Tarefa Básica - Cilindros

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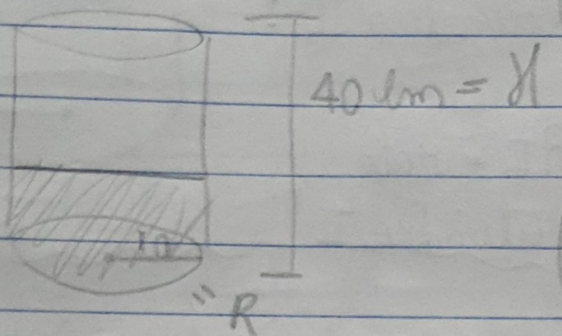
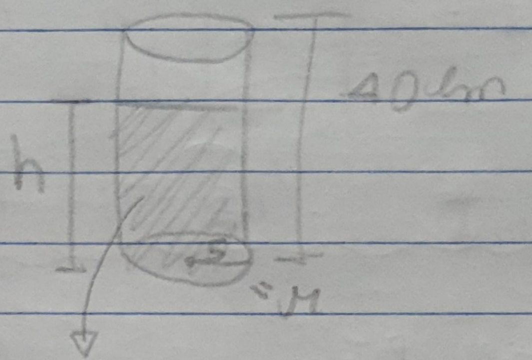
(1) Cilindro 1:



Cilindro 2:



$\text{Volume cilindro } 1 = \pi . R^2 . H$

$V1 = \pi . 10^2 . 40$

$V1 = 4000\pi \text{ cm}^3$

↳ capacidade total

$V_2 = \frac{1}{5} V_1$

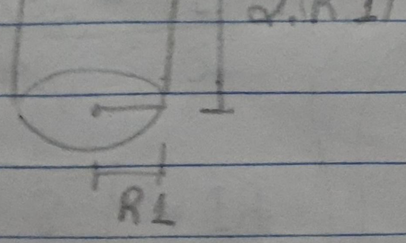
$\pi . r^2 . h = \frac{1}{5} . 4000\pi$

$\pi . 5^2 . h = 800\pi$

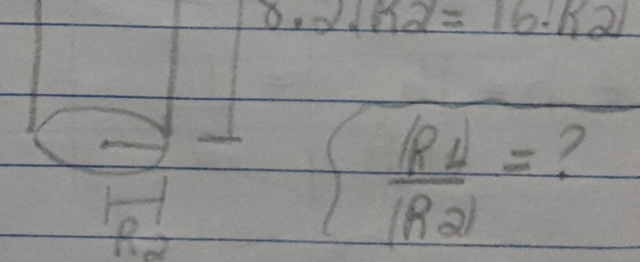
$h = \frac{800\cancel{\pi}}{25\cancel{\pi}} = \boxed{32 \text{ cm}}$ (A)

(2) diâmetro = 2. raio

C1:



C2:



$\frac{(R1)}{(R2)} = ?$

$\frac{\text{Volume C1}}{\text{Volume C2}} = \frac{1}{27}$

$\frac{\pi . (R1)^2 . 2.(R1)^{:2}}{\pi . (R2)^2 . 16.(R2)^{:2}} = \frac{1}{27}$

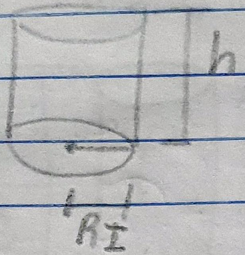
$\rightarrow \frac{(R1)^3}{8.(R2)^3} = \frac{1}{27}$

$\frac{(R1)^3}{(R2)^3} = \frac{8}{27}$ ...

$$\sqrt[3]{\frac{(R1)^3}{(R2)^3}} = \sqrt[3]{\frac{8}{27}} \rightarrow \frac{\cancel{\sqrt[3]{(R1)^3}}}{\cancel{\sqrt[3]{(R2)^3}}} = \frac{\cancel{\sqrt[3]{2^3}}}{\cancel{\sqrt[3]{3^3}}} \rightarrow \frac{(R1)}{(R2)} = \boxed{\frac{2}{3}}$$ E

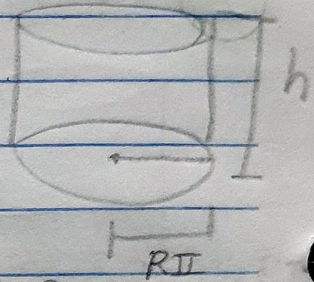
3 aumento de 50% = 100% + 50% = 150%

Cilindro I :



RI = raio cilindro I

Cilindro II :



RII = raio cilindro II

$RII = 150\% \cdot RI$

$RII = \frac{150}{100} \cdot RI = \frac{3}{2} RI$ //

$\sim \text{"} \sim$

$V\text{cilindro I} = \pi \cdot (RI)^2 \cdot h$

$16\pi = \pi \cdot (RI)^2 \cdot h$

$* \; h = \frac{16\cancel{\pi}}{\cancel{\pi} \cdot (RI)^2} = \frac{16}{(RI)^2}$ //

$AL\text{cilindro II} = AT\text{cilindro I}$

$2 \cdot \pi \cdot (RII) \cdot h = 2\pi \cdot (RI) \cdot h + 2 \cdot \pi \cdot (RI)^2$

$\cancel{2} \cdot \pi \cdot \frac{3}{\cancel{2}} \cdot (RI) \cdot h = 2\pi \cdot (RI) \cdot h + 2\pi \cdot (RI)^2$

$3\pi \cdot (RI) \cdot h - 2 \cdot \pi \cdot (RI) \cdot h = 2\pi \cdot (RI)^2$

$1\pi \cdot (RI) \cdot h = 2\pi \cdot (RI)^2$

$\rightarrow \pi \cdot \cancel{(RI)} \cdot \frac{16}{\cancel{(RI)^2}} = 2\pi \cdot (RI)^2$

$\frac{16\pi}{RI} = 2\pi \cdot (RI)^2$

$(RI)^3 = \frac{\overset{8}{\cancel{16}}\cancel{\pi}}{\cancel{2\pi}}$

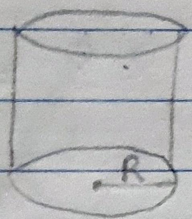
$RI = \sqrt[3]{8} = 2$

$* \; h = \frac{16}{(RI)^2} = \frac{16}{2^2} = \frac{16}{4}$

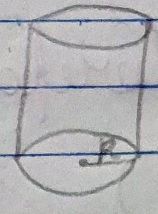
$h = \boxed{4}$ D

Cilindro inicial:

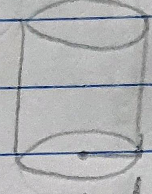
4)



2 situações → 1)



↳ 2)



* V cilindro situação 1 = V cilindro situação 2

$\pi . R^2 . 16 = \pi . (R+12)^2 . 4$

$(R+12)^2 = \dfrac{\cancel{\pi} . R^2 . \cancel{16}}{\cancel{\pi} . \cancel{4}}$

→ $R^2 + 24R + 144 = 4R^2$

$R^2 - 4R^2 + 24R + 144 = 0$

$-3R^2 + 24R + 144 = 0 \quad (\div -3)$

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

* Soma e produto:

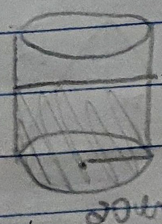
$12 + (-4) = \dfrac{-(-8)}{1} = 8$

$12 . (-4) = \dfrac{-48}{1} = -48$

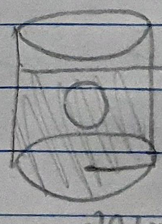
* Raio não pode ser negativo

↳ $R = \boxed{12cm}$ (A)

5) antes:



depois:



V pedra = V depois − V antes

$Vp = \pi . 20^2 . (h+0,08) - \pi . 20^2 . h$

$Vp = \pi . 20^2 (\cancel{h} + 0,08 - \cancel{h})$

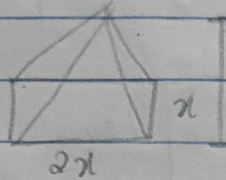
$Vp = \pi . 4\cancel{00} . \dfrac{8}{1\cancel{00}} = 32\pi$

→ $Vp = 32 . 3,14$

$Vp = \boxed{100,5 cm^3}$ (B)

Tarefa Básica - Pirâmides

1



h = 8 cm   * Volume = $\frac{Ab \cdot h}{3}$

$48 = \frac{(2x \cdot x) \cdot 8}{3} \rightarrow \frac{\cancel{48}^{6} \cdot 3}{\cancel{8}} = 2x^2$

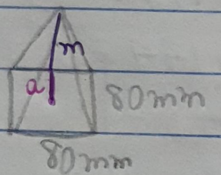
$\frac{\cancel{6}^{3} \cdot 3}{\cancel{2}} = x^2$

$\rightarrow x^2 = 3^2$

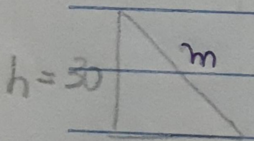
$x = \sqrt{3^2}$

$\boxed{x = 3}$ C

2



30mm



$a = \frac{80}{2} = 40$

$m^2 = 30^2 + 40^2$

$m^2 = 900 + 1600$

$m = \sqrt{2500}$

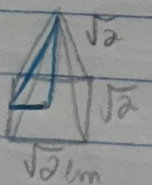
$m = 50$ mm

$AT = 4 \cdot A\triangle_{80}^{50} + A\square_{80}^{80}$

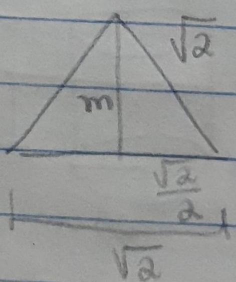
$AT = 4 \cdot \frac{\cancel{80}^{40} \cdot 50}{\cancel{2}} + 80 \cdot 80$

$AT = 8000 + 6400 = \boxed{14400 \text{ mm}^2}$ E

3



→ face lateral:

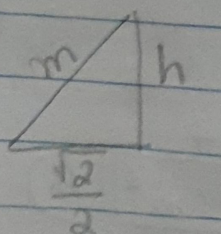


$(\sqrt{2})^2 = m^2 + \left(\frac{\sqrt{2}}{2}\right)^2$

$2 = m^2 + \frac{2^{:2}}{4_{:2}}$

$2 - \frac{1}{2} = m^2$

$m^2 = \frac{4-1}{2} = \frac{3}{2}$



$m^2 = h^2 + \left(\frac{\sqrt{2}}{2}\right)^2$

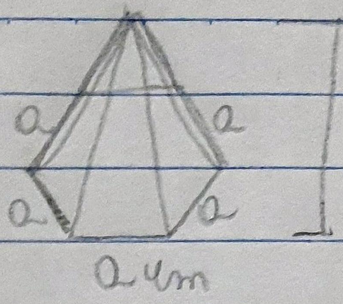
$h^2 = \frac{3}{2} - \frac{2^{:2}}{4_{:2}}$

$\rightarrow h^2 = \frac{3}{2} - \frac{1}{2}$

$h^2 = \frac{2}{2} = 1$

$h = \sqrt{1} = \boxed{1 \text{ cm}}$ C

4

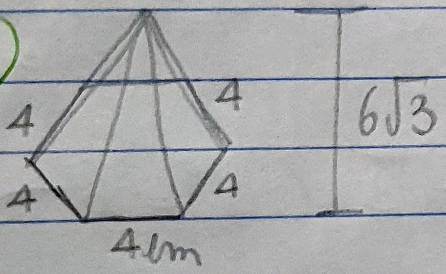


$$V = \frac{1}{\cancel{3}} \cdot \cancel{6}^{2} \cdot \frac{a^2\sqrt{3}}{4} \cdot b\cdot\sqrt{3}$$

$$V = \frac{2^{:2} \cdot a^2 \cdot b \cdot (\sqrt{3})^2}{4:2}$$

$$V = \boxed{\frac{3a^2 \cdot b}{2}\ cm^3}$$ (A)

5

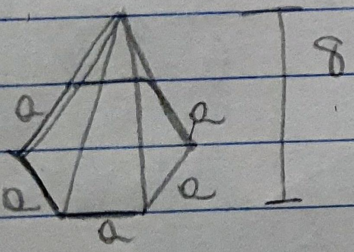


$$V = \frac{1}{\cancel{3}} \cdot \cancel{6}^{2} \cdot \frac{\cancel{4}\cdot 4\cdot\sqrt{3}}{\cancel{4}} \cdot 6\sqrt{3}$$

$$V = 2\cdot 4\cdot 6\cdot(\sqrt{3})^2$$

$$V = 48\cdot 3 = \boxed{144\ cm^3}$$ (D)

6



Perímetro ⬡ = 6 cm

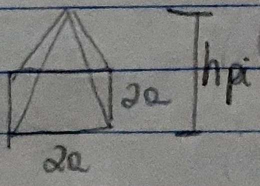
$6a = 6$

$a = \frac{6}{6} = 1$ cm

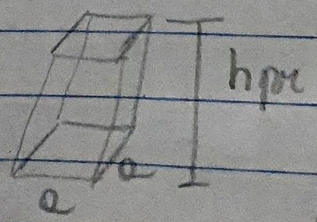
$$V = \frac{1}{\cancel{3}} \cdot \cancel{6}^{2} \cdot \frac{1^2\sqrt{3}}{\cancel{4}} \cdot \cancel{8}^{2}$$

$$V = 2\cdot 2\cdot\sqrt{3} = \boxed{4\sqrt{3}\ cm^3}$$ (A)

7 pirâmide :



prisma :

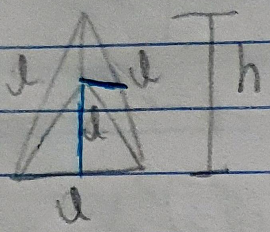


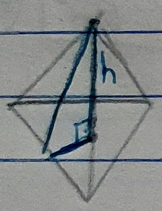
$\frac{hpi}{hpr} = ?$; * Vpirâmide = Vprisma

$* \ \frac{1}{3} \cdot 2a \cdot 2a \cdot h_{pi} = a \cdot a \cdot h_{pr}$

$\frac{h_{pi}}{h_{pr}} = \frac{\cancel{a^2} \cdot 3}{4 \cdot \cancel{a^2}} = \boxed{\frac{3}{4}}$ (A)

8





$AT = 6\sqrt{3}$

$4 \cdot A_{\triangle l} = 6\sqrt{3}$

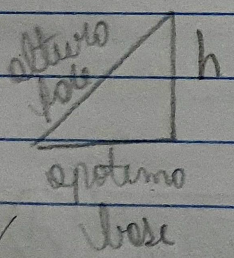
$\cancel{4} \cdot \frac{l^2 \sqrt{3}}{\cancel{4}} = 6\sqrt{3}$

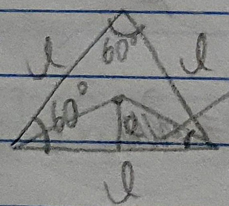
$l^2 = \frac{6\cancel{\sqrt{3}}}{\cancel{\sqrt{3}}}$

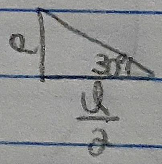
$l^2 = 6$

$*$ Altura triângulo equilátero $= \frac{l\sqrt{3}}{2}$ //

$*$ Apótema triângulo equilátero $= \frac{\sqrt{3}\, l}{6}$ //



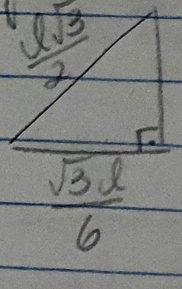




$tg\ 30° = a \div \frac{l}{2}$

$\frac{\sqrt{3}}{3} = \frac{a \cdot 2}{l} \rightarrow$

$\rightarrow a = \frac{\sqrt{3} \cdot l}{3 \cdot 2} = \frac{\sqrt{3}\, l}{6}$ //



$\left(\frac{l\sqrt{3}}{2}\right)^2 = h^2 + \left(\frac{\sqrt{3}\, l}{6}\right)^2$

$h^2 = \frac{3l^2}{4} - \frac{3l^2}{36}$

$h^2 = \frac{27l^2 - 3l^2}{36} = \frac{24 \cdot l^2}{36} = \frac{6 \cdot 6}{9}$

$h = \sqrt{\frac{36}{9}} = \frac{\sqrt{36}}{\sqrt{9}} = \frac{6}{3} = \boxed{2\,cm}$ (A)