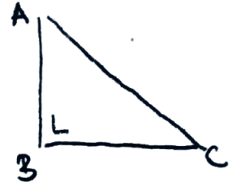


Fiche 1 - Problèmes Pythagore

Problème 1

CAS 1 : $2,8^2 + 9,6^2 \stackrel{?}{=} 10^2$
 $7,84 + 92,16 = 100$
 $100 = 100$

Oui !



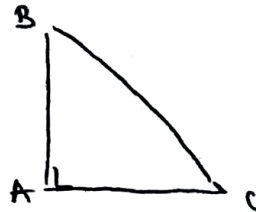
CAS 2 : $14^2 + 10,5^2 \stackrel{?}{=} 17,5^2$
 $196 + 110,25 = 306,25$
 $306,25 = 306,25$

Oui !

CAS 3 : $2^2 + 4^2 \stackrel{?}{=} 6^2$
 $4 + 16 = 36$
 $20 \neq 36$

Non !

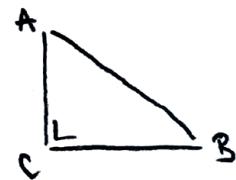
CAS 4 : $1^2 + \left(\frac{4}{3}\right)^2 \stackrel{?}{=} \left(\frac{5}{3}\right)^2$
 $1 + \frac{16}{9} = \frac{25}{9}$
 $\frac{9}{9} + \frac{16}{9} = \frac{25}{9}$
 $\frac{25}{9} = \frac{25}{9}$



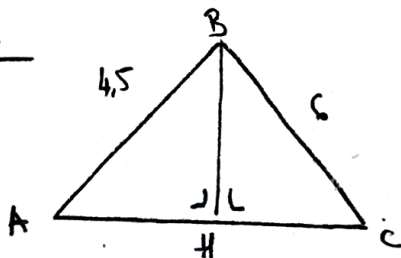
Oui !

CAS 5 : $(\sqrt{40})^2 \stackrel{?}{=} 5^2 + (\sqrt{15})^2$
 $40 = 25 + 15$
 $40 = 40$

Oui !



Problème 3



$$AH = \sqrt{6^2 + 4,5^2} = 7,5 \text{ cm}$$

$$A_{ABH} = \frac{6 \cdot 4,5}{2} = 13,5 \text{ cm}^2$$

$$BH \Rightarrow \frac{7,5 \cdot BH}{2} = 13,5$$

$$7,5 \cdot BH = 27$$

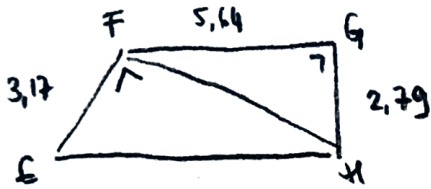
$$\underline{\underline{BH = 3,6 \text{ cm}}}$$

Rappel important :

un Δ a 3 bases et 3 hauteurs.

Cela permet de calculer l'aire d'un Δ de 3 manières différentes !

Problème 2



$$FH = \sqrt{2,79^2 + 5,64^2} \approx 6,29 \text{ cm}$$

$$\underline{EH} = \sqrt{FH^2 + 3,17^2} \approx \underline{7,05 \text{ cm}}$$

Problème 4

$\hat{ACB} = 90^\circ$ car cercle
Thales

$BC = 4 \text{ cm} = \text{rayon}$

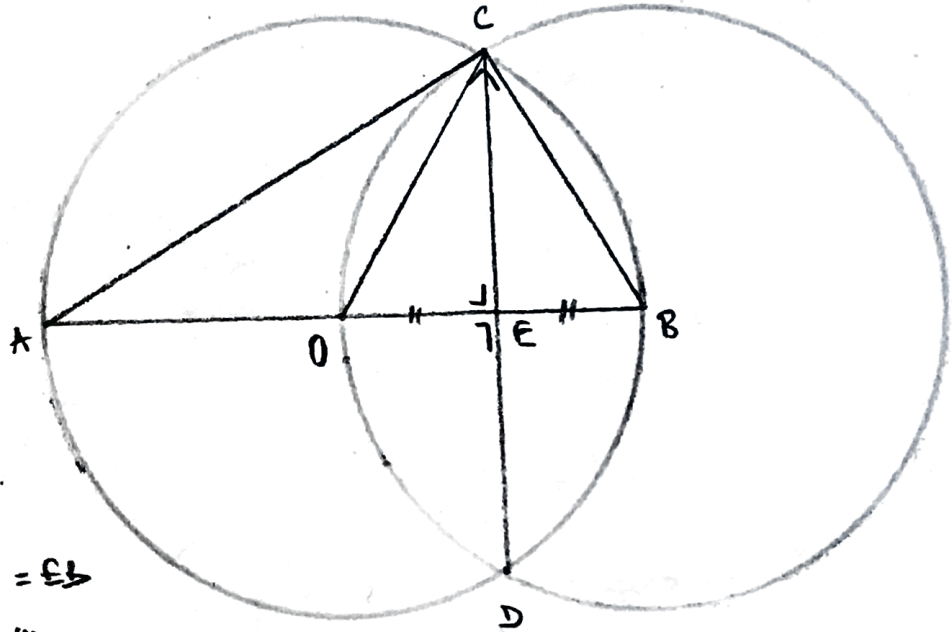
$$\begin{aligned} AC &= \sqrt{8^2 - 4^2} = \sqrt{64 - 16} \\ &= \sqrt{48} = \sqrt{16 \cdot 3} \\ &= 4\sqrt{3} \quad (\approx 6,93) \end{aligned}$$

$BO = 4 \text{ cm} = \text{rayon}$

$\triangle OCB$ isocèle $\Rightarrow OE = EB$
 $= 2 \text{ cm}$

$AE = 6 \text{ cm}$

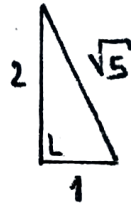
$$CE = \sqrt{AC^2 - AE^2} = \sqrt{(\sqrt{48})^2 - 6^2} = \sqrt{48 - 36} = \sqrt{12} = \sqrt{4 \cdot 3} = 2\sqrt{3} \approx 3,46 \text{ cm}$$



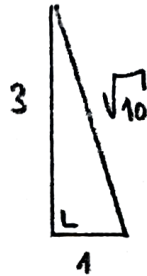
Fiche 1 - Pythagore

Problème 5

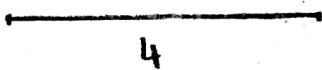
* $\sqrt{5} \Rightarrow 4+1=5$
 $\Rightarrow 2^2+1^2=5$



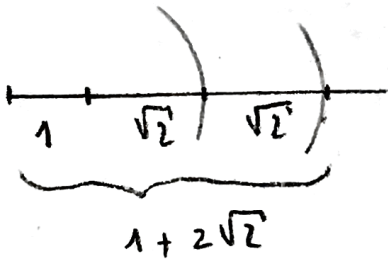
* $\sqrt{10} \Rightarrow 9+1=10$
 $\Rightarrow 3^2+1^2=10$



* $\sqrt{16} = 4$

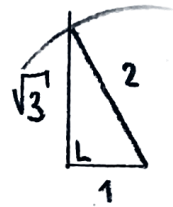


pas besoin de construire un Δ
 !!

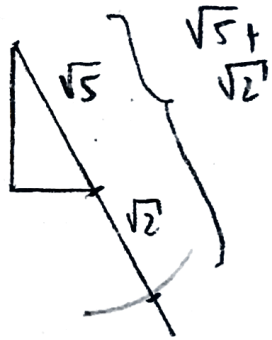
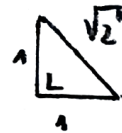


je construis un segment de 1 cm
 ensuite je reporte la longueur de $\sqrt{2}$ que j'ai construite
 précédemment 2x car $2 \cdot \sqrt{2}$

* $\sqrt{3} \Rightarrow 4-1=3$
 $\Rightarrow 2^2-1^2=3$



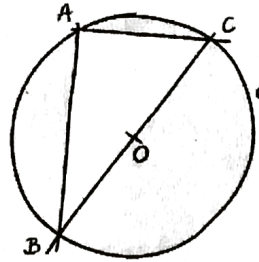
* $\sqrt{2} \Rightarrow 1+1=2$
 $\Rightarrow 1^2+1^2=2$



PROBLEME 6

GM42 Aires composées

- a) Calcule l'aire de la partie colorée de la figure.
O est le centre du cercle c.
AC = 5 cm et AB = 12 cm



$\widehat{BAC} = 90^\circ$ cercle Thales

$$BC = \sqrt{5^2 + 12^2} = 13 \text{ cm}$$

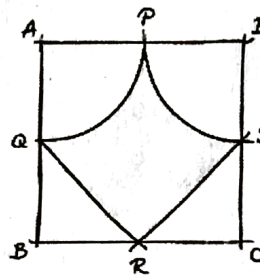
$$\text{rayon} = 13 : 2 = 6,5 \text{ cm}$$

$$\begin{aligned} \text{A cercle} &= 6,5^2 \pi \\ &= 42,25 \pi \\ &= (132,73) \text{ cm}^2 \end{aligned}$$

- b) Calcule l'aire et le périmètre de la partie colorée de la figure.

ABCD est un carré de 8 cm de côté.

P, Q, R et S sont les milieux de ses côtés.



$$\text{A } \triangle ABC =$$

$$\frac{5 \cdot 12}{2} = \frac{60}{2} = 30 \text{ cm}^2$$

A colorée :

$$42,25 \pi - 30 \approx 132,73 \text{ cm}^2$$

$$\text{A carré} : 8^2 = 64 \text{ cm}^2$$

$$\text{A } \frac{1}{2} \text{ cercle} : \frac{4^2 \cdot \pi}{2} = 8\pi \text{ (} \approx 25,14 \text{) cm}^2$$

$$\text{A } 2 \triangle : \frac{4 \cdot 4}{2} \cdot 2 = 8 \cdot 2 = 16 \text{ cm}^2$$

$$\text{A colorée} : 64 - 16 - 8\pi = 22,87 \text{ cm}^2$$

$$\text{P demi-cercle} : \frac{4 \cdot 2 \cdot \pi}{2} = 4\pi \text{ (} \approx 12,56 \text{) cm}$$

$$\text{QR} : \sqrt{4^2 + 4^2} = 4\sqrt{2} = 5,66 \text{ cm}$$

$$\text{P forme colorée} : 4\pi + 2 \cdot 4\sqrt{2} \approx 23,88 \text{ cm}$$