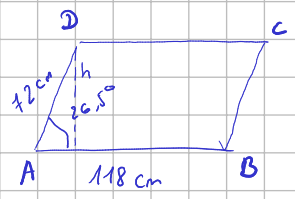
Corrigés détaillés: Géométrie - Trigonométrie

Exercice 18

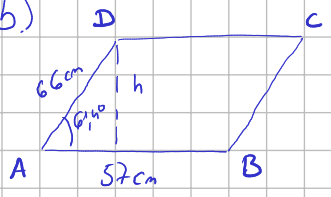
a)



$\sin(26,5°) = \frac{h}{72} \Rightarrow h = 72 \cdot \sin(26,5°) = 32,13 \text{ cm}$

$A = 118 \cdot h = 118 \cdot 32,13 = 3790,9 \text{ cm}^2$

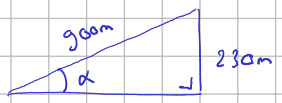
b)



$\sin(61,4°) = \frac{h}{66} \Rightarrow h = 66 \cdot \sin(61,4°) = 57,95 \text{ cm}$

$A = 57 \cdot h = 57 \cdot 57,95 = 3303 \text{ cm}^2$

Exercice 19



$\sin(\alpha) = \frac{230}{900} \Rightarrow \alpha = 14,8°$

Exercice 20

a) Pour une distance horizontale de 100, nous avons un dénivelé de 18.



b) $\tan\alpha = \frac{18}{100} \Rightarrow \alpha = 10,2°$

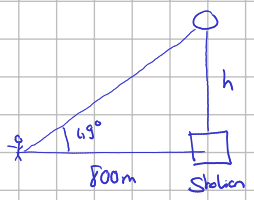
c)



$\sin\alpha = \frac{x}{1} \Rightarrow x = \sin(10,2) = 0,177 \text{ km} = 177 \text{ m}$

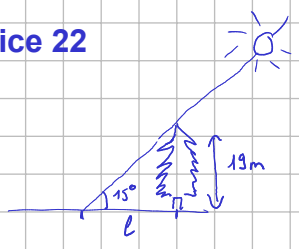
Le dénivelé sera de 177m.

Exercice 21



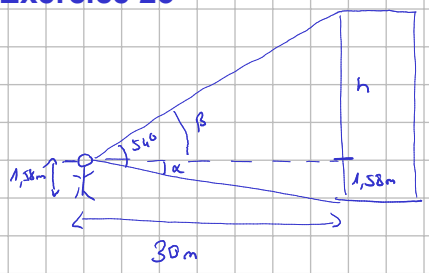
$\tan(49) = \frac{h}{800} \Rightarrow h = 800 \cdot \tan(49) = 920,3 \text{ m}$

Exercice 22



$\tan(15°) = \frac{19}{\ell} \Rightarrow \ell = \frac{19}{\tan(15)} = 70,9 \text{ m}$

Exercice 23



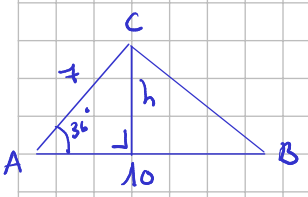
$\tan(\alpha) = \frac{1,58}{30} \Rightarrow \alpha = 3°$

$\beta = 54 - 3 = 51°$

$\tan\beta = \frac{h}{30} \Rightarrow h = 30 \cdot \tan(51°) = 37,1$

Hauteur de l'immeuble : $37,1 + 1,58 = 38,6$ m

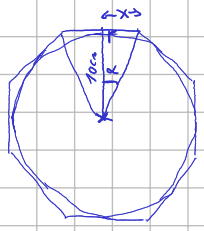
Exercice 24



$\sin(36°) = \frac{h}{7} \Rightarrow h = 7 \cdot \sin(36°) = 4,11$ cm

Aire : $\frac{10 \cdot 4,11}{2} = 20,6$ cm²

Exercice 25



$\alpha = 360 : 8 : 2 = 22,5°$

$\tan\alpha = \frac{x}{10} \Rightarrow x = 10 \cdot \tan 22,5 = 4,14$ cm

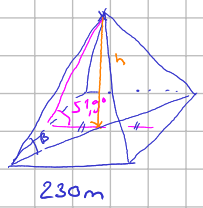
Côté : $c = 2 \cdot x = 8,28$ cm

Périmètre : $P = 8 \cdot c = 8 \cdot 8,28 = 66,27$ cm

$A_{\triangle} = \frac{c \cdot 10}{2} = 5 \cdot c = 41,42$ cm²

$A_{\text{octogone}} = 8 \cdot A_{\triangle} = 8 \cdot 41,42 = 331,4$ cm²

Exercice 26



a) $\tan(51,9°) = \frac{h}{\frac{230}{2}} \Rightarrow h = 115 \cdot \tan(51,9°) = 146,7$ m

b) diagonale de la base par Pythagore :

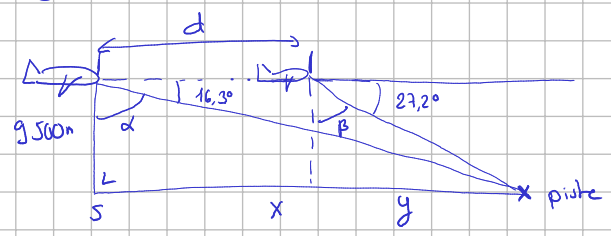
$d = \sqrt{230^2 + 230^2} = 325,3$ m

$\tan(\beta) = \frac{h}{\frac{d}{2}} \Rightarrow \tan(\beta) = \frac{146,7}{\frac{325,3}{2}} \Rightarrow \beta = 42°$

c) $\sin\beta = \frac{h}{s} \Rightarrow s = \frac{h}{\sin\beta} = \frac{146,7}{\sin(42°)} = 219$ m

d) $V = \frac{A_b \cdot h}{3} = \frac{230^2 \cdot 146,7}{3} = 2586192$ m³

Challenge 1



$\alpha = 90 - 16,3 = 73,7°$

$\tan\alpha = \frac{x}{9500} \Rightarrow x = 9500 \cdot \tan(73,7) = 32487,5\,m$

$\beta = 90 - 27,2 = 62,8°$

$\tan\beta = \frac{y}{9500} \Rightarrow y = 9500 \cdot \tan(62,8) = 18485\,m$

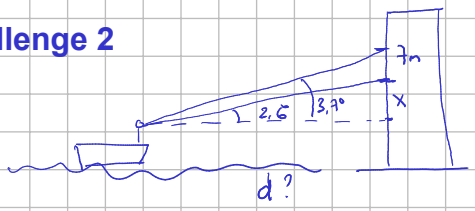
$d = x - y = 32487,5 - 18485 = 14002,5\,m$

Vitesse : $v = \frac{d}{t}$ $\quad t = 1\,min = \frac{1}{60}\,h$ $\quad d = 14002,5\,m = 14\,km$

$v = \frac{14}{\frac{1}{60}} = 840\,km/h$

La vitesse de cet avion est de 840 km/h.

Challenge 2



$\tan(2,6°) = \frac{x}{d}$

$\Rightarrow x = d \cdot \tan(2,6°)$ (1)

$\tan(3,7°) = \frac{x+7}{d}$

$\Rightarrow x + 7 = d \cdot \tan(3,7°)$

$x = d \cdot \tan(3,7°) - 7$ (2)

$\Rightarrow d \cdot \tan(2,6°) = d \cdot \tan(3,7°) - 7$

$d\tan(2,6°) - d\tan(3,7) = -7$

$d(\tan(2,6°) - \tan(3,7°)) = -7$

$d = \frac{-7}{\tan(2,6°) - \tan(3,7°)} = 363,5\,m$

Le bateau se trouve à 363,5 m du phare.