never Give Up
•Chhapadgan ju
•SOCHNA SEEKHNA HAI
•RATTNAA NAHI HAI
~Mai hun aap sabhi ka mathematics mentor, aapka dost aur aapka bada bhai

I want to study because I have big dreams. I want to have a good job, earn money, and help my family. I want to be proud of myself. I want to speak English well, travel to many countries, and meet new people. I know that education is the key to a better life. Sometimes, I feel tired. Sometimes, I feel lazy.

Sometimes, I look at my books and feel bored. But I tell myself:
"Keep going."
Even if I study only 30 minutes today, it's better than nothing.
Even if I make mistakes, I will learn from them. I don't need to be perfect. I just need to try. Step by step, day by day -I will grow.

When I feel sad, I remember why I started. I remember my goals. I take a deep breath. I listen to music. I smile and begin again. Learning is not easy, but it is worth it. Every new word I learn is a small victory. Every page I read brings me closer to my dreams.

I don't compare myself to others.

I only compare myself to who I was yesterday.

I believe in myself.

I know I can do it.

And one day, I will look back and say: "Yes, I did it. I didn't give up."

So today, I choose to keep going..

Because my future depends on what I do now.

And I want that future to be bright.


Kitna royega Chhapadganju yarr..Mai kahi jaa thodi raha hun..Mai humesha tum sabh key sath hun..


WORK HARD
DREAM BIG
NEVER GIVE UP


Thank You Babuaas ❤️🫂
Work Hard
Dream Big
Never Give Up
PW