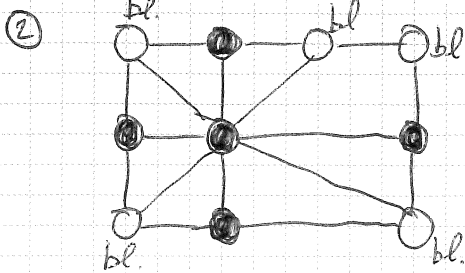


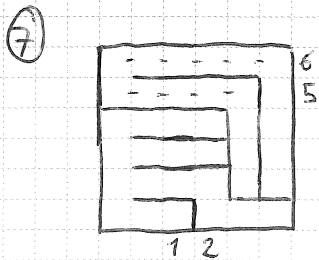
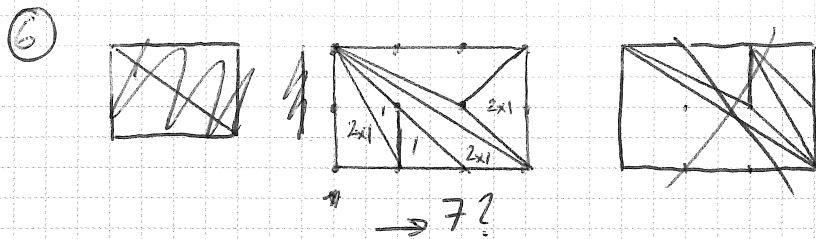
① 1/1/1987

→ 2013 - 1987 = 26



③ BBNNNN → 3+2+1+1+2+3  
BBNBNNN → 3+1+2+2+1+3 ) 12

⑤ ~~AM~~ ~~200k~~  
3 OK (3 coins) ?



⑨ 8'24" = 504" = 36 x 14 = 72 x 7

6' = 360" = 36 x 10 = 72 x 5

$(V_M - V_J) \times 504 = d$        $V_M - V_J = d/504$   
 $(V_M + V_J) \times 360 = d$        $V_M + V_J = d/360$  ) ⊖

$2V_J = \frac{d}{360} - \frac{d}{504} = \frac{(7-5)d}{72 \times 5 \times 7}$

$d/V_J = 72 \times 5 \times 7" = 6 \times 7 \text{ min} = 42 \text{ min.}$

[1 heure]

④ 

x	x	2
2	0	1
x	3	1
x	3	x
2	1	3

 → 3 à la fin  
4 4 4 4

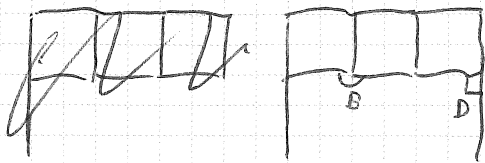
⑧ date + mois → 7  
01: 6, 15, 24  
02: 5, 14, 23  
03: 4, 13, 22, 31  
04: 3, 12, 21, 30  
05: 2, 11, 20  
06: 1, 10  
→ 19

10) Si  $A \downarrow, B \uparrow$  (carré 1)

Carré 2: si  $B \downarrow, C \uparrow$ .

Carré 3: si  $C \downarrow, D \uparrow$ .

AN  $A+B+C+D = \text{cte}$



$$A+B+C+D = 270$$

$B$ : 3 chiffres;  $A, C, D$ : 2 chiffres.

$$123 \leq B \leq 172$$

$$B+D - A - C = 270$$

$$A+C = 24+35 = 59$$

$$172/270$$

$$B+D \approx 329$$

$$123 \leq B \leq 179$$

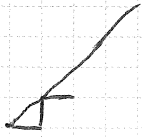
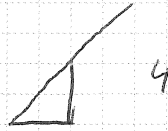
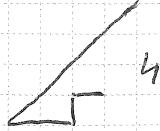
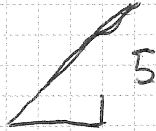
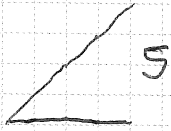
$$A+B+C+D \geq 25+36+47 = 108$$

$$B \leq 270 - (A+C+D) \leq 270 - 108 = 162$$

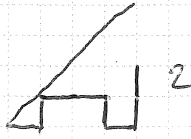
$$B = 159?$$

$$A+C+D = 28+36+47 \quad \text{OK}$$

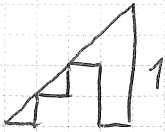
13



→ 7 sans aller en-dessous



→ ~~12~~



→ 32

14

$$(a+1)(b+1)(c+1) = 2abc$$

$$abc = ab + bc + ac + a + b + c + 1$$

$$(ab - b - a)c = ab + a + b + 1$$

$$c = \frac{ab + a + b + 1}{ab - a - b - 1} = 1 + \frac{2(a+b+1)}{ab - a - b - 1} \quad a \geq b \geq 2$$

•  $a = 2$ : non

•  $a = 3$ :  $b = 3$ ,  $c = 8$  non (~~12~~<sup>dir</sup>)

•  $a = 4$ :  $b = 2 \rightarrow 1 + 14/1 \rightarrow c = 15$  non

$b = 3$  non

$b = 4 \rightarrow c = 1 + 18/7$  non

•  $a = 5$ :  $b = 2 \rightarrow c = 1 + 16/2 = 9$  OK (90)

$b = 3 \rightarrow c = 1 + 18/6 = 4$  non

$b = 4 \rightarrow c = 1 + 20/10 = 3$  non ( $c < b$  et  $a$ )

•  $a = 6$ :  $b = 2 \rightarrow c = 1 + 18/3 = 7$  non

$b = 3 \rightarrow c = 1 + 20/8$  non  $c < a$

•  $a = 7$ :  $b = 2 \rightarrow c = 1 + 20/4 = 6$  non

⑮ Pas de 6.  $\rightarrow$  produit des chiffres divisible par 6.

• Si 1, alors  $\exists 5$ , pas 7, pas 9

$\rightarrow$  moins de 6  $\rightarrow$  6 est vrai  $\rightarrow$  imposs.

• Si 3: 3 chiffres: pas 135 (par 12)

153, 315, 351, 513, 531

Pas de 1.  $\rightarrow \exists$  chiffre pair,  $\exists 3$  ou 9.

• Si 3: chiffres  $\neq$ .

• Si 2: 234 imposs (5). Pas de 8  $\rightarrow$  pas de 7, Il y a 9.  
ou 2359 OK

• Pas de 2  $\rightarrow$  Il y a 5  $\rightarrow$  pas de 4.

Qui: 3, 5, 8, 9. Non: 1, 2, 6, 4. imp. (8)

• Si 7, le nb se termine par 8.

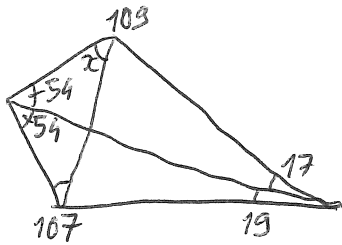
• Si pas de 3: chiffre répété  $\rightarrow$  pas de 2.

Non: 1, 3, 6, Qui: 9.  $\rightarrow$  pas de 4,

Non: 1, 2, 3, 4, 6.  $\rightarrow$  impossible.

$\rightarrow$  1 sol<sup>n</sup>

17



35,5!

18:  $A: 16^2 = 25$   
 $B: 10^2 = 26$

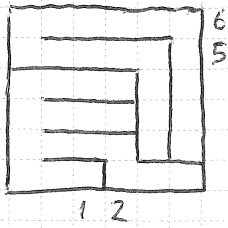
$$\begin{array}{r}
 2013 \times 0,6 = 1207,8 \\
 \phantom{2013 \times 0,6 = } 20,13 \\
 \phantom{2013 \times 0,6 = } 1227 \\
 \phantom{2013 \times 0,6 = } \cancel{10} \\
 \phantom{2013 \times 0,6 = } 17 \\
 \hline
 \text{REZ}
 \end{array}$$

$2013 \times 1,6$

$$\begin{array}{r}
 2013 \\
 1207,8 \\
 \phantom{1207,8} 20,1 \\
 \hline
 3241 \\
 \phantom{3241} \cancel{10} \\
 3258?
 \end{array}$$

Vincent LEFEVRE, HC

Réclam. sur le 7:



répond à la question.

(Il y a beaucoup de solutions,  
mais c'est un problème de CE.)

accepté'

✓