
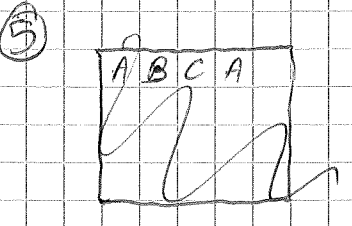


$$\begin{array}{r} 1283 \\ + 726 \\ \hline 2009 \end{array}$$

② d'énoncé

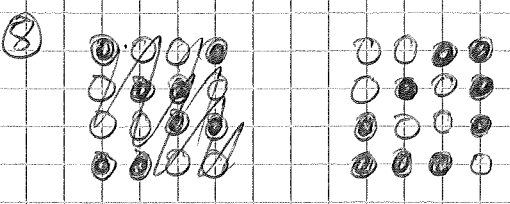
$$\begin{aligned} ③ \quad 3 \times \diamond &= 3 \times 6 + 188 \\ + 3 \times 1(\triangle) &= \underline{21} \end{aligned}$$


④ 2 chiffres \rightarrow identiques. \rightarrow 22
 $1x: \text{MAX} \text{ (MAX)}$



⑥ 1 et 2

- ⑦
- DCBA
 - DCBEA
 - DCFHGEA
 - DCFHGEBA
 - DCFHIGEA
 - EBA
 - DFCBA
 - DFCBEA
 - DFHGEA
 - DFHGEBA
 - DFHIGEA
 - EBA
-) \rightarrow 12



9

① ②

②④ ④① ⑧⑧ ②① → 2nd^o
4/8 8/16

~~①⑧~~ ③③ ⑥⑥ ⑤⑤
= 18 3/6 6/12

10

a b c
d e f
g h i
c + f + i = 15

ab + de + gh = (1575 - 15) / 10 = 156

b + e + h = 6 ou 16

• 6: 7 1 4
8 2 5 → non
9 3 6

1400 + 160 + ~~15~~

• 16: a + d + g = 14

Echange → 1400 + 150 + 16 = 1566

11 n jours, p parties perdues
→ $\frac{n(n-1)}{2}$ parties

Parties perdues:

3(n-1-4) + 3x7 + (n-6) = 4n

4n = $\frac{n(n-1)}{2}$ → n² - n = 8n

→ 9n = n² n > 1 → n = 9

	G	P
3	4	4
3	1	7
3	7	1

Gagnées: 12 + 3(n-8) + (n-6)(n-2)

12 Triangle: $314/2 = 157$



~~$c = 2 \times \sqrt{1-1/4} R$
 $= R\sqrt{3}$~~

~~$A_{\text{ins}}(\text{traj}) = R\sqrt{3} \frac{3R}{4} = \frac{3\sqrt{3}}{4} R^2$~~

13 $m \times n \rightarrow (m+1)(n+1)$ régions
 $(m-1)(n-1)$ " limitées

~~$(m-1)(n-1) \cdot 4R^2 = 2 [(m+1)(n+1) - (m-1)(n-1)]$~~

~~$3(m-1)(n-1) = 2(m+1)(n+1)$~~

~~$m \geq 2, n \geq 2$~~

$m=2: 3(m-1) = 6(n+1)$ non

3: $6(m-1) = 8(n+1)$ "

4: $9 \quad 10$ "

5: $12(m-1) = 12(n+1)$ "

6: $15(m-1) = 14(n+1) \rightarrow n = 29$

7: $18(m-1) = 16(n+1) \rightarrow n = 17$

8: $21(m-1) = 18(n+1) \rightarrow n = 13$

9: $24 \quad 20 \rightarrow n = 11$

10: $27 \quad 22 \rightarrow$ non

m	n	$3(m-1)(n-1)$	$2(m+1)(n+1)$	$m+n$
6	29	420	420	35
7	17	18x18 18x16	18x16	24
8	13	3x7x12	28x9	21
9	11	240	240	20

limité
↓

$$(14) \quad 1+2+\dots+20 = \frac{20 \times 21}{2} = 210$$

$$n \mid 210 = 2 \times 3 \times 5 \times 7$$

$$\rightarrow n = 2, 3, 5, 6, 7, 10, 14, 15, \dots$$

$$2: \quad \cancel{105} + \cancel{105} \quad \text{OK}$$

$$3: \quad \cancel{70} + \cancel{70} + \cancel{70}$$

$$2: \quad 105 (10) + 105 (10)$$

$$1 \ 2 \ 3 \ 4 \ 5 \quad 20 \ 19 \ 18 \ 17 \ 16$$

OK

$$3: \quad 3 \times 20$$

$$5: \quad 42 (4)$$

OK

$$1 \ 2 \quad 20 \ 19$$

$$\cancel{3} \ \cancel{4} \quad 18 \ 17$$

$$3 \ 10 \quad \vdots \quad 12 \ 11$$

$$10: \quad 21 (2)$$

OK

$$1 \quad 20$$

$$2 \quad 19$$

$$10 \quad \vdots \quad 11$$

$$\rightarrow 3 \text{ sol}^{\circ}: \quad 2, 5, 10$$

15) ~~11200 = k a^2 b^2~~

Masses a et b

$$11200 = k(a+b)^2 = k(a^2 + b^2 + 2ab)$$

$$7000 = k(a^2 + b^2)$$

$$4200 = k(2ab)$$

$$\frac{a^2 + b^2}{2ab} = \frac{70}{42} = \frac{5}{3}$$

$$\frac{a}{b} + \frac{b}{a} = \frac{10}{3}$$

$$x + \frac{1}{x} = \frac{10}{3} \rightarrow x^2 - \frac{10}{3}x + 1 = 0$$

$$3x^2 - 10x + 3 = 0$$

~~x = 10/3~~

(x=3) solution → 1/3

16) a, b, c

$$4(a+b+c) = ~~4abc~~ (ab+bc+ca)$$

$$~~(a-4)(b-4)(c-4)~~$$

$$(a-2)(b-2)(c-2) = abc$$

$$(a-4)(b-4)(c-4) = abc - 4(ab+bc+ca) + 16(a+b+c) - 64 = abc - 64$$

$$~~(4-b-c)a = bc - 4(b+c)~~$$

$$a = \frac{bc - 4(b+c)}{4 - (b+c)} = \frac{4(b+c) - bc}{b+c - 4}$$

$$(b, c) = (1, 4) \rightarrow a =$$

$$(b, c) = (1, 4) \rightarrow a = 16$$

$$(2, 3) \rightarrow a = 14$$

$$(2, 4) \rightarrow a = 8$$

$$b+c=7 \rightarrow 3/28-bc$$

$$(2, 5) \rightarrow a = 6$$

$$1 \ 4 \ 16$$

$$2 \ 3 \ 14$$

$$2 \ 4 \ 8$$

$$2 \ 5 \ 6$$

$$4 \ 4 \ 4$$

$$b+c=8: 4/bc$$

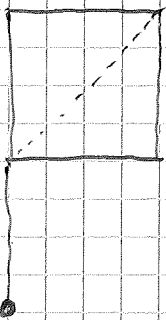
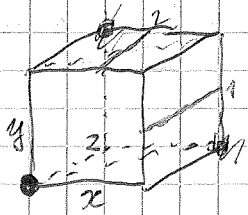
$$(4, 4) \rightarrow 4$$

$$b+c=10: 6/40-bc$$

$$11 \ 7/40-bc$$

(17)

$$0 \leq x_i \leq 8$$



$$\frac{x_1 + x_2}{3} = 4$$

$$\frac{y_1 + y_2}{3} = 4$$

$$\frac{z_1 + z_2}{3} = 4$$

$$\sqrt{p(p-a)(p-b)(p-c)}$$

$$y_1 = 8 \Rightarrow y_2 = 4$$

$$x_2 = 8 \Rightarrow x_1 = 4$$

$$(0, 0, 0)$$

$$(8, 4, z_1)$$

$$(4, 8, z_2)$$

$$z_1 + z_2 = 12$$

(6 et 6?)

$$\sqrt{64 + 16 + 36} = \sqrt{116}$$

$$\sqrt{116}$$

$$\sqrt{32}$$

$$\sqrt{32}$$

$$\sqrt{80 + z^2}$$

$$\sqrt{80 + (12 - z)^2}$$

$$z = 4?$$

$$\sqrt{32 + (12 - 2z)^2}$$

$$\sqrt{\quad}$$

→

$$\sqrt{36}$$

$$\sqrt{144} = 12$$

$$\sqrt{48}$$

~~12~~ $4\sqrt{6}$, 12 et $4\sqrt{3}$

$$p = 6 + 2\sqrt{3} + 2\sqrt{6}$$

$$p - a = 6 + 2\sqrt{3} - 2\sqrt{6}$$

$$p - b = 6 - 2\sqrt{3} + 2\sqrt{6}$$

$$p - c = -6 + 2\sqrt{3} + 2\sqrt{6}$$

$$u = 2(\sqrt{6} + \sqrt{3}) \quad v = 2(\sqrt{6} - \sqrt{3})$$

$$p(p-c) = (u+6)(u-6)$$

$$= u^2 - 36$$

$$p(p-a)(p-b) = (6+v)(6-v)$$

$$= 36 - v^2$$

$(a+b+c)$ $(d+e+f)$

17 suite

$$\sqrt{(u^2 - 36)(36 - v^2)}$$

$$u^2 = 4(9 + 2\sqrt{18}) = 36 + 24\sqrt{2}$$

$$v^2 = 4(9 - 2\sqrt{18}) = 36 - 24\sqrt{2}$$

$$\sqrt{(24\sqrt{2})^2} = 24\sqrt{2}$$

$$24 \times 1,414$$

$$\begin{array}{r} 1,414 \\ \times 24 \\ \hline \end{array}$$

$$\begin{array}{r} 1414 \\ \times 24 \\ \hline 5656 \\ 2828 \\ \hline 33936 \end{array} \leftarrow$$

$$33,936 \text{ cm}^2$$

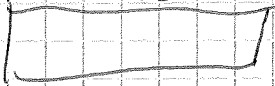
au mm² le + proche:

$$33,94$$

18

2008

2



Proba:



50%?

3x2:



4x2:



5x2:



6x2:

