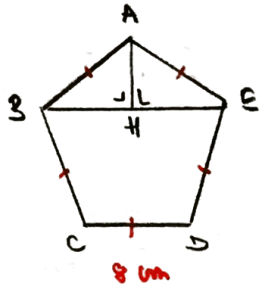
TRIGONOMETRIE - CORRIGÉ

EXERCICE 12



$AH \Rightarrow \cos 54 = \frac{AH}{8}$

$\Rightarrow AH = 4{,}7$ cm

BH (pythagore) $= \sqrt{8^2 - 4{,}7^2}$

$\approx 6{,}47$ cm

a) $BE = 2 \cdot BH \approx 12{,}95$ cm

b) Aire $\Delta ABE = \frac{BE \cdot AH}{2} \approx 30{,}42$ cm²

* Il nous faut l'angle $B\hat{A}E$

$\Rightarrow$ la somme des angles d'un pentagone est de 540° (angles extérieurs)

$\Rightarrow 540° : 5 = 108° = B\hat{A}E = A\hat{E}D = E\hat{D}C = D\hat{C}B = C\hat{B}A$

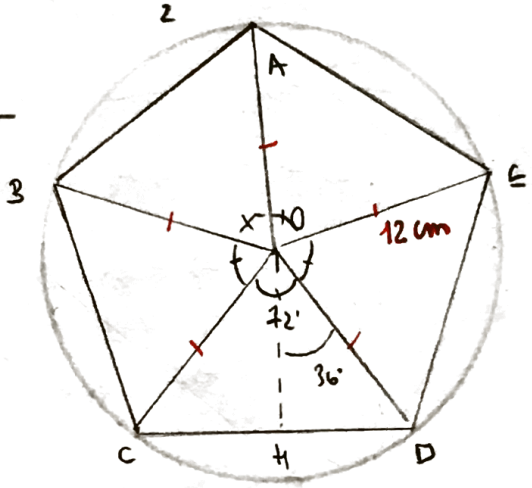
* ΔBAE isocèle

donc $B\hat{A}H = H\hat{A}E = 108 : 2 = 54°$

EXERCICE 13

Un pentagone régulier est formé de 5 Δ isocèles identique

* au centre $= 360°$
* $C\hat{O}D = 360 : 5 = 72°$



$HD \Rightarrow \sin 36° = \frac{HD}{12}$

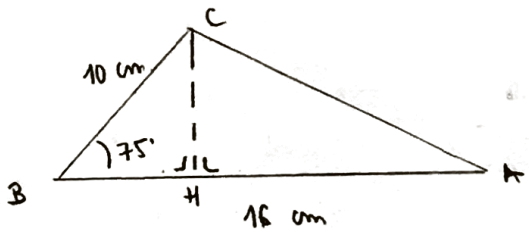
$\Rightarrow HD \approx 7{,}05$ cm

$CD = 2 \cdot HD \approx 14{,}11$ cm

Périmètre :

$14{,}11 \cdot 5 \approx 70{,}53$ cm

EXERCICE 14



$CH \Rightarrow \sin 75 = \frac{CH}{10} \Rightarrow CH \approx 9{,}66$ cm

$BH \Rightarrow \cos 75 = \frac{BH}{10} \Rightarrow BH \approx 2{,}58$ cm

$AH \Rightarrow AB - BH = 16 - 2{,}58 \approx 13{,}42$ cm

* $CA \Rightarrow$ par pythagore

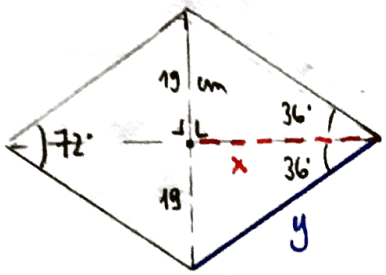
$CA = \sqrt{AH^2 + CH^2} \approx 16{,}53$ cm

* $CA \Rightarrow$ par trigo

$C\hat{A}B = \tan^{-1}\left(\frac{CH}{AH}\right) = 35{,}77°$

$CA \Rightarrow \cos 35{,}77 = \frac{13{,}41}{CA} \Rightarrow CA \approx 16{,}53$ cm

EXERCICE 15



$\tan 36 = \frac{19}{x} \Rightarrow x \simeq 26,15$ cm

Aire $= \frac{D \cdot d}{2} = \frac{D}{2} \cdot d$

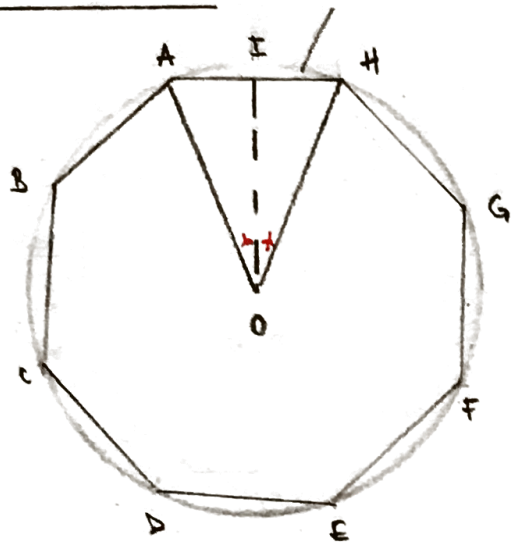
$= 26,15 \cdot 38 \simeq 993,75$ cm²

$y = \sqrt{26,15^2 + 19^2} \simeq 32,32$ cm

Périmètre $= 4 \cdot y \simeq 129,29$ cm

EXERCICE 16

750 : 2 = 375 m



octogone régulier ⇒ 8 Δ isocèles

$A\hat{O}H = 360 : 8 = 45°$

$A\hat{O}I = I\hat{O}H = 45 : 2 = 22,5°$

OI ⇒ $\tan 22,5 = \frac{375}{OI}$

$OI = 905,33$ m

Aire de 1 Δ $= \frac{750 \cdot OI}{2} = 339498,78$ m²

Aire octogone $= 339498,78 \cdot 8$

$= 2715990,24$ m²