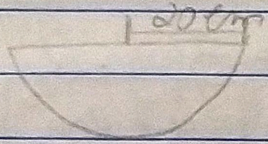
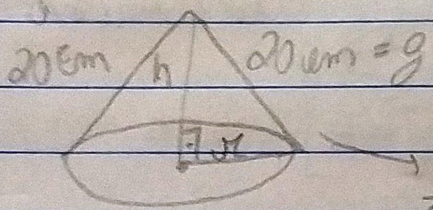
Tarefa Básica - Cones

Nome: Bárbara O. Grosse, CT11350.

1) 

$\text{comprimento semicírculo} = \frac{1}{2} \cdot 2 \cdot \pi \cdot R$

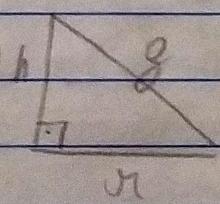
$C = \frac{1}{\cancel{2}} \cdot \cancel{2} \cdot \pi \cdot 20 = 20\pi$



* O base tem o mesmo comprimento do semicírculo

$2 \cdot \pi \cdot r = 20\pi$

$r = \frac{20\cancel{\pi}}{2\cancel{\pi}} = 10\,cm$



$g^2 = h^2 + r^2$

$20^2 = h^2 + 10^2$

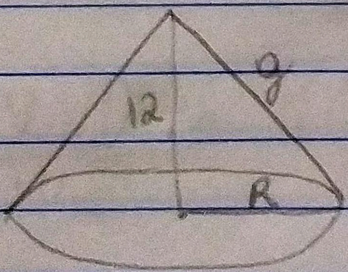
$h^2 = 400 - 100$

$h = \sqrt{300}$

$h = \sqrt{3 \cdot 100} = \sqrt{3} \cdot \sqrt{100}$

$h = \boxed{10 \cdot \sqrt{3}\ cm}$ A

2) $g = ?$



$\text{Volume} = 64\pi\ cm^3$

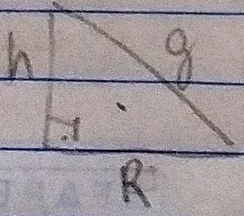
$\frac{1}{3} \cdot \pi \cdot R^2 \cdot h = 64\pi$

$R^2 = \frac{64\cancel{\pi} \cdot 3}{\cancel{\pi} \cdot 12}$ (:4)

$R^2 = \frac{16 \cdot \cancel{3}}{\cancel{3}}$

$R = \sqrt{16}$

$R = 4\,cm$



$g^2 = h^2 + R^2$

$g^2 = 12^2 + 4^2$

$g = \sqrt{144 + 16}$

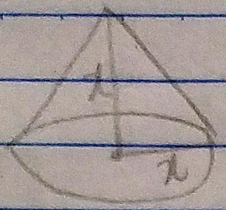
$g = \sqrt{160} = \sqrt{16 \cdot 10}$

$g = \sqrt{16} \cdot \sqrt{10}$

$g = \boxed{4\sqrt{10}\ cm}$

B

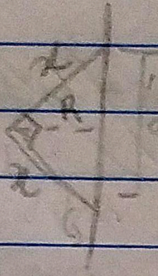
3

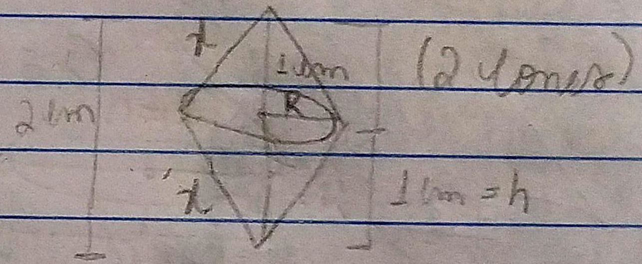


$$\text{Área base} = 36\pi\ cm^2$$
$$\pi . R^2 = 36\pi$$
$$\cancel{\pi} . x^2 = \frac{36\cancel{\pi}}{\cancel{\pi}}$$
$$x = \sqrt{36}$$
$$x = 6\ cm$$

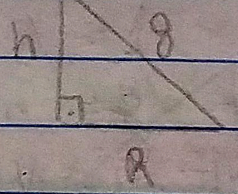
$$V = \frac{1}{3} . Ab . h \rightarrow V = \frac{1}{\cancel{3}} . 36\pi . \cancel{6} \rightarrow V = 36\pi . 2$$
$$V = \boxed{72\pi\ cm^3}\ \text{A}$$

4





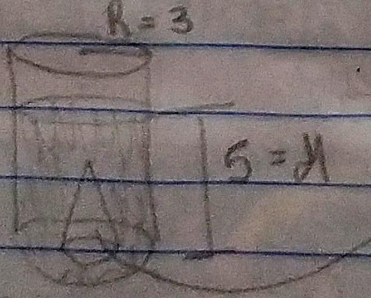
$$2^2 = x^2 + x^2$$
$$2x^2 = 4$$
$$x^2 = \frac{4}{2} = 2$$
$$x = \sqrt{2}$$

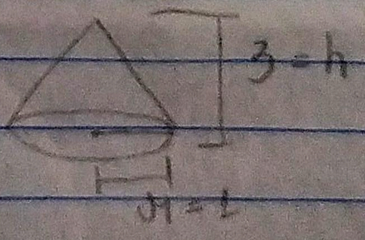


$$g^2 = h^2 + R^2$$
$$x^2 = 1^2 + R^2$$
$$R^2 = 2 - 1$$
$$R = \sqrt{1} = 1\ cm$$

$$V_{sólido} = 2 . V_{cone}$$
$$V_s = 2 . \frac{1}{3} . \pi . R^2 . h$$
$$\rightarrow V_s = 2 . \frac{1}{3} . \pi . 1^2 . 1$$
$$V_s = \boxed{\frac{2\pi}{3}\ cm^3}\ \text{E}$$

5





$$V_{líquido} = V_{cilindro} - V_{cone}$$
$$V_l = \pi . R^2 . H - \frac{1}{3} . \pi . r^2 . h$$
$$V_l = \pi . 3^2 . 5 - \frac{1}{\cancel{3}} . \pi . 1^2 . \cancel{3}$$
$$\rightarrow V_l = 45\pi - \pi$$
$$V_l = \boxed{44\pi}\ \text{E}$$

TAPEL

6) $Ab_{prisma} = Ab_{cone} = x$

$h_{prisma} = \frac{2}{3} h_{cone}$

$V_{prisma} = Ab \cdot h_{prisma}$

$V_{prisma} = x \cdot \frac{2}{3} h_{cone}$

$V_{cone} = \frac{1}{3} \cdot Ab \cdot h_{cone}$

$V_{cone} = \frac{x \cdot h_{cone}}{3}$

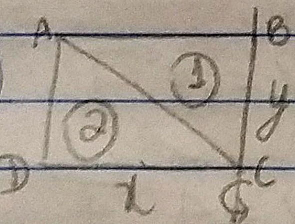
$\frac{V_{prisma}}{V_{cone}} = ?$

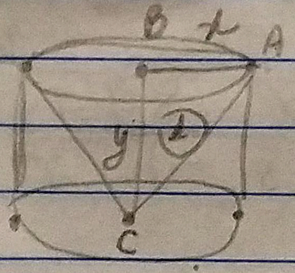
$x \cdot \frac{2}{3} h_{cone} \div \frac{x \cdot h_{cone}}{3}$

$\left(\cancel{x} \cdot \frac{2}{\cancel{3}} \cdot \cancel{h_{cone}}\right) \cdot \frac{\cancel{3}}{\cancel{x} \cdot \cancel{h_{cone}}}$

$= \boxed{2}$ (A)

7)





$\frac{V_{sólido\ 1}}{V_{sólido\ 2}} = ?$

$V_{s1} = V = \frac{1}{3} \cdot \pi \cdot x^2 \cdot y$

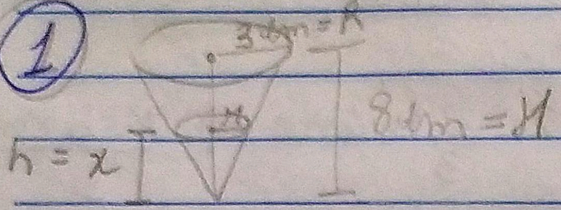
$V_{s2} = V - V = \pi \cdot x^2 \cdot y - \frac{\pi \cdot x^2 \cdot y}{3} = \pi \cdot x^2 y \left(1 - \frac{1}{3}\right)$

$\frac{V_{s1}}{V_{s2}} = \frac{\pi \cdot x^2 \cdot y}{3} \div \pi \cdot x^2 \cdot y \cdot \left(\frac{3-1}{3}\right)$

$\frac{V_{s1}}{V_{s2}} = \left(\frac{\cancel{\pi \cdot x^2 \cdot y}}{\cancel{3}}\right) \cdot \left(\frac{\cancel{3}}{\cancel{\pi \cdot x^2 \cdot y} \cdot 2}\right) = \boxed{\frac{1}{2}}$ (E)

Tarefa Básica - Troncos

(1)



$V_{\text{cone menor}} = V_{\text{tronco de cone}}$

$V_{\text{cone menor}} = V_{\text{cone maior}} - V_{\text{c menor}}$

$2 \cdot V_{\text{cone menor}} = V_{\text{cone maior}}$

$\frac{H}{h} = K \rightarrow K = \frac{8}{x}$

$\frac{V_{\text{cone maior}}}{V_{\text{cone menor}}} = 2$

$K^3 = 2 \rightarrow K = \sqrt[3]{2}$

$\frac{V_{\text{cone maior}}}{V_{\text{cone menor}}} = K^3$

$\sqrt[3]{2} = \frac{8}{x}$

$\sqrt[3]{2}\, x = 8$

$x = \frac{8}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}}$

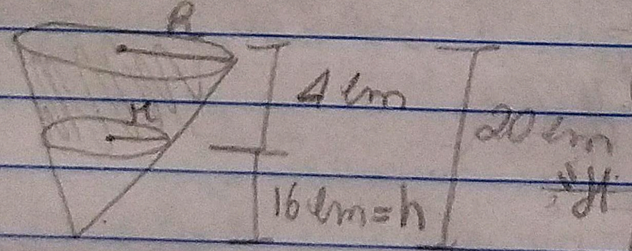
$x = \frac{8\sqrt[3]{4}}{\sqrt[3]{2 \cdot 2^2}}$

$x = \frac{8\sqrt[3]{4}}{\sqrt[3]{2^3}}$

$x = \frac{\cancel{8}\sqrt[3]{4}}{\cancel{2}}$

$x = \boxed{4\sqrt[3]{4}\ \text{cm}}$ (E)

(2)



Porcentagem de espuma = 100% − P. de sorvete

$\frac{h}{H} = K \rightarrow \frac{16^{:4}}{20_{:4}} = K \rightarrow K = \frac{4}{5}$

P de espuma = 100% − 51,2%

P de espuma = 48,8%

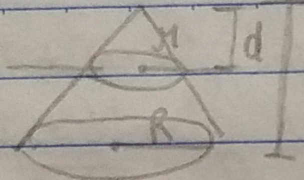
P de espuma ≅ $\boxed{50\%}$ (C)

P de sorvete = $\frac{V_{\text{cone menor (sorvete)}}}{V_{\text{cone maior (total)}}}$

P de sorvete = K^3

P de sorvete = $\left(\frac{4}{5}\right)^3 = \frac{64}{125} \cdot 100\% = \boxed{51{,}2\%}$

③



$d = ?$

$\frac{h}{d} = K$

$h = \sqrt[3]{2} \cdot d$

$d = \frac{h}{\sqrt[3]{2}} \cdot \frac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}}$

$d = \frac{h \cdot \sqrt[3]{4}}{\sqrt[3]{2 \cdot 2^2}}$

$d = \frac{h\sqrt[3]{4}}{\sqrt[3]{2^3}} = \boxed{\frac{h\sqrt[3]{4}}{2}}$

V cone menor = V tronco cone

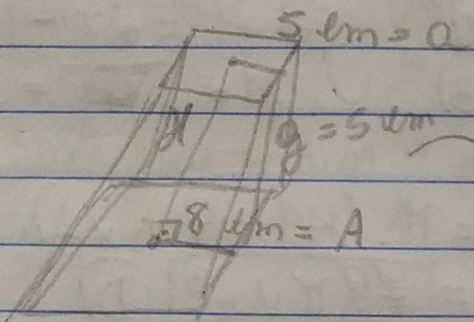
V cone menor = V cone maior − V cone menor

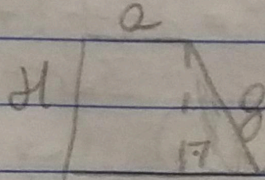
2. V cone menor = V cone maior

$\frac{\text{V cone maior}}{\text{V cone menor}} = 2 = K^3$

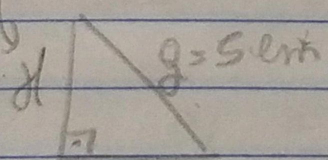
$K^3 = 2 \rightarrow K = \sqrt[3]{2}$

④





*a = apótema base menor



$(A - a) = 8 - 5 = 3\,cm$

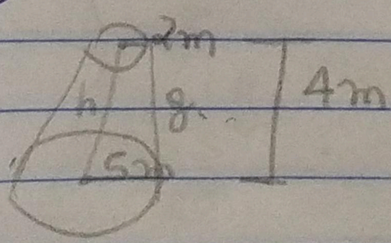
$5^2 = H^2 + 3^2$

$H^2 = 25 - 9$

$H = \sqrt{16} = \boxed{4\,cm}$

⑤ AT = ?, V = ?

$V = \pi \cdot \frac{h}{3}(R^2 + r^2 + R \cdot r)$

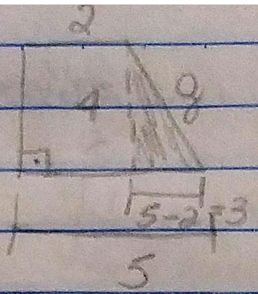


$V = \pi \cdot \frac{4}{3} \cdot (5^2 + 2^2 + 5 \cdot 2) \rightarrow$

$\rightarrow V = \pi \cdot \frac{4}{3} \cdot (25 + 4 + 10) \rightarrow V = \pi \cdot \frac{4}{\cancel{3}} \cdot \cancel{39}^{13} \ldots$

AFAPEL

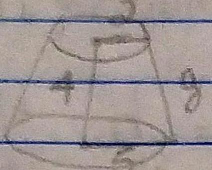
$V = \boxed{52\pi\, m^3}$

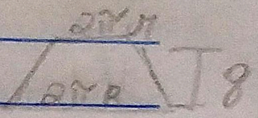


$g^2 = 4^2 + 3^2$

$g^2 = 16 + 9$

$g = \sqrt{25} = 5\,cm$





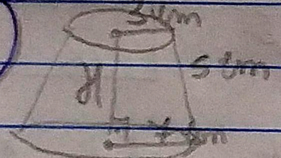
$AT = Ab\,maior + Ab\,menor + AL$

$AT = \pi.5^2 + \pi.2^2 + \dfrac{(2\pi.5 + 2\pi.2).5}{2}$

$AT = 25\pi + 4\pi + \dfrac{(\cancel{14}^{7}\pi).5}{\cancel{2}}$

$AT = 29\pi + 35\pi = \boxed{64\pi\, m^2}$

(6)



$g^2 = H^2 + (R-r)^2$

$5^2 = H^2 + (7-3)^2$

$H^2 = 25 - 16$

$H = \sqrt{9} = 3\,cm$

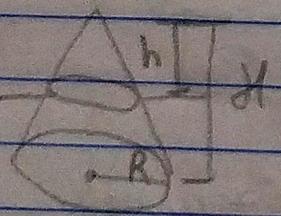
$V = \pi.\dfrac{H}{3}.(R^2 + r^2 + R.r)$

$V = \pi.\dfrac{\cancel{3}}{\cancel{3}}.(7^2 + 3^2 + 7.3)$

$V = \pi.(49 + 9 + 21)$

$V = \boxed{79\pi\, cm^3}$ (D)

(7)



V cone menor = V tronco

V cone menor = V cone maior − V cone menor

2 V cone menor = V cone maior

$\dfrac{V\,cone\,maior}{V\,cone\,menor} = 2 = K^3$

$K = \sqrt[3]{2}$

$\dfrac{H}{h} = K$

$H = \sqrt[3]{2}.h$

$h = \dfrac{H}{\sqrt[3]{2}}.\dfrac{\sqrt[3]{2^2}}{\sqrt[3]{2^2}}$

$h = \dfrac{H.\sqrt[3]{4}}{\sqrt[3]{2^3}}$

$h = \boxed{\dfrac{H\sqrt[3]{4}}{2}}$ (A)

AFAPEL