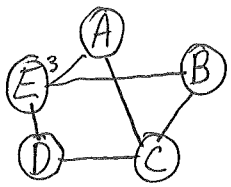
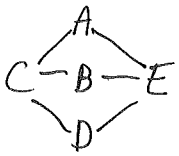
⑧



EC non



⑨

n	6	5-n	n+1	7	6-n	n+2	8	7-n	n+3
1	2	3	4	5	6	7	8	9	10

→ n = 1

1 6 4 2 7 5 3 8 6 4

⑩

F = 2G

$8x + 9y + 10z = 156$ $\quad y = 2k$

$4x + 9k + 5z = 78$

k	4x + 5z
~~0~~	~~78~~
1	69
2	60
3	51
4	42
5	33
6	24
7	15
8	6

156 | 8		156 | 10	
76	19	6	15
4			

$15 < n < 19$, $3 \mid n$

→ n = 18 → G = 6

F = 12

3 | F+G

(x, ~~y~~, z)

(2, 0, 14)

(7, 0, 10)

(12, 0, 6)

(17, 0, 2)

(1, 2, 13)

(6, 2, 9)

(11, 2, 5)

(16, 2, 1)

(0, 4, 12)

(5, 4, 8)

(10, 4, 4)

(15, 4, 0)

(4, 6, 7)

(9, 6, 3)

(3, 8, 6)

(8, 8, 2)

(2, 10, 5)

(7, 10, 1)

(~~1~~, 12, 4)

(6, 12, 0)

(0, 14, 3)

↓

18

G = 18/3 = **6**

(11)

11, 22, 33 → seulement au milieu.

32x23 → 321y123 → **32133123**

32 21 13
33 23 12
31

---

(12)

x99...9, (x+1)0...0.

S(x)+9n, S(x+1) = S(x)+1

7 | 9n−1 → n=4

S(x)=6 → x=6.

69999, 70000

---

(13)

(2,4,6): 7
(1,3,5): 14 → 2 ou 4 ou 6

2: 6+4+2×3+4×3 = 28 /2 → **14**
4: 4+4+2×6+3×6
6: 10+2×5+3×4

---

(14)

1: 4×5 = 20
2: 3×4 = 12
3: 2×3 = 6
4: 1×2 = 2

5×20+7×2 = 114
12x+6y = 114
2x+y = 114/6 = 19

(x,y) = (1,17)
(2,15)
(3,13)
(4,11)

(15)

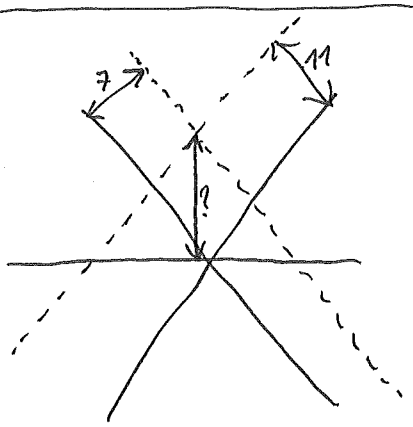
$$\frac{E}{3} \times \frac{S}{5} = \frac{E}{5} + \frac{S}{3}$$

$$ES = 3E + 5S$$

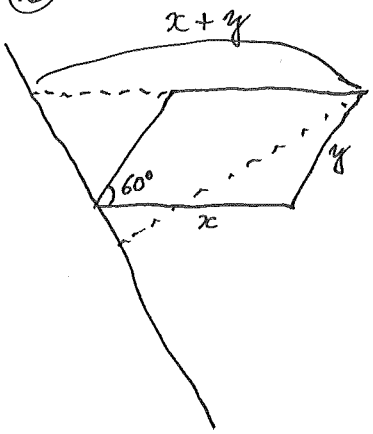
$$S = \frac{3E}{E-5} = 3 + \frac{15}{E-5} \rightarrow E-5 \mid 15$$

$E = 6, 8, 10, 20$ → 4 sol°

$S = 18, 8, 6, 4$



(16)



~~x+y~~

$y = 7\alpha$

$x = 11\alpha$

$x + y = h\alpha$

$\rightarrow h = 18$

- 18
- 4 (11 − 7)

---

(17)

$S = 30 \times 5 + 10 \times 7 = 220 \equiv 4$ [9]

$S_0 = 4/5 \equiv 8$ [9]

7 → 5
5 → 1

50 + 30 = 80

$75 / 5 = 15$

- dix "15" et quinze "1" → $20 + \underset{60}{\cancel{150}} = \underset{80}{\cancel{170}}$
- $775 / 5 = 155$

75	775	5		
0	5	25	→ $25 + 11 \times 5$	= 80
2	4	24	$24 + 11 \times 4 + 2 \times 6$	
4	3	23	$23 + 11 \times 3 + 4 \times 6$	
6	2	22	$22 + 11 \times 2 + 6 \times 6$	
8	1	21	$21 + 11 \times 1 + 8 \times 6$	

- $7775 / 5 = 1555$

...

~~170~~
80

n parall. : pas de côté // base du trg.

1×1 : $\frac{n(n-1)}{2}\times 3$

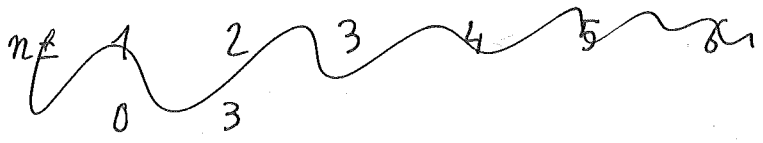
2×2 : $\frac{(n-2)(n-3)}{2}\times 3$

$p\times p$: $\frac{(n+2-2p)(n+1-2p)}{2}\times 3$

$p\times q$: $\frac{(n+2-p-q)(n+1-p-q)}{2}\times 3\times \begin{cases}1 \text{ si } p=q\\ 2 \text{ si } p\neq q\end{cases}$

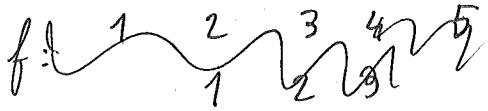
4 : 18 + 3 + 18 = 39

5 : $30 + 2\times 18 + 9 + 2\times 9 + 4\times 3 = 105$

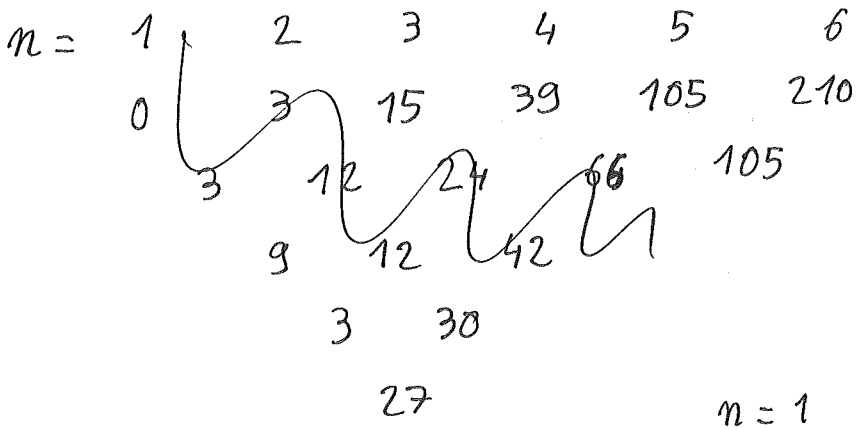


6 : $3\times(15 + 2\times 10 + 3\times 6 + 4\times 3 + 5) = 3\times 70 = 210$

$s = p+q$. s : $\frac{(n+2-s)(n+1-s)}{2}\times 3\times$ (s−1)



$3\sum_{s=2}^{n}(s-1)\frac{(n+2-s)(n+1-s)}{2}$ → deg. 4



$n=$	1	2	3	4	5	6
	0	0	0	0	3	15	45	105	210
		0	0	3	12	30	60	105	
			0	3	9	18	30	45	
				0	3	6	9	12	15
					3	3	3	3	3
						0	0	0	

2 : 3×1

3 : $3\times(3+2) = 15$

4 : $3\times(6+2\times3+3) = 45$

5 : $3\times(10+2\times6+3\times3+4) = 105$

18 suite

$$\frac{(n-3)(n-4)(n-5)(n-6)}{24}$$

$$\frac{(n-1)\,n\,(n+1)\,(n+2)}{8}$$

$\simeq 8\,000\,000^{1/4}$

$9.10^6 \rightarrow < 3000$

$n = 52 \rightarrow \quad \frac{51\times52\times53\times54}{8} = 51\times13\times53\times27$

$51\times13 = 663$

663×53

$351\,39$

$\times\ 3$

$10\,541\,7$

$\times\ 9$

948753

$n = 53 \rightarrow \quad \frac{52\times53\times54\times55}{8} = 13\times53\times27\times55$

$53\times13 = 689$

689×27

$18603 \rightarrow \times 4 = 74412$

18603×55

93015

93015

1023165

$-\ 948753$

074412