



$$\textcircled{11} \quad 5 \times 70 + 50 : \quad 70 - 50 - 70 - 70 - 70 - 70 \quad \left. \begin{array}{l} 50 \\ 50 \\ 50 \end{array} \right\} 4 \text{ poss.}$$

$$70 + 5 \times 80 : 1 \text{ poss.}$$

$$70 + 80 + 5 \times 50 : 70 - 5 \times 50 - 80 \text{ ou sym.} \rightarrow 2 \text{ poss.}$$

$$2 \times 70 + 2 \times 80 + 2 \times 50 :$$

$$70 - 50^* - 70 - 50^* - 80 - 50^* - 80 \text{ ou sym.}$$

$$002 \quad 011 \quad 020 \quad 101 \quad 110 \quad 200 \quad \rightarrow 12 \text{ poss.}$$

$$\rightarrow \underline{\underline{19}}$$

$$\textcircled{12} \quad n(n-1) \text{ "Bonjour"}$$

$$n(n-1) - (n-1)(n-2) = 2n - 2 = 24 \rightarrow n = 13$$

$$n(n-1) - (n-2)(n-3) = 4n - 6 = 24 \text{ imp.}$$

$$n(n-1) - (n-3)(n-4) = 6n - 12 = 24 \rightarrow n = 6$$

$$n(n-1) - (n-4)(n-5) = 8n - 20 = 24 \text{ imp.}$$

$$n \searrow \text{ donc } \underline{\underline{2 \text{ sol}^0}} : 6 \text{ et } 13$$

$$(n=5: 5 \times 4 = 20 < 24)$$

$$\textcircled{13} \quad n \cdot t_c = (100 - n) \cdot t_p$$

$$(100 - n) \cdot t_c = 45$$

$$n \cdot t_p = 20$$

$$\frac{n}{100 - n} = \frac{t_p}{t_c} = \frac{100 - n}{n} \times \frac{20}{45}$$

$$\left( \frac{100 - n}{n} \right)^2 = \frac{9}{4} = \left( \frac{3}{2} \right)^2 \quad 2(100 - n) = 3n \rightarrow n = 40$$

$$t_c = 45/60 = 3/4 \text{ EUR} = 75 \text{ centimes}$$

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1: 1

4:  $1/4 \times 4$

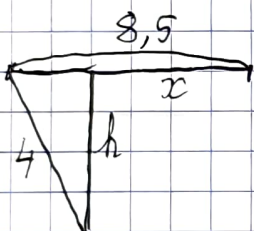
9:  $\begin{matrix} 1 & 2 & 1 \\ 2 & 4 & 2 \\ 1 & 2 & 1 \end{matrix}$

16:  $\begin{matrix} 1 & 3 & 3 & 1 \\ 3 & 9 & 9 & 3 \\ 3 & 9 & 9 & 3 \\ 1 & 3 & 3 & 1 \end{matrix}$

25:  $\begin{matrix} 1 & 4 & 6 & 4 & 1 \\ 4 & 16 & 24 & 16 & 4 \\ 6 & 24 & 36 & 24 & 6 \\ 4 & 16 & 24 & 16 & 4 \\ 1 & 4 & 6 & 4 & 1 \end{matrix}$

$\rightarrow S = 16^2 = 256 \quad 256 - 25 = \underline{\underline{231}}$

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$x = 8,5 - \sqrt{16 - h^2}$  en 1 heure

n heures:  $n \cdot h = 80 \text{ m}$

n, x à minimiser

$h = 80/n$

$n x = n (8500 - \sqrt{16 - 80^2/n^2} \times 1000)$   
 $= 8500n - \sqrt{16n^2 - 80^2} \times 1000$

$f'(n) = 8500 - 1000 \frac{1}{2\sqrt{\dots}} \times 32n = 0$

$(8,5)^2 = \frac{32^2 n^2}{4(16n^2 - 80^2)}$

$17^2(16n^2 - 80^2) = 32^2 n^2$

$16(17^2 - 64)n^2 = 17^2 \times 80^2$

$289 - 64 = 225 = 15^2$

$4 \times 15 n = 17 \times 80 \rightarrow n = \frac{17 \times 4}{3} = 68/3$

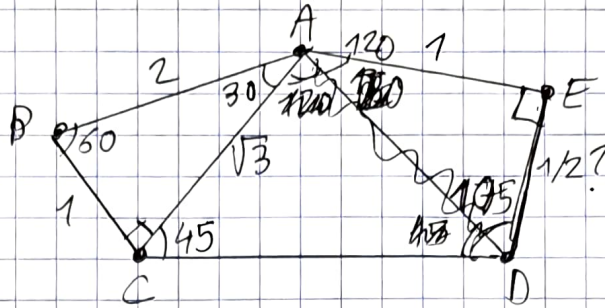
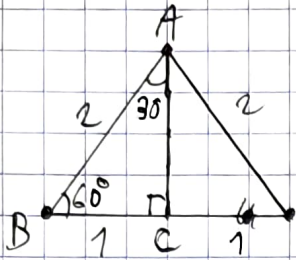
$16n^2 - 80^2 = 16(68^2/9 - 5 \times 80) = 16^2(17^2/9 - 25) = (\frac{4}{3})^2(17^2 - 15^2)$   
 $= (\frac{4}{3})^2 \times 32 \times 2 = (32/3)^2$

$n x = 8500 \times 68/3 - 1000 \times 32/3$

$= \frac{1000}{3} (17^2 \times 2 - 32) = \frac{1000}{3} \times 2 \times 273 = 2000 \times 91$

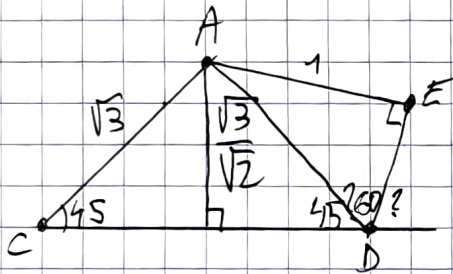
$= 182000$

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

$$CE^2 = 3 + 1 + 2\sqrt{3} \frac{\sqrt{3}}{2} = 4 + 3 = 7$$



AD = ?

$$\frac{\sqrt{3}}{2} + \frac{(\sqrt{3})^2}{2} + \frac{(1/2)}{2} = \frac{1}{2} (\sqrt{3} + 3 + 1/2)$$

$$\begin{array}{r} 1,732 \\ 3, \\ \hline 0,5 \\ \hline 5,232 \end{array}$$

$$/2 \approx 2,616 \text{ dm}^2 = 261,6 \text{ cm}^2 \rightarrow 262$$

$$\textcircled{18} \quad \frac{n(n-1)}{2}$$

$$1000(2x) + x = \frac{n(n-1)}{2}$$

$$\cancel{200} 4002x = n(n-1)$$

$$2 \times 3 \times 667 x = n(n-1) \quad x \geq 100$$

$$2 \times 3 \times x = 666 \rightarrow x = 111 \rightarrow 222111$$

$$\begin{aligned} & (667 \times 2)(667 \times 2 + 1) \\ & \equiv 2[3] \end{aligned}$$

$$3x = 1335 \quad x = 445$$

$$\rightarrow 890445$$