

PRISMAS, PARALELEPÍPEDOS E CUBOS

Prismas - Tarefa Básica

01- áreas laterais $\rightarrow 4 \cdot 3x = 12x$

$x \rightarrow$ aresta da base. (área de um losango $\rightarrow 2x^2$)

$2x^2 + 12x = 80$

$2x^2 + 12x - 80 = 0$

$\Delta = b^2 - 4 \cdot a \cdot c$

$\Delta = 12^2 - 4 \cdot 2 \cdot (-80)$

$\Delta = 144 + 320$

$\Delta = 784$

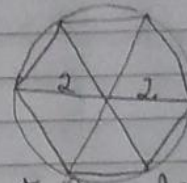
$$x = \frac{-12 \pm \sqrt{784}}{2 \cdot 2} = \frac{-12 \pm 28}{4} = 4 \text{ m}$$

02- $A_L =$ área da base, altura

$A_L = 24\sqrt{3} \cdot 2\sqrt{3}$

$A_L = 48\sqrt{3} \text{ cm}^2$

03-



6 triângulos equilá-

teros

lado do hexágono = 2

área da base
do prisma:

$AB = 6 \cdot 2^2 \sqrt{3}$

4

$AB = 6 \sqrt{3}$

área lateral

$AL = 6 \cdot 2\sqrt{3}$

$AL = 12\sqrt{3}$

área total do prisma

$A_T = 12\sqrt{3} + 2 \cdot 6\sqrt{3}$

$A_T = 12\sqrt{3} + 12\sqrt{3}$

$A_T = 24\sqrt{3} \text{ (B)}$

04- medida de a

$a + 2 + a = 8 \quad a = 8 - 2 = 6 = 3$

$2a = 8 - 2$

$\frac{2}{2} \quad \frac{2}{2}$

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Calculo de h

$$a^2 = b^2 + c^2$$

$$5^2 = h^2 + 3^2$$

$$25 = h^2 + 9$$

$$h^2 = 25 - 9$$

$$h^2 = 16 \quad (-1)$$

$$h^2 = 16$$

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

Área da base do prisma:

$$A = \frac{b(B+b)}{2} = \frac{4(8+2)}{2} =$$

$$A = \frac{4 \cdot 10}{2} = 20$$

VOLUME do prisma:

$$V = 20 \cdot 5$$

$$V = 100$$

05 - Área da base:

$$A = \frac{b \cdot h}{2} = \frac{10 \cdot 15}{2} = 5 \cdot 15 = 75$$

VOLUME da cuba:

$$V = 75 \cdot 10$$

$$V = 750 \text{ cm}^3 \quad (k)$$

$$06 - 2(xy + xz + yz) = 4x^2$$

$$xy + 2xy + 2yz = 2x^2$$

$$2x^2 - 3xy - 2yz = 0$$

$$x = \frac{3y \pm \sqrt{9y^2 + 16yz}}{4}$$

$$x = \frac{3y + 5y}{4}$$

$$x = 2y = z$$

$$\therefore y = x \quad z = x$$

$$V = x \cdot y \cdot z$$

$$V = \frac{x^3}{2}$$

(c)

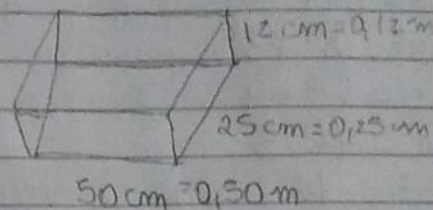
Paralelepipedos e Cubos - tarefa Básica

01- medidas internas

$$51 - (2 \cdot 0,5) = 51 - 1 = 50 \text{ cm}$$

$$26 - (2 \cdot 0,5) = 26 - 1 = 25 \text{ cm}$$

$$12,5 - 0,5 = 12 \text{ cm}$$



convertendo para metros:

$$\begin{array}{l} 50 = 0,50 \text{ m} \\ 100 \end{array} \left\{ \begin{array}{l} 25 \text{ cm} = 0,25 \\ 100 \end{array} \right\} \begin{array}{l} 12 = 0,12 \text{ m} \\ 100 \end{array}$$

Volumen interno da caixa

$$V = 0,5 \cdot 0,25 \cdot 0,12$$

$$V = 0,015 \text{ m}^3 \text{ (a)}$$

02- Fórmula da área total

$$AT = 6 \cdot x^2$$

$x \rightarrow$ medida dos arestos do cubo

$$\text{área total} = 72 \text{ m}^2$$

$$72 = 6 \cdot x^2$$

$$x^2 = 12$$

$$x = 2\sqrt{3} \rightarrow \begin{array}{c|c|c} 12 & 2 & \\ \hline 6 & 2 & 2^2 \cdot 3 \\ \hline 3 & 3 & a = \sqrt{2^2 \cdot 3} \\ \hline 1 & 1 & a = 2\sqrt{3} \end{array}$$

diagonal do cubo

$$d = a\sqrt{3}$$

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

$$d = 2 \cdot 3$$

$$d = 6 \text{ (b)}$$

03-

Cubo \rightarrow arestas iguais

outra forma:

$$V = a^3$$

$$V = 0,125 \cdot 1000$$

$$V = b \cdot h$$

$$V = 0,5^3$$

$$V = 125 \text{ L}$$

$$V = 5 \cdot 5 \cdot 5$$

$$V = 0,125 \text{ m}^3$$

$$V = 125$$

(A)

$$04 - 1 \text{ m}^3 = 1000 \text{ L}$$

$$\text{Volume} = 1000 \text{ L} - 1 \text{ L} = 999 \text{ L}$$

$$1 \text{ m}^3 = 1000 \text{ L}$$

$$x = 999 \text{ L}$$

$$1000x = 1.999$$

$$1000 - 1000x = 999$$

$$1000x = 999 - 1000$$

$$1000x = -1$$

$$x = -\frac{1}{1000} = 0.001 \text{ m}$$

$$1000 \quad 1 \text{ mm}$$

06 - Área prisma

$$\frac{(4\sqrt{3})^2}{4} \cdot \sqrt{3} \cdot h = 4\sqrt{3} \cdot 4\sqrt{3} \cdot 4\sqrt{3}$$

$$H = 4$$

$$4$$

$$H = 16$$

Área Total

$$A_T = \frac{(4\sqrt{3})^2}{4} \cdot \sqrt{3} \cdot 2 + 3 \cdot 4\sqrt{3} \cdot 16$$

$$\frac{16 \cdot 3 \cdot \sqrt{3} \cdot 2 + 192\sqrt{3}}{4}$$

$$24\sqrt{3} + 192\sqrt{3}$$

$$216\sqrt{3} \text{ cm}^2 (D)$$

Outra forma de resolver:

Volume cubo

$$V = l^3$$

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

$$V = 64 \cdot 3\sqrt{3}$$

$$V = 192\sqrt{3}$$

Volume prisma

$$V = ab \cdot h$$

$$V = h \cdot \left(\frac{l^2 \sqrt{3}}{4} \right)$$

$$\frac{192\sqrt{3}}{4} = h \cdot \frac{(4\sqrt{3})^2}{4}$$

$$192\sqrt{3} = h \cdot 16 \cdot 3\sqrt{3} / 4$$

Área Total

$$A = 2 \cdot A_b + A_c$$

$$A = 2 \cdot \left[\frac{(4\sqrt{3})^2}{4} \cdot \sqrt{3} \right] / 4 + 3 \cdot 16 \cdot 4\sqrt{3}$$

$$A = 2 \cdot \left[\frac{16 \cdot 3 \cdot \sqrt{3}}{4} \right] / 4 + 192\sqrt{3}$$

$$A = 2 \cdot (12\sqrt{3}) / 4 + 192\sqrt{3}$$

$$A = 2 \cdot 12\sqrt{3} + 192\sqrt{3}$$

$$A = 24\sqrt{3} + 192\sqrt{3}$$

$$A = 216\sqrt{3}$$

$$4 \cdot 192\sqrt{3} = h \cdot 48\sqrt{3}$$

$$h = \frac{4 \cdot 192\sqrt{3}}{48\sqrt{3}} = 4 \cdot 4 = 16$$

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