



Topic-Volume
Surface Area
Lecture-01
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Zinedu hai to...possible hai!

CIRCLE

Diameter = d

Radius = r

Relation between radius and diameter

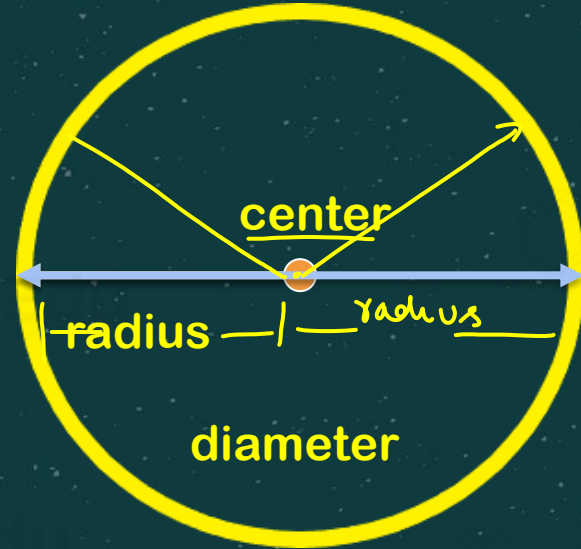
$$\text{diameter} = \text{radius} + \text{radius}$$

$$d = r + r$$

$$d = 2r$$

$$d = 2 \times \text{radius}$$

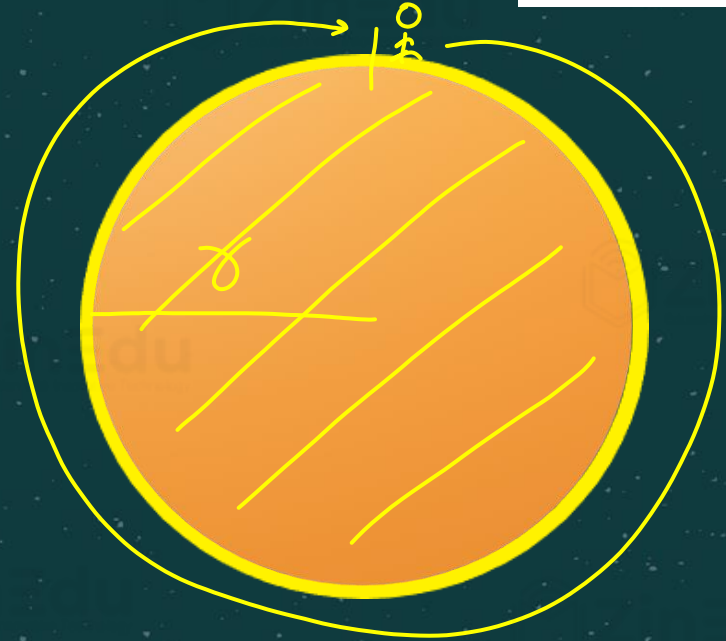
$$r = \frac{d}{2}$$



CIRCLE

Circumference of Circle = $2\pi r$

Area of Circle = πr^2



Q- In a circle diameter is 14 cm , Find the circumference and area of circle

Given -

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

$$r = \frac{d}{2} = \frac{14}{2}$$

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

$$\pi = \frac{22}{7}$$

$$\textcircled{1} \text{ Circumference of circle} = 2\pi r$$

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

$$= 2 \times 22$$

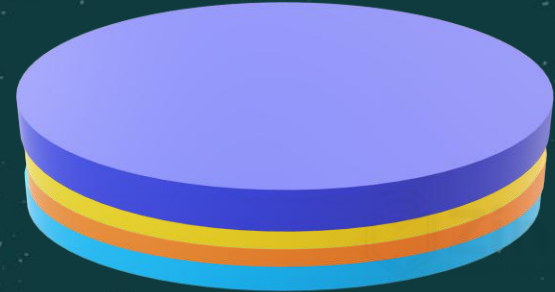
$$= 44 \text{ cm}$$

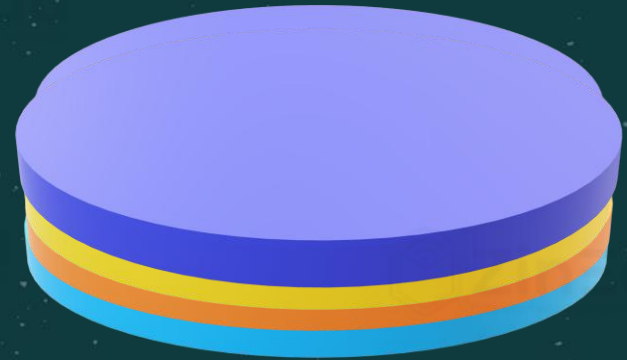
$$\textcircled{11} \text{ Area of circle} = \pi r^2$$

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

$$= 22 \times 7 = \underline{\underline{154 \text{ cm}^2}}$$







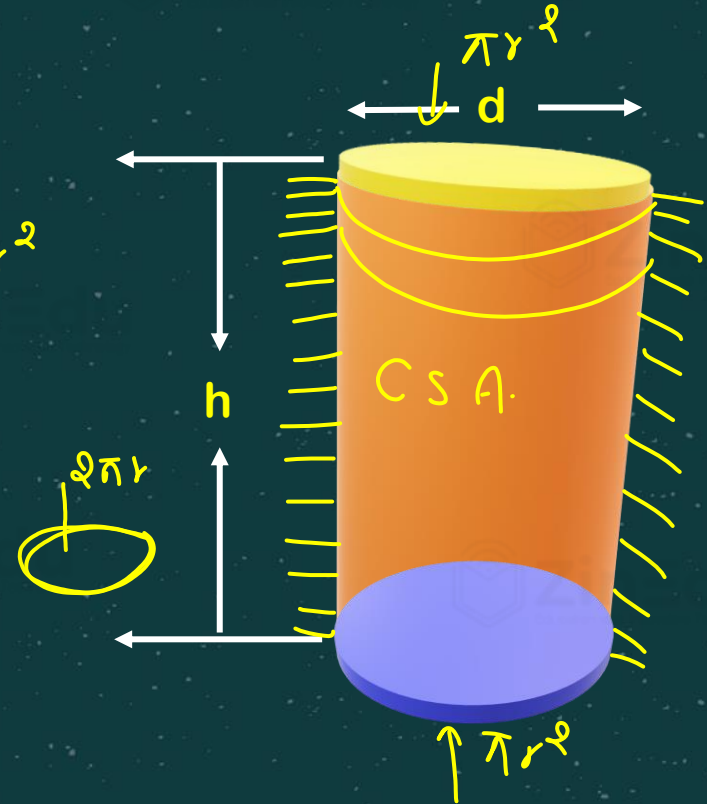
CYLINDER

① Curved Surface Area = $2\pi r \times h$

Total Surface Area = $2\pi r h + \pi r^2 + \pi r^2$

T S A
 $= 2\pi r(h) + 2\pi r^2$
 $= 2\pi r(h + r)$

Volume of Cylinder = $\pi r^2 \times h$



Q- A closed cylindrical, the radius of which is 7 cm and height 10 cm is to be made out of a sheet. Find


(i) Curved Surface Area

(ii) The Area of metal Sheet Required.


(iii) Volume of Cylinder

Sol- $r = 7 \text{ cm}$
 $h = 10 \text{ cm}$

(i) $CS.A = 2\pi r h$
 $= 2 \times \frac{22}{7} \times 7 \times 10$
 $= 440 \text{ cm}^2$



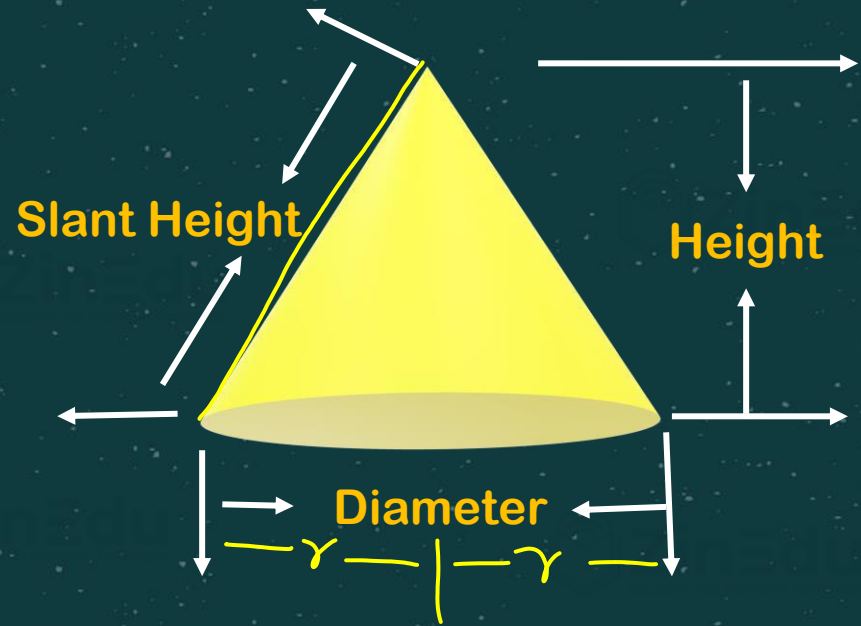
(ii) $TSA \text{ of Cylinder} = 2\pi r(h+r)$
 $= 2 \times \frac{22}{7} \times 7 \times (10+7)$
 $= 44 \times 17$
 $= 748 \text{ cm}^2$



(iii) Volume of Cylinder $= \pi r^2 h$
 $= \frac{22}{7} \times 7 \times 7 \times 10$
 $= 154 \times 10$
 $= \underline{1540 \text{ cm}^3}$

Cone

Height = H
Slant Height = L



Cone

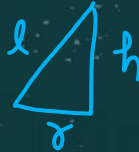
① Curved Surface Area = $\pi r l$

② Total Surface Area = $\pi r l + \pi r^2$
 $= \pi r (l + r)$

③

$$l^2 = r^2 + h^2$$

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



④

Volume Of cone = $\frac{1}{3} \pi r^2 h$



Q- In a cone radius 7 cm and height 11 cm , Find the Curved surface area and volume of the cone.

Given = $r = 7 \text{ cm}$
 $h = 11 \text{ cm}$

① CSA of cone = $\pi r l$

$$= \frac{22}{7} \times 7 \times \sqrt{170}$$

$$= \underline{22 \sqrt{170} \text{ cm}^2}$$

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

$$l = \sqrt{(7)^2 + (11)^2}$$

$$l = \sqrt{49 + 121}$$

$$l = \sqrt{170}$$

$$\frac{242}{7} = 169 \frac{4}{7}$$

② Volume of cone = $\frac{1}{3} \pi r^2 h = \frac{1}{3} \times \frac{22}{7} \times 7 \times 7 \times 11$

$$= \frac{22 \times 7 \times 11}{3} = \underline{\underline{\frac{1694}{3} \text{ cm}^3}}$$