

* APPLICATION DE LA THÉORIE – SENS DES FORMULES

EXERCICE 1

Est-il possible de construire un angle α tel que :

1) $\cos \alpha = 1.4$

2) $\sin \alpha = 1.2$

3) $\tan \alpha = 2.5$

Justifie ta réponse.

2) $\sin \alpha = \frac{\text{opp}}{\text{Hyp}} = 1.2 = \frac{12}{10} \Rightarrow \text{impossible car } 10 < 12 \Rightarrow \text{Hyp} < \text{opposé}$

3) $\tan \alpha = 2.5 = \frac{25}{10} = \frac{\text{opposé}}{\text{adjacent}} \Rightarrow \text{possible}$

EXERCICE 2

Construis :

- un angle α tel que $\cos(\alpha) = \frac{3}{5}$

- un angle β tel que $\sin(\beta) = \frac{2}{5}$

- un angle γ tel que $\tan(\gamma) = \frac{5}{7}$

- un angle δ tel que $\cos(\delta) = \frac{5}{2}$

- un angle ϵ tel que $\sin(\epsilon) = 0.75$

- un angle ω tel que $\tan(\omega) = 1.5$

- un angle θ tel que $\sin(\theta) = 0.3$

1) $\cos \alpha = \frac{\text{Adjacent}}{\text{Hypoténuse}}$

Hypoténuse =
le plus
long du Δ

Donc $\cos \alpha = 1.4 = \frac{14}{10} \rightarrow \text{Adj.} > \text{Hyp.}$

Pas possible car $10 < 14 \Rightarrow \text{Hyp} < \text{Adj.}$

* UTILISATION DE LA MACHINE A CALCULER

EXERCICE 3

Complète ces tableaux avec l'aide de la calculatrice.

a)

α	$\sin \alpha$
75°	$0,97 \approx$
$11,54^\circ \approx$	$0,2$
$\emptyset$	2

b)

α	$\cos \alpha$
32°	$0,84 \approx$
$53,13^\circ$	$0,6$
$\emptyset$	$1,2$

c)

α	$\tan \alpha$
57°	$1,53 \approx$
$16,69^\circ$	$0,3$
$71,56^\circ$	3

On
utilise
 $\sin^{-1}$

$$\Rightarrow \sin^{-1}(0,2) \approx 11,54^\circ$$

$$\Rightarrow \sin^{-1}(2) = \text{impossible}$$

$$\text{car } \sin \alpha = 2 = \frac{2}{1}$$

$$\Rightarrow 1 < 2$$

$$\Rightarrow \text{Hyp} < \text{opp}$$

Pas possible !

impossible

$$\text{car } \cos \alpha = 1,2 = \frac{12}{10}$$

$$\Rightarrow 10 < 12$$

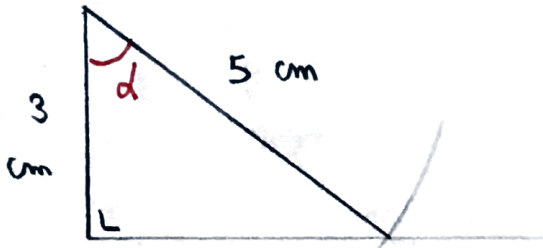
$$\Rightarrow \text{Hyp} < \text{Adj}$$

Pas possible !

Avec la tangente,
on peut réaliser
tous les calculs.
En effet, le côté
adjacent peut
être plus grand
que l'opposé ou
inversement.

Exercice 2

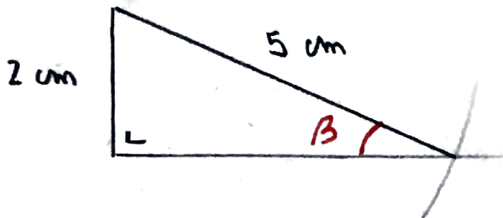
* $\cos \alpha = \frac{3}{5}$ $\rightarrow$ Adjaçant $\rightarrow$ Hypothénuse



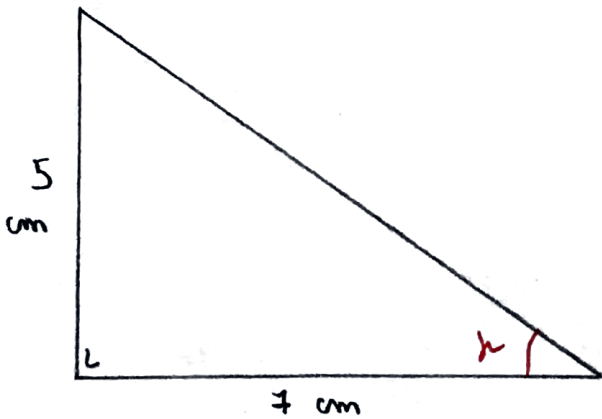
Marche à suivre :

- 1) je construis un côté de 3 cm
- 2) je réalise l'angle droit
- 3) je construis l'hypothénuse de 5 cm
- 4) j'annule mon dessin $\Rightarrow$ j'ai construit l'angle α

* $\sin \beta = \frac{2}{5}$ $\rightarrow$ opposé $\rightarrow$ Hypothénuse



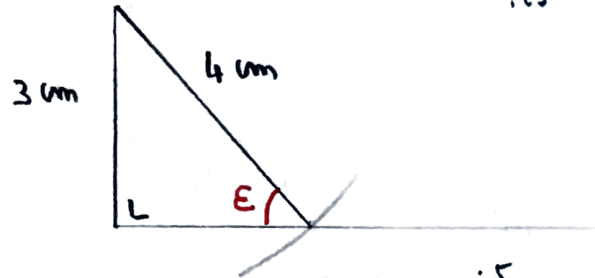
* $\tan \gamma = \frac{5}{7}$ $\rightarrow$ opp $\rightarrow$ Adj



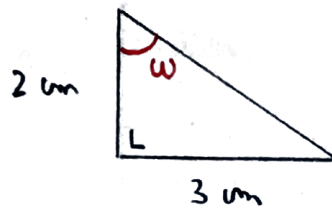
* $\cos \delta = \frac{5}{2}$ $\rightarrow$ Adj $\rightarrow$ Hyp.

Pas possible car $\text{hyp} < \text{Adj}$
On ne peut pas construire un Δ rectangle avec ses mesures.

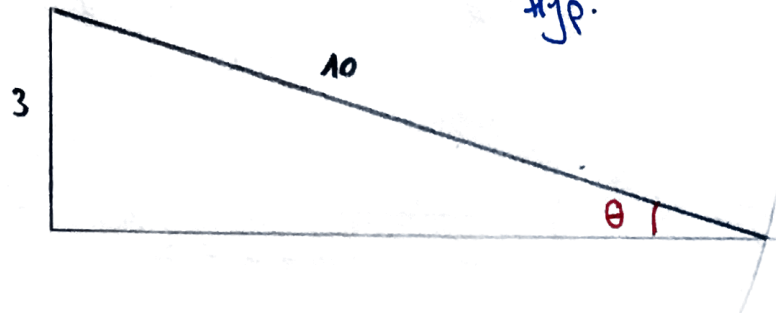
* $\sin \epsilon = 0,75 = \frac{75}{100} = \frac{3}{4}$ $\rightarrow$ opp $\rightarrow$ Hyp



* $\tan \omega = 1,5 = \frac{15}{10} = \frac{3}{2}$ $\rightarrow$ opp $\rightarrow$ Adj



* $\sin \theta = 0,3 = \frac{3}{10}$ ou $\frac{15}{50}$ $\rightarrow$ opp $\rightarrow$ Hyp.



* RAPPEL DE L'UTILISATION DES FORMULES

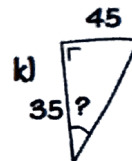
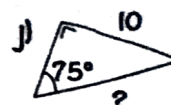
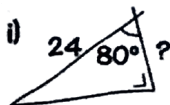
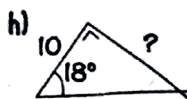
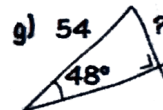
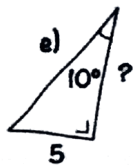
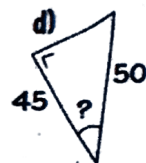
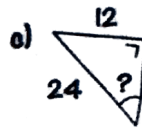
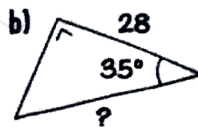
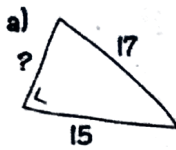
EXERCICE 4

Calcule les mesures demandées (mesures en cm).

Note proprement tes calculs, pas seulement la réponse !

Exemple b) $\cos(35) = \frac{28}{h} \Rightarrow h = \frac{28}{\cos(35)} \Rightarrow h \approx 34.18 \text{ cm}$

? = x



h) $\tan 18 = \frac{x}{10}$
 $x = 10 \cdot \tan 18 = \underline{3,25 \text{ cm}}$

i) $\cos 80 = \frac{x}{24}$
 $x = 24 \cdot \cos 80 = \underline{4,17 \text{ cm}}$

j) $\sin 75 = \frac{10}{x}$
 $x = \frac{10}{\sin 75} = \underline{10,35 \text{ cm}}$

a) Per pythagore :

$$x = \sqrt{17^2 - 15^2} = \underline{8 \text{ cm}}$$

c) $\sin x = \frac{12}{24} \Rightarrow x = \sin^{-1}\left(\frac{12}{24}\right) = \underline{30^\circ}$

d) $\cos x = \frac{45}{50} \Rightarrow x = \cos^{-1}\left(\frac{45}{50}\right) \approx \underline{25,84^\circ}$

e) $\tan 10 = \frac{5}{x} \Rightarrow x = \frac{5}{\tan 10} = \underline{28,36 \text{ cm}}$

f) Somme $\Delta \Rightarrow 180 - 90 - 26 = \underline{64^\circ}$

g) $\sin 48 = \frac{x}{54} \Rightarrow x = 54 \cdot \sin 48 = \underline{40,13 \text{ cm}}$

k) $\tan x = \frac{45}{35}$

$$x = \tan^{-1}\left(\frac{45}{35}\right) = \underline{52,13^\circ}$$