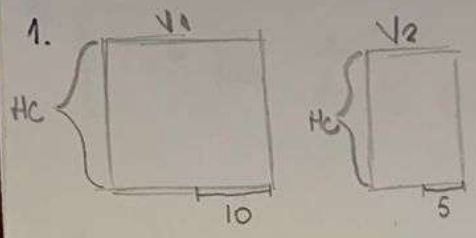
CILINDROS

1.



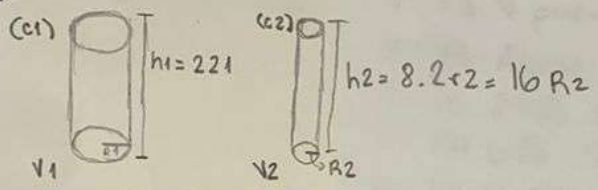
$r_m = 5\,cm$
$R_M = 10\,cm$
$h_c = 40\,cm$
$h = ?$

$V_1 = A_{base} \cdot h_c$
$V_1 = \pi R_M \cdot h$
$V_1 = \pi 10^2 1/5 \cdot 40$
$V_1 = \pi 100\, 1/5 \cdot 40$
$V_1 = \pi\, 20 \cdot 40$
$V_1 = 800\,cm^2$

$V_1 = V_2$
$V_2 = A_{base} \cdot h$
$V_2 = \pi r_m^2 \cdot h$
$800\pi = \pi 5^2 \cdot h$
$\frac{800\pi}{\pi} = 5^2 \cdot h$
$800 = 25h$
$h = 800/25 \rightarrow 3\,20\,m$

R: A

2.

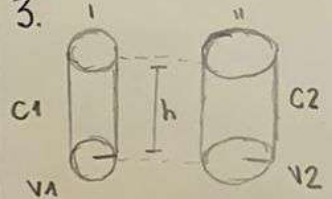


$\frac{V_1}{V_2} = \frac{1}{27} \rightarrow \frac{\pi \cdot (R_1)^2 \cdot h_1}{\pi \cdot (R_2)^2 \cdot h^2} = \frac{1}{27} \rightarrow \frac{(R_1)^2 \cdot 2R_1}{(R_2)^2 \cdot 16R_2} = \frac{1}{27} \rightarrow \frac{(R_1)^2 \cdot R_1 \cdot 2}{(R_2)^2 \cdot R_2 \cdot 16} = \frac{1}{27} \rightarrow \frac{(R_1)^3}{(R_2)^3} \cdot \frac{1}{8} \cdot \frac{1}{27} \rightarrow$

$\frac{(R_1)^3}{(R_2)^3} = \frac{8}{27} \rightarrow \left(\frac{R_1}{R_2}\right)^3 = \frac{8}{27} \rightarrow \frac{R_1}{R_2} = \sqrt[3]{\frac{8}{27}} \rightarrow \frac{R_1}{R_2} = \sqrt[3]{\frac{2^3}{3^3}} \rightarrow \frac{R_1}{R_2} = \frac{2}{3}$

R: A

3.



$V_1 = 16\pi$
$C_2\,Alateral = C_1\,Alateral$
$h = ?$

$V_1 = 16\pi \rightarrow \pi r^2 \cdot h = 16\pi \rightarrow R^2 \cdot h = 16\pi/\pi \rightarrow R^2 \cdot h = 16$
$R^2 \cdot h = 16 \rightarrow R^2 \cdot 2R = 16 \rightarrow R^2 \cdot R = 16/2 \rightarrow R^3 = 8$
$R = \sqrt[3]{8} \rightarrow R = \sqrt[3]{2^3} \rightarrow R = 2$

$C_2\,Alateral = C_1\,Atotal$
$2\pi R.h = 2\pi r\,(R+H)$
$2\pi R.h = 2\pi r(R+h)$
$3h = \frac{2\pi R\,(R+h)}{\pi R}$
$3h = 2(R+h) \rightarrow 3h = 2r + 2h$
$3h - 2h = 2r \rightarrow h = 2r$

$h = 2R$
$h = 2 \cdot 2$
$h = 4$

R: D

4. $V = \pi . R^2 . h$

$h = 4$

$R^2 = (R+12)^2$

$h = (4+12)$

$\pi . R^2 . h = \pi . R^2 . h$

$\pi (R+12)^2 . 4 = \pi . R^2 . (4+12)$

$\pi (R^2 + 24R + 144) 4 = \pi . R^2 . 16$

$\pi (4R^2 + 96R + 576) = \pi . R^2 . 16$

$4R^2 + 96R + 576 = 16R^2$

$4R^2 - 16R^2 + 96R + 576 = 0$

$-12R^2 + 96R + 576 = 0 \ (\times -1)$

$12R^2 - 96R + 576 = 0 \div 12$

$R^2 - 8R - 48 = 0$

$\Delta = (-8)^2 . 4 . 1 . -48$

$\Delta = 64 + 192$

$\Delta = \sqrt{256}$

$\Delta = 16 \longrightarrow$

$R = 8 \pm 16 / 2.1$

$R_I = 8 + 16 / 2 \rightarrow 12\ cm$

$R_{II} = 8 - 16 / 2 \rightarrow (-4)$

R: A

5.

$R1 = 20cm$

$0,8mm = 0,08\ cm$

$\pi = 3,14$

$Vd = \pi . R^2 . h$

$Vd = \pi (20^2) . 0,08$

$Vd = \pi\ 400 . 0,08$

$Vd = 32\pi$

$Vp = Vd$

$Vp = 32\pi$

$Vp = 32 . 3,14$

$Vp = 100,48 cm^3$

R: B

PIRÂMIDES

1. $a = x\ cm$

$b = 2x\ cm$

$h = 8cm$

Volume

$Vol = 1/3 . Vol\ prisma \rightarrow Vol = 1/3 . Abase . h$

$Vol = 1/3 . a . b . h \rightarrow 48 = 1/3 . x . 2x^2 . 8$

$48 . 3 = 1 . 2x^2 . 8 \rightarrow 144 = 2x^2 . 8$

$144 = 16x^2 \rightarrow 144/16 = x^2 \rightarrow x^2 = 9 \rightarrow x = \sqrt{9} \rightarrow x = 3\ cm$

R: C

2. $bl = 80mm$

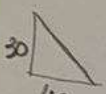
$h = 30mm$

$Abase = ?$

$a = 40\ mm$

$A = ?$

$A\ total = A\ base + A\ lateral$



$A = h^2 + a^2$

$A^2 = 30^2 + 40^2$

$A^2 = 900 + 1600$

$A^2 = \sqrt{2500}$

$A = 50mm$

$Abase = l^2 = 80^2 = 6400 mm^2$

$Alateral = 4A \rightarrow \frac{4 . l . A}{2}$

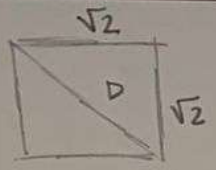
$\frac{4 . 80 . 50}{2} = 2 . 80 . 50 = 8000 mm^2$

$Atotal = 6400 + 8000$

$Atotal = 14.400$

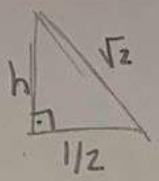
R: E

3.



$d = \sqrt{2}$

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



$(\sqrt{2})^2 = h^2 + 1^2$

$2 = h^2 + 1$

$h^2 = 1 \rightarrow h = \sqrt{1} \rightarrow 1$

R: C

4.

Aresta Base = a cm

$h = 6\sqrt{3}$ cm

V = ?

$A_{base} = \frac{3l^2\sqrt{3}}{2} \rightarrow \frac{3a^2\sqrt{3}}{2}$

$V = 1/3 \cdot 1/prisma \rightarrow V = 1/3 \cdot A_{base} \cdot h$

$V = 1/3 \cdot 3 \cdot a^2\sqrt{3}/2 \cdot 6\sqrt{3} \rightarrow V = 3a^2\sqrt{3} \cdot \sqrt{3} \cdot b/3 \cdot 2$

$V = 3a^2 \cdot \cancel{3}b/\cancel{3} \cdot 2 \rightarrow V = 3a^2 \cdot b/2 \ cm^3$

R: A

5.

Ar. base = lado = 4 cm

$h = 6\sqrt{3}$ cm

V = ?

$V = 1/3 \cdot V\ prisma$

$V = 1/3 \cdot A_{base} \cdot h$

$V = 1/3 \cdot 24\sqrt{3} \cdot 6\sqrt{3}$

$V = 24 \cdot 6\sqrt{3} \cdot \sqrt{3}/3$

$V = 24 \cdot 6 \cdot \cancel{3}/\cancel{3}$

$V = 24 \cdot 6 \rightarrow V = 144\ cm^2$

$A_{base} = 3l^2\sqrt{3}/2$

$A_{base} = 3 \cdot 4^2\sqrt{3}/2$

$A_{base} = 3 \cdot \cancel{16}\sqrt{3}/\cancel{2}$

$A_{base} = 24\sqrt{3}$

R: D

6.

Perímetro = 6cm

h = 8cm

l hexa = $6/6 \rightarrow 1$ cm

$A_{base} = 3l^2\sqrt{3}/2$

$A_{base} = 3 \cdot 1^2\sqrt{3}/2$

$A_{base} = 3\sqrt{3}/2$

$V = 1/3 \cdot prisma$

$V = 1/3 \cdot A_{base} \cdot h$

$V = 1/3 \cdot 3\sqrt{3}/2 \cdot 8$

$V = \frac{1 \cdot \cancel{8}^{4} \cdot \cancel{3} \cdot \sqrt{3}}{\cancel{3} \cdot \cancel{2}} \rightarrow 4\sqrt{3}\ cm^2$

R: A

7.

Lado pirâmide = 2a

Volume pirâmide = Volume prisma

Volume prisma = $A_{base} \cdot h_{prisma}$

= $l^2 = h_{prisma}$

= $a^2 \cdot h_{prisma}$

Volume prisma = $1/3 \cdot V \cdot prisma$

= $1/3 \cdot A_{base} \cdot h_{prisma}$

= $1/3 \cdot l^2 \cdot h_{prisma}$

= $1/3 \cdot 2a^2 \cdot h_{prisma}$

= $4a^2 \cdot h\ prisma/3$

$4a^2 \cdot h\ prisma/3 = a^2 \cdot prisma$

$4a^2 \cdot h_{prisma} = 3a^2 \cdot h\ prisma$

$\frac{h\ prisma}{h_{prisma}} = \frac{3a^2}{4a^2} = \frac{3}{4}$

R: A

8.

$A_{total} = \ell^2\sqrt{3}$

$h = ?$

$6\sqrt{3} = \ell^2\sqrt{3} \rightarrow \frac{6\sqrt{3}}{\sqrt{3}} = \ell^2$

$\ell^2 = 6 \rightarrow \ell = \sqrt{6}$

$h = \ell\sqrt{6}$

$h = \frac{\sqrt{6}.\sqrt{6}}{3} \rightarrow h = \frac{\sqrt{36}}{3}$

$h = \frac{3}{6} \rightarrow 2cm$

R: A