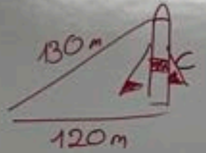
Ejercicio 4



$130^2 = c^2 + 120^2$

$16900 = c^2 + 14400$

$16.900 - 14.400 = c^2$

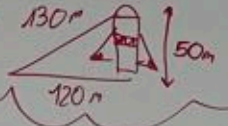
$2500 = c^2$

$c = \sqrt{2500} \rightarrow \boxed{c = 50m}$

$$\begin{array}{r} 130 \\ \cdot 130 \\ \hline 3900 \\ + 130 \\ \hline 16900 \end{array} \qquad \begin{array}{r} 120 \\ \cdot 120 \\ \hline 2400 \\ + 120 \\ \hline 14400 \end{array}$$

$$\begin{array}{r} 16900 \\ 14400 \\ \hline 02500 \end{array}$$

La altura del cohete es 50m.



5

$P = 4 \cdot 10 = 40cm$

$A = 10^2 = 100cm$

$x^2 = 10^2 + 10^2$

$x^2 = 100 + 100$

$\sqrt{x^2} = \sqrt{200}$

$x = 14{,}14cm$

6.

$37^2 = x^2 + 35^2$

$1369 = x^2 + 1225$

$1369 - 1225 = x^2$

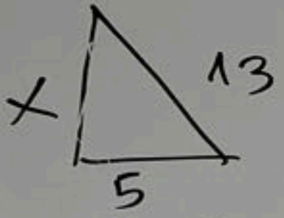
$144 = x^2$

$x = \sqrt{144} \rightarrow x = 12$

$P = 2 \cdot 35 + 2 \cdot 12 = 70 + 24 = 94m$

$A = 35 \cdot 12 = 420m^2$

7



$13^2 = x^2 + 5^2$

$169 = x^2 + 25$

$169 - 25 = x^2$

$144 = x^2$

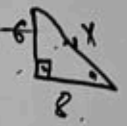
$x = \sqrt{144} \Rightarrow x = 12$

$P = 13 + 13 + 10 = 36\,cm$

~~A = 12·5 = 60 cm²~~

$$Área = \frac{b \cdot a}{2} = \frac{10 \cdot 12}{2} = 60\,cm^2$$

8



$x^2 = 6^2 + 8^2$

$x^2 = 36 + 64$

$x^2 = 100$

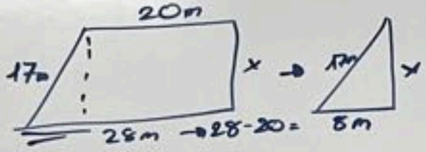
$x = \sqrt{100}$

$x = 10\,dm$

$P = 10 + 10 + 10 + 10 = 40\,dm$

$$A = \frac{D \cdot d}{2} = \frac{16 \cdot 12}{2} = 96\,dm^2$$

Ejercicio 9



$X^2 = 17^2 + 8^2 \rightarrow X^2 = 289 + 64 \rightarrow$

$289 - 64 = X^2 \rightarrow 225 = X^2 \rightarrow \sqrt{225} = X$

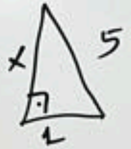
$\boxed{X = 15m}$ → La altura del trapecio rectángulo mide 15m.

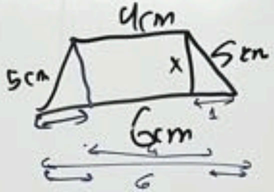
$P = 17 + 20 + 15 + 28 \rightarrow \boxed{P = 80m}$

$\acute{A} = \frac{(B+b) \cdot h}{2} \rightarrow \acute{A} = \frac{(28+20) \cdot 15}{2} \rightarrow \acute{A} = \frac{48 \cdot 15}{2} \rightarrow \acute{A} = \frac{720}{2} \rightarrow$

$\boxed{\acute{A} = 360 m^2}$

10





$6 - 4 = 2$

$\frac{2}{2} = 1$

$5^2 = 1^2 + x^2$

$25 = 1 + x^2$

$x^2 = 25 - 1$

$\sqrt{x^2} = \sqrt{24}$

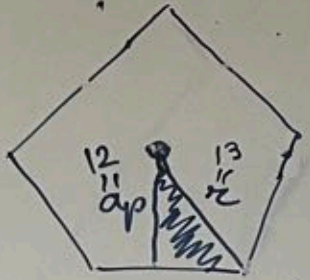
$x = 4{,}9$

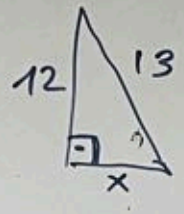
$P = 4 + 5 + 5 + 6 = 20$ cm

$A = \frac{(4+6) \cdot 4{,}9}{2} = \frac{10 \cdot 4{,}9}{2} = \frac{49}{2} = 24{,}5 cm^2$

$A = \frac{(B+b) \cdot a}{2}$

(11)





T. PITÁGORAS

$$13^2 = x^2 + 12^2$$

$$169 = x^2 + 144$$

$$169 - 144 = x^2$$

$$25 = x^2$$

$$\sqrt{25} = \sqrt{x^2}$$

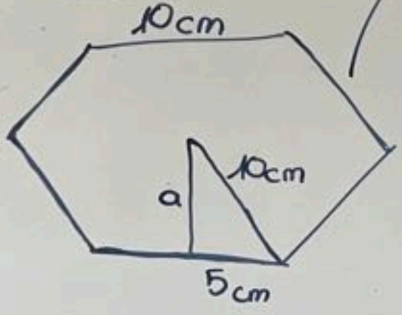
$$x = 5$$

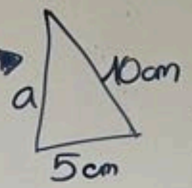
$$\text{lado} = 2 \cdot 5 = 10\ \text{cm}$$

$$\text{Perímetro} = 5 \cdot 10 = 50\ \text{cm}$$

$$\text{Área} = \frac{\text{Perímetro} \cdot ap}{2} = \frac{50 \cdot 12}{2} = 300\ \text{cm}^2$$

12





· Teorema de pitágoras $(h^2 = c_1^2 + c_2^2)$

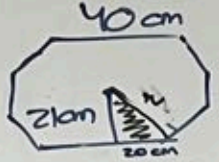
$10^2 = a^2 + 5^2 \rightarrow 100 = a^2 + 25 \rightarrow a^2 = 100 - 25 \rightarrow a^2 = 75 \rightarrow$

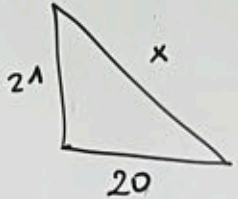
$\sqrt{a} = \sqrt{75} \rightarrow \boxed{a = 8{,}66 cm}$

· Perímetro $= 10 \cdot 6 = \boxed{60 cm}$

· Área $= \dfrac{\text{perímetro} \cdot \text{apotema}}{2} = \dfrac{60 \cdot 8{,}66}{2} = \dfrac{519{,}6}{2} = \boxed{259{,}8 cm^2}$

13





TEOREMA DE PITÁGORAS

$$x^2 = 21^2 + 20^2$$

$$x^2 = 441 + 400$$

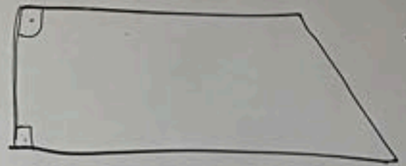
$$x^2 = 841$$

$$\sqrt{x^2} = \sqrt{841}$$

$$x = 29cm \leftarrow \text{radio}$$

perimetro: $40 \cdot 8 = 320cm$

área $= \frac{P \cdot a}{2} = \frac{320 \cdot 21}{2} = 3360 cm^2$



TRAPECIO RECTÁNGULO

TRAPECIO ISÓSCELES

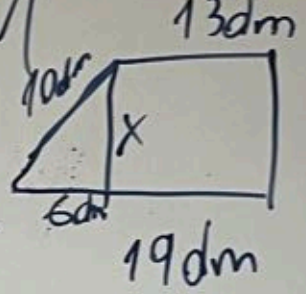
$P = 8+10+19+13 = 50dm$

altura = 8

$A = \frac{(19+13)\cdot 8}{2}$

$\frac{32\cdot 8}{2} = \frac{256}{2} = 128\,dm^2$

M



$10^2 = 6^2 + x^2$

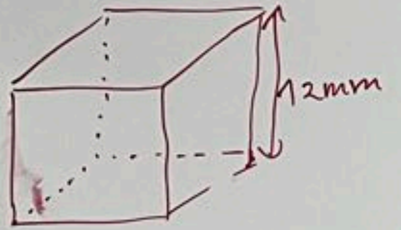
$100 = 36 + x^2$

$100 - 36 = x^2$

$\sqrt{64} = x^2$

$8 = x$

1 e



$1\ dm^3 = 1\ \ell$

$1\ cm^3 = 1\ m\ell$

CUBO (6 cuadrados)

$\text{ÁREA}_{CUBO} = 6 \cdot A_{1\,cuadrado} = 6 \cdot 12^2 = 6 \cdot 144 = 864\ mm^2$

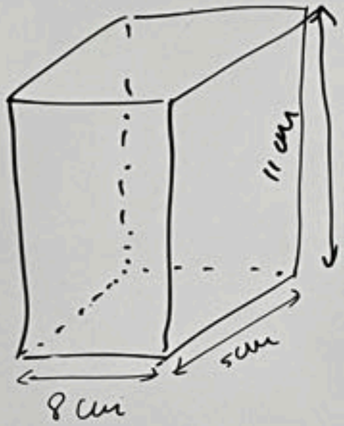
$\text{VOLUMEN} = A_{base\,cubo} \cdot altura = 12^2 \cdot 12 = 12^3 = 1728\ mm^3 = 0'001728\ dm^3$

$\boxed{\text{CAPACIDAD} = 0'001728\ \ell}$

$dm^3 \xrightarrow{\times 1000} cm^3 \xrightarrow{\times 1000} mm^3$

$mm^3 \xrightarrow{:1000} cm^3 \xrightarrow{:1000} dm^3$

(f)

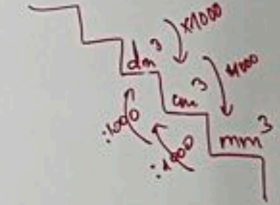


ORTOEDRO
(PRISMA CUADRANGULAR

6 rectángulos iguales 2 a 2

$1\ dm^3 = 1\ l$

$1\ cm^3 = 1\ ml$



ÁREA ORTOEDRO = Suma de las áreas de todos los rectángulos =

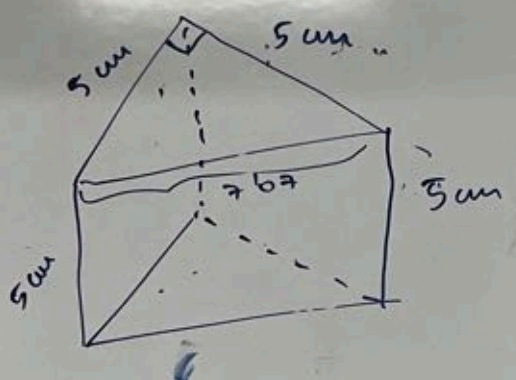
$= 2 \cdot 8 \cdot 5 + 2 \cdot 11 \cdot 5 + 2 \cdot 8 \cdot 11 =$

$= 80 + 110 + 176 = 366\ cm^2$

$V_{ORTOEDRO} = A_{base} \cdot altura = 8 \cdot 5 \cdot 11 = 440\ cm^3$

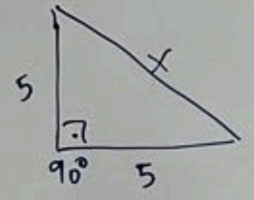
CAPACIDAD = 0'44 l

(9)



PRISMA TRIANGULAR

Necesito 2 triángulo y 3 rectángulos



T. PITÁGORAS

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

$x^2 = 50$

$x = \sqrt{50} \cong 7'07$

$VOLUMEN_{PRISMA} = A_{base} \cdot h =$

$= 12'5\ cm^2 \cdot 5\ cm = 62'5\ cm^3$

$= 0'0625\ dm^3$

CAPACIDAD $= 0'0625\ l.$

$A_{base} = A_{triángulo} = \frac{b \cdot a}{2} = \frac{5 \cdot 5}{2} = \frac{25}{2} = 12'5\ cm^2$

$A_{rectángulo\ 1} = b \cdot a = 7'07 \cdot 5$
$= 35'35\ cm^2$

$A_{rectángulo\ 2} = 5 \cdot 5 = 25$

$A_{rectángulo\ 3} = 5 \cdot 5 = 25$

$85'35\ cm^2$

$A_{PRISMA\ TRIAN.}$ = Sumar el área de todas las caras = $2 \cdot A_{base} + A_{lateral} = 2 \cdot 12'5 + 85'35 = 25 + 85'35 = 110'35\ cm^2$

(a)

PRISMA PENTAGONAL REGULAR

$\text{VOLUMEN} = A_{BASE} \cdot h =$

$= 15'75\, dm^2 \cdot 6\, dm = 94'50\, dm^3$

$\text{ÁREA}_{\text{PRISMA}} =$ Sumar área de todas las caras

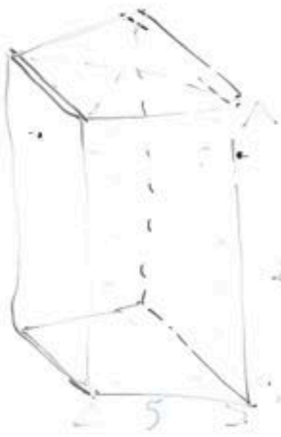
$= 2 \cdot A_{BASE} + A_{LATERAL} = 2 \cdot 15'75 + 90 = 31'50 + 90 = 121'5\, dm^2$

CAPACIDAD $= 94'5\, \ell$

$A_{BASE} = A_{PENT\ REGULAR} = \frac{\text{Perímetro} \cdot a_p}{2} = \frac{(3 \cdot 5) \cdot 2'1}{2} = 15'75\, dm^2$

$A_{LATERAL} =$ Suma área rectángulos $= 5 \cdot (3 \cdot 6) = 90\, dm^2$

(b)

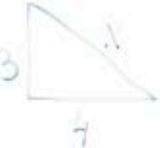


PRISMA ROMBOIDAL (2 rombos, 4 rectángulos iguales)

$\text{ÁREA} = 2\,A_{base} + A_{lateral} = 2 \cdot 24 + 400 = 448\ dm^2$

$A_{base} = A_{rombo} = \frac{D \cdot d}{2} = \frac{8 \cdot 6}{2} = \frac{48}{2} = 24\,dm^2$

$A_{LATERAL} = 4 \cdot A_{rectángulo} = 4 \cdot (5 \cdot 20) = 400\ dm^2$



PITÁGORAS

$x^2 = 3^2 + 4^2$

$x^2 = 9 + 16$

$x^2 = 25$

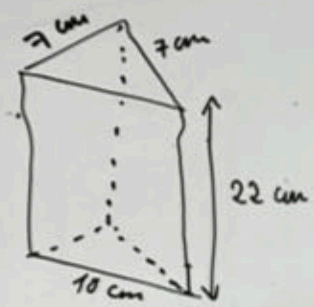
$x = 5$

$1dm^3 = 1\ell$

$\text{VOLUMEN} = A_{base} \cdot \underset{\text{altura}}{a} = 24\,dm^2 \cdot 20\,dm = 480\,dm^3 \Rightarrow \text{CAPACIDAD} = 480\,\ell.$

①

ⓒ



PRISMA TRIANGULAR

$\text{ÁREA} = 2 \cdot A_{TRIANGULO} + A_{LATERAL}$

$A_{TRIANGULO} = A_{BASE} = \frac{b \cdot a}{2} = \frac{10 \cdot 4'9}{2} = \frac{49}{2} = 24'5 \text{ cm}^2$

PITÁGORAS

$7^2 = x^2 + 5^2$

$49 = x^2 + 25$

$49 - 25 = x^2$

$x^2 = 24 \rightarrow x = \sqrt{24} \simeq 4'9 \text{ cm}$

$\text{VOLUMEN}_{\text{PRISMA}} = A_{base} \cdot altura =$

$= 24'5 \text{ cm}^2 \cdot 22 \text{ cm}$

$= 539 \text{ cm}^3$

$= 0'539 \text{ dm}^3$

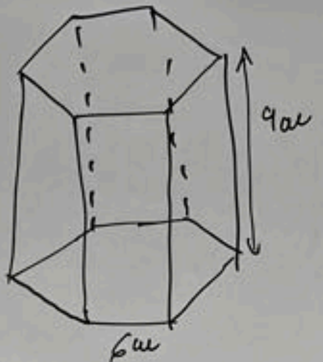
CAPACIDAD = 0'539 ℓ

$A_{LATERAL}$ = Suma área rect.

$= 10 \cdot 22 + 7 \cdot 22 + 7 \cdot 22 = 220 + 154 + 154$

$= 220 + 308 = 528 \text{ cm}^2$

$A_{TODO} = 2 \cdot 24'5 + 528 = 49 + 528 = 577 \text{ cm}^2$

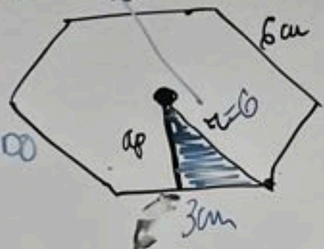


PRISMA HEXAGONAL REGULAR

(6 rectángulos iguales y 2 hexágonos regulares iguales)

$$\text{Área}_{\text{total}} = 2 \cdot A_{\text{hexágono reg.}} + \overbrace{6 \cdot A_{\text{rect.}}}^{A_{\text{LATERAL}}} = 2 \cdot 93'6 + 6 \cdot (\underset{b}{6} \cdot \underset{a}{9}) = 187'2 + 324 = 511' \ \text{cm}^2$$

EN UN HEXÁGONO REGULAR EL RADIO r MIDE IGUAL QUE EL LADO



$$\text{Área}_{\text{hexágono regular}} = \frac{\text{Perím.} \cdot ap}{2} = \frac{(6 \cdot 6) \cdot 5'2}{2} = \frac{36 \cdot 5'2}{2} = 93'6 \ \text{cm}^2$$

$$6^2 = a_p^2 + 3^2$$

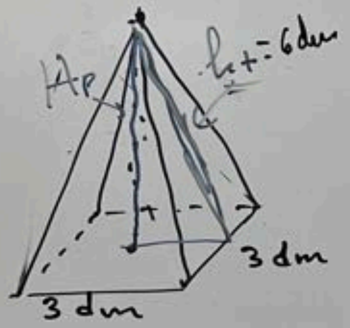
$$36 = a_p^2 + 9$$

$$36 - 9 = a_p^2 \Rightarrow a_p^2 = 27 \Rightarrow a_p = 5'2 \ \text{cm}$$

$$\text{Volumen PRISMA} = A_{\text{BASE}} \cdot \overset{\text{altura}}{h} = \underset{\text{cm}^2}{93'6} \cdot \underset{\text{cm}}{9} = 842'4 \ \text{cm}^3 = 0'8424 \ \text{dm}^3$$

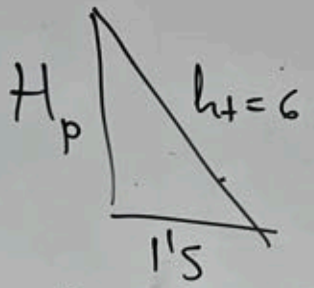
CAPACIDAD = 0'8424 l

(i) PIRÁMIDE CUADRANGULAR



$$\acute{A}REA_{TOTAL} = A_{BASE} + \underbrace{4A_{TRIÁNGULO}}_{A_{LATERAL}} = 9 + 4 \cdot 9 = 9 + 36 = 45\ dm^2$$

→ Necesitamos 1 cuadrado y cuatro triángulos iguales.



$$A_{BASE} = A_{cuadrado} = 3^2 = 9\ dm^2$$

$$A_{TRIÁNGULO} = \frac{b \cdot a}{2} = \frac{3 \cdot 6}{2} = \frac{18}{2} = 9\ dm^2$$

$$6^2 = H_p^2 + 1'5^2$$

$$36 - 2'25 = H_p^2$$

$$33'75 = H_p^2 \Rightarrow H_p = 5'81$$

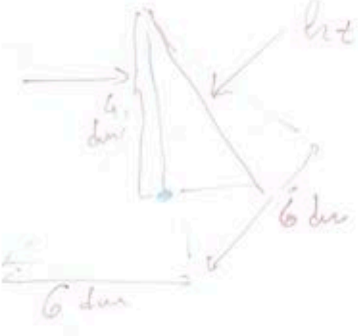
$$VOLUMEN = \frac{\acute{A}REA\ BASE \cdot H_p}{3} = \frac{9 \cdot 5'81}{3} = 17'43\ dm^3$$

ALTURA PIRÁMIDE

$1\ dm^3 = 1\ l$

CAPACIDAD = 17'43 l

H_p altura pirámide



h_t → altura triángulo

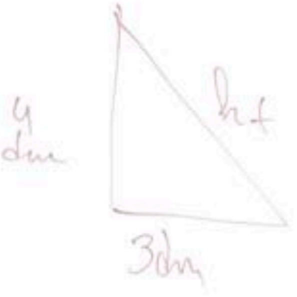
PIRÁMIDE CUADRANGULAR

$A_{BASE} = A_{CUADRADO} = 6 \cdot 6 = 36\ dm^2$

$A_{triángulo} = \frac{b\,a}{2} = \frac{b \cdot h_t}{2} = \frac{6 \cdot 5}{2} = 15\ dm^2$

$A_{TOTAL} = A_{BASE} + \underbrace{4 \cdot A_{TRIANG.}}_{A_{LAT}} = 36 + 4 \cdot 15 = 36 + 60 = 96\ dm^2$

$H_p = 4\ dm$



$h_t^2 = 4^2 + 3^2$

$h_t^2 = 16 + 9$

$h_t^2 = 25$

$h_t = 5$

$VOLUMEN = \frac{A_{BASE} \cdot H_p}{3} = \frac{36 \cdot 4}{3} = 48\ dm^3$

CAPACIDAD = 48 l

$1\ dm^3 = 1\ l$

$A\ base = \pi \cdot r^2$

$A\ base = 3'14 \cdot 4^2 \cong 50'24\ m^2$

$A\ lateral = 2 \cdot \pi \cdot r \cdot h$

$A\ lateral \cong 2 \cdot 3'14 \cdot 4 \cdot 8 \cong 200'96\ m^2$

$A\ total = A\ lat + 2 \cdot A\ base$

$A\ total = 200'96 + 2 \cdot 50'24 \cong 301'44\ m^2$

$V = \pi \cdot r^2 \cdot h$

$V \cong 3'14 \cdot 4^2 \cdot 8 = 401'92\ m^3 = 401920\ dm^3$

CAPACIDAD $\cong$ 401920 l