

① 4 (3 gros + 1 petit à droite)

② 1, 3, 9 → base 3

112 OK 121 OK 122 non

$$9 + 6 + 2 = \underline{\underline{17}}$$

③

1	1	1	1
			2
			3
		4	4
		4	4

1	1	1
		2
	3	3
	3	3
		4

1	1	1
		2
		2
	3	3
		4

1	1
	2
	2
	2
	2
	3
	3
	4

1 1
2 2 2 2
3
4 4

~~1 1
2 2
4 4 4~~

1
2 2 2 2 2
3 3
4

~~1
2 2 2
3
4 4~~

→ 6

④ $S = 9$ $9 - 2 = \underline{\underline{7}}$

⑤

→ 3

⑥

	x	
x	x	x
	x	

x			x
x			x

?
→ non

→ 9

⑦ $12 + 23 + \dots + 89 = 11 \times \frac{8 \times 9}{2} + 8 = 396 + 8 = 404$

$$910 + 1011 + \dots + 2021 = 101 \times (9 + 10 + \dots + 20) + 12$$

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$$29 \times 6 = 180 - 6 = 174$$

$$\begin{array}{r} 174 \\ + 174 \\ + 12 \\ \hline \end{array}$$

$$17586 + 404 = \underline{\underline{17990}}$$

⑧ (#creux = #bosses)

Angles: 3

Côtés: $2 \times 3 = 6$

Int.: 6

15

⑨ 80×40

L

40×20

L

20×10

L

10×5

L

$5 \times 5/2$

L

$25/8$

$L = 25/16$

$R = 25/32 < 1$

6

⑩ $8 = 2^3$ $2 \times 3 \times 5 = 30$

$2^3 \times 3 = \underline{\underline{24}}$

⑪ $a^2 h = 225 = 3^2 \times 5^2$

$4h + 4a + 25 ?$

$a = 3$ ou 5

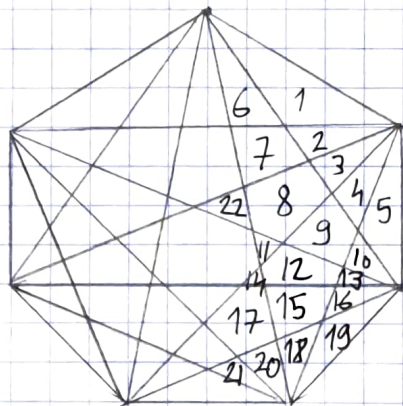
$h = 25$ ou 9

1) $4 \times 28 + 25 = 112 + 25 = 137$

2) $4 \times 14 + 25 = 56 + 25 = 81$

2 sol^o

12



$$22 \times 2 + 6 = 50$$

13

2 nb à 1 chiffre + 4 nb à 2 chiffres

$$\hookrightarrow \frac{9 \times 8}{2} = 36$$

Reste 7 chiffres $\neq 0$

Nb avec le 0 : 7

Reste 6 chiffres

Plus petit chiffres : $5 \times 2 = 10$

Plus petit chiffre : $3 \times 2 = 6$

2 chiffres restants : 2

$$\begin{aligned} 36 \times 7 \times 10 \times 6 \times 2 &= 252 \times 10 \times 6 \times 2 \\ &= 1512 \times 10 \times 2 \\ &= \underline{\underline{30240}} \end{aligned}$$

14

3 OK $3 = 1 + 2$

4 ~~OK~~ : $1 + 4 = 2 + 3$

5 et 6 : impair $\rightarrow$ impossible

7 : $3 + 4 + 7 = 1 + 2 + 5 + 6$

$\rightarrow 3, 4, 7, 8, 11, 12, 15, 16, 19, 20 \rightarrow \underline{\underline{10 \text{ valeurs}}}$

(15)

$$2080 \times 2 = 4160$$

$$64^2 = 4096$$

$$\frac{64 \times 65}{2} = 2048 + 32 = 2080$$

$$16 \times 14 = 224$$

$$1: (1, 0)$$

$$9: (5, -4)$$

$$2: (1, 2)$$

$$10: (5, 6)$$

$$3: (-2, 2)$$

$$11: (-6, 6)$$

$$4: (-2, -2)$$

$$12: (-6, -6)$$

$$5: (3, -2)$$

⋮

$$6: (3, 4)$$

$$64: (-32, -32)$$

$$7: (-4, 4)$$

$$8: (-4, -4)$$

$$32 \times 50 \sqrt{2} \simeq 16 \times 100 \times 1,414 = 16 \times 141,4$$

$$\simeq 2262,4$$

$$\rightarrow \underline{\underline{2262}}$$

(16)

$[a][b+2]$	$b+1$	$[a][c]$
g	$[a][0]$	$[a][b]$
d	$[a][e]$	f

$$\checkmark \rightarrow c=2$$

$$\Rightarrow 2b+5 = b+9 \Rightarrow b=4$$

$$\cancel{A} A = \beta a \quad (\text{base } \beta)$$

$$\checkmark \rightarrow 2A+2 = A+15 \Rightarrow A=13$$

$A+6$	5	$A+2$
g	A	$A+4$
d	$A+e$	f

19	5	15

$$S = 3 \times 39 = \underline{\underline{117}}$$

(17) 4 cubes identiques (4 verts + 2)

Pour chaque cube collé: $P(4 \text{ verts})$? $P(3 \text{ verts})$? $P(2 \text{ verts})$?

Collage = choix d'une arête. 12 arêtes

$$P(4 \text{ verts}) = 1/12$$

$$P(3 \text{ verts}) = 6/12$$

$$P(2 \text{ verts}) = 5/12$$

$$12 = 2 + 2 + 4 + 4 \quad (6 \text{ poss.}) \quad 6 \times 5 \times 5 \quad \cancel{2450}$$

$$= 2 + 3 + 3 + 4 \quad (12 \text{ poss.}) \quad 12 \times 5 \times 6 \times 6$$

$$= 3 + 3 + 3 + 3 \quad (1 \text{ poss.}) \quad 6 \times 6 \times 6 \times 6$$

$$\frac{1}{12} \times \frac{1}{2} \times \frac{5}{12} \times \frac{5}{12} = \frac{25}{2 \times 12^3}$$

$$+ \frac{12 \times 5 \times 6}{2 \times 12^3} = \frac{360}{2 \times 12^3}$$

$$+ \frac{6^3}{2 \times 12^3} = \frac{216}{2 \times 12^3}$$

$$25 + 360 + 216 = 601$$

$$\begin{array}{r} \cancel{146} \times 288 \\ \times 12 \\ \hline 576 \\ 288 \\ \hline 3456 \end{array}$$

$$\rightarrow 601 / 3456$$