Tarefa básica

PRISMAS, PARALELEPÍPEDOS E CUBOS

→ PRISMAS

① $A_T = 80\,m^2$

altura = 3 m

lado = ?

$A_T = 2A_B + A_L$

$80 = 2l^2 + (4.3.l)$

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

$\Delta\ b^2 - 4.a.c$

$\Delta\ 12^2 - 4.2.(-80)$

$\Delta\ 144 + 640$

$\Delta\ 784$

$l = \dfrac{-b \pm \sqrt{784}}{2.a}$

$l = \dfrac{-12 \pm 28}{4}$

$l' = \dfrac{16}{4} = 4\,m \qquad l'' = \dfrac{-40}{4} = -10\,m$ NÃO CONVÉM

② $A_B = 24\sqrt{3}\ cm^2$

altura $= 2\sqrt{3}\,cm$

$A_L = ?$

prisma hexagonal regular:

$A_B = \dfrac{6l^2\sqrt{3}}{4}$

$24\cancel{\sqrt{3}} = \dfrac{6l^2\cancel{\sqrt{3}}}{4}$

$96 = 6l^2$

$l^2 = \dfrac{96}{6}$

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

$A_L = 6.4.2\sqrt{3}$

$A_L = 24.2\sqrt{3}$

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

③ altura $= \sqrt{3}$

$r = 2 = l$

$A_T = ?$

prisma reto hexagonal regular:

$A_B = \dfrac{6.\cancel{2^2}\sqrt{3}}{\cancel{4}}$

$A_B = 6\sqrt{3}$

$A_L = 6.2.\sqrt{3}$

$A_L = 12\sqrt{3}$

$A_T = 2A_B + A_L$

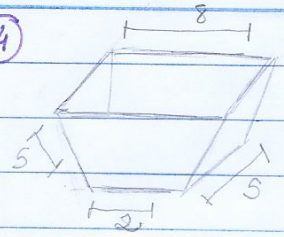
$A_T = 2.6\sqrt{3} + 12\sqrt{3}$

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

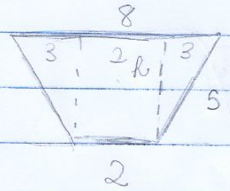
$A_T = 24\sqrt{3}$

Alternativa B)

4)



$B = 8$
$b = 2$
$V = ?$



$\rightarrow 5^2 = 3^2 + h^2$
$25 = 9 + h^2$
$h^2 = 16$
$h = \sqrt{16} = 4$

$\rightarrow A_B = \frac{(2+8) \cdot 4}{2}$

$A_B = \frac{10 \cdot \cancel{4}}{\cancel{2}}$

$A_B = 20$

$V = A_B \cdot h$
$V = 20 \cdot 5 = 100 \ m^3$ alternativa D)

5) $l = 10 \ cm$
$h = 15 \ cm$
$V = ?$

$A_B = \frac{l \cdot h}{2}$

$A_B = \frac{10 \cdot 15}{\cancel{2}}$

$A_B = 75 \ cm$

$V = A_B \cdot h$
$V = 75 \cdot 15$
$V = 750 \ cm^3$

6) altura $= z = 2y$
$A_T = 4x^2$

prisma quadrangular reto:
$A_B = x \cdot y$

$A_L = 2 \cdot (x \cdot 2y) + 2(y \cdot 2y)$
$A_L = 4xy + 4y^2$

$A_T = 2A_B + A_L$
$4x^2 = 2xy + (4xy + 4y^2)$
$4x^2 = 6xy + 4y^2$
$4x^2 - 6xy - 4y^2 = 0$
$\Delta (-6y)^2 - 4 \cdot 4 \cdot (-4y^2)$
$\Delta \ 36y^2 + 64y^2$
$\Delta \ 100y^2$

$\rightarrow x = \frac{6y \pm \sqrt{100y^2}}{8}$

$x = \frac{6y \pm 10y}{8}$

$x' = \frac{16y}{8} = 2y$

$x'' = \frac{-4y}{8}$

NÃO CONVÉM

$x = 2y = z$

$A_B = x \cdot \frac{x}{2}$

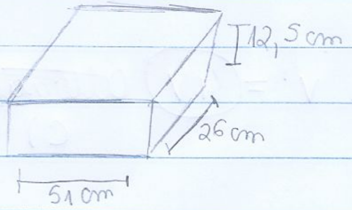
$A_B = \frac{x^2}{2}$

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

alternativa C)

→ PARALELEPÍPEDOS E CUBOS

(1)



espessura = 0,5 cm

Comprimento → $51 - (2 \cdot 0{,}5) = 51 - 1 = 50$ //

Largura → $26 - (2 \cdot 0{,}5) = 25$ //

Altura → $12{,}5 - 0{,}5 = 12$ //

$50 \times 25 \times 12$ cm

$V = 50 \cdot 25 \cdot 12$

$V = 15000\ cm^3 \rightarrow 0{,}015\ m^3$ alternativa A)

(2) $A_T = 72\ m^2$

$D = ?$

$72 = 6a^2$

$a = \sqrt{12}$

$a = 2\sqrt{3}\ m$

$D = \sqrt{3a^2}$

$D = \sqrt{3 \cdot (2\sqrt{3})^2}$

$D = \sqrt{3 \cdot 12}$

$D = \sqrt{36} = 6\ m$

alternativa B)

(3) $a = 5\ cm \rightarrow \frac{50}{100} = 0{,}5\ m$

$V = ?$

$V = a^3$

$V = 0{,}5^3$

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

→ $V = 0{,}125 \cdot 1000$

$V = 125$ litros

alternativa A)

(4) aresta = 1 m

$V = a^3$

$V = 1^3$

$V = 1m \rightarrow 1.000 \cdot 1 = 1000$ litros

$1000 - 1 = 999$ litros

$1\ m^3$ — 1000 l

$1\ m^3 - x$ — 999 l

$1000 - 1000x = 999$

$^{(-1)} -1000x = -1\ ^{(-1)}$

$x = \frac{1}{1000} \rightarrow 0{,}001\ m^3$

⑤ $V = abc$

$V' = 2a \cdot 2b \cdot c \rightarrow V' = 4abc$ ou seja $V' = 4V$ Alternativa C)

⑥ lado $= 4\sqrt{3}$ cm – equilátero

$V = (4\sqrt{3})^3 = 64 \cdot 3 \cdot \sqrt{3} = 192\sqrt{3}\ cm^3$

$A_T = ?$

$h = ?$

$h_\Delta = \dfrac{4\sqrt{3} \cdot \sqrt{3}}{2} = 6\ cm$

$A_B = \dfrac{4\sqrt{3} \cdot 6}{2} = 12\sqrt{3}\ cm^2$

$h_\square = \dfrac{192\sqrt{3}}{12\sqrt{3}} = 16\ cm$

$A_L = 3 \cdot 4\sqrt{3} \cdot 16 = 192\sqrt{3}\ cm^2$

$A_T = 2A_B + A_L$

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

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

$A_T = 216\sqrt{3}\ cm^2$ Alternativa D)