

① A ou B a menti.
 C → vérité
 A → vérité
Béa a menti.

② 6 (sommet au centre du cube)

③ $14/2 = 7$
 $7 = 3 + 4$
 $3 \times 4 = \underline{12}$

④ $(5 + 5 + 5 + 5) \times 5$
 $\rightarrow 10 - 15 - 20$

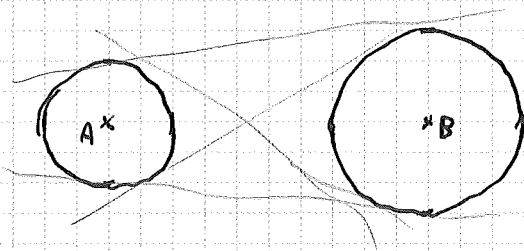
⑤ $n_0 \geq 3$
 $n_1 \geq 2$
 $n_2 \geq 3$
 $n_3 \geq 4$

\rightarrow

$n_0 = 3$
 $n_1 = 2$
 $n_2 = 4$
 $n_3 = 5$

~~11/4~~ $(3 + 2 + 4 + 5) \times 2 = 14$

⑥



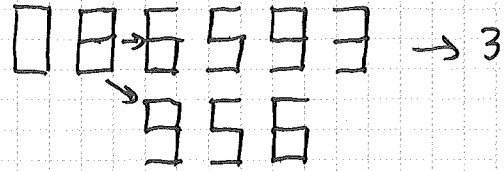
$\rightarrow 4$

⑩ $3/4$: non gauchers

Droitiers: $1/5 \times 3/4 = 3/20 = 15/100 = 15\%$

⑪ $24/24/24 \rightarrow 12/12/48 \rightarrow 6/6/60 \rightarrow 3/30/39$
 $\rightarrow 6/24/42 \rightarrow 12/21/39$
 $\rightarrow 3/21/imp.$
 2 sol^o

⑥



~~101~~

⑦

1738
 $\times 4$

 6952

⑧

$S_1 - S_2$
 $S_1 = 1111 \times 6 \times (2 + 0 + 1 + 3)$
 $= 1111 \times 6 \times 6$
 $S_2 = 111 \times 2 \times (2 + 1 + 3)$
 $= 111 \times 2 \times 6$
 $S = 6 \times (6666 - 222)$
 $= 6 \times 6444$
 $= \underline{38664}$

⑫. Si pas de retenue:

$$6|s \quad 5|s+1$$

$$\rightarrow s = 24$$

798 et 799

• Si 1 retenue:

$$\left. \begin{array}{l} s = k+9 \\ s' = k+1 \end{array} \right\} \rightarrow k = 9$$

189 et 190

• Si 2 retenues:

99 non

199 trop grand

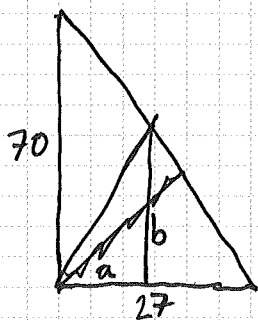
⑬ $\frac{ab}{2} = 2013$

$$ab = 4026 = 2 \times 3 \times 11 \times 61$$

Nb diviseurs de ab : 2^4

Nb de produits: $2^4 / 2 = \underline{\underline{8}}$

⑭



$$a = \mu\sqrt{2}$$

$$b = 2\mu$$

$$b / (27 - a) = 70 / 27$$

$$\rightarrow 27b = 70(27 - a)$$

$$\rightarrow 54\mu = 70 \times 27 - \mu(70\sqrt{2})$$

$$\mu = \frac{70 \times 27}{54 + 70\sqrt{2}}$$

$$\sqrt{2} \approx \frac{7070}{5000}$$

$$\text{Arête} = b = 2\mu = \frac{1890}{27 + 35\sqrt{2}} \text{ mm} = \frac{18900}{27 + 35\sqrt{2}} \text{ mm}$$

$$\approx \frac{70 \times 27\sqrt{2}}{54\sqrt{2} + 70 \times 2} \approx \frac{27\sqrt{2}}{\frac{5454}{5000} + 2} =$$

⑭ suite

$$1,414 \times 5 = 7,07$$

$$7 \times " = 49,49$$

$$" + 27 = 76,49$$

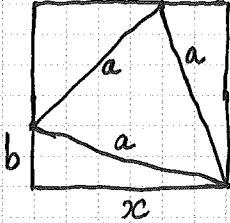
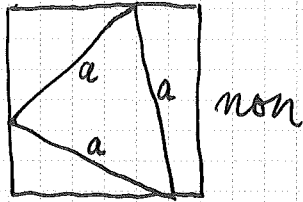
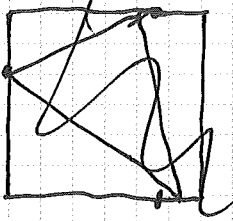
$$1,414 \approx \frac{707}{500}$$

$$\frac{18900}{76,49} \text{ mm}$$

$$76 \times 7 = 532$$

$$\begin{array}{r} 18900 \\ -15298 \\ \hline 36020 \\ -30596 \\ \hline 54240 \end{array} \left| \begin{array}{r} 7649 \\ \hline 247 \end{array} \right. \rightarrow \underline{\underline{247 \text{ mm}}}$$

15



$$b^2 + x^2 = a^2 = 2(x-b)^2 = 2x^2 + 2b^2 - 4bx$$

$$\pi = b/x$$

$$\pi^2 - 4\pi + 1 = 0$$

$$\pi = 2 - \sqrt{3} \approx 0,268$$

$$b = \pi x \rightarrow x^2(\pi^2 + 1) = a^2$$

$$\pi^2 + 1 = 4\pi \rightarrow x = \frac{a}{2\sqrt{\pi}}$$

$$(1 - \sqrt{3})^2 = 4 - 2\sqrt{3} = 2\pi$$

$$\sqrt{\pi} = \frac{\sqrt{3} - 1}{\sqrt{2}} \quad 2\sqrt{\pi} = \sqrt{2}(\sqrt{3} - 1)$$

$$x = \frac{a}{\sqrt{2}(\sqrt{3} - 1)} = \frac{a\sqrt{2}(\sqrt{3} + 1)}{2 \times 2}$$

$$\sqrt{3} + 1 \approx 2,732$$

$$\begin{array}{r} 2,732 \\ \times 1,414 \\ \hline 10,928 \\ 2732 \\ 10928 \\ 2732 \\ \hline 4,20728 \end{array} / 4 = 1,05182$$

$$x \approx 10,5182 \approx 10,52$$

16) $a^2 - b^2 = h^3$ Supp. $a \neq b$?

$$a^3 - b^3 = h^2$$

~~0 1 2 3~~

0 1 8 27 64 125 216 343

0 1 4 9 16 25 36 49 64 81 100 121 144 169 196 225
256 289 ~~324~~ 324 361

~~(a,b)~~ (0,1) ~~(3,6)~~ (6,10) ~~(13,14)?~~ ~~(10,15)?~~ ~~(3,15)?~~

~~(a,b)~~

$$216 - 27 = 189$$

$$1000 - 216 = 784 \quad 784 / 4 = 196 = h^2$$

$$\begin{aligned} 14^3 - 13^3 &= 14^2 + 14 \times 13 + 13^2 \\ &= 196 + 182 + 169 \\ &= 547 \end{aligned}$$

$$15^3 - 10^3 = 5^3 (27 - 8)$$

$$15^3 - 3^3 = 3^3 (125 - 1)$$

~~(5,17)~~

~~(75,77)~~

$$17^3 - 15^3 \neq 8 \times h$$

$$\equiv 3 - 5 \equiv 8[-10] \quad \text{pas un carré}$$

2 sol^o : 1 et 10

17

1927 1814

29 27

191817165

192 78 → 56 ✓
32456

~~12~~ ~~23~~ ~~34~~ 40506070809

1234

12034506070809

~~12030456070809~~ 12030456070809

~~12030425670809~~ 1203045607809

~~12030425~~

1920304560718

320360450718

456 20 30

29

2903

36

18029

18

36045092018718 ?

~~360450718180~~

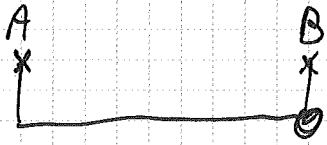
420340

26 et 34

⑧ $4,5 \text{ km/h} = 4500 \text{ m/h} = 75 \text{ m/min}$

$t(10\text{m}) = 10/75 = \frac{2}{15} \text{ min} = 8\text{s}$

$t(100\text{m}) = 80\text{s} = 60 + 20$



A: 0 à 15: OK sinon 45 - t'

B: 15 à 40: : 25s d'attente ou - 25/2 en moyenne

B: 40 à 55: OK

A: 55 à 60: 5s d'attente ou - 5/2 en moyenne

Attente: $\frac{25}{60} \times \frac{25}{2} + \frac{5}{60} \times \frac{5}{2} \text{ s}$

$= \frac{625 + 25}{120} = \frac{650}{120} \text{ s} \approx 5\text{s} \leftarrow \text{attente moyenne}$

Au pire: 25s d'attente.

~~8h 30' 25" au pire avec 25s d'attente~~

8h 30' 05" en moyenne.

8h 30 - 25s au mieux (sans attente)

8h 30 - 20s en moyenne

8h 29' 40"