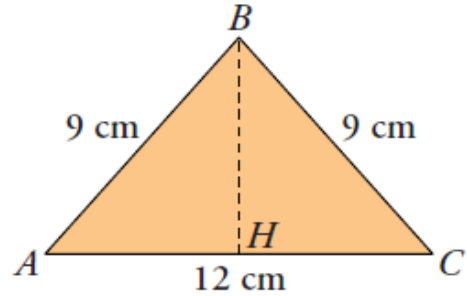


3. Queremos construir un ortoedro de volumen $36\,015\text{ cm}^3$ que sea semejante a otro de dimensiones $25 \times 15 \times 35\text{ cm}$. ¿Cuánto medirán sus aristas?

4. En el triángulo isósceles ABC , halla:

- a. Los ángulos A , B y C
b. El área del triángulo



5. Calcula los ángulos de un rombo cuyas diagonales miden 12 cm y 8 cm , respectivamente. ¿Cuánto mide el lado del rombo? Calcula su área.
6. Halla $\cos \alpha$ y $\operatorname{tg} \alpha$ sabiendo que $\operatorname{sen} \alpha = \frac{1}{4}$ y que $90^\circ < \alpha < 180^\circ$
7. Calcula las razones trigonométricas de los siguientes ángulos:

a) 210°

b) 1035°

c) $\frac{5}{6}\pi\text{ rad}$

d) -60°

Ejercicios 4º ESO opción "A"

3)

$$V = 36.015 \text{ cm}^3$$

$$V' = 25 \times 15 \times 135 \quad V' = 25 \cdot 15 \cdot 135 = 13.125 \text{ cm}^3.$$

$$\frac{V}{V'} = r^3 \quad \frac{36.015}{13.125} = 2,744 = r^3 \quad r = \sqrt[3]{2,744} = \underline{\underline{1,4}}$$

Dimensiones

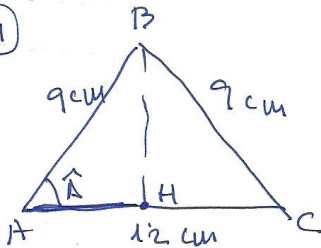
$$25 \cdot 1,4 = 35 \text{ cm.}$$

$$15 \cdot 1,4 = 21 \text{ cm}$$

$$35 \cdot 1,4 = 49 \text{ cm}$$

Aristas del ortoedro.

4)



T. isósceles $\overline{AH} = \overline{HC} = 6 \text{ cm.}$

a) Altura BH \rightarrow Pitágoras.

$$9^2 = 6^2 + BH^2 \quad BH = \sqrt{81 - 36} = \underline{\underline{6,71 \text{ cm}}}$$

$\hat{A} = \hat{C} \rightarrow$ por ser isósceles.

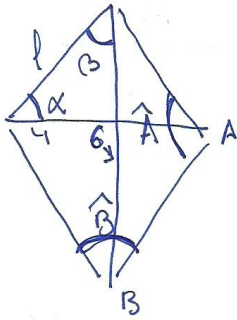
b) $\cos \hat{A} = \frac{6}{9} = 0,6$

$$\hat{A} = 48^{\circ} 11' 24'' = \hat{C} = \underline{\underline{48,19^{\circ}}}$$

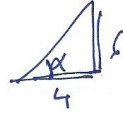
$$\hat{B} = 180^{\circ} - 2 \cdot 48,19^{\circ} = 83,62^{\circ} \Rightarrow \hat{B} = 83^{\circ} 37' 12''$$



5



$$\operatorname{tg} \alpha = \frac{6}{4}$$



$$\operatorname{tg} \alpha = 1,5 \quad \alpha = \operatorname{arc} \operatorname{tg} 1,5 = 56,3^\circ$$

$$\beta = 90 - 56,3^\circ = 33,7^\circ$$

Los Angulos del rombo son.

$$\hat{A} = 56,3 \cdot 2 = 112,6^\circ$$

$$\hat{B} = 33,7 \cdot 2 = 67,4^\circ$$

$$l = \sqrt{6^2 + 4^2} = \sqrt{36 + 16} = 7,21 \text{ cm.}$$

$$l = 7,21 \text{ cm}$$

$$A = \frac{D \cdot d}{2} = \frac{12 \cdot 8}{2} = 48 \text{ cm}^2.$$

6) $\cos \alpha$?

$\operatorname{tg} \alpha$?

$$\operatorname{sen} \alpha = \frac{1}{4}$$

2^a cuadrante \rightarrow

$\operatorname{sen} \alpha \rightarrow +$
$\cos \alpha \rightarrow -$
$\operatorname{tg} \alpha \rightarrow -$

$$\operatorname{sen}^2 \alpha + \cos^2 \alpha = 1$$

$$\left(\frac{1}{4}\right)^2 + \cos^2 \alpha = 1$$

$$\cos^2 \alpha = 1 - \frac{1}{16} = \frac{15}{16}$$

$$\cos \alpha = -\sqrt{\frac{15}{16}} = -\frac{\sqrt{15}}{4}$$

$$\operatorname{tg} \alpha = \frac{\operatorname{sen} \alpha}{\cos \alpha} = \frac{+\frac{1}{4}}{-\frac{\sqrt{15}}{4}} = -\frac{1}{\sqrt{15}}$$

7

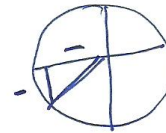
a) 210° Reducir al 1er cuadrante

$$210 = 180 + \alpha \quad \alpha = 210 - 180 = 30^\circ$$

$$\text{Sen } 210^\circ = -\text{Sen } 30^\circ = -\frac{1}{2}$$

$$\text{Cos } 210^\circ = -\text{Cos } 30^\circ = -\frac{\sqrt{3}}{2}$$

$$\text{Tg } 210^\circ = \text{Tg } 30^\circ = \frac{1}{\sqrt{3}}$$



b) $1035^\circ = 2 \cdot 360^\circ + 315^\circ$

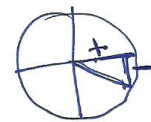
$$315^\circ = 360^\circ - \alpha^\circ$$

$$\alpha = 360^\circ - 315^\circ = \underline{\underline{45^\circ}}$$

$$\text{Sen } 1035^\circ = \text{Sen } 315^\circ = -\text{Sen } 45^\circ = -\frac{\sqrt{2}}{2}$$

$$\text{Cos } 1035^\circ = \text{Cos } 315^\circ = +\text{Cos } 45^\circ = +\frac{\sqrt{2}}{2}$$

$$\text{Tg } 1035^\circ = +\text{Tg } 315^\circ = -\text{Tg } 45^\circ = -\underline{\underline{1}}$$



c) $\frac{5}{6} \pi \text{ rad.} = 150^\circ$

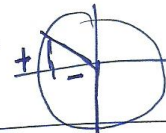
$$\alpha = 180^\circ - 150^\circ = 30^\circ$$

$$\text{Sen } 150^\circ = \text{Sen } 30^\circ = \frac{1}{2}$$

$$\text{Cos } 150^\circ = -\text{Cos } 30^\circ = -\frac{\sqrt{3}}{2}$$

$$\text{Tg } 150^\circ = -\text{Tg } 30^\circ = -\frac{1}{\sqrt{3}}$$

$150^\circ = 2^\circ \text{ cuadr.}$



d) -60°

4° cuadr.

$$-60^\circ \rightarrow 360^\circ - 60 = 300^\circ$$

$$\text{Sen } (-60^\circ) = \text{Sen } 300^\circ = -\text{Sen } 60^\circ = -\frac{\sqrt{3}}{2}$$

$$\text{Cos } (-60^\circ) = \text{Cos } 300^\circ = \text{Cos } 60^\circ = \frac{1}{2}$$

$$\text{Tg } (-60^\circ) = \text{Tg } 300^\circ = -\text{Tg } 60^\circ = -\sqrt{3}$$