

2<sup>a</sup>  
SÉRIE

**CANAL SEDUC-PI2**



PROFESSOR (A):



DISCIPLINA:



CONTEÚDO:



TEMA GERADOR:



DATA:

**ALEXANDRO  
KESLLER**

**MATEMÁTICA**

**GEOMETRIA ESPACIAL  
II CONES-CILINDROS-  
ESFERAS**

**ARTE  
NA ESCOLA**

**30.10.2019**

# ROTEIRO DE AULA

## GEOMETRIA ESPACIAL II

### ➤ Cilindro

Cálculo da área e volume

### ➤ Cone

Cálculo da área e volume

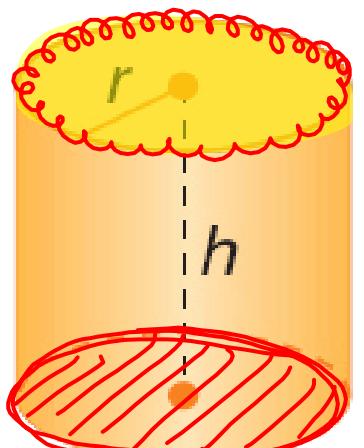
### ➤ Esfera

Cálculo da área e volume

## Área da superfície (Total)

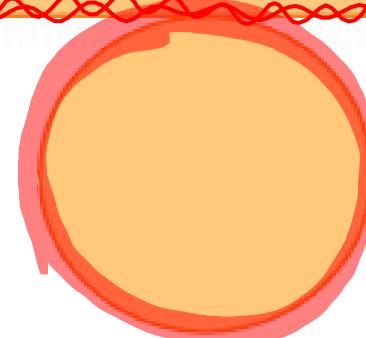
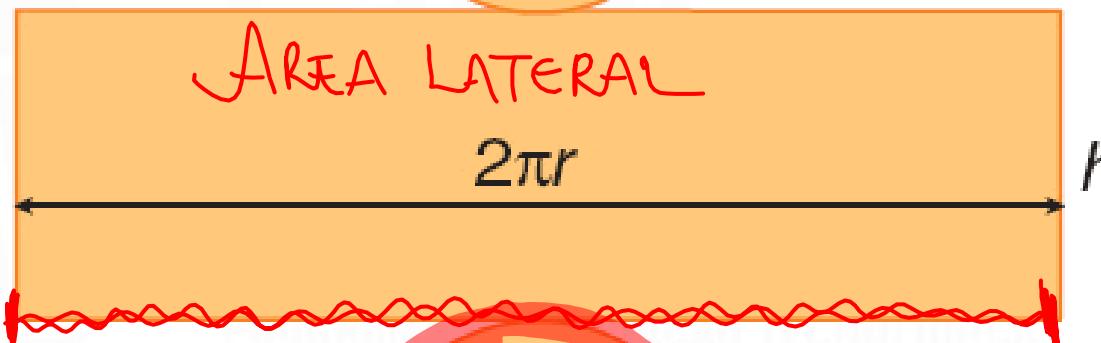
$$\Rightarrow A_T = 2 \cdot A_{\text{BASE}} + A_L$$

$$A_B = \pi \cdot R^2$$



$$A_{\text{BASE}} = \pi \cdot R^2$$

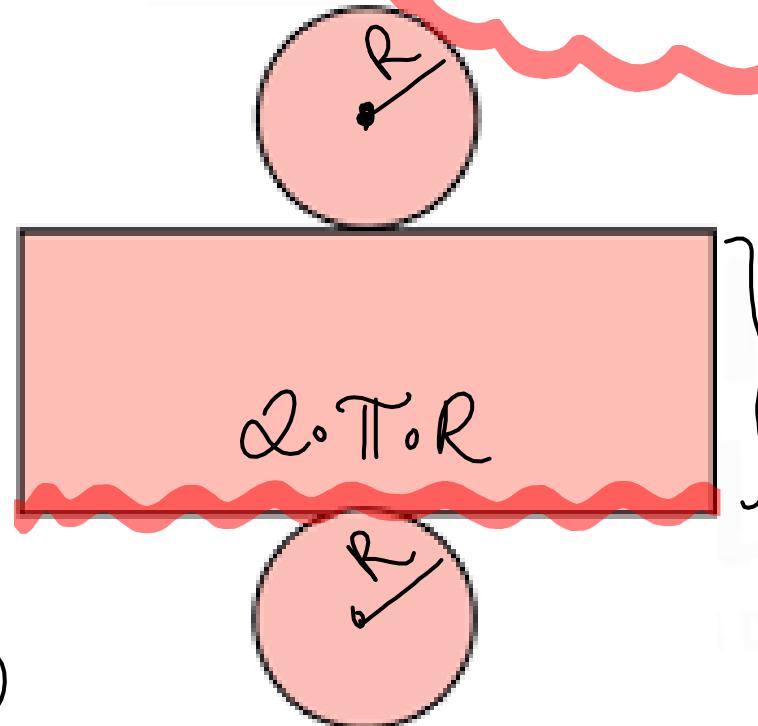
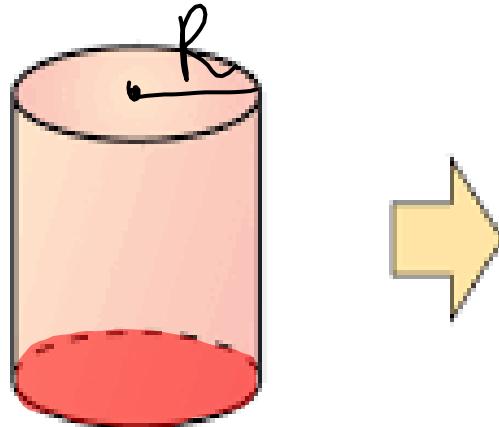
$$C = 2 \cdot \pi \cdot R$$



$$C = 2 \cdot \pi \cdot R$$

## Área Base ( $A_b$ )


$$A_B = \pi \cdot R^2$$



BASE = CÍRCULO

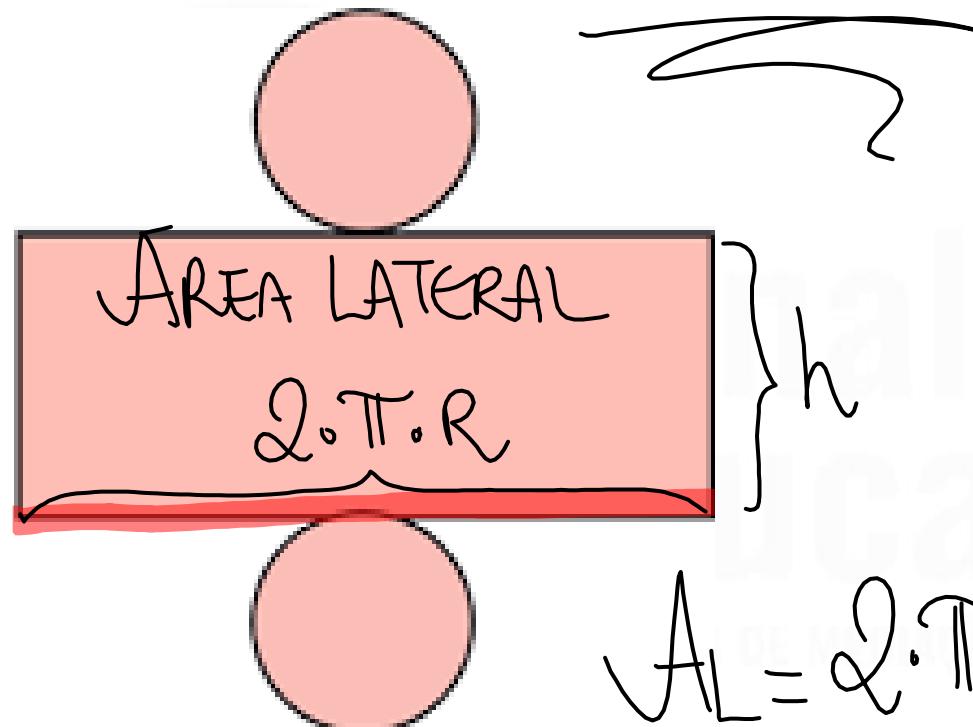
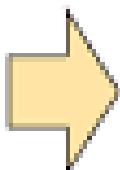
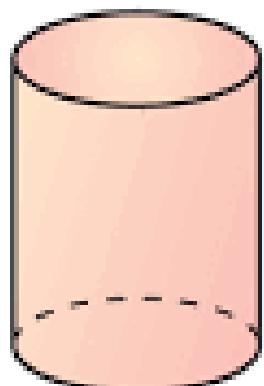
$$\sqrt{b} = \pi \cdot R^2$$

$$A_{LATERAL} = 2\pi \cdot R \cdot h$$

Base      altura  
do  
Retângulo

Área Lateral ( $A_L$ )

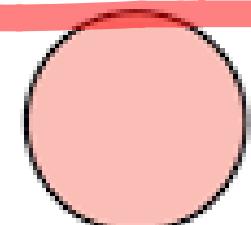
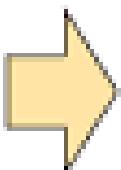
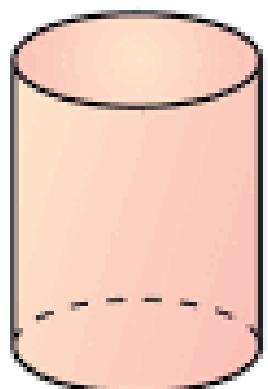
$$\Rightarrow A_L = 2 \cdot \pi \cdot R \cdot h$$



$$A_L = \underbrace{2 \cdot \pi \cdot R}_{\text{Base do Retângulo}} \cdot \underbrace{h}_{\text{Altura}}$$

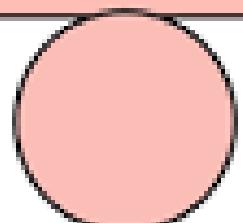
## Área Total (A<sub>t</sub>)

$$\Rightarrow A_t = 2 \cdot A_B + A_L$$



$$A_B = \pi \cdot R^2$$

$$A_L = 2 \cdot \pi \cdot R \cdot h$$



$$A_{TOTAL} = \underbrace{2 \cdot \pi \cdot R^2}_{\text{ÁREA DA BASE}} + \underbrace{2 \cdot \pi \cdot R \cdot h}_{\text{ÁREA LATERAL}}$$

# Volume (V)



$$V_{CILINDRO} = A_{BASÉ} \times \text{ALTURA}$$

$$V = \pi \cdot R^2 \cdot h$$

# Áreas e Volumes ( Cilindro)

Área Base( $A_b$ )

$$A_b = \pi R^2$$

Área Lateral( $A_L$ )

$$A_L = 2\pi Rh$$

Área Total( $A_t$ )

$$A_t = 2A_b + A_L$$

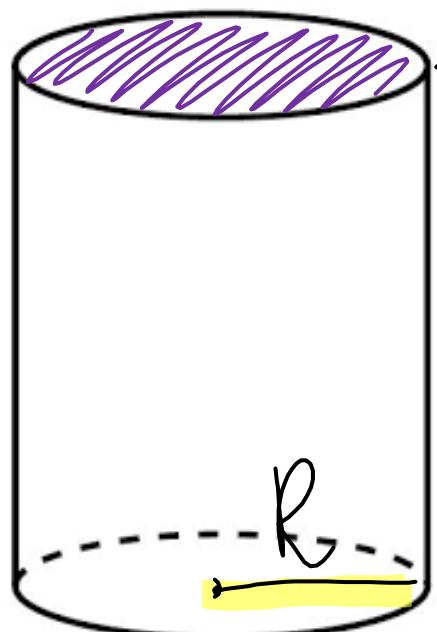
Volume( $V$ )

$$V = \pi R^2 \cdot h$$

$$A_L = 2\pi \cdot R \cdot h$$

## EXERCÍCIO 1

A área lateral de um cilindro circular reto é  $300\pi \text{ cm}^2$ . Dado que a altura desse cilindro é 15 cm, calcule seu volume.



$$V = A_B \cdot h$$

$$V = 100\pi \cdot 15$$

15cm

$$A_B = \pi \cdot 10^2$$

$$A_B = 100\pi \text{ cm}^2$$

$$A_L = 300\pi$$

$$2\pi \cdot R \cdot 15 = 300\pi$$

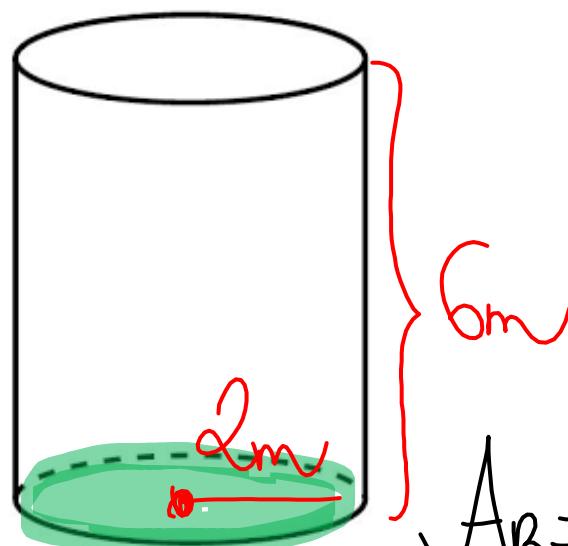
$$30\pi \cdot R = 300\pi$$

$$R = \frac{300\pi}{30\pi} = 10 \text{ cm}$$

$$1m^3 \Rightarrow 1000l$$

## EXERCÍCIO 2

Um reservatório em formato cilíndrico possui 6 metros de altura e raio da base igual a 2 metros. Determine o volume e a capacidade desse reservatório em litros.



$$V = A_B \cdot h$$

$$V = 4\pi \cdot 6$$

$$A_B = \pi R^2$$

$$A_B = \pi \cdot 2^2 \Rightarrow 4\pi m^2$$

$$V = 24\pi m^3$$

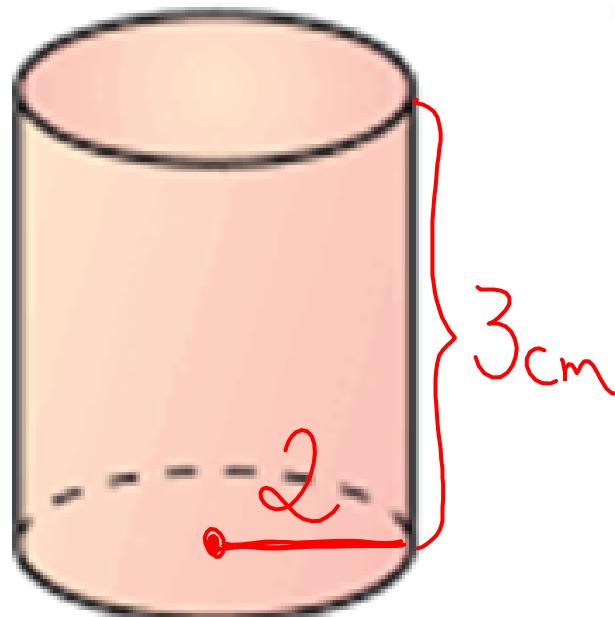
$$\text{CAPACIDADE} \Rightarrow 24000\pi l$$

?

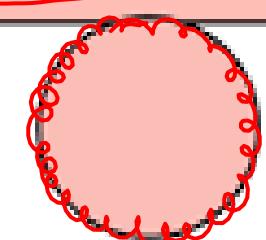
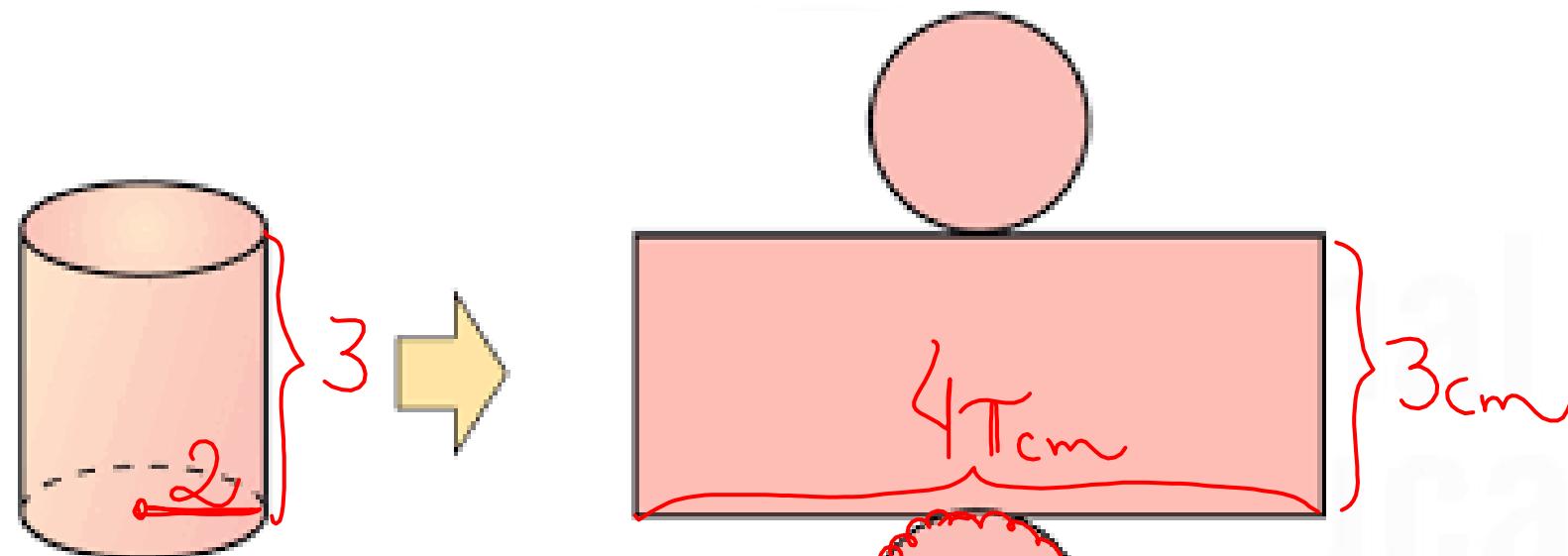
6

## EXERCÍCIO 3

Seja um cilindro circular reto de raio igual a 2 cm e altura 3 cm.  
Calcular a área lateral, área total e o seu volume.



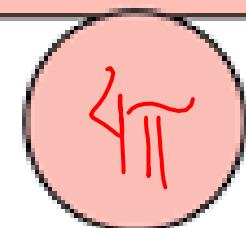
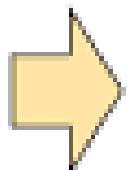
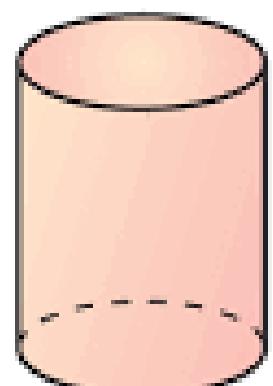
Área Lateral( $A_L$ )  $\Rightarrow A_L = 4\pi \cdot 3 = \underline{\underline{12\pi \text{ cm}^2}}$



$$C = 2 \cdot \pi \cdot R$$

$$\begin{aligned} C &= 2 \cdot \pi \cdot 2 \\ C &= 4\pi \text{ cm} \end{aligned}$$

# Área Total (A<sub>t</sub>)



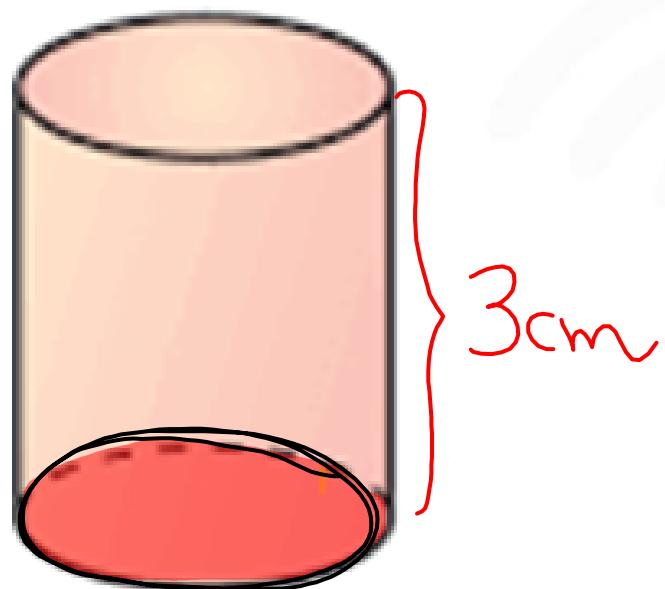
$$A_{\bullet} = \pi \cdot R^2$$

$$A_{\bullet} = \pi \cdot 2^2 = 4$$

$$A_{\bullet} = \underline{\underline{4\pi \text{ cm}^2}}$$

$$A_{\text{TOTAL}} = 4\pi + 4\pi + 12\pi = \boxed{20\pi \text{ cm}^2}$$

# Volume(V)



$$V = A_B \cdot h$$

$$V = 4\pi \cdot 3$$

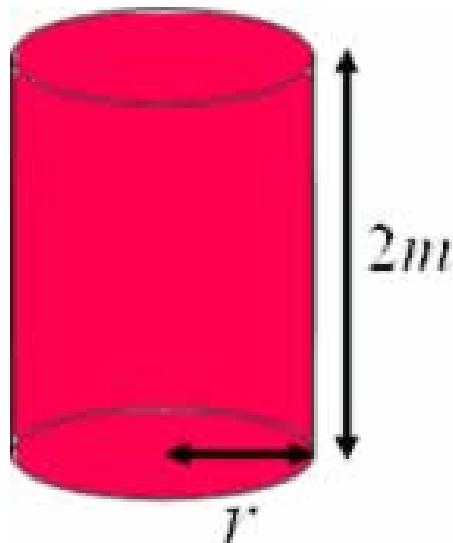
$$V = 12\pi \text{ cm}^3$$

$$A_B = 4\pi \text{ cm}^2$$

Q1 CASA

## EXERCÍCIO 4

A figura indica o tambor cilíndrico de um aquecedor solar com capacidade de 1 570 litros.



Sabendo que 1 000 litros de água ocupam um volume de  $1 \text{ m}^3$  e adotado  $\pi = 3,14$ , determine a medida do raio  $r$  do cilindro.