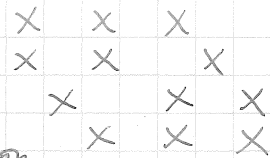
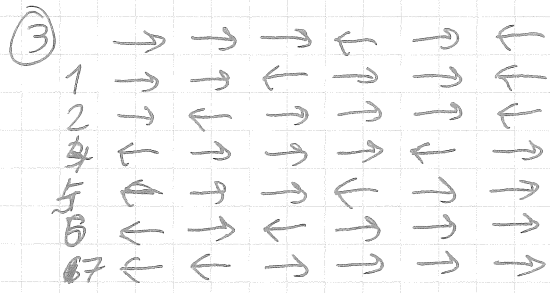


①  $6+1 = \underline{7}$

②  $123456789$  J V S D



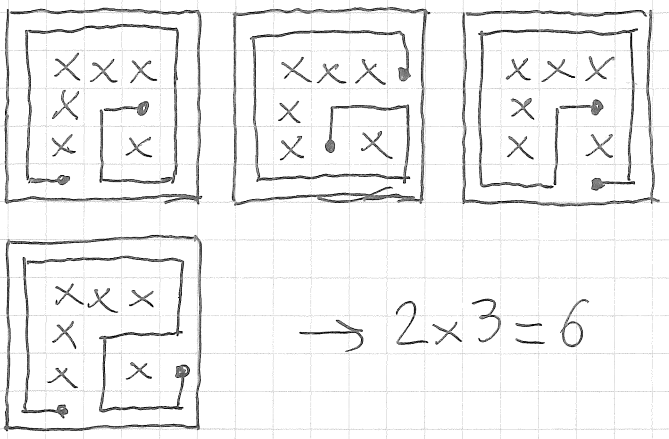
~~A/B~~  
→ 4



~~A/B~~ → 7

- ④
- $1+5 = 6$
  - $2+5 = 7$
  - $3+3 = 6$
  - $4+3 = 7$
  - $5+5 = 10$
  - $6+5 = 11$
  - $7+3 = 10$
  - $8+3 = 11$
  - $9+5 = 14$
- 5

⑤ A côté d'une case impaire



⑥  $2 > 57$  pair  $< 31 \times 6$  4

A: V M V V M V

B: M V V M V V ~~mon~~

~~A~~ A:  $< 31$  et 4 →  $3 \times 4 \rightarrow 24$  imp.

B:  $> 57$  et 4 →  $2 \times 4 \rightarrow 84$  OK

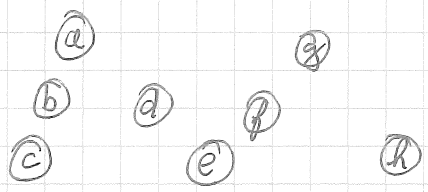
⑦  $99 \times 100 \rightarrow 17$   
 $999 \times 1000 \rightarrow 26$

~~54999~~ ~~15~~ ~~154999~~ ~~155000~~

$3 \times 9 = 27 \rightarrow +12$

~~12~~  $48999$  et 49000

⑧  $1+2+\dots+8 = 36$



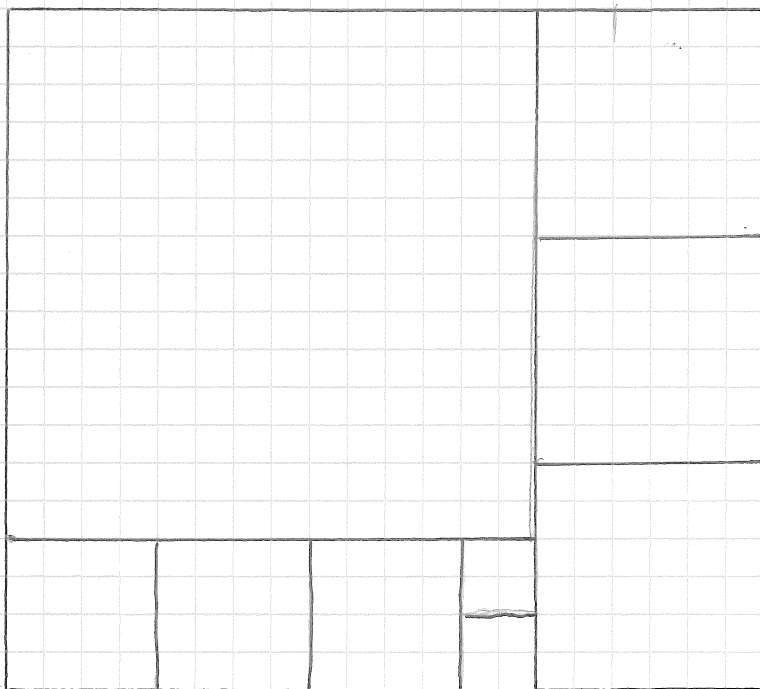
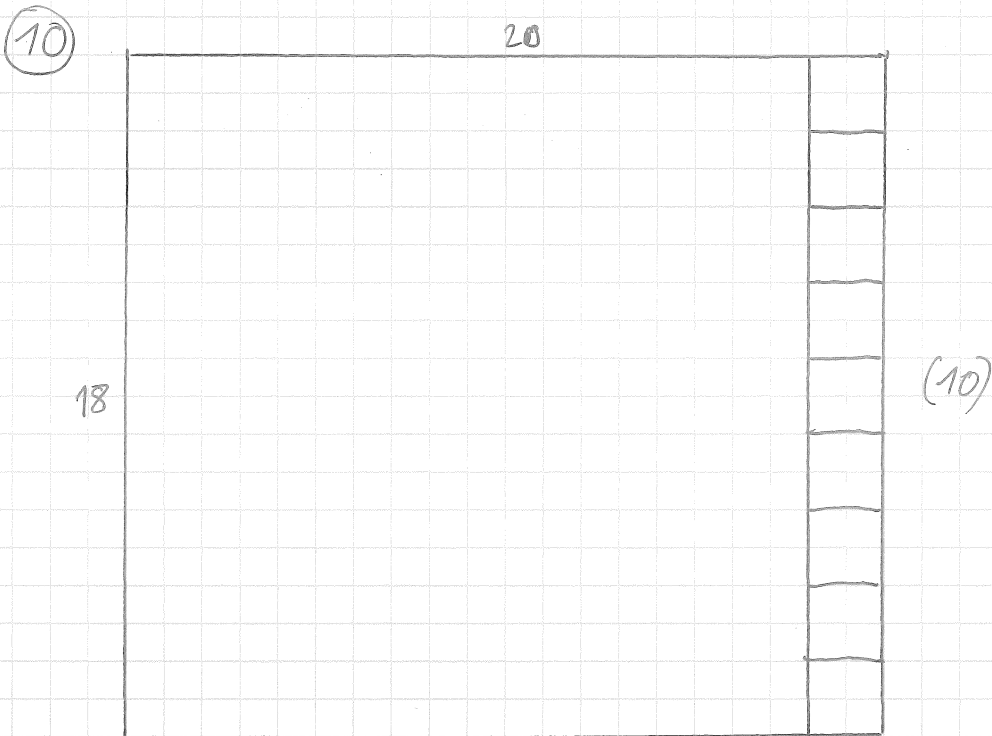
$36 - 2 \times 11 = 14 = 6 + 8$

$11 = 8 + 1 + 2$  (1 somme)

⇒  $h = 6$

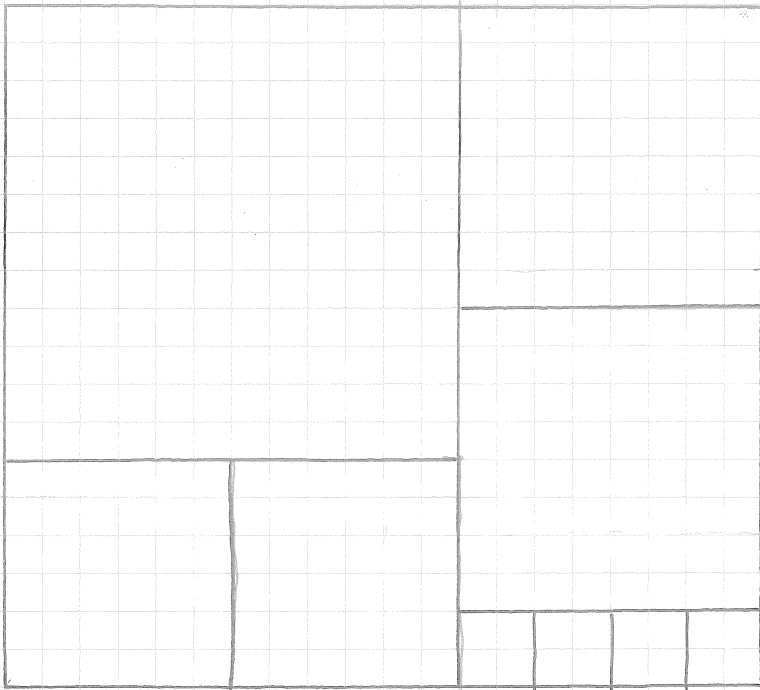
⑨ Arrivées tram:  $5N+3$  (départ taxi: 0)

Tram dépassés arrivent à: 23, 28, 33, 38.  $\rightarrow 4$

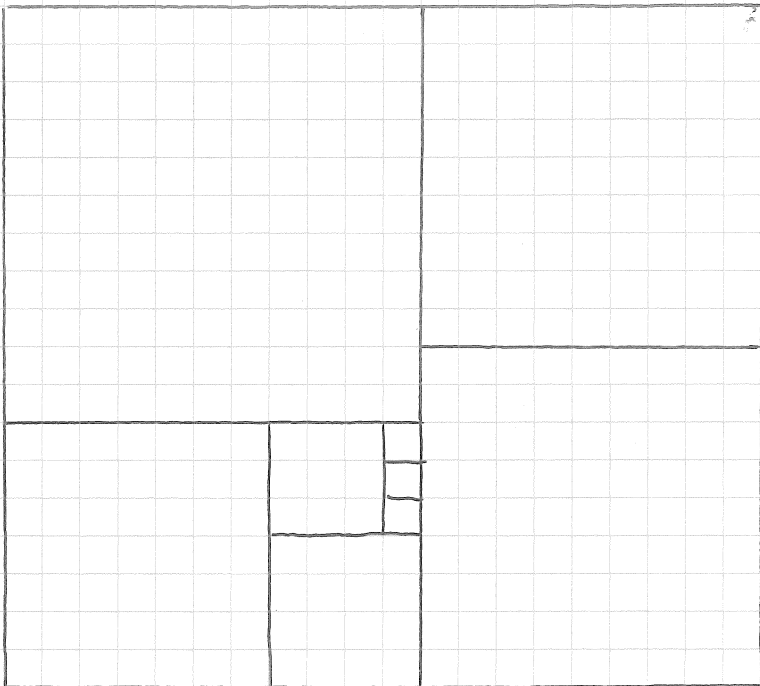


$$(14 \times 14) + 3 \times (6 \times 6) + 3 \times (4 \times 4) + 2 \times (2 \times 2) \rightarrow 9$$

⑩ suite 1

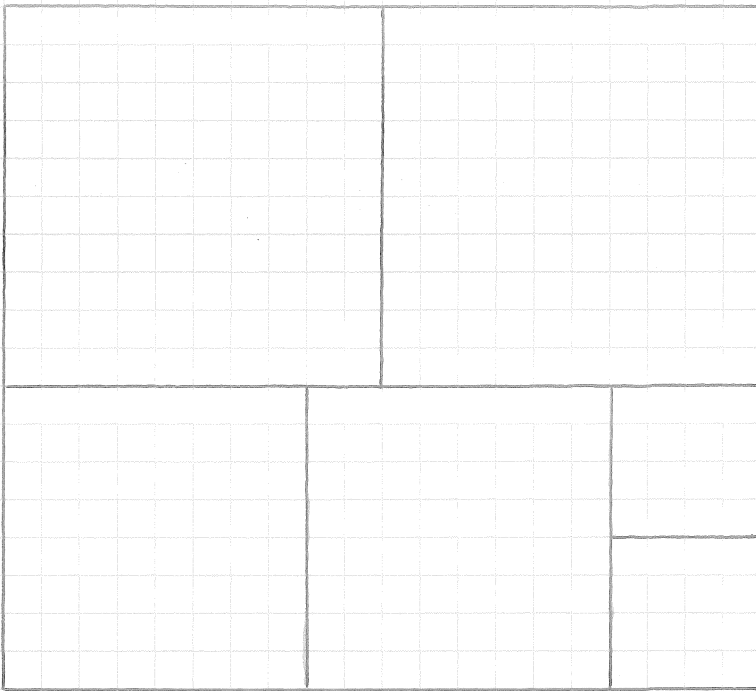


g



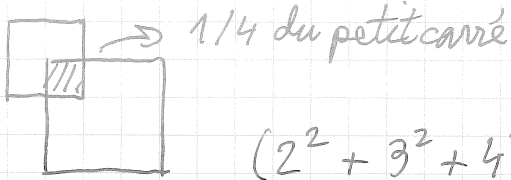
g

90 suite 2



6 → OK

12



$$(2^2 + 3^2 + 4^2 + \dots + 10^2) - \frac{1}{4}(2^2 + 3^2 + \dots + 9^2)$$

$$= \frac{3}{4}(2^2 + 3^2 + \dots + 9^2) + 10^2$$

$$4 + 9 + 16 + 25 + 36 + 49 + 64 + 81 = 284$$

$$\frac{3}{4} 284 + 100 = 3 \times 71 + 100 = 213 + 100 = \underline{313}$$

13) (7, 0) ~~7 ± 4a + 3b~~

$$7 = 4(a+b) + 3(c+d)$$

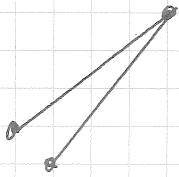
$$a+b = 1 \text{ et } c+d = 1?$$

$$0 = 3(a-b) + 4(c-d)$$

$$\rightarrow 0 = 3(2a-1) + 4(2c-1)$$

*imp.*

→ nombre impair



$$5 \times 3 + 2 = 17?$$

~~4+4+4~~  $4 + 4 - 3 - 3 - 3 = -1$

$$3 + 3 - 4 - 4 + 4 = 2$$

14

$$60690 = ka^2$$

$$a = b + c$$

$$35490 = k(b^2 + c^2)$$

$$k(b^2 - c^2) ?$$

$$60690 = k(b+c)^2 = k(b^2 + c^2 + 2bc)$$

$$35490^2 = k^2(b^4 + c^4 + 2b^2c^2)$$

$$k(2bc) = 60690 - 35490 = 25200$$

$$25200^2 = k^2(4b^2c^2)$$

$$35490^2 - 25200^2 = k^2(b^4 + c^4 - 2b^2c^2)$$
$$= k^2(b^2 - c^2)^2$$

$$d = \sqrt{35490^2 - 25200^2}$$

$$35490 = 10 \times 7 \times 507 = 10 \times 7 \times 3 \times 169$$

$$25200 = 10 \times 7 \times 360 = 10 \times 7 \times 3 \times 120$$

$$169^2 - 120^2 = 289 \times 49 = (17 \times 7)^2$$

$$d = 10 \times 7 \times 3 \times 17 \times 7 = 10 \times 7 \times 3 \times 119$$

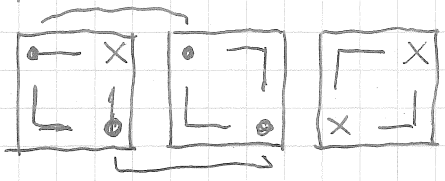
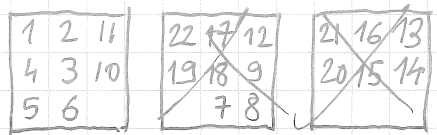
$$= 10 \times 7 \times 357 = 24990$$

$$10 \times 51 \times 49 = 10 \times (50^2 - 1) = 24990$$

15

$$27 = 3^3$$

nb pair 28



$$27 - 3 = 24 ?$$

16

$x$   $y$   $z$   
AB % de CD, EF = GHI

$x\%$  de  $y = \frac{xy}{100}$   $100 | xy$

$25 | x$  ou  $25 | y$

Si  $25 | y$ , alors  $y$  impair  $\Rightarrow 4 | x$  impossible

$\Rightarrow 25 | x$  i.e.  $x = 25$  ou  $75$

• Si  $x = 25$ :  $y = 4z$   $C = 1$  ou  $3$

•  $G = 3 \rightarrow C = 1$

~~$I = 1, F = 4$   $1 \dots 4$   $3 \dots 4$~~   
•  $I = 4, F = 6$   $1 \dots 6$   $3 \dots 4$   
•  $I = 6, F = 4$   
 $\rightarrow D = 4$

$2 \leq D \leq 5$  imp.  
idem.

•  $I = 7, F = 8$   $14 \dots 8$   $3 \dots 7$  imp.  
•  $I = 9, F = 6$   $14 \dots 6$   $3 \dots 9$  imp.

•  $G = 4 \rightarrow C = 1$

~~$I = 4, F = 6$   $1 \dots 6$   $4 \dots 1$   $6 \leq D \leq 9$~~   
•  $I = 7, F = 8$   $1 \dots 8$   $4 \dots 7$  imp.  
•  $I = 8, F = 2$  imp.  
•  $I = 9, F = 6$   $1 \dots 6$   $4 \dots 9$  imp.

•  $G = 7, C = 3$

~~$I = 1, F = 4$   $3 \dots 4$   $7 \dots 1$   $D = 1$  ~~(5, 8, 9)~~ imp.~~  
 ~~$I = 1, F = 4$   $3 \dots 4$   $7 \dots 1$~~   
 $\rightarrow 4 \times 770 = 3080 \rightarrow H = 8$  ou  $9$   
•  $I = 4, F = 6$   $31 \dots 6$   $7 \dots 4$  imp.  
•  $I = 6, F = 4$   $31 \dots 4$   $7 \dots 6$

$25\%$  de  $31,84 = 7,96 \rightarrow 7,96$

•  $I = 9, F = 6$   $31 \dots 6$   $7 \dots 9$  imp.

•  $G = 8, C = 3$

•  $I = 9, F = 6$   $34 \dots 6$   $8 \dots 9$   $4 \leq D \leq 5$   $D = 4$   
 ~~$6 \leq H \leq 7$~~   
non

•  $G = 9, C = 3$

~~$I = 1, F = 4$   $3 \dots 4$   $9 \dots 1$   $D > 6$  non~~  
 ~~$I = 2, F = 8$   $3 \dots 8$   $9 \dots 2$  (1, 4) non~~  
•  $I = 4, F = 6$   $3 \dots 6$   $9 \dots 4$  (1, 7, 8) non  
•  $I = 6, F = 4$   $3 \dots 4$   $9 \dots 6$  (1, 7, 8) non  
•  $I = 7, F = 8$   $3 \dots 8$   $9 \dots 7$  (1, 4) non  
• imp.



16 suite

• Si  $x = 75$  :  $3y = 4z$

$$y > 1000 \rightarrow z > \frac{3000}{4} = 750$$

$$y \geq 1234 \rightarrow z \geq \frac{3600}{4} = 900$$

$$G = 9$$

$$z < 1000 \rightarrow y < \frac{4000}{3} \rightarrow C = 1$$

$$D \leq 3$$

$$1 \dots 9 \dots 3 | H+I$$

1