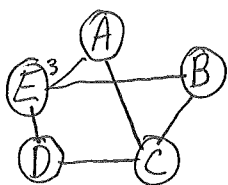
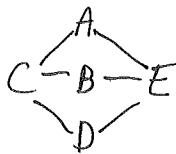


8



EC non



9

n 6 $5-n$ $n+1$ 7 $6-n$ $n+2$ 8 $7-n$ $n+3$ $\rightarrow n=1$
 1 2 3 4 5 6 7 8 9 10

1 6 4 2 7 5 3 8 6 4

10

$F = 2G$

$8x + 9y + 10z = 156$

$y = 2k$

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

$3 \mid F+G$

(x, y, z)

$(2, 0, 14)$

$(7, 0, 10)$

$(12, 0, 6)$

$(17, 0, 2)$

$(1, 2, 13)$

$(6, 2, 9)$

$(11, 2, 5)$

$(16, 2, 1)$

$(0, 4, 12)$

$(5, 4, 8)$

$(10, 4, 4)$

$(15, 4, 0)$

$(4, 6, 7)$

$(9, 6, 3)$

$(3, 8, 6)$

$(8, 8, 2)$

$(2, 10, 5)$

$(7, 10, 1)$

$(0, 12, 4)$

$(6, 12, 0)$

$(0, 14, 3)$

\downarrow

18

$G = 18/3 = 6$

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

156	8
76	19
4	

156	10
6	15

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

$\rightarrow n = 18 \rightarrow G = 6, F = 12$

(11)

11, 22, 33 \rightarrow seulement au milieu.

32 x 23 \rightarrow 321y123 \rightarrow 32133123

32	21	13
33	23	12
31		

(12)

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

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

$$7 \mid 9n - 1 \rightarrow n = 4$$

$$S(x) = 6 \rightarrow x = 6.$$

69999, 70000

(13)

~~2, 4, 6~~: 7 \rightarrow 2 ou 4 ou 6
(1, 3, 5): 14

$$2: 6 + 4 + 2 \times 3 + 4 \times 3 = 28 \quad / 2 \rightarrow \boxed{14}$$

$$4: 4 + 4 + 2 \times 6 + 3 \times 6$$

$$6: 10 + 2 \times 5 + 3 \times 4$$

(14)

$$1: 4 \times 5 = 20$$

$$2: 3 \times 4 = 12$$

$$3: 2 \times 3 = 6$$

$$4: 1 \times 2 = 2$$

$$5 \times 20 + 7 \times 2 = 114$$

$$12x + 6y = 114$$

$$2x + y = 114/6 = 19$$

$$(x, y) = \begin{pmatrix} 1, 17 \\ 2, 15 \\ 3, 13 \\ 4, 11 \end{pmatrix}$$

15

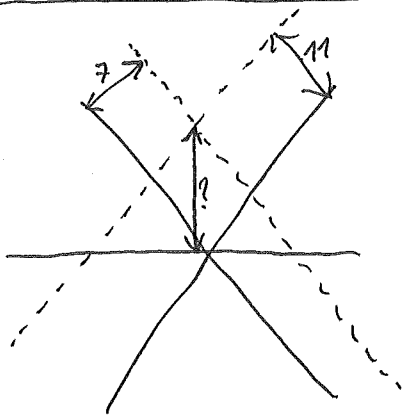
$$\frac{E}{3} \times \frac{S}{5} = \frac{E}{5} + \frac{S}{3}$$

$$ES = 3E + 5S$$

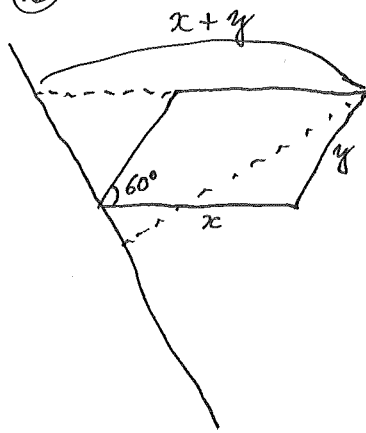
$$S = \frac{3E}{E-5} = 3 + \frac{15}{E-5} \rightarrow E-5 \mid 15$$

$$E = 6, 8, 10, 20 \rightarrow 4 \text{ sol}^o$$

$$S = 18, 8, 6, 4$$



16



~~sol~~

$$y = 7x$$

$$x = 11x$$

$$x + y = h$$

$$\rightarrow h = 18$$

• 18

• 4 (11-7)

17

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

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

$$75 / 5 = 15$$

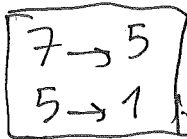
• dix "15" et vingt "1" $\rightarrow 20 + \frac{150}{60} = \frac{170}{80}$

$$\bullet 775 / 5 = 155$$

75	775	5		
0	5	25 25	$\rightarrow 25 + 11 \times 5$	= 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	$21 + 11 \times 1 + 8 \times 6$	

$$\bullet 7775 / 5 = 1555$$

~~170~~
80



$$50 + 30 = 80$$

n

paral. : pas de côte // base du triq.

1x1: $\frac{n(n-1)}{2} \times 3$

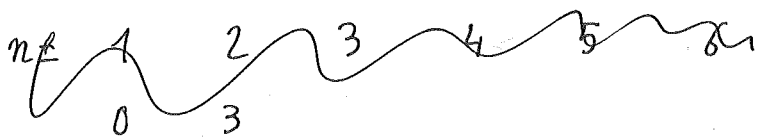
2x2: $\frac{(n-2)(n-3)}{2} \times 3$

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

4: $18 + 3 + 18 = 39$

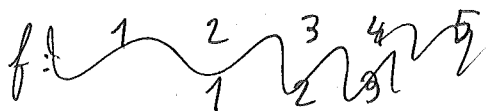
5: $30 + 2 \times 18 + 9 + 2 \times 9 + 4 \times 3 = 105$

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



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

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



$3 \sum_{\Delta=2}^n \frac{1}{2} \Delta (\Delta - 1) \frac{(n+2-\Delta)(n+1-\Delta)}{2} \rightarrow \text{deg. } \frac{3}{4}$

n =	1	2	3	4	5	6
	0	3	15	39	105	210
		3	12	24	66	105
			9	12	42	
				3	30	
					27	

n =	1	2	3	4	5	6
	0	0	0	0	3	15
		0	0	0	3	12
			0	0	3	9
				0	3	6
					3	3
						3

2: 3×1

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

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

5: $3 \times (10 + 2 \times 6 + 3 \times 3 + 4) = 105$

101 18 suite

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

$$\frac{(n-3)n}{24} \frac{(n-1)n(n+1)(n+2)}{8}$$

$$\frac{1}{24} n! \approx 8\,000\,000^{1/4}$$

$$9 \cdot 10^6 \rightarrow < 3000$$

$$n=52 \rightarrow \frac{51 \times 52 \times 53 \times 54}{8} = 51 \times 13 \times 53 \times 27$$

$$51 \times 13 = 663$$

$$\begin{array}{r} 663 \\ \times 53 \\ \hline 35139 \end{array}$$

$$\begin{array}{r} 35139 \\ \times 3 \\ \hline 105417 \end{array}$$

$$\begin{array}{r} 105417 \\ \times 9 \\ \hline 948753 \end{array}$$

$$n=53 \rightarrow \frac{52 \times 53 \times 54 \times 55}{8} = 13 \times 53 \times 27 \times 55$$

$$53 \times 13 = 689$$

$$\begin{array}{r} 689 \\ \times 27 \\ \hline 18603 \end{array} \rightarrow \times 4 = 74412$$

$$\begin{array}{r} 18603 \\ \times 55 \\ \hline 93015 \\ 93015 \\ \hline \end{array}$$

$$\begin{array}{r} 1023165 \\ - 948753 \\ \hline \end{array}$$

$$074412$$