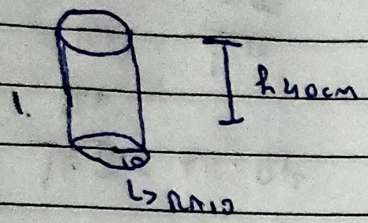
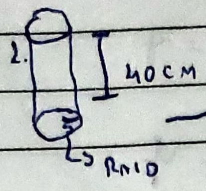
TAREFA BÁSICA - Cilindros e PIRAMIDES

-> Cilindros

①





$\longrightarrow \frac{1}{5}$ de sua capacidade

$V_1 = \pi . R^2 . h$

$V_1 = \pi . 10^2 . 40$

$V_1 = 100 . 40\pi$

$V_1 = 4000\pi \, cm^2$

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

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

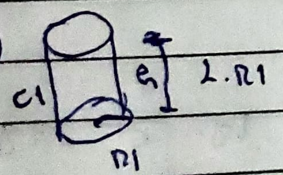
$\pi . 5^2 . h = 800\pi$

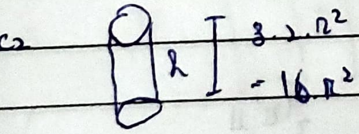
$h = \frac{800\pi}{25\pi}$

$h = 320$ CM

Alternativa A

②





$d = 2R$

$\frac{\text{Volume } C_1}{\text{Volume } C_2} = \frac{1}{27}$

$\frac{\pi . R^2 . 2R_1}{\pi . R_2^2 . 16 . R} = \frac{1}{27}$

$\frac{R_1^3}{8 . R^3} = \frac{1}{27}$

$\frac{R_1^3}{R_2^3} = \frac{8}{27}$

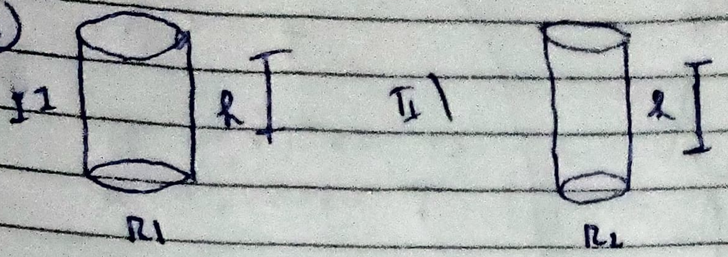
$\sqrt[3]{\frac{R_1^3}{R_2^3}} = \sqrt[3]{\frac{8}{27}}$

$\frac{\sqrt[3]{R_1^3}}{\sqrt[3]{R_2^3}} = \frac{\sqrt[3]{2^3}}{\sqrt[3]{3^3}}$

$\frac{R_1}{R_2} = \frac{2}{3}$

Alternativa E

3



Aumento de 50%
100% + 50%
150%

$R_2 = 150\% \cdot R_1$

$R_2 = \frac{15\cancel{0}}{10\cancel{0}} \cdot R_1$

$R_2 = \frac{3}{2} \cdot R_1$

Volume $C_1 = \pi \cdot R_1^2 \cdot h$

$16\pi = \pi \cdot R_1^2 \cdot h$

$h = \frac{16\pi}{\pi \cdot R_1^2} \therefore \frac{16}{R_1^2}$

$A_{L C2} = A_{T C1}$

$2\pi \cdot R_2 \cdot h = 2\pi \cdot R_1 \cdot h + 2\pi \cdot R_1^2$

$\cancel{2}\pi \cdot \frac{3}{\cancel{2}} \cdot R_1 \cdot h = 2\pi \cdot R_1 \cdot h + 2\pi \cdot R_1^2$

$3\pi \cdot R_1 \cdot h - 2\pi \cdot R_1 \cdot h = 2\pi \cdot R_1^2$

$1\pi \cdot R_1 \cdot h = 2\pi \cdot R_1^2$

$\pi \cdot \frac{\cancel{R_1} \cdot 16}{\cancel{R_1}^2} = 2\pi \cdot R_1^2$

$\frac{16\pi}{R_1} = 2\pi \cdot R_1^2$

$R_1^3 = \frac{16\pi}{2\pi}$

$R_1 = \sqrt[3]{8}$

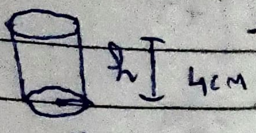
$R_1 = 2$

$h = \frac{16}{R_1^2}$

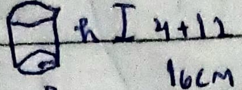
$h = \frac{16}{2^2}$

$h = \frac{16}{4} = 4$

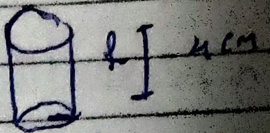
Alternativa D

(4) 

→ Podendo ser:



Ou



$V_1 = \pi . R^2 . 16$

$V_2 = \pi . (R+12)^2 . 4$

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

$(R+12)^2 = 4 R^2$

$R^2 + 24R + 144 - 4R^2$ $(\div -3)$

$-3R^2 + 24R + 144 = 0$

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

$\Delta = B^2 - 4.A.C$

$\Delta = (-8)^2 - 4.1.(-48)$

$\Delta = 64 + 192$

$\Delta = 256$

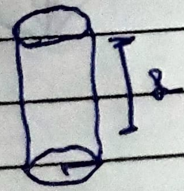
$x = \frac{-B \pm \sqrt{256}}{2.a}$

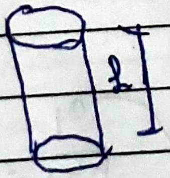
$x = \frac{8 \pm 16}{2}$

$x_1 = \frac{8+16}{2} = 12cm$

$x_2 = \frac{8-16}{2} = -4cm$ Não convém

Alternativa A

(5) I. 

→ II. 

h + 0,8 mm

R + 0,08 cm

V pedra $= V_2 - V_{II}$

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

$VP = \pi . 400 (x + 0,08 - x)$

$VP = \pi . 400 . \frac{8}{100} = 32\pi$

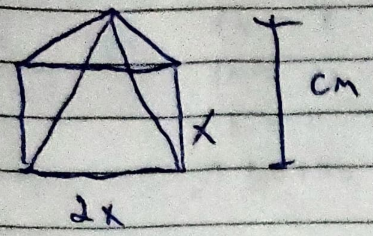
$VP = 32 . 3,14$

$VP = 100,5\ cm^3$

Alternativa B

Piramides

1



$V = \frac{AB \cdot h}{3}$

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

$144 = 16x^2$

$x^2 = \frac{144}{16}$

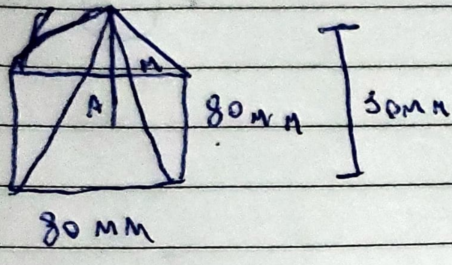
$\rightarrow x^2 = 9$

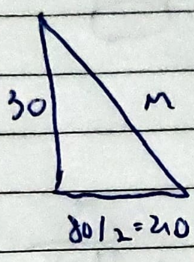
$x = \sqrt{9}$

$x = 3$

Alternativa C

2





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

$m^2 = 900 + 1600$

$m = \sqrt{2500}$

$m = 50mm$

$At = 4 \cdot AD + AD$

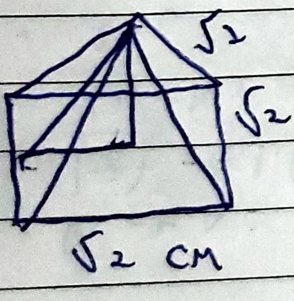
$At = 4 \cdot \frac{80 \cdot 50}{2} + 80 \cdot 80$

$At = 8000 + 6400$

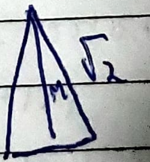
$At = 14400\ mm^2$

Alternativa E

3

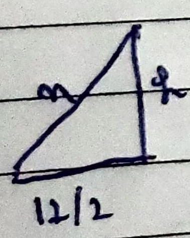


→ h de lateral



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

$2 = m^2 + \frac{2 \div 2}{4 \div 2}$



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

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

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

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

$h = \sqrt{1}$

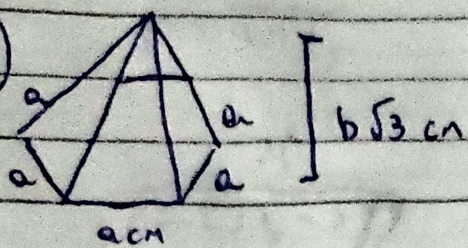
$\downarrow$

1cm

Alternativa C

S T Q Q S S D ___/___/___

(4)

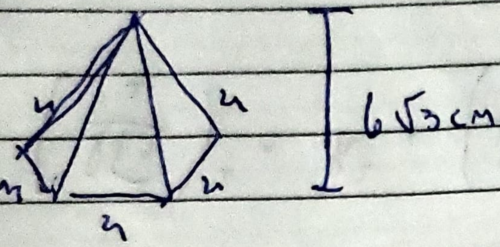


$V = \frac{1}{\cancel{3}} \cdot \cancel{6} \cdot \frac{a^2\sqrt{3}}{4} \cdot b\sqrt{3}$

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

$V = \frac{3a^2 \cdot b\ cm^2}{2}$ Alternativa A

(5)

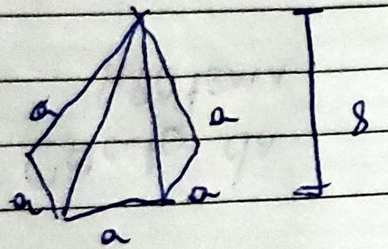


$V = \frac{1}{\cancel{3}} \cdot \cancel{6} \cdot \frac{\cancel{4} \cdot 4\sqrt{3}}{\cancel{4}} \cdot 6\sqrt{3}$

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

$V = 48 \cdot 3 = 144 cm^2$ Alternativa D

(6)



Perímetro ⬡ = 6cm

$6a = 6$

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

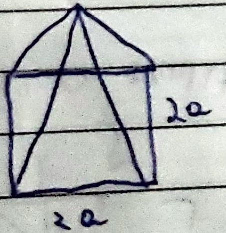
$V = \frac{1}{3} \cdot \frac{6 \cdot 1^2\sqrt{3}}{4} \cdot 8$

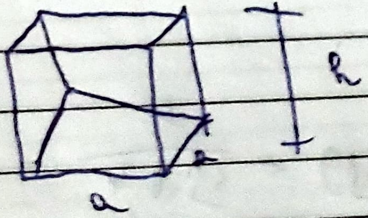
$V = 2 \cdot 2 \cdot \sqrt{3}$

$V = 4\sqrt{3} cm^2$

Alternativa A

7





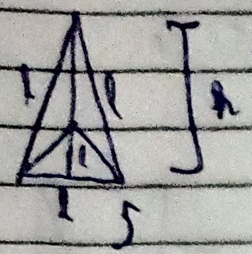
$V_{Pirâmide} = V_{prisma}$

$\frac{1}{3} \, 2a \cdot 2a \cdot h_1 = a \cdot a \cdot h$

$$\frac{h_1}{h_2} = \frac{a^2 \cdot 3}{4a^2} = \frac{3}{4}$$

Alternativa A

(8)



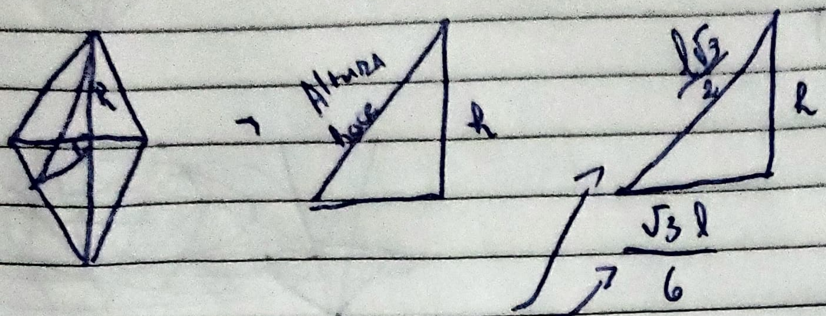
$A_t = 6\sqrt{3}$

$4A_\Delta = 6\sqrt{3}$

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

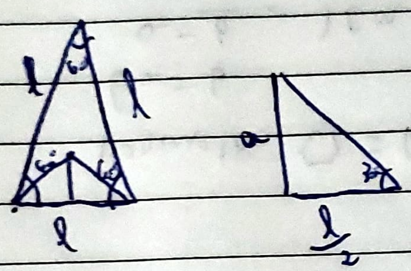
$l^2 = 6$

triangulo equilatero



* $h_\Delta = \frac{l\sqrt{3}}{2}$; $a_\Delta = \frac{\sqrt{3}\, l}{6}$ (triangulo equilatero)

Calculo da Apótema



$tg\,30° = a : l/2$

$\frac{\sqrt{3}}{3} = \frac{a\,2}{l}$

$a = \frac{\sqrt{3}\cdot l}{6}$

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

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

$h^2 = \frac{27^2 - 3l^2}{36}$

$h = \frac{24\, l^2}{36} \rightarrow h = \sqrt{\frac{36}{9}} = \frac{6}{3} = 2cm$

Alternativa A