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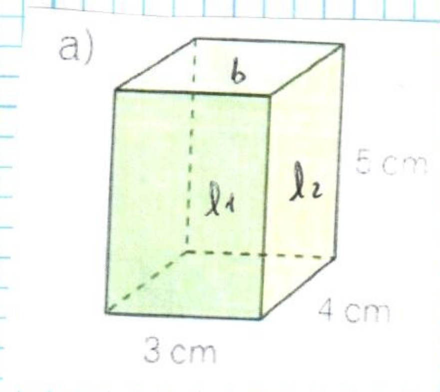
# 59 Calcula el Área

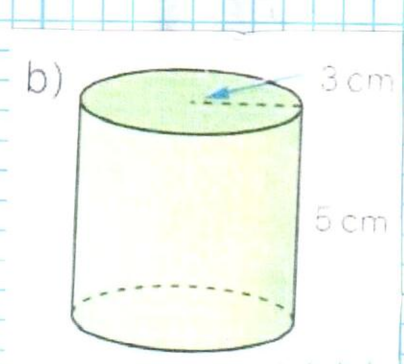



$Al_1 = (3\cdot5)\cdot2 = 30\ cm^2$

$Al_2 = (4\cdot5)\cdot2 = 40$

$Ab = (3\cdot4)\cdot2 = 24$

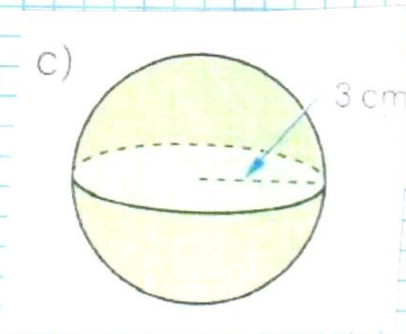
A total $= 94\ cm^2$



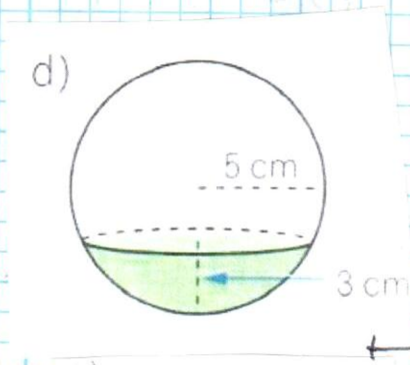

$Al = 2\pi R\cdot h = 2\cdot3'14\cdot3\cdot5 = 94'2\ cm^2$

$Ab = 2(\pi R^2) = 2\cdot(3'14\cdot3^2) = 56'52\ cm^2$

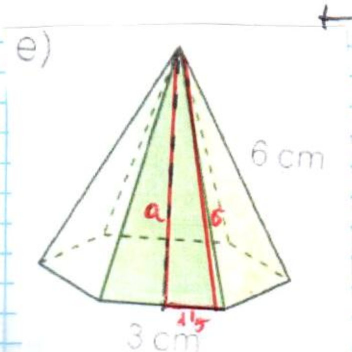
total $= 150'72$




$A = 4\pi R^2 = 4\cdot\pi\cdot3^2 = 113'04\ cm^2$



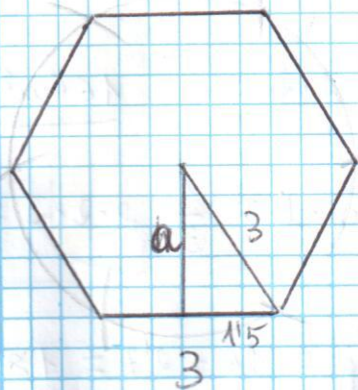

$A = 2\cdot\pi\cdot R\cdot h = 2\cdot\pi\cdot5\cdot3 = 94'2\ cm^2$




$6^2 = 1'5^2 + a^2 \;//\; a^2 = 6^2 - 1'5^2 = 33'75$

$a = \sqrt{33'75} = 5'8\ cm$

$Al = 6\cdot\left(\frac{b\cdot a}{2}\right) = 6\cdot\left(\frac{3\cdot5'8}{2}\right) = 52'2\ cm$



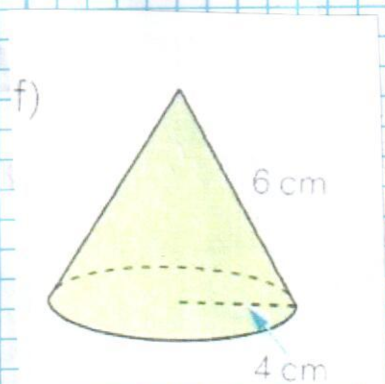

A base

$$3^2 = 1'5^2 + a^2 \;//\; a^2 = 3^2 - 1'5^2 = 6'75$$

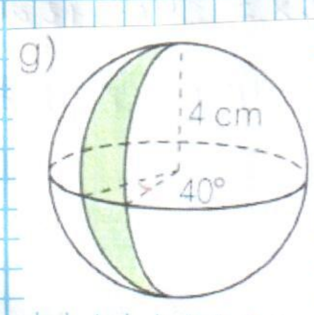
$$a = \sqrt{6'75} = \underline{2'6 \text{ cm}}$$

$$Ab = \frac{P \cdot a}{2} = \frac{18 \cdot 2'6}{2} = 23'4 \text{ cm}^2$$

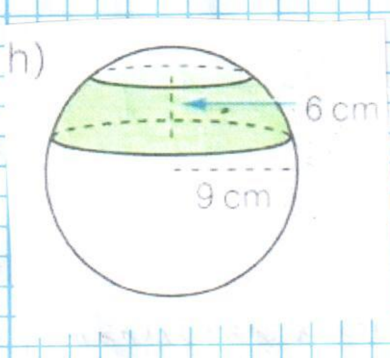
$$A\text{total} = Al + Ab = 52'2 + 23'4 = \underline{\underline{75'6 \text{ cm}^2}}$$




$$A = \pi R (g + R) = \pi \cdot 4 (6 + 4) = \underline{\underline{125'6 \text{ cm}^2}}$$




$$A = \frac{4 \pi R^2 \cdot \alpha}{360} = \frac{4 \cdot \pi \cdot 4^2 \cdot 40}{360} = \underline{\underline{22'33 \text{ cm}^2}}$$




$$A_{zona} = 2 \pi R \cdot h = 2 \cdot \pi \cdot 9 \cdot 6 = \underline{\underline{339'12 \text{ cm}^2}}$$

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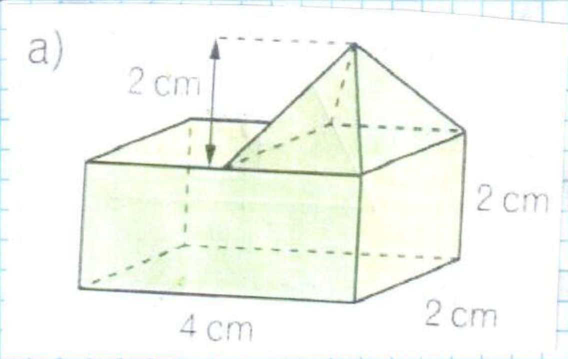
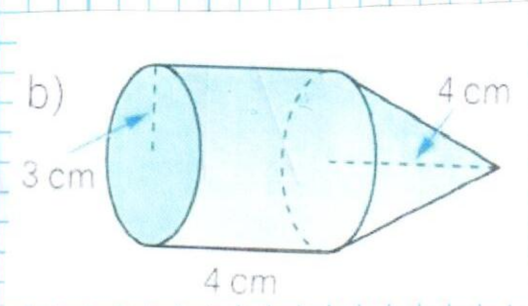



$V_{ortoedro} = 4\cdot 2\cdot 2 = \underline{16\ cm^2}$

$V_{pira} = \frac{1}{3} A_{base}\cdot h = \frac{1}{3}\ 2\cdot 2\cdot 2 = 2'7\ cm^3$

$V_{total} = V_{or} + V_p = 16 + 2'7 = \underline{18'7\ cm^3}$

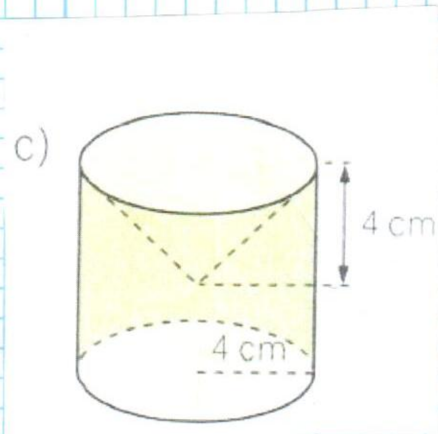



$V_{cil} = A_b\cdot h = \pi R^2\cdot h = \pi\cdot 3^2\cdot 4 = \underline{113'04\ cm^3}$

$V_{cono} = \frac{1}{3}\pi R^2\cdot h = \frac{1}{3}\pi 3^2\cdot 4 = \underline{37'68\ cm^3}$

$V_{total} = V_{cil} + V_{con} = 113'04 + 37'68 =$

$= \underline{150'72\ cm^3}$

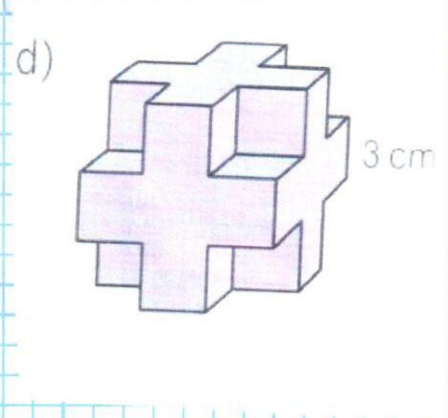



$V_{cil} = \pi R^2\cdot h = \pi 4^2\cdot 8 = 401'92\ cm^3$

$V_{cono} = \frac{1}{3}\pi R^2\cdot h = \frac{1}{3}\pi 4^2\cdot 4 = 67\ cm^3$

$V_{total} = V_{cil} - V_{cono} = 401'92 - 67 =$

$= \underline{334'92\ cm^3}$

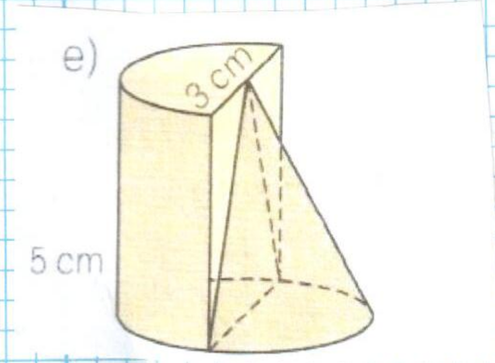



Hallamos el volumen del cubo como si fuera macizo, es decir, un cubo de 9 cm de lado y después le restamos 9 huecos formados por cubos de 3 cm de lado.

$V_{cubo} = 9\cdot 9\cdot 9 = 729\ cm^3$

$V_{huecos} = 8\cdot 3^3 = 216\ cm^3$

$V\ total = \underline{513\ cm^3}$



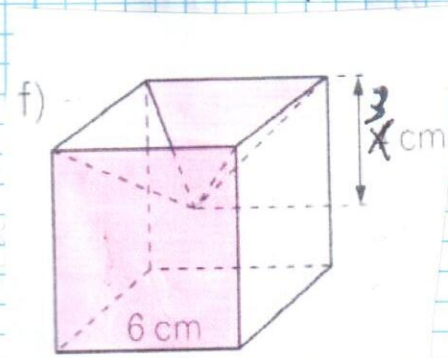

$$V_{semicilindro} = \frac{1}{2}\pi R^2 \cdot h =$$

$$= \frac{1}{2}\pi \cdot 1'5^2 \cdot 5 = \underline{17'66\ cm^3}$$

$$V.\ Semicono = \frac{1}{2}\cdot\left(\frac{1}{3}\cdot \pi R^2 \cdot h\right) =$$

$$= \frac{1}{6}\pi\, 1'5^2 \cdot 5 = \underline{5'89\ cm^3}$$

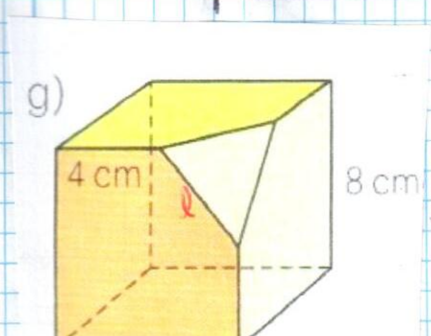
$$V_{total} = V_{semicil} + V.\ Semicono = 17'66 + 5'89 = \underline{\underline{23'55\ cm^3}}$$



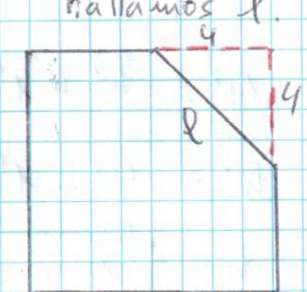

$$V_{cubo} = l^3 = 6^3 = 216\ cm^3$$

$$V_{piram.} = \frac{1}{3}Ab \cdot h = \frac{1}{3}6^2 \cdot 3 = 36\ cm^3$$

$$V = V_c - V_p = 216 - 36 = \underline{\underline{180\ cm^3}}$$



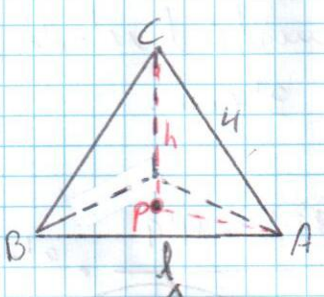

hallamos $l$.




$$l^2 = 4^2 + 4^2 = 32$$

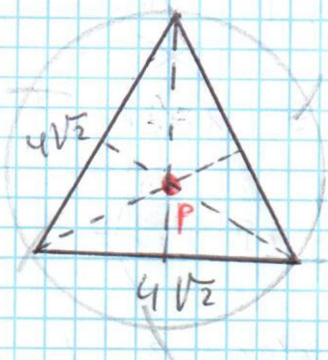
$$l = \sqrt{32} = \sqrt{2^5} = 2^2\sqrt{2} =$$

$$= \underline{4\sqrt{2}}$$

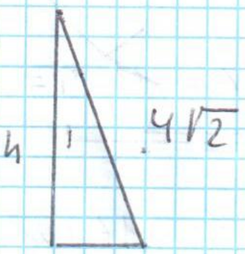



El pico biselado es una pirámide triangula cuya base esta formada por 3 lados de $4\sqrt{2}$ y cuyas aristas son de 4 cm.

Debemos hallar la altura.




En la base el punto "p" se encuentra donde se cortan las bisectrices, que en un triángulo equilátero es a 1/3 de de la distancia entre el vértice y la base.




$$(4\sqrt{2})^2 = (2\sqrt{2})^2 + h^2$$

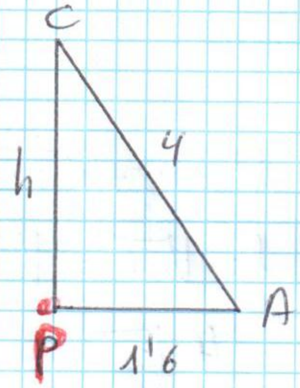
$$\frac{4\sqrt{2}}{2} = 2\sqrt{2}$$

$$h^2 = 16 \cdot 2 - 4 \cdot 2 = 32 - 8 = 24$$

$$h = \sqrt{24} = 4'9 \text{ cm}$$

Luego la distancia al vértice $= \frac{1}{3}\, 4'9 = 1'6$

En triángulo $\widehat{CPA}$ de la primera figura




$$4^2 = h^2 + 1'6^2$$

$$h^2 = 4^2 - 1'6^2 = 13'44 \text{ cm.}$$

$$h = \sqrt{13'44} = \underline{3'7 \text{ cm}}$$

Hallamos el volumen de ~~la~~ la pirámide biselada, de lado de la base $= 4\sqrt{2}$ y altura $3'7$ cm.

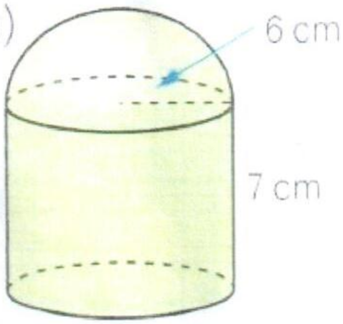
$$V_{\text{pirámide}} = \frac{1}{3}(A_{\text{base}} \cdot h) = \frac{1}{3}\left(\frac{4\sqrt{2} \cdot 4'9}{2} \cdot 3'7\right) =$$

$$= \frac{1}{3}(51'28) = \underline{17'09 \text{ cm}^3}$$

$$V_{\text{cubo}} = 8^3 = \underline{512 \text{ cm}^3}$$

$$V_{\text{figura}} = V_{\text{cubo}} - V_{\text{pira}} = 512 - 17'9 = \underline{494'1 \text{ cm}^3}$$

h)




$$V_{cilind} = \pi R^2 \cdot h = \pi\, 6^2 \cdot 7 = 791'28 \text{ cm}$$

$$V_{Semiesf} = \frac{1}{2}\left(\frac{4}{3}\pi R^3\right) = \frac{1}{3}\cdot\left(\frac{4}{3}\pi 6^3\right) =$$

$$= \frac{1}{2}\cdot 904'32 = 452'16 \text{ cm}^3$$

$$V_{total} = 791'28 + 452'16 = \underline{\underline{1.243'44 \text{ cm}^3}}$$