

Tarefa Básica

ESFERA E SUAS PARTES

- 1 A esfera é um sólido gerado pela rotação de um semi-círculo em torno do seu diâmetro. Alternativa C)

→ Ela é uma figura tridimensional, sendo do tipo dos corpos redondos (sólidos de revolução, que são gerados através da rotação completa de uma figura geométrica plana).

2 $V_1 = \frac{4}{3} \cdot \pi \cdot R^3$ → 1 milhão de $V_2 = \frac{4}{3} \cdot \pi \cdot R^3$

vezes maior

$$V_1 = \frac{4}{3} \cdot \pi \cdot 1^3 \text{ que é } V_1 \quad \frac{4}{3} \cdot \pi \cdot R^3 = 1000.000 \cdot \frac{4}{3} \cdot \pi$$

$$R^3 = 1.000.000$$

$$R^3 = 10^6 \rightarrow R = \sqrt[3]{10^6}$$

$$R = 10^2 \rightarrow R = 100$$

3 $V_{\text{sfera}} = \frac{4}{3} \cdot \pi \cdot R^3$ $V_{\text{cilindro}} = \pi \cdot 16 \cdot R^3$ $R_C = 2R$ $R_E = R$

$$\frac{V_E}{V_C} = \frac{\frac{4}{3} \cdot \pi \cdot R^3}{\pi \cdot 16 \cdot R^3} = \frac{4}{3} \cdot \frac{1}{16} = \frac{4}{48} = \boxed{\frac{1}{12}}$$

Alternativa E)



minha opinião

$$\textcircled{4} \quad R_1 = 1 \text{ cm} \quad e \quad R_2 = 2 \text{ cm}, \quad h_2 = 3 \text{ cm}$$

A soma dos volumes das esferas é igual ao volume do cilindro.

$$\frac{4\pi \cdot 1^3}{3} + \frac{4\pi \cdot 2^3}{3} = \pi \cdot R^2 \cdot 3$$

$$\frac{4\pi}{3} + \frac{32\pi}{3} = 3 \cdot R^2 \cdot \pi \quad \left. \begin{array}{l} \\ \\ \end{array} \right\} R^2 = 12$$

$$\frac{36\pi}{3} = 3 \cdot R^2 \pi$$

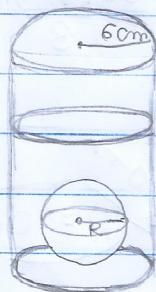
3

$$12\pi = 3R^2\pi$$

$$R = \sqrt[3]{4}$$

$$R = 2 \text{ cm} \quad \text{alternativa B)}$$

\textcircled{5}



$$V_{\text{cilindro}} = \pi \cdot 6^2 \cdot 10$$

$$V_{\text{sfera}} = \frac{4}{3} \cdot \pi \cdot R^3$$

$$V_c = 36\pi$$

$$V_E = V_c$$

$$\frac{4}{3}\pi \cdot R^3 = 36\pi$$

3

$$4\pi \cdot R^3 = 108\pi$$

$$R^3 = 27$$

$$R = \sqrt[3]{27}$$

$$R = 3 \text{ cm}$$

$$\text{alternativa C)}$$

$$\textcircled{6} \quad V = 288\pi \text{ cm}^3$$

$$\text{aresta} = 2 \cdot 6$$

$$288\pi = \frac{4 \cdot \pi \cdot R^3}{3}$$

$$R = 12$$

3

$$R = \sqrt[3]{216}$$

$$R = 6$$

alternativa E)



$$\rightarrow R = \frac{d}{2} = 10 \text{ cm}$$

7) $\text{vol} = 20 \text{ cm}^3, h = 16 \text{ cm}$ { bolinhas $\rightarrow R = 2 \text{ cm}$ } 8

Nº de doces = ?

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

$$V_d = \frac{4 \pi \cdot R^3}{3}$$

nº de doces = $V_{\text{pane}} / V_{\text{doces}}$

$$V_p = \pi \cdot 100 \cdot 16$$

$$V_p = 1600 \pi$$

$$V_d = \frac{4 \pi \cdot 2^3}{3}$$

$$V_{\text{doces}}$$

$$V_p = 1600 \pi$$

$$V_d = \frac{32 \pi}{3}$$

$$n = 1600 \pi$$

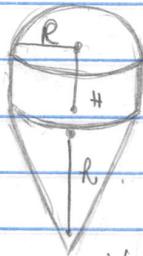
$$V_d = \frac{32 \pi}{3}$$

$$\frac{32 \pi}{3}$$

$$n = \frac{1600 \pi}{\frac{32 \pi}{3}} \rightarrow n = 50 \cdot 3 \rightarrow n = 150 \text{ (doces)}$$

alternativa D)

8)



$$V_{\text{cilindro}} = \pi \cdot R^2 \cdot H$$

$$V_{\text{cone}} = \frac{\pi \cdot R^2 \cdot h}{3}$$

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

$$3H = R$$

$$V_{\text{hemisfério}} = \frac{2\pi \cdot R^3}{3} \rightarrow \frac{\pi \cdot R^2 \cdot h}{3} = \frac{2\pi \cdot R^3}{3} \rightarrow \pi \cdot R^2 \cdot h = 2\pi \cdot R^3 \rightarrow R = 2R$$

alternativa D) $2R = h = 3H$

► INSCRIÇÃO E CIRCONSCRIÇÃO DE SÓLIDOS

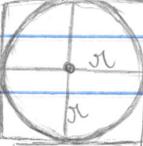
1) A superfície esférica = $100\pi \text{ m}^2$ $r = \sqrt{30} \text{ m}$ $h = ?$

$$100\pi = 4\pi r^2 \quad R^2 = r^2 + (R - r)^2 \quad \rightarrow r^2 = h^2 + r^2$$

$$r^2 = 25 \quad R^2 = r^2 + h^2 - 2h \cdot R + R^2 \quad (\sqrt{30})^2 = h^2 + r^2$$

$$r = 5 \text{ m} \quad 5 = \frac{30}{2r} \quad \rightarrow r = 3 \text{ m} \quad 30 = h^2 + r^2$$

$$a/2$$

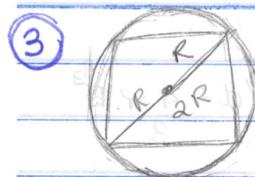
2)  $S_{\text{cube}} = 6 \cdot a^2$ $S_{\text{sfera}} = 4 \cdot \pi \cdot r^2 \rightarrow S_{\text{c}} = 4\pi \cdot a^2 / 4$

$$S_c = 6 \cdot a^2 \quad S_{\text{sfera}} = 4 \cdot \pi \cdot (a/2)^2 \quad S_c = \pi a^2$$

$$a$$

$$\text{RAZÃO} \rightarrow \frac{S_c}{S_{\text{c}}} = \frac{\pi a^2}{6a^2} \quad \text{RAZÃO} = \frac{\pi}{6}$$

alternativa A)



$$③ \text{ Véspera} = \frac{4}{3} \pi R^3 + \text{raio} \quad V_{\text{cubo}} = l^3 \quad \text{raio} = \sqrt[3]{8R^3} = 2R \quad \boxed{\text{raio} = 2\sqrt[3]{3} \cdot \frac{l}{2}}$$

$$l\sqrt{3} = 2R \quad \text{RAZÃO} \rightarrow V_{\text{cubo}} = \frac{4}{3} \pi R^3 = \frac{V}{\pi} = \frac{1}{\frac{1}{\sqrt[3]{8}}} = \pi \cdot \sqrt[3]{8}$$

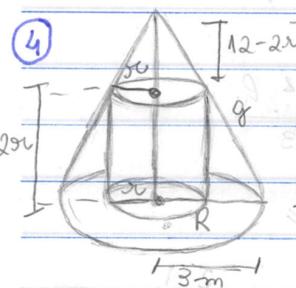
$$l = \underline{2R}$$

$$\text{raio} = \underline{2\sqrt[3]{3}}$$

$$\frac{3}{8R^3}$$

$$\text{RAZÃO} = \boxed{\frac{\sqrt[3]{3}\pi}{2}}$$

comb 0.2R = 0.7 + 5.03 = m → Alternativa B)



$$V_c = \pi R^2 \cdot h \quad \text{raio} = 12 - 2r \quad \pi \cdot 0.7 = 36\pi$$

$$12m = V_c = \pi \cdot 0.7^2 \cdot 2r \quad R = \underline{12-2r} \quad \boxed{R = 12m}$$

$$V_c = \pi R^2 \cdot 2r \quad \frac{r}{3} = \frac{12-2r}{12}$$

Resposta

$$12r = 36 - 6r$$

$$r = 36 \quad \boxed{r = 2}$$

$$⑥ V = \pi \cdot 1^2 \cdot 2 + \frac{2 + \pi \cdot 1^2 \cdot 1}{3}$$

$$V = 2\pi + \frac{2\pi}{3}$$

$$V = \frac{6\pi + 2\pi}{3} \rightarrow \boxed{V = \frac{8\pi}{3} \text{ cm}^3}$$

$$\pi \cdot 0.7^2 = 0.49 \quad \pi \cdot 0.7 \cdot 1 = 0.7\pi \quad 2 \cdot 0.7 = 1.4$$

$$0.49 + 0.7\pi = 1.4 \quad (0.49 + 0.7\pi) \cdot 1 = 1.4$$

$$0.49 + 0.7\pi = 1.4 \quad 0.49 + 0.7\pi = 1.4$$

