

⑦ 6 3 10 5 16 8 4 2 1

7 22 11 34 17 52 26 13 40 20 10 5 16 8 4 2 1

9 28 14 }
↳ 20

⑧ ~~7777~~ #pair de 7

$$\left. \begin{array}{l} 2 \times 7 + 3 \times 2 \\ 4 \times 7 + 1 \times 2 \\ 5 \times 2 \end{array} \right\} \rightarrow 5 \text{ min.}$$

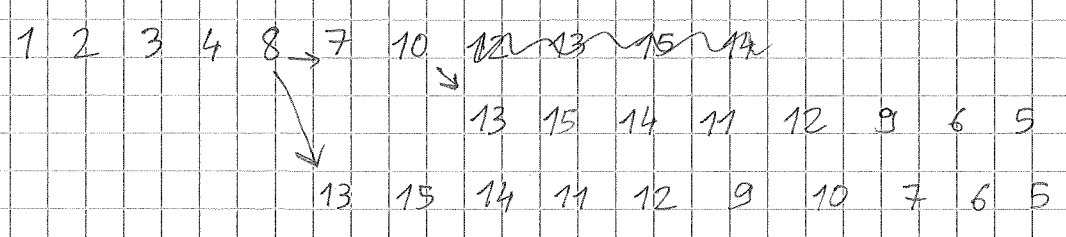
$$77 + 7 + 7 + 7 + 2 = 100$$

→ 5

⑨ 1 2 3 4 8 7 6 9 10 12 13

La 1^{ère}: forcément 1. D → 1 2 3 4 8

La dernière: " 5, A ← 5 ← 6

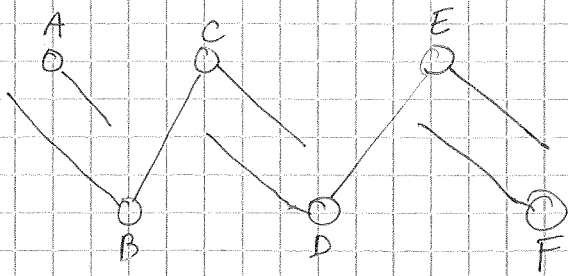


⑩ Surfaces: $6 \times 4 = 24$

Arête + sommet opposé: $12 \times 2 = 24$

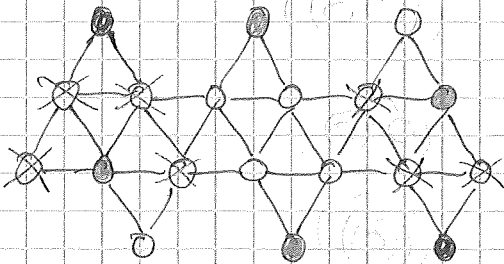
→ 48

(11) Max: $3 + 1 + 1 + 3$



B | C D | E

Max: $4 + 1 + 1 = 6$



(13) ZB34

Chiffre:

	a	b	#
1	5	6	5 (+1)
2	3	0	(1+) 0
3	3	6	3 (+1)
4	4	1	(1+) 1
5	2	1	(1+) 1
6	3	2	(1+) 2
7	3	5	3 (+2)
8	3	0	(1+) 0
9	1	6	1 (+1)
	<u>27</u>	<u>27</u>	

→ $1 + 16 + 1$ (18 chiffres en tout)

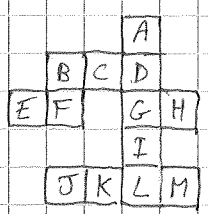
8973716 → 1 épuisé

8973716436131179

89711

- 17
- 37
- 47
- 67
- 97

12



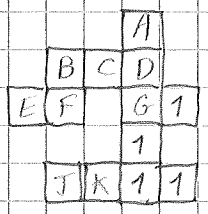
$A = D + G + I + L \Rightarrow A > I \Rightarrow I = L \Rightarrow I, L \neq 1 \text{ ou } 2$
 $E = F + G + H, \quad C = B, D \text{ ou } K \quad D \geq 3$

~~Se $K = J + K$, allora $K = J$ ou C~~

~~$J = J + K, K = J$~~

• Se $I = L = 1$:

$L = M \Rightarrow M = 1 \Rightarrow M = H$

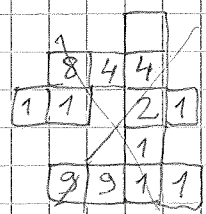
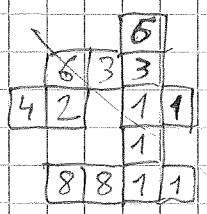


• Se $K = J$:

$J = B + F, \quad B = C + D, \quad C = \text{outra D}$

$D = G + 2 \geq 3 \quad B \geq 6 \quad J \geq 7$

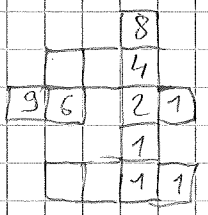
$\rightarrow G = 1 \text{ ou } 2 \quad F = G + 1$



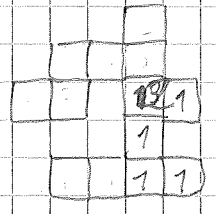
• Se $K = C \neq J$

• Se $J = F + B, \quad B = C + D, \quad D = G + 2 \quad \text{imp.}$

$G \geq 2$



$K = C$
 ~~$J = K + D$~~



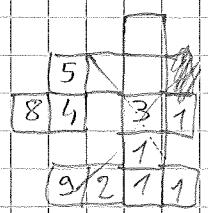
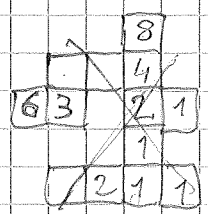
~~$G = 2$~~
 ~~$F = G + 1$~~

~~$K = C \geq 3$~~
 ~~$J \geq 5$~~

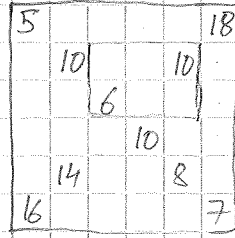
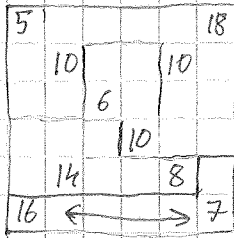
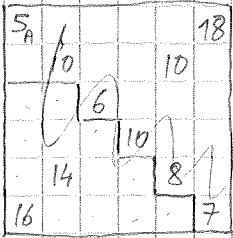
$J = B + F$
 $F = G + 1$

$K = C \geq 4$
imp.

$\rightarrow K = L \neq C$



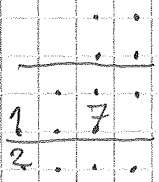
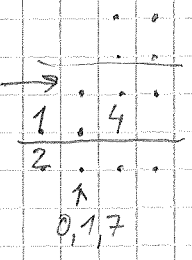
14



~~14/16~~ 14/16: $p=16$
 $p/2=8=5+3$ ou $4+4$

16

237



17

- A
- B
- A+B
- A+2B
- 2A+3B
- 3A+5B
- 1
- 2
- 3
- 5
- 8
- 13
- 21
- 34
- 55
- 88
- 144
- 233
- 377
- 610
- 987
- 1597
- 2584
- 4181
- 6765
- 10946
- 17711

$$AB \geq 10000A$$

$$987A + 1597B = 1000A + B$$

$$13A = 1596B$$

$$10946A + 17711B = 10000A + B$$

$$6765A + 10946B = 10000A + B$$

$$4181A + 6765B = 10000A + B$$

$$6764B = 5819A \quad (67645819)$$

$$2584A + 4181B = 10000A + B$$

$$4180B = 7416A \quad \text{non}$$

$$1597A + 2584B = 10000A + B$$

$$2583B = 8403A \quad (25838403)$$

div 3

$$1045B = 1854$$

$$(1854 \ 1045?)$$

206
103

~~88~~ 5819

~~1597~~ 1596

$$987A + 1597B =$$

$$1596B = 9013A$$

$$209321596 \quad A < B$$