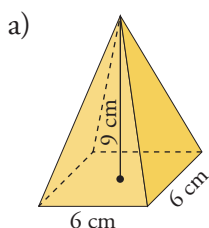
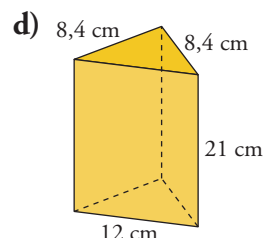
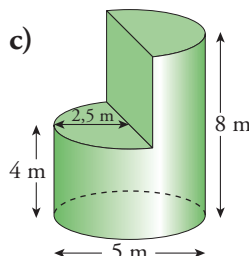
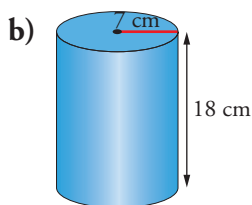
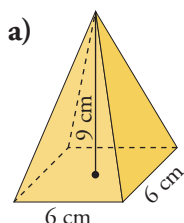
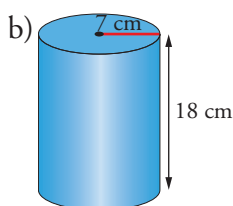


11 ▼▼▼ Calcula el volumen de estos cuerpos:



$$V = \frac{1}{3} 6^2 \cdot 9 \text{ cm}^3$$

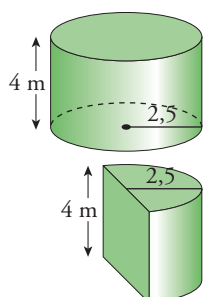
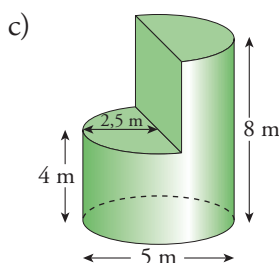
$$V = 108 \text{ cm}^3$$



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

$$V = \pi \cdot 7^2 \cdot 18 = 882\pi \text{ cm}^3$$

$$V = 2770,88 \text{ cm}^3$$

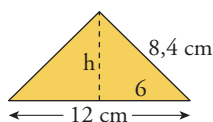
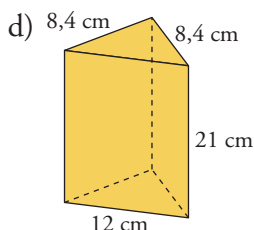


$$V_1 = \pi \cdot 2,5^2 \cdot 4 = 25\pi \text{ m}^3$$

$$V_2 = \frac{\pi \cdot 2,5^2 \cdot 4}{2} = 12,5\pi \text{ m}^3$$

Volumen total:

$$25\pi + 12,5\pi \approx 117,81 \text{ m}^3$$

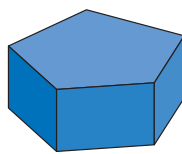


$$h^2 = 8,4^2 - 6^2 = 34,56 \rightarrow h \approx 5,88 \text{ cm}$$

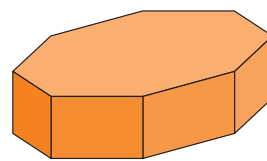
$$\text{Área de la base} = \frac{12 \cdot 5,88}{2} = 35,28 \text{ cm}^2$$

$$\text{Volumen} = \text{Área base} \cdot \text{altura} = 35,28 \cdot 25 = 740,88 \text{ cm}^3$$

- 12** $\nabla\nabla\nabla$ Calcula el volumen de estos dos prismas regulares. En ambos, la arista de la base mide 10 cm y la altura, 8 cm.



P. PENTAGONAL



P. OCTOGONAL

Apotema del pentágono = 6,88 cm

Apotema del octógono = 12,07 cm

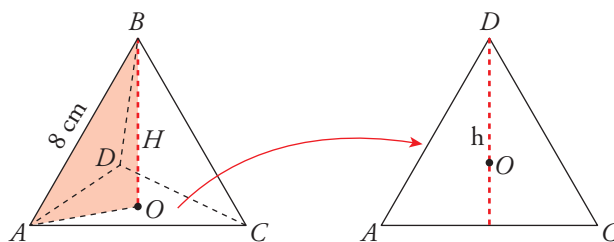
$$\text{Superficie de la base del prisma pentagonal} = \frac{10 \cdot 5 \cdot 6,88}{2} \approx 172 \text{ cm}^2$$

$$\text{Superficie de la base del prisma octogonal} = \frac{10 \cdot 8 \cdot 12,07}{2} \approx 482,8 \text{ cm}^2$$

$$V_{\text{PRISMA PENTAGONAL}} = 172 \cdot 8 = 1\,376 \text{ cm}^3$$

$$V_{\text{PRISMA OCTOGONAL}} = 482,8 \cdot 8 = 3\,862,4 \text{ cm}^3$$

- 13** $\nabla\nabla\nabla$ Calcula el volumen de este tetraedro regular:



∇ Para hallar la altura H , recuerda que $\overline{AO} = \frac{2}{3}h$, donde h es la altura de una cara.

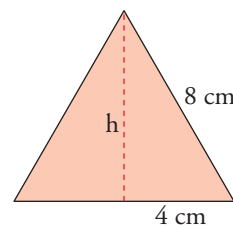
$$h^2 = 8^2 - 4^2 = 48$$

$$\left. \begin{array}{l} h = \sqrt{48} \approx 6,93 \\ \overline{AO} = \frac{2}{3} \cdot 6,93 = 4,62 \end{array} \right\} \begin{array}{l} \text{Área de la base:} \\ A = \frac{8 \cdot 6,93}{2} = 27,72 \text{ cm}^2 \end{array}$$

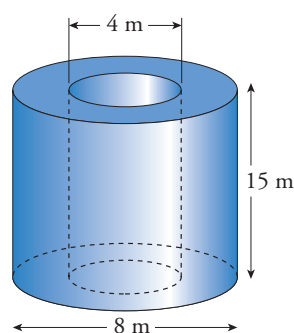
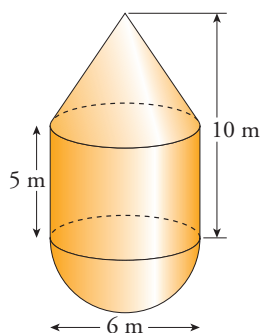
Calculamos la altura del tetraedro:

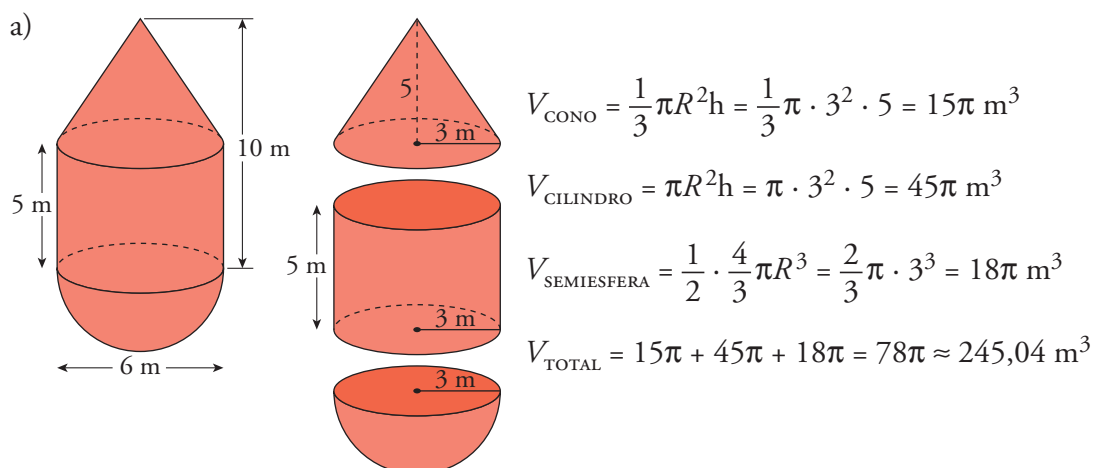
$$H^2 = 8^2 - 4,62^2 \rightarrow H \approx 6,53 \text{ cm}$$

$$\text{Volumen} = \frac{1}{3} \cdot 27,72 \cdot 6,53 = 60,34 \text{ cm}^3$$



- 14** $\nabla\nabla\nabla$ Calcula el volumen de estos cuerpos:





b) $V_{\text{CILINDRO GRANDE}} = \pi \cdot R^2 h = \pi \cdot 4^2 \cdot 15 = 240\pi \text{ m}^3$

$V_{\text{CILINDRO PEQUEÑO}} = \pi \cdot 2^2 \cdot 15 = 60\pi \text{ m}^3$

$V_{\text{TOTAL}} = 240\pi - 60\pi = 180\pi \approx 565,49 \text{ m}^3$

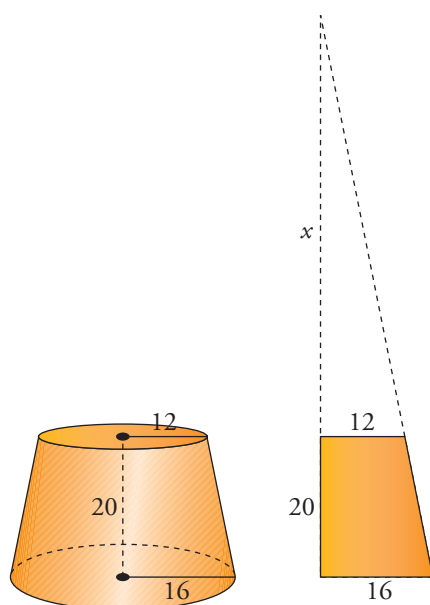
15 ▼▼▼ Resuelto en el libro del alumno

16 ▼▼▼ Calcula el volumen de un tronco de cono de radios 12 cm y 16 cm y altura 20 cm.

Calculamos las alturas de los conos que forman el tronco:

$$\frac{x}{12} = \frac{x+20}{16} \rightarrow 16x = 12x + 240 \rightarrow 4x = 240 \rightarrow x = 60 \text{ cm} \rightarrow$$

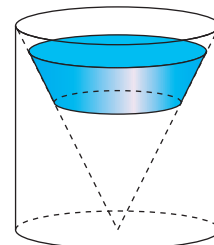
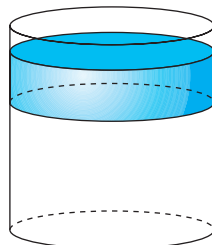
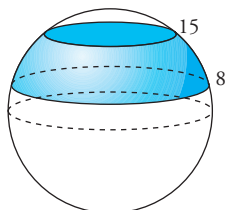
$$\rightarrow h = 20 + 60 = 80 \text{ cm}$$



$$\begin{aligned}
 V_{\text{TRONCO}} &= V_{\text{CONO MAYOR}} - V_{\text{CONO MENOR}} = \\
 &= \frac{1}{3} \pi \cdot 16 \cdot 80 - \frac{1}{3} \pi \cdot 12 \cdot 60 = \\
 &= \frac{560}{3} \pi \approx 586,43 \text{ cm}^3
 \end{aligned}$$

17 ▼▼▼ Resuelto en el libro del alumno

- 18** Se corta una esfera de 50 cm de diámetro por dos planos paralelos a 8 cm y 15 cm del centro, respectivamente. Halla el volumen de la porción de esfera comprendida entre ambos planos.



$$V_{\text{PORCIÓN CILINDRO}} = \pi \cdot 50^2(15 - 8) = 17\,500\pi \text{ cm}^3$$

$$V_{\text{TRONCO DE CONO}} = \frac{1}{3}\pi \cdot 50^2 \cdot 15 - \frac{1}{3}\pi \cdot 50^2 \cdot 8 = 5\,833,33\pi \text{ cm}^3$$

$$\begin{aligned} V_{\text{PORCIÓN ESFERA}} &= V_{\text{PORCIÓN CILINDRO}} - V_{\text{TRONCO CONO}} = \\ &= 17\,500\pi - 5\,833,33\pi = 11\,666,67\pi \text{ cm}^3 \approx 36\,651,9 \text{ cm}^3 \end{aligned}$$