Tarefa Básica - Geometria Espacial: Prismas

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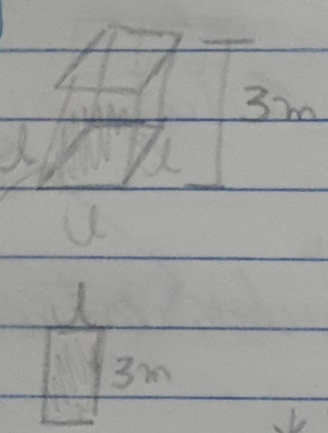
1



$A_{total} = A_{lateral} + 2 \cdot A_{base}$

$80 = 4 \cdot 3 \cdot l + 2 \cdot l \cdot l$

$2l^2 + 12l = 80$

$2l^2 + 12l - 80 = 0 \quad (\div 2)$

$l^2 + 6l - 40 = 0$

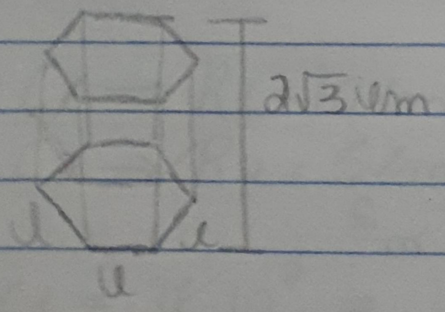
* Soma e produto: $\underline{-10} + \underline{4} = -\frac{b}{a} = -\frac{6}{1}$

$\cancel{l = -10}$ ou $l = 4$ $\qquad \underline{-10} \cdot \underline{4} = \frac{c}{a} = -\frac{40}{1}$

lado não pode ser negativo

* $l = \boxed{4m}$

2



$A_b = A_{⬡} = 24\sqrt{3}$

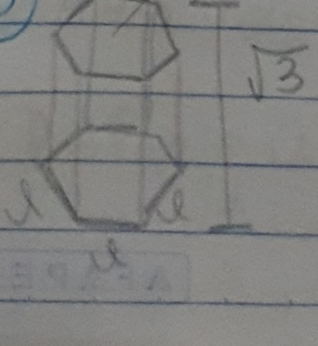
$\frac{6 \cdot l^2 \sqrt{3}}{4} = 24\sqrt{3}$

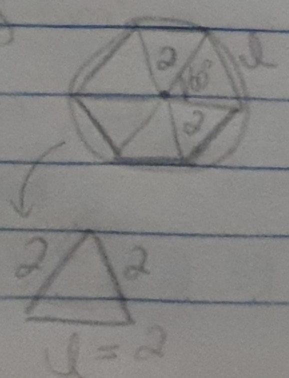
$l^2 = \frac{\overset{4}{\cancel{24}}\cancel{\sqrt{3}} \cdot 4}{\cancel{6} \cdot \cancel{\sqrt{3}}} \rightarrow l^2 = 16$

$l = \sqrt{16} = 4cm$

$AL = 6 \cdot 2\sqrt{3} \cdot l = 12\sqrt{3} \cdot 4 = \boxed{48\sqrt{3}\ cm^2}$

3





* hexágono regular pode ser dividido em 6 triângulos equiláteros

$AT = 2.Ab + AL$

$AT = 2.6.\frac{\cancel{2^2}\sqrt{3}}{\cancel{4}} + 6.\sqrt{3}.2 \rightarrow AT = 12\sqrt{3} + 12\sqrt{3}$

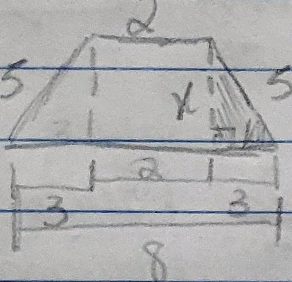
$AT = \boxed{24\sqrt{3}}$ (B)

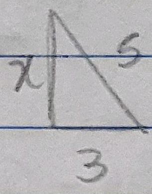
4) Volume = $Ab.h$

$V = Ab.5$

{ x = altura do trapézio

Base:





$5^2 = 3^2 + x^2$

$x^2 = 25 - 9$

$x^2 = 16$

$x = \sqrt{16} = 4$

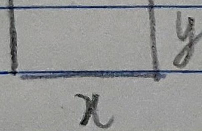
$V = Ab.5$

$V = \frac{(8+2).\cancel{4}^{2}}{\cancel{2}}.5 \rightarrow V = 10.2.5 = \boxed{100\ m^3}$ (D)

5) $V = Ab.h$

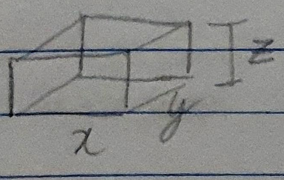
$V = A\triangle.10 \rightarrow V = \frac{15.\cancel{10}^{5}}{\cancel{2}}.10 = \boxed{750\ cm^3}$ (C)

6) Base:



, altura = z, $Ab = x.y$

$z = 2y$



$AT = 4x^2$

$2.(x.z) + 2.(y.z) + 2.(x.y) = 4x^2$

$2.x.2y + 2.y.2y + 2.x.y = 4x^2$

$4xy + 4y^2 + 2xy = 4x^2$

$6xy + 4y^2 = 4x^2 \quad (\div 2)$

$3xy + 2y^2 = 2x^2$

$2x^2 - 3yx - 2y^2 = 0 \rightarrow$ fazer bháskara

$$2x^2 - 3yx - 2y^2 = 0 \quad \begin{cases} a = 2 \\ b = -3y \\ c = -2y^2 \end{cases}$$

$$\Delta = (-3y)^2 - 4.2.(-2y^2)$$

$$\Delta = 9y^2 + 16y^2$$

$$\Delta = 25y^2$$

$$x_1 = \frac{-(-3y) + \sqrt{25y^2}}{2.2} = \frac{3y + 5y}{4} = \frac{\cancel{8}y}{\cancel{4}} = \boxed{2y}$$

$$x_{11} = \frac{-(-3y) - \sqrt{25y^2}}{2.2} = \frac{3y - 5y}{4} = \cancel{\frac{-2y}{4}}$$

(lado de 1 prisma não pode ser negativo)

$$\hookrightarrow x = 2y \rightarrow y = \frac{x}{2}$$

$$V = x.y.z$$

$$V = x.y.2y$$

$$\rightarrow V = x.\frac{x}{2}.\cancel{2}.\frac{x}{\cancel{2}} = \boxed{\frac{x^3}{2}}$$

c

Tarefa Básica - Paralelepípedos e Cubos

1) * A espessura das placas de madeira influencia no cálculo, precisa ser subtraída das dimensões da caixa para o volume interno ser calculado.

comprimento = 51 cm - 2.0,5 cm = 50 cm
largura = 26 cm - 2.0,5 cm = 25 cm
altura = 12,5 cm - 0,5 cm = 12 cm

→ caixa está sem tampa

Volume = 50.25.12
$V = 15000\ cm^3$
$V = \frac{15000}{1000000}\ m^3 = \boxed{0,015\ m^3}$ (A)

2) AT a a a = 72

$6a^2 = 72$
$a^2 = \frac{72}{6}$

$\rightarrow a^2 = 12$
$a = \sqrt{12}$
$a = \sqrt{4.3}$
$a = \sqrt{4}.\sqrt{3} = 2\sqrt{3}$

diagonal $= a\sqrt{3} \Rightarrow d = 2\sqrt{3}.\sqrt{3}$
$= 2.(\sqrt{3})^2$

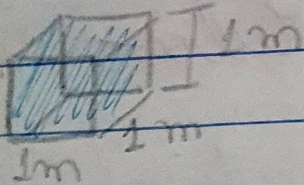
$\rightarrow d = 2.3 = \boxed{6}$ (B)

3) $1000\ cm^3 = 1\ l$

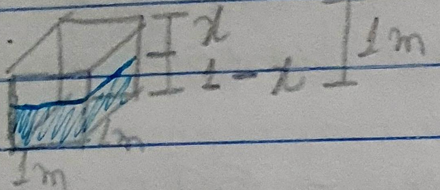
V 5 5cm $= 5^3 = 125\ cm^3$

$1000\ cm^3$ — $1\ l$
$125\ cm^3$ — x

$1000x = 125$
$x = \frac{125}{1000} = \boxed{0,125\ L}$

④ 

$V = 1^3$
$V = 1m^3 = 1000\,l$



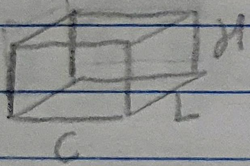
$1000\,l - 1\,l = 999\,l$

$1m^3 \;—\; 1000\,l$
$y \;—\; 999\,l$

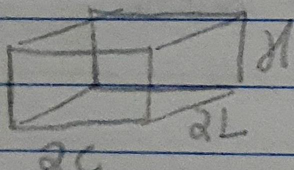
$\hookrightarrow 1000y = 999$
$y = \dfrac{999}{1000} = 0{,}999\,m^3$

$\hookrightarrow V = 0{,}999\,m^3$
$1 \cdot 1 \cdot (1 - x) = 0{,}999$
$1 - x = 0{,}999$
$x = 1 - 0{,}999$
$x = \boxed{0{,}001\,m}$

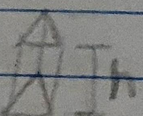
$\hookrightarrow$ o nível baixou 0,001 m

⑤ 

$V_{inicial} = V = C \cdot L \cdot H$



$V_{novo} = 2C \cdot 2L \cdot H$
$V_n = 4 \cdot C \cdot L \cdot H$
$V_n = \boxed{4 \cdot V}$ (C)

⑥ V  = V 

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

$h = \dfrac{\cancel{(4\sqrt{3})} \cdot \cancel{(4\sqrt{3})} \cdot (4\sqrt{3})}{\cancel{(4\sqrt{3})} \cdot \cancel{(4\sqrt{3})} \cdot \cancel{\sqrt{3}}} \cdot 4 = 16\,cm$

$AT_{prisma} = 2 \cdot A_{\triangle} + 3 \cdot A_{\square}$ ($4\sqrt{3}$, 16)
$AT_p = 2 \cdot \dfrac{(4\sqrt{3}) \cdot (4\sqrt{3}) \cdot \sqrt{3}}{\cancel{4}} + 3 \cdot 4\sqrt{3} \cdot 16$

$AT_p = 8 \cdot (\sqrt{3})^2 \cdot \sqrt{3} + 192\sqrt{3}$
$AT_p = 8 \cdot 3 \cdot \sqrt{3} + 192\sqrt{3}$
$AT_p = 24\sqrt{3} + 192\sqrt{3}$
$AT_p = \boxed{216\sqrt{3}\,cm^2}$ (D)