

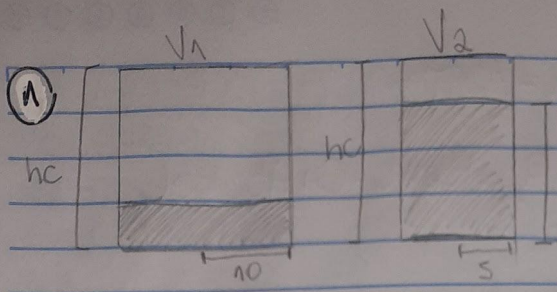
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CTII348

Cilindros e Pirâmides

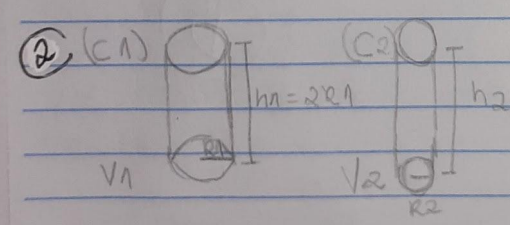
Cilindros

1



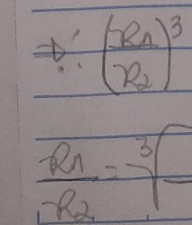
$V_1 = \pi R_1^2 h_c$
 $V_2 = \pi R_2^2 h_c$
 $V_1 = V_2$
 $\pi 10^2 h_c = \pi 5^2 h_c$
 $100 h_c = 25 h_c$
 $h_c = 40$
 $h = 40$

2



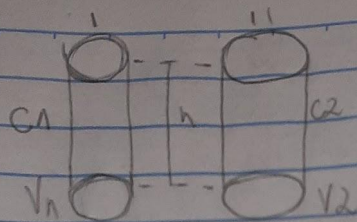
$V_1 = \pi R_1^2 h_1$
 $V_2 = \pi R_2^2 h_2$
 $V_1 = V_2$
 $\pi R_1^2 h_1 = \pi R_2^2 h_2$
 $R_1^2 h_1 = R_2^2 h_2$
 $R_1^2 \cdot 2R_1 = R_2^2 \cdot 16R_2$
 $2R_1^3 = 16R_2^3$
 $R_1^3 = 8R_2^3$
 $R_1 = 2R_2$

3



$V = \pi R^2 h$
 $V = 100\pi$
 $\pi R^2 h = 100\pi$
 $R^2 h = 100$
 $R^2 = \frac{100}{h}$
 $R = \sqrt{\frac{100}{h}}$
 $R = \frac{10}{\sqrt{h}}$
 $R = 2$
 $h = 25$

③



$$V_1 = 16\pi$$

$$C_2 A_{\text{lateral}} = C_1 A_{\text{total}}$$

$$h = ?$$

$$C_2 A_{\text{lateral}} = C_1 A_{\text{total}}$$

$$2\pi r_2 h = 2\pi r_1 (r_1 + h)$$

$$2\pi \cdot 3 \cdot r_2 h = 2\pi r_1 (r_1 + h)$$

$$3h = 2r_1 (r_1 + h)$$

$$r_1$$

$$3h = 2(r_1 + h)$$

$$3h = 2r_1 + 2h$$

$$3h - 2h = 2r_1$$

$$h = 2r_1$$

$$h = 2r_1$$

$$h = 2 \cdot 2$$

$$h = 4$$

$$V_1 = 16\pi$$

$$\pi r^2 h = 16\pi$$

$$r^2 h = 16$$

$$\pi$$

$$r^2 h = 16$$

$$r^2 \cdot 2r = 16$$

$$r^3 = 16/2$$

$$r^3 = 8$$

$$r = \sqrt[3]{8}$$

$$r = 2$$

$$r = 2$$

8	2
4	2
2	2
1	

D

④ $V = \pi \cdot r^2 \cdot h$ $h = 4$

AUMENTAR O RAIO DA BASE E A ALTURA

$$r = (r + 12)^2$$

$$h = (4 + 12)$$

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

$$\pi (r + 12)^2 \cdot 4 = \pi \cdot r^2 \cdot (4 + 12)$$

$$\pi (r^2 + 24r + 144) \cdot 4 = \pi r^2 \cdot 16$$

$$4(r^2 + 24r + 144) = 16r^2$$

$$4r^2 + 96r + 576 = 16r^2$$

$$4r^2 - 16r^2 + 96r + 576 = 0$$

$$-12R^2 + 96R + 576 = 0 \quad \times (-1)$$

$$12R^2 - 96R - 576 = 0 \quad : 12$$

$$R^2 - 8R - 48 = 0$$

$$R = \frac{8 \pm \sqrt{256}}{2} = \frac{8 \pm 16}{2}$$

$$\Delta = (-8)^2 - 4 \cdot 1 \cdot (-48)$$

$$\Delta = 64 + 192$$

$$\Delta = 256$$

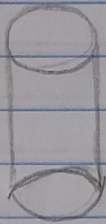
$$R_1 = \frac{8 + 16}{2} = 2\frac{1}{2} = 12 \text{ cm}$$

(A)

$$R_2 = \frac{8 - 16}{2} = -\frac{8}{2} = -4 \text{ (n\u00e3 conv\u00e9m)}$$

Orais \u00e9 12 cm

(5)



$$R_1 = 20 \text{ cm}$$

$$0,8 \text{ mm} = 0,08 \text{ cm}$$

$$\pi = 3,14$$

$$V_d = \pi R^2 h$$

$$V_d = \pi (20)^2 \cdot 0,08$$

$$V_d = \pi \cdot 400 \cdot 0,08$$

$$V_d = 32\pi$$

$$V_p = V_d$$

$$V_p = 32\pi$$

$$V_p = 32 \cdot 3,14$$

$$V_p = 100,48 \text{ cm}^3$$

$$V_p \approx 100,5 \text{ cm}^3$$

(B)

Pirâmides

data

S T Q Q S S D

① $a = x \text{ cm}$

$b = 2x \text{ cm}$

$h = 8 \text{ cm}$

Volume = 48 cm^3

Volume = $\frac{1}{3} \cdot \text{Volume}_{\text{prisma}}$

Volume = $\frac{1}{3} \cdot \text{Abase} \cdot h$

Volume = $\frac{1}{3} \cdot a \cdot b \cdot h$

$48 = \frac{1}{3} \cdot x \cdot 2x \cdot 8$

$48 \cdot 3 = 1 \cdot 2x^2 \cdot 8$

$144 = 2x^2 \cdot 8$

$144 = 16x^2$

$144/16 = x^2$

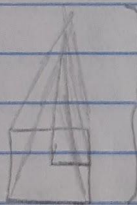
$x^2 = 9$

$x = \sqrt{9}$

$x = 3 \text{ cm}$

(C)

②



$b_l = 80 \text{ mm}$

$a = 40 \text{ mm}$

$h = 30 \text{ mm}$

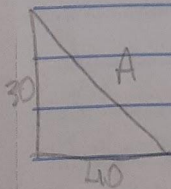
$A = ?$

Abase = ?

Alateral =

$A_{\text{total}} = A_{\text{base}} + A_{\text{lateral}}$

Apotema da pirâmide



$A^2 = h^2 + a^2$

$A^2 = 30^2 + 40^2$

$A^2 = 900 + 1600$

$A = \sqrt{2500}$

$A = 50 \text{ mm}$

data

S Y Q Q S S D

$$A_{base} = l^2$$

$$A_{base} = 80^2$$

$$A_{base} = 6400 \text{ mm}^2$$

$$A_{lateral} \rightarrow 4 \text{ tring} \rightarrow 4 l \cdot A/2$$

$$A_{lateral} = 4 \cdot 80 \cdot 50$$

$$A_{lateral} = 2 \cdot 80 \cdot 50$$

$$A_{lateral} = 8000 \text{ mm}^2$$

$$A_{total} = A_{base} + A_{lateral}$$

$$A_{total} = 6400 + 8000$$

$$A_{total} = 14400$$

(E)

4. Aresta Base = lado = 2 cm

$$h = b\sqrt{3} \text{ cm}$$

$$\text{Volume} = ?$$

$$\text{Volume} = \frac{1}{3} \text{ Volume prisma}$$

$$\text{Volume} = \frac{1}{3} \cdot \text{Abase} \cdot h$$

$$\text{Volume} = \frac{1}{3} \cdot \frac{3a^2\sqrt{3}}{2} \cdot b\sqrt{3}$$

$$\text{Abase} = \frac{3 \cdot 2^2 \sqrt{3}}{2}$$

$$\text{Abase} = \frac{3a^2\sqrt{3}}{2}$$

$$\text{Volume} = \frac{1 \cdot 3a^2\sqrt{3} \cdot \sqrt{3}b}{3 \cdot 2}$$

$$\text{Volume} = \frac{3a^2}{2} b$$

$$\text{Volume} = \frac{3a^2b}{2} \text{ cm}^3$$

(A)

5. Aresta Base = lado = 4 cm

$$h = 6\sqrt{3} \text{ cm}$$

$$\text{Volume} = ?$$

$$\text{Volume} = \frac{1}{3} \cdot \text{Volume prisma}$$

$$\text{Volume} = \frac{1}{3} \cdot \text{Abase} \cdot h$$

$$\text{Volume} = \frac{1}{3} \cdot 24\sqrt{3} \cdot 6\sqrt{3}$$

$$\text{Volume} = \frac{1 \cdot 24 \cdot 6 \cdot \sqrt{3} \cdot \sqrt{3}}{3}$$

$$\text{Abase} = \frac{3 \cdot 4^2 \sqrt{3}}{2}$$

$$\text{Abase} = \frac{3 \cdot 16 \sqrt{3}}{2}$$

$$\text{Abase} = \frac{3 \cdot 16 \sqrt{3}}{2}$$

$$\text{Volume} = \frac{24 \cdot 6 \cdot 3}{1}$$

$$\text{Volume} = 24 \cdot 6$$

$$\text{Volume} = 144 \text{ cm}^3$$

$$\text{Abase} = 24\sqrt{3} \text{ cm}^2$$

(D)

$$\textcircled{6} \text{ Perimetro} = 6 \text{ cm}$$

$$h = 8 \text{ cm}$$

$$L_{\text{hexa}} = \frac{6}{6}$$

$$L_{\text{hexa}} = 1 \text{ cm}$$

$$\text{Abase} = \frac{3l^2\sqrt{3}}{2}$$

$$\text{Abase} = \frac{3 \cdot 1^2 \sqrt{3}}{2}$$

$$\text{Abase} = \frac{3 \cdot 1 \sqrt{3}}{2}$$

$$\text{Abase} = \frac{3\sqrt{3}}{2}$$

$$\text{Volume} = \frac{1}{3} \text{ Volume prisma}$$

$$\text{Volume} = \frac{1}{3} \cdot \text{Abase} \cdot h$$

$$\text{Volume} = \frac{1}{3} \cdot \frac{3\sqrt{3}}{2} \cdot 8$$

$$\text{Volume} = \frac{1 \cdot 8 \cdot 3\sqrt{3}}{3 \cdot 2}$$

$$\text{Volume} = 4\sqrt{3} \text{ cm}^2$$

(A)

$$\textcircled{7} \text{ Lado Piramide} = 2a$$

$$\text{Volume Piramide} = \frac{1}{3} \text{ Volume Prisma}$$

$$\text{Volume Piramide} = \frac{1}{3} \cdot \text{Volume Prisma}$$

$$\text{Volume Piramide} = \frac{1}{3} \cdot \text{Abase} \cdot h_{\text{piramide}}$$

$$\text{Volume Piramide} = \frac{1}{3} \cdot l^2 \cdot h_{\text{piramide}}$$

$$\text{Volume Piramide} = \frac{1}{3} \cdot (2a)^2 \cdot h_{\text{piramide}}$$

$$\text{Volume Piramide} = \frac{4a^2 \cdot h_{\text{piramide}}}{3}$$

$$\text{Volume Prisma} = \text{Abase} \cdot h_{\text{prisma}}$$

$$\text{Volume Prisma} = l^2 \cdot h_{\text{prisma}}$$

$$\text{Volume Prisma} = a^2 \cdot h_{\text{prisma}}$$