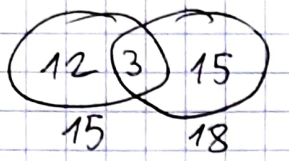
① 

→ 30

② 2×1 : 4
1×2 : 3
3×2 : 1
3×1 : ~~2~~
~~10~~ 10

③ 25 = 1 + 3×8 → 1789

④ V J V J V J V J ~~X X~~ → 8

⑤ Impairs : G et I

⑥ 6 : 25 → + 3×3
3 : 16
→ 16 − 6 = 10

⑦ T ~~et~~ ou U : impairs
N, S, E : pairs
T + U + N + S + E = 23
9 8 4 1 2 1 0

⑧

1 et 14	1 2 5 8
17 et 20	4 7 12 13
4 et 13	9 10 15 17
9 et 12	14 16 19 20
7 et 9	
9 et 10	→ 6

⑨

3	1	1	3	4	2
2	0	1	2	3	3
1	0	0	4	0	0
3	2	0	4	4	4
3	2	1	2	4	1

2-2
3-3
0-2
0-1
1-3
1-1

1-2 3-4
2-3 2-4 0-0
4-4

⑩ a 2 5 b a + b ≡ 2 [3]
a + 5 ≡ b + 2 [11]

1	4	1254 / ~~11~~ 11 = 114
4	7	4257 / 11 = 387
7	~~8~~ 9	
8	0	8250 / 11 = 750

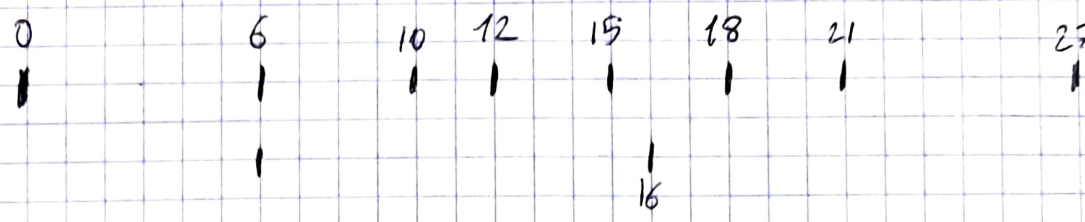
3 sol° : 114 387 750

⑪ 0, 1, 2, 5, 8 → idem.
6 ↔ 9
1 chiffre : 4
2 " : ~~4~~ 4 + 2 = 6
3 chiffres : 4 × 6 = 24
↑ 2 chiffres
4 " : 6 + 1 = 7
↑
2002

41

⑫ 2(a+b) = 3(b−a) → 5a = b
5a² = 12a a = 12/5
b = 12
~~a~~ (2,4 ; 12)

(13)



$15 + 6 + 6 = 27$

$10 + 10 = 20$

~~27 minutes ?~~

15

$10 + 6 + 6 = \underline{\underline{22}}$ min.

(14) $12600 = 2^3 \times 3^2 \times 5^2 \times 7$

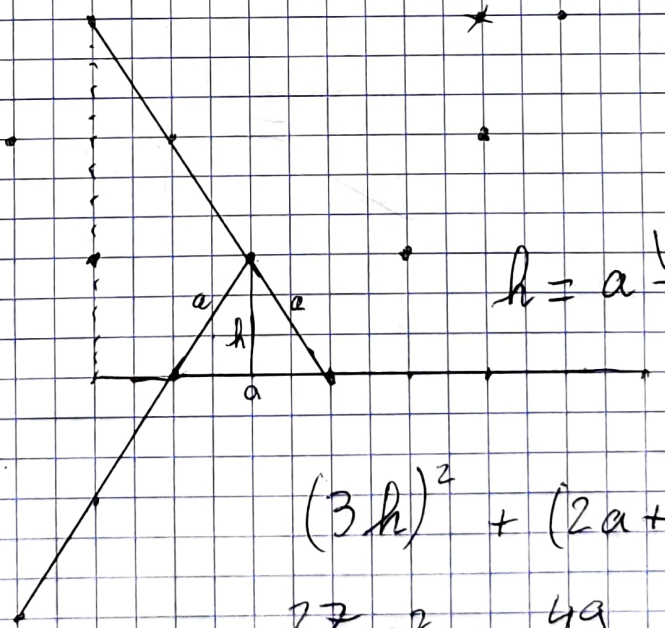
$2^3 = 8$ ~~solutions~~, reste 2 et 5 → a ou b

3 et 7 → a

- $63 \times 8 \,/\, 5^2 = 504 \,/\, 25 = \boxed{20,16}$
- $63 \times 25 \,/\, 8$ ✉
- $\boxed{12600}$

) ∃ sol°

(15)



$h = a\frac{\sqrt{3}}{2}$

$(3h)^2 + \left(2a + \frac{3}{2}a\right)^2$

$= \frac{27}{4}a^2 + \frac{49}{4}a^2$

$= \frac{76}{4}a^2 = 19a^2$ → $\underline{\underline{19}}$

(16) $2025 = 3^4 \times 5^2$ $\quad a^2+b^2 > c^2$

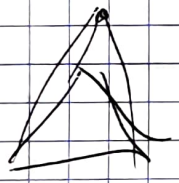
$(x, y, 1)$ avec $x > y$: $y^2 + 1 > x^2$ imp.

$\Rightarrow$ arête ≥ 3

$(x, y, 3)$ avec $x > y \geq 3$: $y^2 + 9 > x^2$

- $(x, 3, 3)$: $(3,3,3)$ et ~~$(5,3,3)$~~
- $(x, 5, 3)$: $(5,5,3)$
- $(x, x, 3)$ avec $x \geq 3$

$(3,3,3,3,5,5)$ ~~1 1 2~~



5 et 5 : $\hat{m}$ face ou arêtes opposées.

~~1 1 2~~

$(3,3,3,3,3,5)$
$(3,3,3,3,3,4)$
$(3,3,3,3,3,3)$

~~1~~ 1

$(3,3,3,3,4,4)$
$(3,3,3,3,5,5)$ 2

- $(1,1,1) \longrightarrow$ pas 2x le 1 sf 1^6
  $(1,x,x,x,x,x)$ OK $x = 1,2,3,4$ $\quad 4^5 = 1024$ → ~~4~~
- $(2,2,3)$ ~~OK~~ NON
  $(2,3,3)$ OK
  $(2,4,4)$
  $(2,5,5)$
  $(2,2,4,4,4,4) \leftrightarrow (1,1,x,x,x,x)$ $x \leq 6$
  $2+4+2+2 = 10$
  $+45 =$

$(2,2,2,2,2,2)$ OK
$(2,2,2,3)$
$(2,2,2,2,3,3)$ ×2
$(2,2,2,3,3,3)$ ×3
$(2,2,3,3,3,3)$ ~~×4~~ 1
$(2,2,3,4,4,4)$ ×1
$(2,2,3,5,5,5)$
17

2025/12 = 168,_

$(2,3,3,3,3,x)$ 2
$x = 3,4$ ~~5~~

$(2,4,4,4,4,x)$
imp.

~~187~~

(17)

11 $\quad 3\times5 = 16-1 = 2^4-1$

101

10001 $\quad 3\times5\times17 = 16^2-1 = 2^8-1$

n tổ: $(2^{2^n}-1) \;/\; 2^{(2^n-1)}$

$= 2 - 1/2^{(2^n-1)}$

$\log_{10}(2^{(2^n-1)}) = (2^n-1)\times\log_{10}2$

$1/2^{(2^n-1)} < 10^{-2025}$

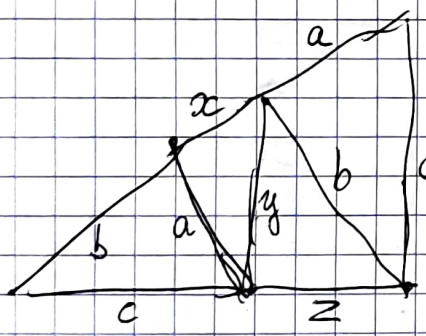
$2^{(2^n-1)} > 10^{2025}$

$2^n - 1 > 2025 \;/\; \log_{10}2 \simeq 20250/3{,}01$

$20250/3 = 6750$ $\qquad 4096 \to 8192$

~~$\Rightarrow n > 8$~~ $\to$ ~~$n = 10$~~ $\to$ $n = 13$

(18)



$a/b = x/a \to x = a^2/b$

$y^2 = a^2 + x^2 = a^2 + a^4/b^2$

$z/y = a/b \quad z^2 = a^4/b^2 + a^6/b^4$

~~$z = a^3/b + a^5/b^2$~~

$y^2 + z^2 = y^2(1 + a^2/b^2) = b^2$

$a^2 + 2a^4/b^2 + a^6/b^4 = b^2$

$1 + 2a^2/b^2 + a^4/b^4 = b^2/a^2 \qquad n = (a/b)^2$

$1 + 2n + n^2 = 1/n \qquad n^3 + 2n^2 + n - 1 = 0$