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Disciplina: Matemática

IFSP - Câmpus Cubatão

Tarefa Básica 03

Prismas, Paralelepípedo Reto e Retângulo

(Fotos nas páginas seguintes)

1ª Lista – Prismas

Exercícios 1 e 2:

Matéria 3 - Prismas/Paralelepípedo Reto Retângulo

Tarefa Básica - Prismas

1-) $A_{total} = 80\,m^2 \mid h = 3\,m$

$2A_{base} = 2x^2 \mid A_{lateral} = 4.3x \Rightarrow 12x$

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

$80 = 2x^2 + 12x$

$2x^2 + 12x - 80 = 0 \; (\div 2) \Rightarrow x^2 + 6x - 40 = 0$

$\underline{-10} + \underline{4} = -6$ $\quad \boxed{x' = 4} \Rightarrow$ O lado da base é 4 m

$\underline{-10} \cdot \underline{4} = -40$ $\quad x'' = -10 \quad$ −10 não convém.

2-) $A_{base} = 24\sqrt{3}\,cm^2 \mid h = 2\sqrt{3}$

fórmula do ⬡

⬡ $\Rightarrow 24\sqrt{3} = \frac{3l^2\sqrt{3}}{2} \Rightarrow 48\sqrt{3} = 3l^2\sqrt{3} \therefore$

$\therefore \Rightarrow \frac{48\sqrt{3}}{3} = l^2\sqrt{3} \Rightarrow 16\sqrt{3} = l^2\sqrt{3} \Rightarrow l^2 = \frac{16\cancel{\sqrt{3}}}{\cancel{\sqrt{3}}} \therefore$

$\therefore = l^2 = 16 \Rightarrow l = \sqrt{16} \Rightarrow l = 4$

$A_{lateral} = 6$ retângulos $= 6.l.h$

$A_{lateral} = 6.4.2\sqrt{3} \Rightarrow 48\sqrt{3}\,cm^2$

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

Exercícios 3 e 4:

3-)   $h = \sqrt{3} \mid R = 2 \mid R = l$

igual foi feito na questão 2.

$A_{base} = \dfrac{6l^2\sqrt{3}}{4} \Rightarrow$ simplifico $\Rightarrow A_{base} = \dfrac{3l^2\sqrt{3}}{2}$ ∴

∴ $\dfrac{3.2^2\sqrt{3}}{2} \Rightarrow \dfrac{12\sqrt{3}}{2} \Rightarrow 6\sqrt{3} = A_{base}$

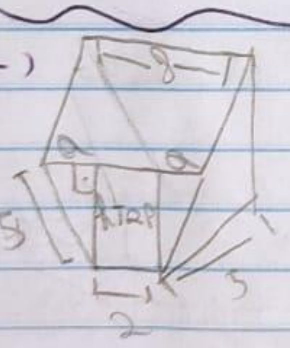
$A_{lateral} = 6.2.\sqrt{3} \Rightarrow A_{lateral} = 12\sqrt{3}$

$A_{total} = 2.A_{base} + A_{lateral}$

$A_{total} = 2.6\sqrt{3} + 12\sqrt{3}$

$A_{total} = 12\sqrt{3} + 12\sqrt{3}$

$\boxed{A_{total} = 24\sqrt{3}}$ ∴ letra B.

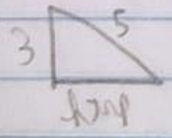
4-) 

$B = 8\,cm \mid h_{prisma} = 5\,cm$

$b = 2\,cm \mid h_{trp} = ?$

$a + 2 + a = 8 \Rightarrow 2a + 2 = 8$

$2a = 8 - 2 \Rightarrow 2a = 6 \Rightarrow \boxed{a = 3}$



$\Rightarrow 5^2 = 3^2 + h_{trp}^2$

$25 = 9 + h_{trp}^2$

$16 = h_{trp}^2$

$h_{trp} = \sqrt{16}$

$h_{trp} = 4$

$A_{base} = \dfrac{(B+b).h_{trp}}{2} \Rightarrow \dfrac{(8+2).\cancel{4}}{\cancel{2}}$ ∴

∴ $10.2 = 20$

$Volume = A_{base}.h_{prisma} \Rightarrow Volume = 20.5$

$\boxed{Volume = 100\,cm^3}$ ∴ letra D.

Exercícios 5 e 6:

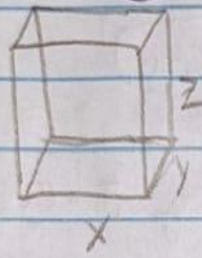
5.-) B tri = 15 cm | h tri = 10 cm | h prisma = 10 cm

$$A\,base = \frac{15.10}{2} = \frac{150}{2} \Rightarrow 75$$

$\Rightarrow$ Letra C.

Volume = A base . h prisma $\Rightarrow 75.10 \Rightarrow \boxed{\text{Volume} = 750\,cm^3}$

6.-)



Área total $\Rightarrow 4x^2 = 2xy + 2xz + 2yz$

$$4x^2 = 2(xy + xz + yz) \quad (\div 2)$$

$$2x^2 = xy + xz + yz \Rightarrow z = 2y$$

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

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

$$\underset{a}{2y^2} \; \underset{b}{+3xy} \; \underset{c}{-2x^2}$$

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

$$9x^2 + 16x^2 = \boxed{25x^2}$$

$$y = \frac{-3x \pm \sqrt{25x^2}}{2.2} \Rightarrow \frac{-3x \pm 5x}{4}$$

$$y' = \frac{2x}{4} = \boxed{\frac{x}{2}} \quad y'' = \frac{-8x}{4} = \boxed{-2x} \Rightarrow \text{não convém}$$

$$z = 2.\frac{x}{2} = \boxed{x} \quad V = x.y.z$$

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

$\Rightarrow$ Letra C.

2ª Lista – Paralelepípedos e Cubos

Exercícios 1 e 2:

Folha Básica - Paralelepípedos e Cubos

1-) Comprimento = 51 cm | Largura = 26 cm | Altura = 12,5 cm

Comp Interno = 51 - (2 · 0,5)
51 - 1
50 cm²

Larg Int = 26 - (2 · 0,5)
26 - 1
25 cm²

Alt Int = 12,5 - 0,5
12 cm

V_{Int} = Comp Int · Larg Int · Alt Int
$V_{Int} = 50 \cdot 25 \cdot 12$
$V_{Int} = 15000\ cm^2$

$cm^2 - m^2 = \frac{15000}{1000000}$ → $\boxed{V = 0{,}015\ m^2}$ m → Letra A.

2-) A total = $72\ m^2$

$72 = 6a^2$ → $a^2 = 12$
$\frac{72}{6} = a^2$
$a = \sqrt{12}$
$a = \sqrt{2^2 \cdot 3}$
$a = 2\sqrt{3}$

12	2
6	2
3	3

Diagonal → $D = a\sqrt{3}$
$D = 2\sqrt{3} \cdot \sqrt{3}$
$D = 2 \cdot 3$
$\boxed{D = 6}$ m → Letra B.

Exercícios 3, 4 e 5:

3-) $a = 50cm \Rightarrow a = 0,5m$

$Volume = a^3 \Rightarrow V = 0,5^3 \Rightarrow V = 0,5m^3$

Volume em litros $\Rightarrow VL = 0,125 \cdot 1000$

$\boxed{VL = 125L} \Rightarrow$ Letra B

4-) Aresta $= 1m^3$ | $Volume = a^3 \Rightarrow 1^3 = 1m^3$

$1m^3 = 1000$ litros

Volume $= 1000 - 1 = 999$ litros

$1m$ — $1000l$

$(1-x)$ — $999l$

$1000(1-x) = 999$

$1000 - 1000x = 999$

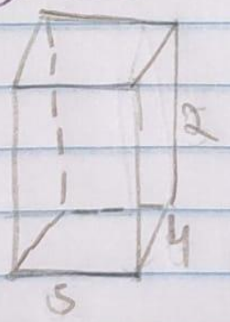
$1000x = 999 - 1000$

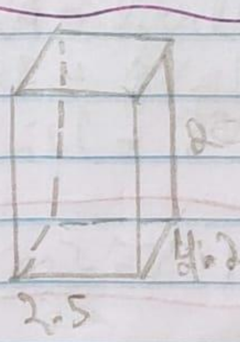
$\Rightarrow 1000x = 1$

$x = \frac{1}{1000}$

$\boxed{X = 0,001m}$

5-) Volume = V





$V = 2 \cdot 4 \cdot 5 = 40cm^3$

$V = 2 \cdot (5 \cdot 2) \cdot (4 \cdot 2)$

$V = 2 \cdot 8 \cdot 10 = 160cm^3$

Logo: $\frac{16\cancel{0}}{4\cancel{0}} \Rightarrow 4 \Rightarrow \boxed{4V} \Rightarrow$ Letra C.

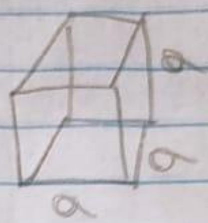
Exercício 6:

6-)

$l = 4\sqrt{3}$

$\text{Volume}_P = V_{cubo}$

$\begin{cases} h = ? \\ a = 4\sqrt{3} \end{cases}$



$\text{Volume}_P = V_{cubo}$

$A_{base} \cdot h = a^3$

$\frac{l^2\sqrt{3}}{4} \cdot h = a^3 \Rightarrow \therefore$

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

$\therefore \frac{h}{4} = 4 \Rightarrow h = 4 \cdot 4$

$h = 16$

$A_{lateral} = 3 \cdot 4\sqrt{3} \cdot 16 \Rightarrow 192\sqrt{3} \Rightarrow A_{lateral}.$

$A_{base} = \frac{l^2\sqrt{3}}{4} = \frac{(4\sqrt{3})^2 \cdot \sqrt{3}}{4} \Rightarrow \frac{\cancel{16} \cdot 3\sqrt{3}}{\cancel{4}} \Rightarrow 4 \cdot 3\sqrt{3}$

$\boxed{A_{base} = 12\sqrt{3}}$

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

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

$A_{total} = 24\sqrt{3} + 192\sqrt{3}$

$\boxed{A_{total} = 216\sqrt{3}\ cm^2} \Rightarrow$ Alternativa D