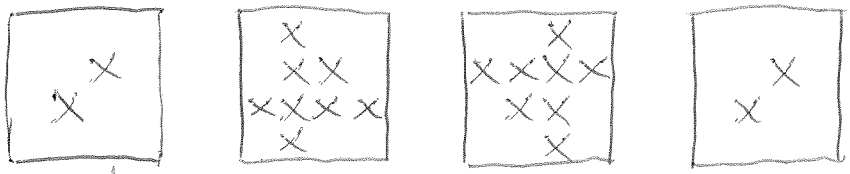
⑦ 2008 2007 669 666 222 74 73 72 24 8 7 6 2 1
→ 13 223 222 74 73 72 24 8 7 6 2 1

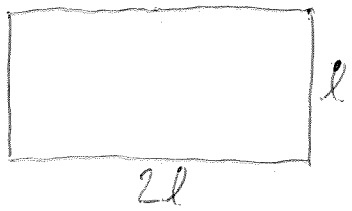
⑧



avant

14 + 8 + 8 + 14 = 44 × 10g = 440g

⑨



$2l^2 = 200 \times 4\ cm^2$

$l^2 = 20^2\ cm^2$

$l = 20\ cm \rightarrow p = 6l = \underline{120\ cm}$

⑩ 10 + 10 + 2 + 2 + 2 + 2 → ne suffit pas:

⇒ 5 + 5 → 10 → 10

Rép: 3 × 30 min = 1h30 min

⑪ [illegible]

$8 \wedge 9 = 1 \rightarrow 72k + 55 \rightarrow 72 + 55 = \underline{127}$

⑫ $a \times a \times b$

$a \times a \times (a-b)$ $\quad a - b = b \rightarrow b = \frac{a}{2}$

Non cubique : $a \times \frac{a}{2} \times (2a)$

$2\left(\frac{a^2}{2} + a^2 + 2a^2\right) = 448$

$\rightarrow 7a^2 = 448 \rightarrow a^2 = 64 \rightarrow a = 8$

$V = 8^3 = 2^9 = \underline{512\ cm^3}$

(13) $CCCC - TTT + KK - P = 1234$

$C = 1 \rightarrow \leq 1111 + 99 = 1210$

$C = 3$ trop gd.

$\Rightarrow C = 2$

$TTT - KK + P = 2222 - 1234 = 988$

$\Rightarrow T = 9$

$KK - P = 11$

$\Rightarrow K = 1$, $P = 0$

$2222 - 999 + 11 - 0 = 1234$

(14) $\overline{aa}$

$\overline{a0a} - \overline{aa} = a(101 - 11) = 90a$

$90 = 2 \times 3^2 \times 5$ [121]

[122] [231] [1211] [421] ~~[126]~~ [141]

$a=5$ $a=6$ $a=7$ $a=8$ $a=9$

- Si 7 | d : $2 \times 3 \times 2 = 12$
- Sinon :

000	100	200	300	
001	101	201	301	
002	102	210	310	x 2 (pour 4)
010	110	211	311	
011	111	220	320	
012	112	221	321	
020	120	230		
021	121	231		
022	122			
030	130			
031	131			
040	140			
041	141			

$13 + 13 + 8 + 2 \times 6 + \underset{(7 \nmid d)}{12} = \underline{58}$

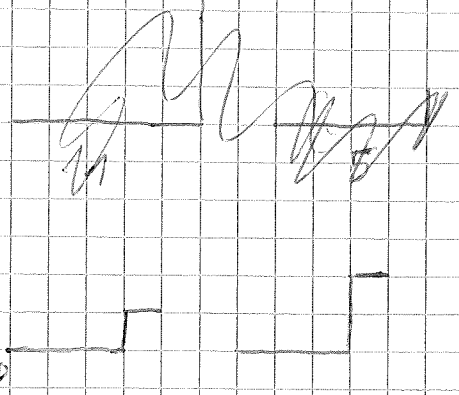
$12 + 5 \times 3 \times 2 + 2 \times 3 + 3 \times 2 + 2 \times 2 = 12 + 30 + 16 = 58$

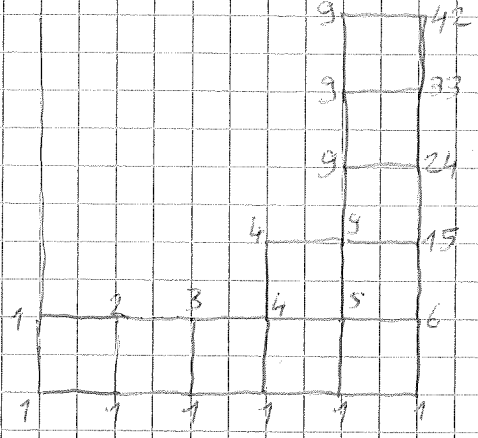
$[x21]$ $[xy2]$ $[x3y]$ $[x4y]$

≤ 6

(15) Supp. passe en dessous → ×2

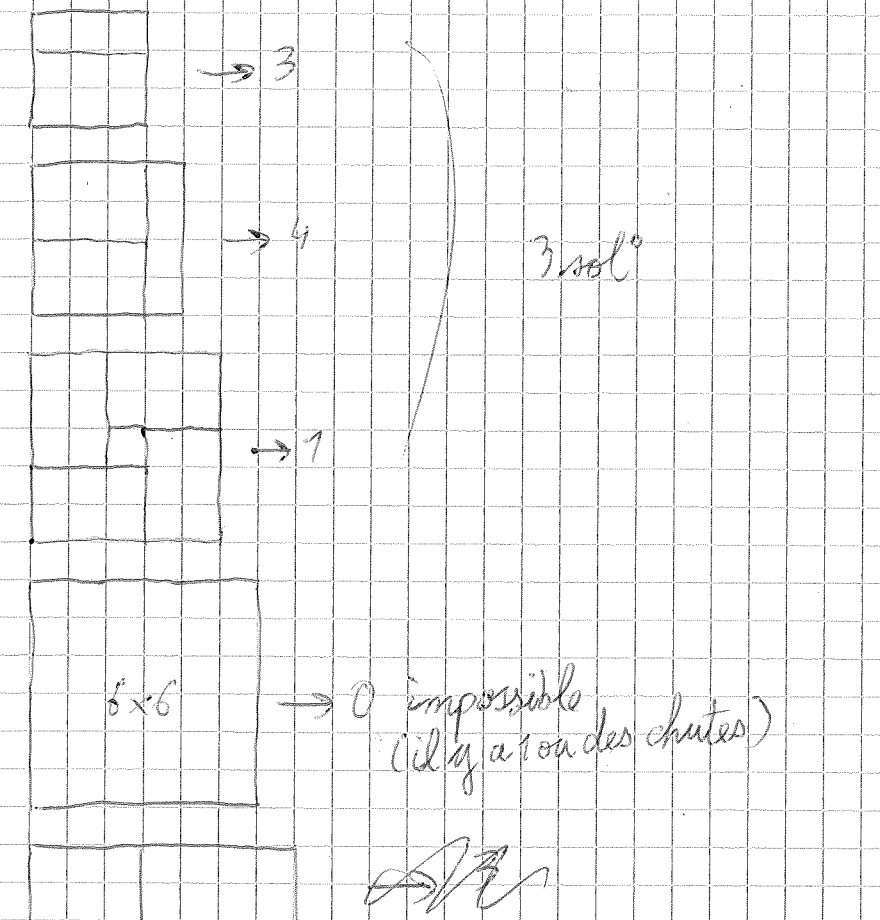
Si B → 6

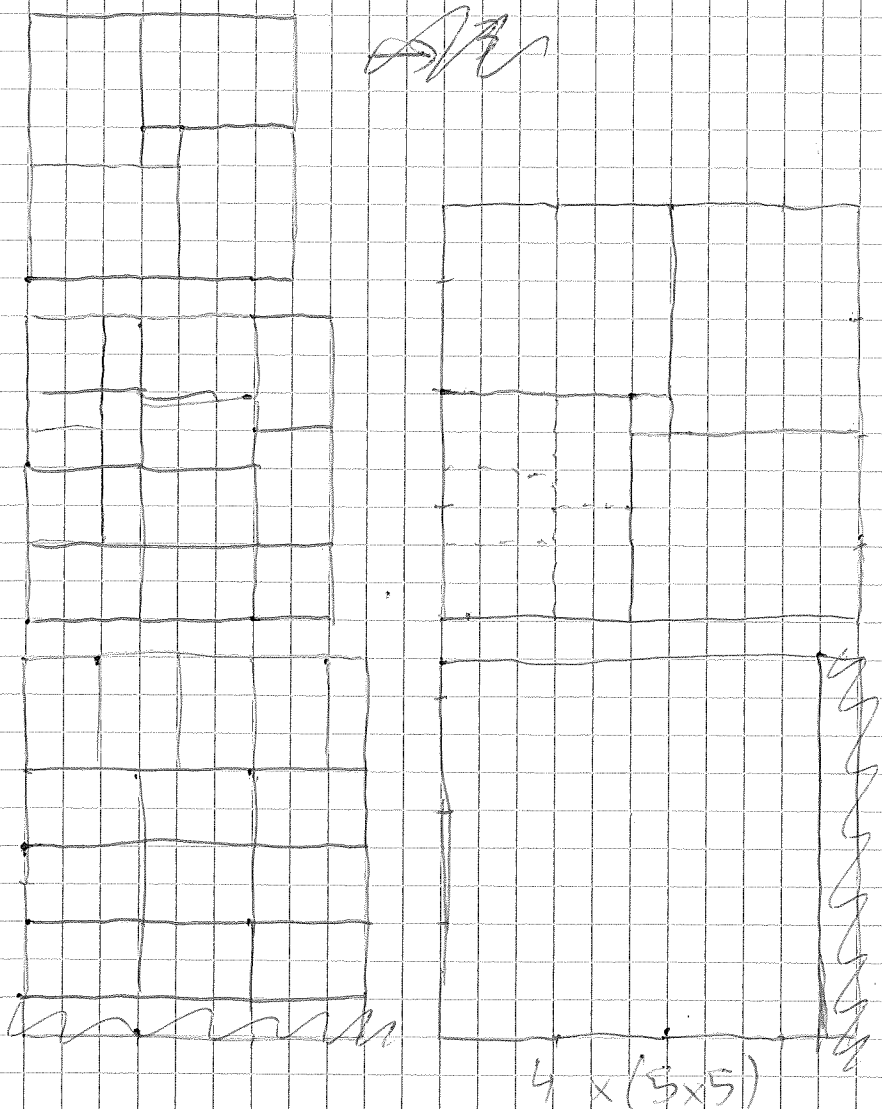




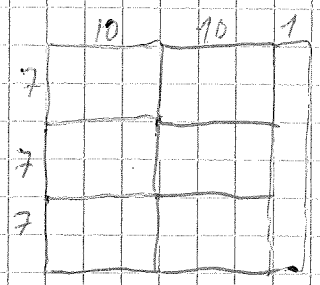
→ 42 × 2 = 84

(16)





(17) 10+10+7+1



$21^2 = 441$

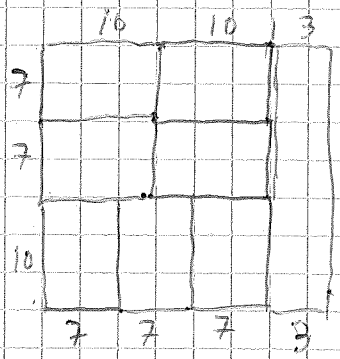
$6 \times 70 = 420$

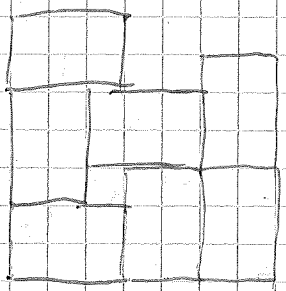
$5 \times 70 = 350$

$7 \times 70 = 490$ → au moins 23^2 → 7+7+7

Si 24^2 :

7+7+10





$24^2 = 576$

$8 \times 70 = 560$

→ 7 ?

(18)

A	B	AB	
B	A		
A	A	AB	A
B	B	C	BC
C	C	3	3
	6		1

ABC

6 cheduri : 6! / 4!

- 1+1+1+1+1+1 → $6! = 720$
- 1+1+1+1+2 → $5 \times \binom{6}{2} = 5 \times 15 = 75$
- 1+1+1+3 → $4 \times \binom{6}{3} = 4 \times 20 = 80$
- 1+1+2+2 → $\binom{4}{2} \times \binom{6}{2} \times \binom{4}{2} = 6 \times 15 \times 6 = 540$
- 1+1+4 → $3 \times \binom{6}{1} = 3 \times 15 = 45$
- 1+2+3 → $3! \times 6 \times \binom{5}{2} = 6 \times 60 = 360$
- 1+5 → $2 \times 6 = 12$
- 6 → 1

$6 \times \binom{5}{2} = 60$

$\binom{6}{2} \times 4 = 60$

720
75
80
540
45
360
12
1

1833

1620 + 80 + 75 + 45 + 13

1700 + 120 + 13

80 = 4 × 6 × 5

(18)

- $1+1+1+1+1+1 \Rightarrow 6! = 720$
- $1+1+1+1+2 \rightarrow 5 \times \binom{6}{2} \times 4! = 5 \times 15 \times 24 = 1800$
  $(5 \times 6 \times 5 \times 4 \times 3 = 1800)$
- $1+1+1+3 \rightarrow 4 \times \binom{6}{3} \times 3! = 4 \times 20 \times 6 = 480$
  $(4 \times 6 \times 5 \times 4 =$
- $1+1+2+2 \rightarrow \binom{4}{2} \times \binom{6}{2} \times \binom{4}{2} \times 2 = 6 \times 15 \times 6 \times 2 = 1080$
  $\not{4}\ (6 \times 6 \times 5 \times 6)$
- $1+1+4 \rightarrow 3 \times \binom{6}{4} \times 2 = 3 \times 15 \times 2 = 90$
  $(3 \times 6 \times 5)$
- $1+2+3 \rightarrow 3! \times 6 \times \binom{5}{2} = 360$
- $1+5 \rightarrow 2 \times 6 = 12$
- $6 \rightarrow 1$

$720 + 1800 + 480 + 1080 + 90 + 360 + 12 + 1 = 4543$

$3000 \qquad 1530 \qquad 13$