

Part 4 : "New Advanced Study of Magic Squares and Cubes"
 Chapter 4 : Commentary Articles No.2 by Kanji Setsuda:
 "Various Arts and Tools for Studying Magic Squares"

Section 15 : Make 'Complete Euler Cubes' of Order 5

Section 15-1: Make 'Complete Euler Cubes' of Order 5
 for the Self-complementary Type

0. What I like to do in this Section:

I would like to challenge now to make various types of three-dimensional Magic Cubes of Order 5: Self-complementary, Pan-triagonal and Simultaneous.

It would be too hard for us to make any ordinary type of these objects, because we have to deal with so many numerical elements as 125. It should be nearly equivalent to the case of order 11 of the two dimensional magic squares.

I would like to build the 'Complete Euler Type' instead. It should be easier to make the 'C. E. Cubes' under the Positional Number System of Base 5 and count all the standard solutions of them through up to the last, I expect.

1. What the ordinary type of Magic Cubes of Order 5 look like:

At first I like to show you a few examples of Self-complimentary Magic Cubes of Order 5, made as an ordinary type we would often make before.

I put each set of its Decomposed Diagrams drawn under the Positional Number System of Base 5 along with the list of actual 3 solutions as follows.

Do you notice that no layer unit of them is of 'Latin Type'? All rows, columns and pillars are not always made up of only {0, 1, 2, 3 and 4}, as you see.

** Samples of Ordinary type of Self-complimentary Magic Cubes of Order 5 **
 ** Made by Kanji Setsuda on June 8, 2010 with MacOSX & Xcode3.1.2 **

1#				
1-----118-----	9-----	71-----	116-----	
124	48	88	41	14
121 3 43 102	92 99	46 47	13 64	
16 65	97 32	26 53	86 51	90 114
6 98 122-103-20-15-104-84-66-35-31-105-67-82-7				
109 69	25 81	39 37	49 56	93 72
68 108 11 30 19 74 50 63 76 52 107 96 115 18 58				
54 33	70 77	89 87	45 101	57 17
119-44-59-21-95-91-60-42-22-111-106-23-4 28 120				
12 36	75 40	73 100	94 29	61 110
62 113	79 80	27 34	24 83	123 5
112	85	38	78	2
10-----	55-----	117-----	8-----	125-----
1/H 1/M 1/L				
0-----4-----0-----2-----4	0-----3-----1-----4-----3	0-----2-----3-----0-----0		
4 1 3 1 0	4 4 2 3 2	3 2 2 0 3		
4 0 1 4 3 3 1 1 0 2	4 0 3 0 3 4 4 4 2 2	0 2 2 1 1 3 0 1 2 3		
0 2 3 1 1 2 3 2 3 4	3 2 4 1 0 0 2 0 2 2	0 4 1 1 0 2 0 0 4 3		
0 3 4-4-0-0-4-3-2-1-1-4-2-3-0	1 4 4-0-3-2-0-1-3-1-1-0-3-1-1	0 2 1-2-4-4-3-3-0-4-0-4-1-1-1		
4 2 0 3 1 1 1 2 3 2	1 3 4 1 2 2 4 1 3 4	3 3 4 0 3 1 3 0 2 1		
2 4 0 1 0 2 1 2 3 2 4 3 4 0 2	3 1 2 0 3 4 4 2 0 0 1 4 2 3 1	2 2 0 4 3 3 4 2 0 1 1 0 4 2 2		
2 1 2 3 3 3 1 4 2 0	0 1 3 0 2 2 3 0 1 3	3 2 4 1 3 1 4 0 1 1		
4-1-2-0-3-3-2-1-0-4-4-0-0 1 4	3-3-1-4-3-3-1-3-4-2-1-4-0 0 3	3-3-3-0-4-0-4-1-1-0-2-3 2 4		
0 1 2 1 2 3 3 1 2 4	2 2 4 2 4 4 3 0 2 1	1 0 4 4 2 4 3 3 0 4		
2 4 3 3 1 1 0 3 4 0	2 2 0 0 0 1 4 1 4 0	1 2 3 4 1 3 3 2 2 4		
4 3 1 3 0	2 1 2 0 0	1 4 2 2 1		
0-----2-----4-----0-----4	1-----0-----3-----1-----4	4-----4-----1-----2-----4		

2#

1-----118-----	9-----71-----	116-----
124	25	99
121 3	36 108	95 102
16 65	83 49	32 39
6 98 122	96 37 15 104	29 66 42 70 105 67 81 7
109 69	23 74	51 80
68 107 11	44 26 85 47 63 79 41 100 82 115 19 58	
54 34	106 86	46 75
119 45 59 21 56 84 60 97 22 111 89 30 4 28 120		
12 35	78 33	87 94
62 113	88 76	24 31
112	73	27
10-----	55-----	117-----
		8-----
		125-----

2/H	2/M	2/L
0 4 0 0 2 4	0 3 1 4 3	0 2 3 0 0
4 0 3 2 0	4 4 4 0 2	3 4 3 2 3
4 0 1 4 3 4 1 1 0 2	4 0 2 1 3 0 4 2 2 2	0 2 0 2 4 1 4 2 2 3
0 2 3 1 1 1 3 1 3 4	3 2 1 4 1 2 3 4 3 2	0 4 2 3 1 3 2 2 0 3
0 3 4 3 1 0 4 1 2 1 2 4 2 3 0	1 4 4 4 2 2 0 0 3 3 3 0 3 1 1	0 2 1 0 1 4 3 3 0 1 4 4 1 0 1
4 2 0 2 2 3 1 0 3 2	1 3 4 4 0 0 2 3 3 4	3 3 2 3 0 4 4 4 1 1
2 4 0 1 1 3 1 2 3 1 3 3 4 0 2	3 1 2 3 0 1 4 2 0 3 4 1 2 3 1	2 1 0 3 0 4 1 2 3 0 4 1 4 3 2
2 1 4 3 1 2 2 4 2 0	0 1 1 2 4 4 0 0 1 3	3 3 0 0 0 4 1 2 1 1
4 1 2 0 2 3 2 3 0 4 3 1 0 1 4	3 3 1 4 1 1 1 4 4 2 2 0 0 0 3	3 4 3 0 0 3 4 1 1 0 3 4 3 2 4
0 1 3 1 3 3 3 1 2 4	2 1 0 1 2 3 0 3 2 1	1 4 2 2 1 3 1 2 0 4
2 4 3 3 0 1 0 3 4 0	2 2 2 0 4 1 3 2 4 0	1 2 2 0 3 0 2 4 2 4
4 2 1 4 0	2 4 0 0 0	1 2 1 0 1
0 2 4 0 4	1 0 3 1 4	4 4 1 2 4

3#

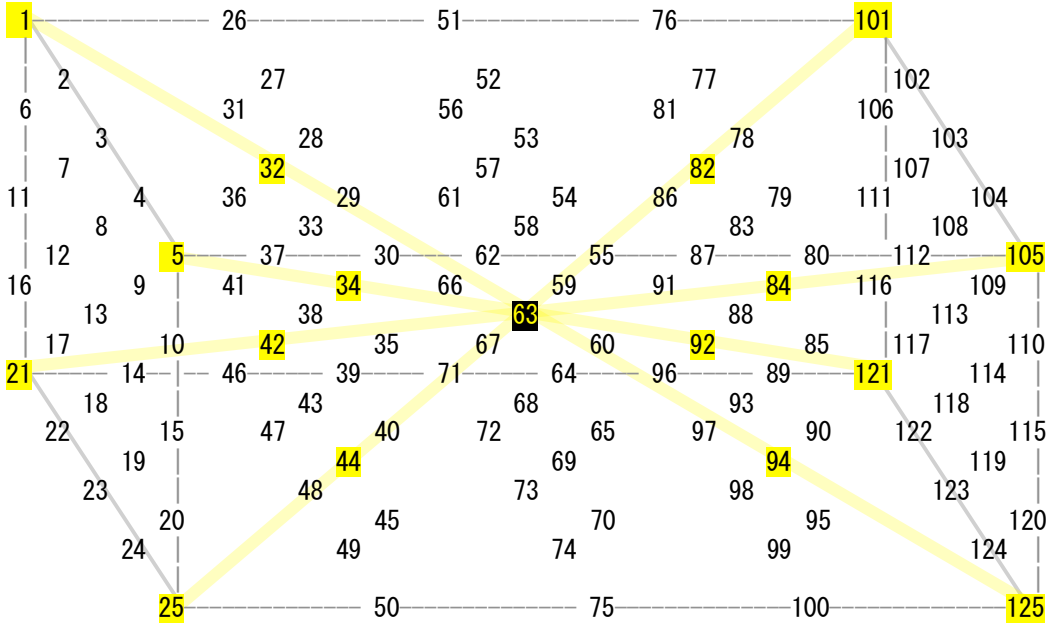
1-----118-----	9-----71-----	116-----
124	53	85
121 3	48 96	89 103
16 65	80 33	26 52
6 98 122	99 20 15 101	94 66 42 22 105 67 81 7
109 69	31 88	40 36
68 107 11	29 18 79 56 63 70 47 108 97 115 19 58	
54 34	76 83	90 86
119 45 59 21 104 84 60 32 25 111 106 27 4 28 120		
12 35	75 24	74 100
62 113	77 82	23 37
112	87	41
10-----	55-----	117-----
		8-----
		125-----

3/H	3/M	3/L
0 4 0 0 2 4	0 3 1 4 3	0 2 3 0 0
4 2 3 1 0	4 0 1 2 2	3 2 4 3 3
4 0 1 3 3 4 1 1 0 2	4 0 4 4 2 0 3 4 2 2	0 2 2 0 3 2 3 3 2 3
0 2 3 1 1 2 4 2 3 4	3 2 0 1 0 0 0 0 3 2	0 4 4 2 0 1 1 0 0 3
0 3 4 3 0 0 4 3 2 1 0 4 2 3 0	1 4 4 4 3 2 0 3 3 3 4 0 3 1 1	0 2 1 3 4 4 0 3 0 1 1 4 1 0 1
4 2 1 3 1 1 1 1 3 2	1 3 1 2 2 2 3 4 3 4	3 3 0 2 4 0 2 4 1 1
2 4 0 1 0 3 2 2 2 1 4 3 4 0 2	3 1 2 0 3 0 1 2 3 4 1 4 2 3 1	2 1 0 3 2 3 0 2 4 1 2 1 4 3 2
2 1 3 3 3 3 1 3 2 0	0 1 0 1 2 2 2 3 1 3	3 3 0 2 4 0 2 4 1 1
4 1 2 0 4 3 2 1 0 4 4 1 0 1 4	3 3 1 4 0 1 1 1 4 2 1 0 0 0 3	3 4 3 0 3 3 4 1 4 0 0 1 3 2 4
0 1 2 0 2 3 3 1 2 4	2 1 4 4 4 4 3 4 2 1	1 4 4 3 3 4 2 0 0 4
2 4 3 3 0 1 1 3 4 0	2 2 0 1 4 2 0 0 4 0	1 2 1 1 2 1 4 2 2 4
4 3 1 2 0	2 2 3 4 0	1 1 0 2 1
0 2 4 0 4	1 0 3 1 4	4 4 1 2 4

All of these solutions are of 'Non-Euler Type', indeed. I guess there are too many of that type for us to count them through. Since I knew it really took about an hour to get every piece of solutions, I had to give up my counting on the way. I could not imagine how long I should take my time to go on making this ordinary type.

2. How to define this type of object with the Basic Form and Basic Equations: Let me show you the definitions as usual with the diagram and list of equations.

**** Basic Form and Conditions for Magic Cubes of Order 5 ****



**** Basic Equations for Rows, Columns and Pillars of Magic Cubes 5x5x5: C=315 ****

$n_1+n_2+n_3+n_4+n_5=C;$	$n_1+n_6+n_{11}+n_{16}+n_{21}=C;$	$n_1+n_{26}+n_{51}+n_{76}+n_{101}=C;$
$n_6+n_7+n_8+n_9+n_{10}=C;$	$n_2+n_7+n_{12}+n_{17}+n_{22}=C;$	$n_2+n_{27}+n_{52}+n_{77}+n_{102}=C;$
$n_{11}+n_{12}+n_{13}+n_{14}+n_{15}=C;$	$n_3+n_8+n_{13}+n_{18}+n_{23}=C;$	$n_3+n_{28}+n_{53}+n_{78}+n_{103}=C;$
$n_{16}+n_{17}+n_{18}+n_{19}+n_{20}=C;$	$n_4+n_9+n_{14}+n_{19}+n_{24}=C;$	$n_4+n_{29}+n_{54}+n_{79}+n_{104}=C;$
$n_{21}+n_{22}+n_{23}+n_{24}+n_{25}=C;$	$n_5+n_{10}+n_{15}+n_{20}+n_{25}=C;$	$n_5+n_{30}+n_{55}+n_{80}+n_{105}=C;$
$n_{26}+n_{27}+n_{28}+n_{29}+n_{30}=C;$	$n_{26}+n_{31}+n_{36}+n_{41}+n_{46}=C;$	$n_6+n_{31}+n_{56}+n_{81}+n_{106}=C;$
$n_{31}+n_{32}+n_{33}+n_{34}+n_{35}=C;$	$n_{27}+n_{32}+n_{37}+n_{42}+n_{47}=C;$	$n_7+n_{32}+n_{57}+n_{82}+n_{107}=C;$
$n_{36}+n_{37}+n_{38}+n_{39}+n_{40}=C;$	$n_{28}+n_{33}+n_{38}+n_{43}+n_{48}=C;$	$n_8+n_{33}+n_{58}+n_{83}+n_{108}=C;$
$n_{41}+n_{42}+n_{43}+n_{44}+n_{45}=C;$	$n_{29}+n_{34}+n_{39}+n_{44}+n_{49}=C;$	$n_9+n_{34}+n_{59}+n_{84}+n_{109}=C;$
$n_{46}+n_{47}+n_{48}+n_{49}+n_{50}=C;$	$n_{30}+n_{35}+n_{40}+n_{45}+n_{50}=C;$	$n_{10}+n_{35}+n_{60}+n_{85}+n_{110}=C;$
$n_{51}+n_{52}+n_{53}+n_{54}+n_{55}=C;$	$n_{51}+n_{56}+n_{61}+n_{66}+n_{71}=C;$	$n_{11}+n_{36}+n_{61}+n_{86}+n_{111}=C;$
$n_{56}+n_{57}+n_{58}+n_{59}+n_{60}=C;$	$n_{52}+n_{57}+n_{62}+n_{67}+n_{72}=C;$	$n_{12}+n_{37}+n_{62}+n_{87}+n_{112}=C;$
$n_{61}+n_{62}+n_{63}+n_{64}+n_{65}=C;$	$n_{53}+n_{58}+n_{63}+n_{68}+n_{73}=C;$	$n_{13}+n_{38}+n_{63}+n_{88}+n_{113}=C;$
$n_{66}+n_{67}+n_{68}+n_{69}+n_{70}=C;$	$n_{54}+n_{59}+n_{64}+n_{69}+n_{74}=C;$	$n_{14}+n_{39}+n_{64}+n_{89}+n_{114}=C;$
$n_{71}+n_{72}+n_{73}+n_{74}+n_{75}=C;$	$n_{55}+n_{60}+n_{65}+n_{70}+n_{75}=C;$	$n_{15}+n_{40}+n_{65}+n_{90}+n_{115}=C;$
$n_{76}+n_{77}+n_{78}+n_{79}+n_{80}=C;$	$n_{76}+n_{81}+n_{86}+n_{91}+n_{96}=C;$	$n_{16}+n_{41}+n_{66}+n_{91}+n_{116}=C;$
$n_{81}+n_{82}+n_{83}+n_{84}+n_{85}=C;$	$n_{77}+n_{82}+n_{87}+n_{92}+n_{97}=C;$	$n_{17}+n_{42}+n_{67}+n_{92}+n_{117}=C;$
$n_{86}+n_{87}+n_{88}+n_{89}+n_{90}=C;$	$n_{78}+n_{83}+n_{88}+n_{93}+n_{98}=C;$	$n_{18}+n_{43}+n_{68}+n_{93}+n_{118}=C;$
$n_{91}+n_{92}+n_{93}+n_{94}+n_{95}=C;$	$n_{79}+n_{84}+n_{89}+n_{94}+n_{99}=C;$	$n_{19}+n_{44}+n_{69}+n_{94}+n_{119}=C;$
$n_{96}+n_{97}+n_{98}+n_{99}+n_{100}=C;$	$n_{80}+n_{85}+n_{90}+n_{95}+n_{100}=C;$	$n_{20}+n_{45}+n_{70}+n_{95}+n_{120}=C;$
$n_{101}+n_{102}+n_{103}+n_{104}+n_{105}=C;$	$n_{101}+n_{106}+n_{111}+n_{116}+n_{121}=C;$	$n_{21}+n_{46}+n_{71}+n_{96}+n_{121}=C;$
$n_{106}+n_{107}+n_{108}+n_{109}+n_{110}=C;$	$n_{102}+n_{107}+n_{112}+n_{117}+n_{122}=C;$	$n_{22}+n_{47}+n_{72}+n_{97}+n_{122}=C;$
$n_{111}+n_{112}+n_{113}+n_{114}+n_{115}=C;$	$n_{103}+n_{108}+n_{113}+n_{118}+n_{123}=C;$	$n_{23}+n_{48}+n_{73}+n_{98}+n_{123}=C;$
$n_{116}+n_{117}+n_{118}+n_{119}+n_{120}=C;$	$n_{104}+n_{109}+n_{114}+n_{119}+n_{124}=C;$	$n_{24}+n_{49}+n_{74}+n_{99}+n_{124}=C;$
$n_{121}+n_{122}+n_{123}+n_{124}+n_{125}=C;$	$n_{105}+n_{110}+n_{115}+n_{120}+n_{125}=C;$	$n_{25}+n_{50}+n_{75}+n_{100}+n_{125}=C;$

**** Basic Conditions for Self-Complementary Pairs of MC555: SC=126 ****

$$\begin{aligned}
 &n_1+n_{125}=n_2+n_{124}=n_3+n_{123}=n_4+n_{122}=n_5+n_{121}=n_6+n_{120}=n_7+n_{119}=n_8+n_{118}=n_9+n_{117}= \\
 &n_{10}+n_{116}=n_{11}+n_{115}=n_{12}+n_{114}=n_{13}+n_{113}=n_{14}+n_{112}=n_{15}+n_{111}=n_{16}+n_{110}=n_{17}+n_{109}=n_{18}+n_{108}= \\
 &n_{19}+n_{107}=n_{20}+n_{106}=n_{21}+n_{105}=n_{22}+n_{104}=n_{23}+n_{103}=n_{24}+n_{102}=n_{25}+n_{101}=n_{26}+n_{100}=n_{27}+n_{99}= \\
 &n_{28}+n_{98}=n_{29}+n_{97}=n_{30}+n_{96}=n_{31}+n_{95}=n_{32}+n_{94}=n_{33}+n_{93}=n_{34}+n_{92}=n_{35}+n_{91}=n_{36}+n_{90}= \\
 &n_{37}+n_{89}=n_{38}+n_{88}=n_{39}+n_{87}=n_{40}+n_{86}=n_{41}+n_{85}=n_{42}+n_{84}=n_{43}+n_{83}=n_{44}+n_{82}=n_{45}+n_{81}= \\
 &n_{46}+n_{80}=n_{47}+n_{79}=n_{48}+n_{78}=n_{49}+n_{77}=n_{50}+n_{76}=n_{51}+n_{75}=n_{52}+n_{74}=n_{53}+n_{73}=n_{54}+n_{72}= \\
 &n_{55}+n_{71}=n_{56}+n_{70}=n_{57}+n_{69}=n_{58}+n_{68}=n_{59}+n_{67}=n_{60}+n_{66}=n_{61}+n_{65}=n_{62}+n_{64}=n_{63}+n_{63}=SC \dots scc
 \end{aligned}$$

As the last equation indicates, n_{63} must take 63, representing the invariable value placed in the center of any self-complementary magic thing of odd orders.

You don't have to give any definite conditions for the next four Primary Triagonals at the first stage, since each of them should necessarily add up to the same magic constant $C (=315)$, because of those Self-complimentary Conditions above.

$$\begin{aligned} n_1+n_{32}+n_{63}+n_{94}+n_{125} &= (n_1+n_{125})+(n_{32}+n_{94})+n_{63} = 126+126+63 = 315; \dots ptr1 \\ n_5+n_{34}+n_{63}+n_{92}+n_{121} &= (n_5+n_{121})+(n_{34}+n_{92})+n_{63} = 126+126+63 = 315; \dots ptr2 \\ n_{21}+n_{42}+n_{63}+n_{84}+n_{105} &= (n_{21}+n_{105})+(n_{42}+n_{84})+n_{63} = 126+126+63 = 315; \dots ptr3 \\ n_{25}+n_{44}+n_{63}+n_{82}+n_{101} &= (n_{25}+n_{101})+(n_{44}+n_{82})+n_{63} = 126+126+63 = 315; \dots ptr4 \end{aligned}$$

This is an example of the inherent properties of any self-complimentary object.

But, you may well add these 4 conditions above to the list of Basic Equations at the definition stage. We don't mind, because it should change nothing about the result.

3. How to make our 'Latin Cubes' of Order 5 for the "Complete Euler Type":

Let's build the "Complete Euler Cubes" of Order 5 for the Self-complimentary type here, using the Positional Number System of Base 5 (5-th Increment Number System).

Before all we have to make 'Latin Cubes' of Order 5, to combine any three of them and suppose the set as for the simulated Decomposed Layer Units of our object.

The Latin Cubes are defined almost in the same way as above, but you must only change the values of Constant Sums as $C=10$ and $SC=4$.

On top of that, Latin Cubes must always be made under such the strict rules as:

(1) Any Latin Cube must be simply made up of 5 numerical letters: {0, 1, 2, 3 and 4}. Each letter should appear as often as 25 times, no more and no less.

(2) Each row, each column and each pillar of Latin Cubes must be made up of {0, 1, 2, 3 and 4} using each number strictly once.

Neither duplication nor lack of any number must be found in it.

These strict conditions should make the constant sum of each row, column and pillar of our final object always realized:

$$\begin{aligned} ((0+1+2+3+4) \times 5_{(Dec)} + (0+1+2+3+4)) \times 5_{(Dec)} + (0+1+2+3+4) &= 310_{(Dec)} \\ \text{(in Mathematical Expression of Cube)} \end{aligned}$$

(3) Each of the following three Self-complementary Pairs should appear 25 times in any Latin Unit: (0, 4), (1, 3), and (2, 2)

Constituents of any pair must be placed symmetrically to each other with respect to the geometric center n_{63} as in (n_1, n_{125}) , (n_2, n_{124}) , (n_3, n_{123}) , (n_4, n_{122}) , ..., (n_{60}, n_{66}) , (n_{61}, n_{65}) , (n_{62}, n_{64}) . And n_{63} itself must always take 2.

(4) Each of the four Primary Triagonals above $ptr1-4$ must also be made up of 5 numbers: {0, 1, 2, 3 and 4} using each letter strictly once.

4. What the 'Latin Cubes' look like:

The next list shows some sample solutions of Latin Cubes of Order 5, made under the Positional Number System of Base 5.

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I want you to watch these samples and check if each of them is successfully made under those strict conditions above. Will you especially examine each content of rows, columns, pillars and 4 primary-triagonals? And finally check every two adjacent numbers sitting next in all six directions to see whether they are the same or not.

5. How to make the Latin Cubes of Order 5

How can we make such the Latin Cubes as shown above, then? How many of them can we make in all?

I plan to make them here by our "New Euler's Method" under the Positional Number System of Base 5. Since we use only 5 numbers {0, 1, 2, 3 and 4} in each step, we can make them far quicker, though we have to deal with so many variables as 125.

Let me list out only the core part of my program here as follows.

```

/**/
short CC;           //Constant Sum of Complimentary Pairs: CC=4;
short nm[126];     //For storing the defined value of each variable
short bc[80][5];   //For the actual status of each Basic Condition: 'Used' or 'Un-used'
short d[4][129];   //For the temporary values listing out 3 by 3
short tluh[3009];  //For the status of high position checking if it is 'standard'
short tlu[3009][126]; //For storing all Latin Units made
/**/
/** Program Modules of 'Latin Cubes' 5x5x5 for the Self-complimentary Type **
** Dictated by Kanji Setsuda on May 30, 2010 with MacOSX & Xcode3.1.2 **/
/* Level 1: */
/* Set N1 & n125=CC-N1 */
void stp01(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[1][a]==0)&&(bc[2][a]==0)&&(bc[3][a]==0)&&(bc[76][a]==0)){
if((bc[73][b]==0)&&(bc[74][b]==0)&&(bc[75][b]==0)&&(bc[76][b]==0)){
nm[1]=a; nm[125]=b;
bc[1][a]=1; bc[2][a]=1; bc[3][a]=1; bc[76][a]=1;
bc[73][b]=1; bc[74][b]=1; bc[75][b]=1; bc[76][b]=1;
stp02();
bc[73][b]=0; bc[74][b]=0; bc[75][b]=0; bc[76][b]=0;
bc[1][a]=0; bc[2][a]=0; bc[3][a]=0; bc[76][a]=0;}}
}
}
/* Set N2 & n124=CC-N2 */
void stp02(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[1][a]==0)&&(bc[5][a]==0)&&(bc[6][a]==0)){
if((bc[71][b]==0)&&(bc[72][b]==0)&&(bc[73][b]==0)){
nm[2]=a; nm[124]=b;
bc[1][a]=1; bc[5][a]=1; bc[6][a]=1;
bc[71][b]=1; bc[72][b]=1; bc[73][b]=1;
stp03();
bc[71][b]=0; bc[72][b]=0; bc[73][b]=0;
bc[1][a]=0; bc[5][a]=0; bc[6][a]=0;}}
}
}
/* Set N3 & n123=CC-N3 */
void stp03(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[1][a]==0)&&(bc[8][a]==0)&&(bc[9][a]==0)){
if((bc[68][b]==0)&&(bc[69][b]==0)&&(bc[73][b]==0)){
nm[3]=a; nm[123]=b;
bc[1][a]=1; bc[8][a]=1; bc[9][a]=1;
bc[68][b]=1; bc[69][b]=1; bc[73][b]=1; cnt2=0;
stp04();

```

```

        bc[68][b]=0; bc[69][b]=0; bc[73][b]=0;
        bc[1][a]=0; bc[8][a]=0; bc[9][a]=0;}}
    }
}
/* Set N4 & n122=CC-N4 */
void stp04(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[1][a]==0)&&(bc[11][a]==0)&&(bc[12][a]==0)){
            if((bc[65][b]==0)&&(bc[66][b]==0)&&(bc[73][b]==0)){
                nm[4]=a; nm[122]=b;
                bc[1][a]=1; bc[11][a]=1; bc[12][a]=1;
                bc[65][b]=1; bc[66][b]=1; bc[73][b]=1;
                stp05();
                bc[65][b]=0; bc[66][b]=0; bc[73][b]=0;
                bc[1][a]=0; bc[11][a]=0; bc[12][a]=0;}}
        }
    }
}
/* Set N5 & n121=CC-N5 */
void stp05(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[1][a]==0)&&(bc[14][a]==0)&&(bc[15][a]==0)&&(bc[77][a]==0)){
            if((bc[62][b]==0)&&(bc[63][b]==0)&&(bc[73][b]==0)&&(bc[77][b]==0)){
                nm[5]=a; nm[121]=b;
                bc[1][a]=1; bc[14][a]=1; bc[15][a]=1; bc[77][a]=1;
                bc[62][b]=1; bc[63][b]=1; bc[73][b]=1; bc[77][b]=1;
                stp06();
                bc[62][b]=0; bc[63][b]=0; bc[73][b]=0; bc[77][b]=0;
                bc[1][a]=0; bc[14][a]=0; bc[15][a]=0; bc[77][a]=0;}}
        }
    }
}
/* Set N6 & n120=CC-N6 */
void stp06(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[2][a]==0)&&(bc[4][a]==0)&&(bc[18][a]==0)){
            if((bc[60][b]==0)&&(bc[70][b]==0)&&(bc[74][b]==0)){
                nm[6]=a; nm[120]=b;
                bc[2][a]=1; bc[4][a]=1; bc[18][a]=1;
                bc[60][b]=1; bc[70][b]=1; bc[74][b]=1;
                stp07();
                bc[60][b]=0; bc[70][b]=0; bc[74][b]=0;
                bc[2][a]=0; bc[4][a]=0; bc[18][a]=0;}}
        }
    }
}
/* Set N7 & n119=CC-N7 */
void stp07(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[4][a]==0)&&(bc[5][a]==0)&&(bc[21][a]==0)){
            if((bc[57][b]==0)&&(bc[70][b]==0)&&(bc[71][b]==0)){
                nm[7]=a; nm[119]=b;
                bc[4][a]=1; bc[5][a]=1; bc[21][a]=1;
                bc[57][b]=1; bc[70][b]=1; bc[71][b]=1;
                stp08();
                bc[57][b]=0; bc[70][b]=0; bc[71][b]=0;
                bc[4][a]=0; bc[5][a]=0; bc[21][a]=0;}}
        }
    }
}
/* Set N8 & n118=CC-N8 */
void stp08(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[4][a]==0)&&(bc[8][a]==0)&&(bc[24][a]==0)){

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    if((bc[54][b]==0)&&(bc[68][b]==0)&&(bc[70][b]==0)){
        nm[8]=a; nm[118]=b;
        bc[4][a]=1; bc[8][a]=1; bc[24][a]=1;
        bc[54][b]=1; bc[68][b]=1; bc[70][b]=1;
        stp09C);
        bc[54][b]=0; bc[68][b]=0; bc[70][b]=0;
        bc[4][a]=0; bc[8][a]=0; bc[24][a]=0;}}
    }
}
/* Set N9 & n117=CC-N9 */
void stp09C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[4][a]==0)&&(bc[11][a]==0)&&(bc[27][a]==0)){
            if((bc[51][b]==0)&&(bc[65][b]==0)&&(bc[70][b]==0)){
                nm[9]=a; nm[117]=b;
                bc[4][a]=1; bc[11][a]=1; bc[27][a]=1;
                bc[51][b]=1; bc[65][b]=1; bc[70][b]=1;
                stp10C);
                bc[51][b]=0; bc[65][b]=0; bc[70][b]=0;
                bc[4][a]=0; bc[11][a]=0; bc[27][a]=0;}}
        }
    }
}
/* Set N10 & n116=CC-N10 */
void stp10C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[4][a]==0)&&(bc[14][a]==0)&&(bc[30][a]==0)){
            if((bc[48][b]==0)&&(bc[62][b]==0)&&(bc[70][b]==0)){
                nm[10]=a; nm[116]=b;
                bc[4][a]=1; bc[14][a]=1; bc[30][a]=1;
                bc[48][b]=1; bc[62][b]=1; bc[70][b]=1;
                stp11C);
                bc[48][b]=0; bc[62][b]=0; bc[70][b]=0;
                bc[4][a]=0; bc[14][a]=0; bc[30][a]=0;}}
        }
    }
}
/* Set N11 & n115=CC-N11 */
void stp11C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[2][a]==0)&&(bc[7][a]==0)&&(bc[33][a]==0)){
            if((bc[45][b]==0)&&(bc[67][b]==0)&&(bc[74][b]==0)){
                nm[11]=a; nm[115]=b;
                bc[2][a]=1; bc[7][a]=1; bc[33][a]=1;
                bc[45][b]=1; bc[67][b]=1; bc[74][b]=1;
                stp12C);
                bc[45][b]=0; bc[67][b]=0; bc[74][b]=0;
                bc[2][a]=0; bc[7][a]=0; bc[33][a]=0;}}
        }
    }
}
/* Set N12 & n114=CC-N12 */
void stp12C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[5][a]==0)&&(bc[7][a]==0)&&(bc[36][a]==0)){
            if((bc[42][b]==0)&&(bc[67][b]==0)&&(bc[71][b]==0)){
                nm[12]=a; nm[114]=b;
                bc[5][a]=1; bc[7][a]=1; bc[36][a]=1;
                bc[42][b]=1; bc[67][b]=1; bc[71][b]=1;
                stp13C);
                bc[42][b]=0; bc[67][b]=0; bc[71][b]=0;
                bc[5][a]=0; bc[7][a]=0; bc[36][a]=0;}}
        }
    }
}

```

```

/* Set N13 & n113=CC-N13 */
void stp13(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[7][a]==0)&&(bc[8][a]==0)&&(bc[39][a]==0)){
if((bc[39][b]==0)&&(bc[67][b]==0)&&(bc[68][b]==0)){
nm[13]=a; nm[113]=b;
bc[7][a]=1; bc[8][a]=1; bc[39][a]=1;
bc[39][b]=1; bc[67][b]=1; bc[68][b]=1;
stp14();
bc[39][b]=0; bc[67][b]=0; bc[68][b]=0;
bc[7][a]=0; bc[8][a]=0; bc[39][a]=0;}}
}
}
/* Set N14 & n112=CC-N14 */
void stp14(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[7][a]==0)&&(bc[11][a]==0)&&(bc[42][a]==0)){
if((bc[36][b]==0)&&(bc[65][b]==0)&&(bc[67][b]==0)){
nm[14]=a; nm[112]=b;
bc[7][a]=1; bc[11][a]=1; bc[42][a]=1;
bc[36][b]=1; bc[65][b]=1; bc[67][b]=1;
stp15();
bc[36][b]=0; bc[65][b]=0; bc[67][b]=0;
bc[7][a]=0; bc[11][a]=0; bc[42][a]=0;}}
}
}
/* Set N15 & n111=CC-N15 */
void stp15(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[7][a]==0)&&(bc[14][a]==0)&&(bc[45][a]==0)){
if((bc[33][b]==0)&&(bc[62][b]==0)&&(bc[67][b]==0)){
nm[15]=a; nm[111]=b;
bc[7][a]=1; bc[14][a]=1; bc[45][a]=1;
bc[33][b]=1; bc[62][b]=1; bc[67][b]=1;
stp16();
bc[33][b]=0; bc[62][b]=0; bc[67][b]=0;
bc[7][a]=0; bc[14][a]=0; bc[45][a]=0;}}
}
}
/* Set N16 & n110=CC-N16 */
void stp16(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[2][a]==0)&&(bc[10][a]==0)&&(bc[48][a]==0)){
if((bc[30][b]==0)&&(bc[64][b]==0)&&(bc[74][b]==0)){
nm[16]=a; nm[110]=b;
bc[2][a]=1; bc[10][a]=1; bc[48][a]=1;
bc[30][b]=1; bc[64][b]=1; bc[74][b]=1;
stp17();
bc[30][b]=0; bc[64][b]=0; bc[74][b]=0;
bc[2][a]=0; bc[10][a]=0; bc[48][a]=0;}}
}
}
/* Set N17 & n109=CC-N17 */
void stp17(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[5][a]==0)&&(bc[10][a]==0)&&(bc[51][a]==0)){
if((bc[27][b]==0)&&(bc[64][b]==0)&&(bc[71][b]==0)){
nm[17]=a; nm[109]=b;
bc[5][a]=1; bc[10][a]=1; bc[51][a]=1;
bc[27][b]=1; bc[64][b]=1; bc[71][b]=1;
}
}
}

```



```

        stp18C);
        bc[27][b]=0; bc[64][b]=0; bc[71][b]=0;
        bc[5][a]=0; bc[10][a]=0; bc[51][a]=0;}}
    }
}
/* Set N18 & n108=CC-N18 */
void stp18C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[8][a]==0)&&(bc[10][a]==0)&&(bc[54][a]==0)){
            if((bc[24][b]==0)&&(bc[64][b]==0)&&(bc[68][b]==0)){
                nm[18]=a; nm[108]=b;
                bc[8][a]=1; bc[10][a]=1; bc[54][a]=1;
                bc[24][b]=1; bc[64][b]=1; bc[68][b]=1;
                stp19C);
                bc[24][b]=0; bc[64][b]=0; bc[68][b]=0;
                bc[8][a]=0; bc[10][a]=0; bc[54][a]=0;}}
    }
}
/* Set N19 & n107=CC-N19 */
void stp19C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[10][a]==0)&&(bc[11][a]==0)&&(bc[57][a]==0)){
            if((bc[21][b]==0)&&(bc[64][b]==0)&&(bc[65][b]==0)){
                nm[19]=a; nm[107]=b;
                bc[10][a]=1; bc[11][a]=1; bc[57][a]=1;
                bc[21][b]=1; bc[64][b]=1; bc[65][b]=1;
                stp20C);
                bc[21][b]=0; bc[64][b]=0; bc[65][b]=0;
                bc[10][a]=0; bc[11][a]=0; bc[57][a]=0;}}
    }
}
/* Set N20 & n106=CC-N20 */
void stp20C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[10][a]==0)&&(bc[14][a]==0)&&(bc[60][a]==0)){
            if((bc[18][b]==0)&&(bc[62][b]==0)&&(bc[64][b]==0)){
                nm[20]=a; nm[106]=b;
                bc[10][a]=1; bc[14][a]=1; bc[60][a]=1;
                bc[18][b]=1; bc[62][b]=1; bc[64][b]=1;
                stp21C);
                bc[18][b]=0; bc[62][b]=0; bc[64][b]=0;
                bc[10][a]=0; bc[14][a]=0; bc[60][a]=0;}}
    }
}
/* Set N21 & n105=CC-N21 */
void stp21C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[2][a]==0)&&(bc[13][a]==0)&&(bc[63][a]==0)&&(bc[78][a]==0)){
            if((bc[15][b]==0)&&(bc[61][b]==0)&&(bc[74][b]==0)&&(bc[78][b]==0)){
                nm[21]=a; nm[105]=b;
                bc[2][a]=1; bc[13][a]=1; bc[63][a]=1; bc[78][a]=1;
                bc[15][b]=1; bc[61][b]=1; bc[74][b]=1; bc[78][b]=1;
                stp22C);
                bc[15][b]=0; bc[61][b]=0; bc[74][b]=0; bc[78][b]=0;
                bc[2][a]=0; bc[13][a]=0; bc[63][a]=0; bc[78][a]=0;}}
    }
}
/* Set N22 & n104=CC-N22 */
void stp22C){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;

```

```

    if((bc[5][a]==0)&&(bc[13][a]==0)&&(bc[66][a]==0)){
    if((bc[12][b]==0)&&(bc[61][b]==0)&&(bc[71][b]==0)){
        nm[22]=a; nm[104]=b;
        bc[5][a]=1; bc[13][a]=1; bc[66][a]=1;
        bc[12][b]=1; bc[61][b]=1; bc[71][b]=1;
        stp23();
        bc[12][b]=0; bc[61][b]=0; bc[71][b]=0;
        bc[5][a]=0; bc[13][a]=0; bc[66][a]=0;}}
    }
}
/* Set N23 & n103=CC-N23 */
void stp23(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[8][a]==0)&&(bc[13][a]==0)&&(bc[69][a]==0)){
            if((bc[9][b]==0)&&(bc[61][b]==0)&&(bc[68][b]==0)){
                nm[23]=a; nm[103]=b;
                bc[8][a]=1; bc[13][a]=1; bc[69][a]=1;
                bc[9][b]=1; bc[61][b]=1; bc[68][b]=1;
                stp24();
                bc[9][b]=0; bc[61][b]=0; bc[68][b]=0;
                bc[8][a]=0; bc[13][a]=0; bc[69][a]=0;}}
        }
    }
}
/* Set N24 & n102=CC-N24 */
void stp24(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[11][a]==0)&&(bc[13][a]==0)&&(bc[72][a]==0)){
            if((bc[6][b]==0)&&(bc[61][b]==0)&&(bc[65][b]==0)){
                nm[24]=a; nm[102]=b;
                bc[11][a]=1; bc[13][a]=1; bc[72][a]=1;
                bc[6][b]=1; bc[61][b]=1; bc[65][b]=1;
                stp25();
                bc[6][b]=0; bc[61][b]=0; bc[65][b]=0;
                bc[11][a]=0; bc[13][a]=0; bc[72][a]=0;}}
        }
    }
}
/* Set N25 & n101=CC-N25 */
void stp25(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[13][a]==0)&&(bc[14][a]==0)&&(bc[75][a]==0)&&(bc[79][a]==0)){
            if((bc[3][b]==0)&&(bc[61][b]==0)&&(bc[62][b]==0)&&(bc[79][b]==0)){
                nm[25]=a; nm[101]=b;
                bc[13][a]=1; bc[14][a]=1; bc[75][a]=1; bc[79][a]=1;
                bc[3][b]=1; bc[61][b]=1; bc[62][b]=1; bc[79][b]=1;
                stp26();
                bc[3][b]=0; bc[61][b]=0; bc[62][b]=0; bc[79][b]=0;
                bc[13][a]=0; bc[14][a]=0; bc[75][a]=0; bc[79][a]=0;}}
        }
    }
}
/* Level 2: */
/* Set N26 & n100=CC-N26 */
void stp26(){
    short a,b;
    for(a=0;a<5;a++){b=CC-a;
        if((bc[3][a]==0)&&(bc[16][a]==0)&&(bc[17][a]==0)){
            if((bc[58][b]==0)&&(bc[59][b]==0)&&(bc[75][b]==0)){
                nm[26]=a; nm[100]=b;
                bc[3][a]=1; bc[16][a]=1; bc[17][a]=1;
                bc[58][b]=1; bc[59][b]=1; bc[75][b]=1;
                stp27();
                bc[58][b]=0; bc[59][b]=0; bc[75][b]=0;
                bc[3][a]=0; bc[16][a]=0; bc[17][a]=0;}}
        }
    }
}

```

```

}
}
/* .... (skip) .... */
/**/
/* Set N62 & n64=CC-N62 */
void stp62(){
short a,b;
for(a=0;a<5;a++){b=CC-a;
if((bc[35][a]==0)&&(bc[36][a]==0)&&(bc[37][a]==0)){
if((bc[37][b]==0)&&(bc[41][b]==0)&&(bc[42][b]==0)){
nm[62]=a; nm[64]=b;
bc[35][a]=1; bc[36][a]=1; bc[37][a]=1;
bc[37][b]=1; bc[41][b]=1; bc[42][b]=1;
recordans();
bc[37][b]=0; bc[41][b]=0; bc[42][b]=0;
bc[35][a]=0; bc[36][a]=0; bc[37][a]=0;}}
}
}
/**/
/* Record & Print the Latin Units */
void recordans(){
short n;
tlu[cnt0][0]=cnt0+1;
for(n=1;n<126;n++){tlu[cnt0][n]=nm[n];}
if((nm[1]<=nm[5])&&(nm[1]<=nm[21])&&(nm[1]<=nm[25])&&(nm[1]<=nm[101])&&(nm[1]<=nm[105])){
if((nm[1]<=nm[121])&&(nm[1]<=nm[125])&&(nm[2]<=nm[6])&&(nm[6]<=nm[26])){tluh[cnt0]++; cnt1++;}}
cnt0++; cnt2++;
if(cnt2==1){
d[cnt3][0]=cnt0;
for(n=1;n<126;n++){d[cnt3][n]=nm[n];}
cnt3++; if(cnt3==3){prdlu(cnt3); cnt3=0;}
}
}
}
/**/

```

We define each pair of self-complimentary variables at the same time in each step. Therefore, we need 62 steps in all to define all the 125 variables but $n63=2$.

In every step we always watch each variable on the three lines: rows, columns and pillars, and check whether each value is 'Used' or 'Un-used' there.

If it is 'Used', then we must have another value to be checked again. But, if it is all 'Un-used' in the three lines, then we take it for the variable now and can go on to the next step, after we set the flags for the value as 'Used' in all the three directions.

On top of that the 8 pairs on the 4 primary-triagonals should be checked if they obey the 'Latin Rules' to be made up of {0, 1, 2, 3 and 4}. Each of (n1, n125), (n5, n121), (n21, n105), (n25, n101), (n32, n94), (n34, n92), (n42, n84) and (n44, n82) must be checked if the flags of their value are all 'Un-used' in the four directions.

**** List of 'Latin Cubes' for the Self-complimentary C.E.C. of Order 5(Part) ****
**** Made by Kanji Setsuda on May 30, 2010 with MacOSX and Xcode 3.1.2 ****

1/					133/					161/				
0	1	2	3	4	0	1	2	3	4	0	1	2	3	4
1	0	3	4	2	1	0	3	2	4	1	0	4	2	3
1 2	0 4	4 0	2 1	3 3	1 2	0 4	4 1	3 3	2 0	1 3	0 1	3 0	4 4	2 2
0 3	1 2	2 4	3 0	4 1	0 4	1 3	2 0	4 1	3 2	2 2	1 4	0 3	3 0	4 1
2 3 4	3 2 3 0	1 1 4 4	2 1 0 0	0 0	2 3 3 3 2 2 1 0 4 0 1 0 4 4 1	2 0 4 1 4 3 4 1 2 0 2 1 1 2	0 4 1 4 3 2 0 2 4 1	4 1 4 2 0 3 3 2 1 1 4 2 0 3 0	3 4 3 4 3 2 0 2 4 2 1 0 1 0 1					
4 4	2 3	1 0	0 1	3 2	4 2	2 4	0 3	3 0	1 1	0 4	2 3	3 2	4 1	1 0
3 0 2	4 1 4 1	2 3 0 3 0	2 4 1	0 0	4 1 4 2 0 3 3 2 1 1 4 2 0 3 0	4 3 3 4 1 1 4 0 2 2 0	4 3 3 0 2 1 1 2 0 4	4 3 3 0 2 1 1 2 0 4	4 3 3 0 2 1 1 2 0 4					
2 1	3 4	4 3	1 2	0 0	3 3	4 1	1 4	0 2	2 0	4 3	3 0	2 1	1 2	0 4
4 4 3 2 0 0 3 3 4 1 2 1 0 1 2	3 0 0 4 3 4 0 4 3 2 2 1 1 1 2	4 1 1 3 2 4 2 3 0 1 0 3 0 4 2	3 0 0 4 1 0 2 2 3 1 4	2 1 3 0 4 2 1 3 0 4	4 1 1 3 2 4 2 3 0 1 0 3 0 4 2	3 0 4 1 1 4 0 3 2 2	2 2 0 0 4 1 3 4 1 3	1 2 0 4 3	1 2 0 4 3					
1 1	3 2	4 0	0 4	2 3	4 2	1 1	3 0	0 4	2 3	2 2	0 0	4 1	3 4	1 3
2	0	1	4	3	0	2	1	4	3	1	2	0	4	3
0	1	2	3	4	1	0	2	3	4	0	1	3	2	4

221/
 0—1—2—4—3
 |1 2 4 3 |0
 14 40 03 31 22
 |22 33 11 00 |44
 2030-1-4-3-4-0-1-2-2-4-3-1
 |43| 10 02 24 |31|
 434342123201010
 |31| 02 24 43 |10|
 3-1-0-2-2-3-4-0-1-0-3-4-1-4-2
 00| 44 33 11 22|
 22 31 14 40 03
 4| 1 0 2 3|
 1—0—2—3—4

238/
 0—1—3—2—4
 |2 0 1 4 |3
 11 24 00 43 32
 |03 12 44 30 |21
 2340-0-3-4-1-2-3-2-1-1-4-0
 |14| 23 32 01 |40|
 342434123010201
 |40| 34 21 12 |03|
 4-0-3-3-2-1-2-3-0-1-4-4-0-1-2
 32| 41 00 23 14|
 21 10 44 02 33
 1| 0 3 4 2|
 0—2—1—3—4

298/
 0—1—2—3—4
 |2 0 4 1 |3
 11 33 00 44 22
 |04 12 23 30 |41
 2330-4-4-4-1-1-1-2-2-3-0-0
 |42| 20 34 01 |13|
 304412123230041
 |13| 34 01 42 |20|
 4-4-1-2-2-3-3-3-0-0-4-1-1-2
 30| 41 12 23 04|
 22 00 44 11 33
 1| 3 0 4 2|
 0—1—2—3—4

315/
 0—2—1—3—4
 |2 0 3 4 |1
 13 41 34 00 22
 |01 14 20 32 |43
 2441-0-3-0-1-2-4-2-1-3-3-0
 |32| 43 14 21 |00|
 303032420214141
 |44| 32 03 10 |21|
 4-1-1-3-2-0-2-3-4-1-4-3-0-0-2
 10| 21 42 03 34|
 22 44 01 30 13
 3| 0 1 4 2|
 0—1—3—2—4

375/
 0—3—2—1—4
 |2 0 4 3 |1
 13 41 30 24 02
 |04 32 21 10 |43
 3411-2-4-0-1-3-4-0-2-2-3-0
 |42| 20 14 03 |31|
 203031420314142
 |31| 14 03 42 |20|
 4-1-2-2-4-0-1-3-4-0-2-3-3-0-1
 10| 43 32 21 04|
 24 02 41 30 13
 3| 1 0 4 2|
 0—3—2—1—4

392/
 0—4—2—1—3
 |2 1 0 3 |4
 14 03 41 30 22
 |01 32 23 44 |10
 2331-1-0-3-0-4-0-2-2-4-4-1
 |32| 24 41 10 |03|
 414302123241030
 |14| 43 30 02 |21|
 3-0-0-2-2-4-0-4-1-4-3-3-1-2
 43| 00 12 21 34|
 22 41 30 14 03
 0| 1 4 3 2|
 1—3—2—0—4

426/
 0—1—3—2—4
 |3 2 0 4 |1
 11 20 44 03 32
 |02 14 21 30 |43
 2344-4-3-0-1-2-3-2-1-1-0-0
 |44| 03 10 21 |32|
 302030123414241
 |21| 32 43 14 |00|
 4-4-3-3-2-1-2-3-4-1-0-0-0-1-2
 10| 41 32 03 24|
 21 14 00 42 33
 3| 0 4 2 1|
 0—2—1—3—4

486/
 0—1—2—3—4
 |3 2 0 4 |1
 12 40 04 21 33
 |01 14 43 30 |22
 2343-2-3-4-1-1-0-0-2-1-4-0
 |14| 03 32 21 |40|
 342010123434201
 |40| 32 21 14 |03|
 4-0-3-2-4-4-3-3-0-1-2-1-0-1-2
 22| 41 10 03 34|
 11 32 04 40 23
 3| 0 4 2 1|
 0—1—2—3—4

646/
 0—3—4—2—1
 |3 2 0 1 |4
 24 10 01 33 42
 |12 31 23 44 |00
 4010-2-4-3-4-2-1-1-0-2-3-3
 |03| 14 41 20 |32|
 334240123402011
 |21| 42 30 03 |14|
 1-1-2-4-3-3-2-0-1-0-2-4-3-4-0
 44| 00 12 31 23|
 20 11 34 43 02
 0| 3 4 2 1|
 3—2—0—1—4

663/
 0—3—1—2—4
 |4 2 0 1 |3
 11 20 04 43 32
 |22 14 43 30 |01
 3031-4-1-4-3-2-0-2-4-2-1-0
 |13| 00 32 21 |44|
 244433321110002
 |00| 32 21 44 |13|
 4-3-2-0-2-4-2-1-0-3-0-3-1-4-1
 34| 41 10 03 22|
 21 10 04 42 33
 1| 3 4 2 0|
 0—2—3—1—4

753/
 1—0—2—3—4
 |0 1 3 4 |2
 02 14 40 21 33
 |13 02 24 30 |41
 2343-2-3-0-1-1-4-4-2-1-0-0
 |44| 23 10 01 |32|
 302414123030241
 |21| 34 43 12 |00|
 4-4-3-2-0-0-3-3-4-1-2-1-0-1-2
 30| 41 02 24 13|
 11 32 40 03 24
 2| 0 1 3 4|
 0—1—2—4—3

990/
 1—0—2—4—3
 |2 1 3 0 |4
 00 44 11 33 22
 |13 02 24 41 |30
 2441-3-3-3-0-0-0-2-2-4-1-1
 |32| 21 43 10 |04|
 413302024241130
 |04| 43 10 32 |21|
 3-3-0-2-2-4-4-4-1-1-3-0-0-2
 41| 30 02 24 13|
 22 11 33 00 44
 0| 4 1 3 2|
 1—0—2—4—3

1178/
 1—4—0—2—3
 |3 2 1 0 |4
 00 21 13 34 42
 |22 03 34 41 |10
 4140-3-0-3-4-2-1-2-3-2-0-1
 |04| 11 42 20 |33|
 233344420001112
 |11| 42 20 33 |04|
 3-4-2-1-2-3-2-0-1-4-1-4-0-3-0
 43| 30 01 14 22|
 20 01 13 32 44
 0| 4 3 2 1|
 1—2—4—0—3

1268/
 1—4—2—0—3
 |4 0 3 2 |1
 00 23 11 34 42
 |12 41 20 03 |34
 2331-1-2-3-4-4-4-2-1-0-0-0
 |34| 20 03 11 |42|
 312043420104231
 |20| 33 14 42 |01|
 4-4-4-3-2-0-0-0-1-2-3-3-1-1-2
 01| 14 42 30 23|
 20 01 33 12 44
 3| 2 1 4 0|
 1—4—2—0—3

1505/
 3—1—2—0—4
 |0 4 1 2 |3
 01 23 30 44 12
 |12 00 24 33 |41
 2340-4-2-4-1-3-1-2-1-3-0-0
 |44| 23 30 01 |12|
 102411024330243
 |23| 34 41 12 |00|
 4-4-1-3-2-3-1-3-0-2-0-4-0-1-2
 30| 11 02 44 23|
 23 00 41 12 34
 1| 2 3 0 4|
 0—4—2—3—1

<p style="text-align: center; color: cyan;">1742/ 3—4—0—2—1</p> <pre> 1 2 3 0 4 0 0 2 3 3 1 1 4 4 2 2 2 0 1 1 4 4 3 3 0 4 3 4 0 1 0 1 4 2 3 2 1 2 0 3 0 4 3 3 4 2 2 0 1 1 2 1 1 1 4 4 4 2 0 0 0 3 3 3 2 3 3 4 2 2 0 1 1 0 4 1 4 2 3 2 1 2 0 3 4 3 4 0 1 0 4 1 1 0 0 3 3 4 2 2 2 0 0 3 3 1 1 2 4 4 0 4 1 2 3 3—2—4—0—1</pre>	<p style="text-align: center; color: cyan;">1832/ 3—0—2—4—1</p> <pre> 2 3 1 0 4 0 0 4 4 1 3 2 1 3 2 1 1 0 2 3 4 4 3 2 0 2 4 4 1 2 1 3 0 0 0 3 2 4 1 3 3 3 2 1 4 2 1 0 0 4 4 1 2 3 0 3 0 2 4 1 4 1 2 3 0 0 4 4 3 2 0 3 2 1 1 1 3 0 2 1 4 4 4 1 3 2 3 0 0 2 4 2 1 0 0 1 2 4 3 3 2 1 3 2 1 3 0 0 4 4 0 4 3 1 2 3—0—2—4—1</pre>	<p style="text-align: center; color: cyan;">2020/ 3—1—2—0—4</p> <pre> 4 3 1 2 4 0 0 2 4 3 3 4 1 1 2 1 2 0 0 2 4 3 3 4 1 2 4 1 4 1 2 1 0 0 3 2 4 0 3 3 0 3 2 4 4 1 1 0 3 2 4 3 2 3 0 3 0 2 4 1 4 1 2 1 0 2 1 4 3 3 0 0 2 1 4 1 1 4 0 2 1 4 4 3 2 3 0 3 0 2 3 0 1 1 0 2 4 4 2 3 2 3 3 0 1 1 0 2 4 4 4 2 3 1 0 0—4—2—3—1</pre>
<p style="text-align: center; color: cyan;">2257/ 4—0—1—2—3</p> <pre> 0 2 3 1 4 0 1 2 3 3 0 1 4 4 2 2 2 3 1 4 4 0 3 1 0 1 3 3 3 4 4 0 1 2 4 2 0 2 0 1 3 1 4 0 1 2 2 4 0 3 2 0 4 1 1 1 4 2 0 3 3 3 0 4 2 1 4 0 2 2 3 4 0 3 1 3 4 2 4 2 0 2 3 4 0 0 1 1 1 3 4 3 1 4 0 0 3 1 2 2 2 0 0 3 4 1 1 2 3 4 0 3 1 2 4 1—2—3—4—0</pre>	<p style="text-align: center; color: cyan;">2347/ 4—1—0—2—3</p> <pre> 1 2 4 3 0 0 0 4 4 3 3 1 1 2 2 2 2 3 3 1 1 0 0 4 4 2 1 3 3 2 0 1 4 2 0 3 4 4 0 1 4 3 1 0 0 2 2 4 3 1 1 3 4 2 0 1 4 2 0 3 4 2 0 1 3 3 1 0 2 2 4 4 3 1 0 3 4 0 0 1 4 2 0 3 4 2 1 1 3 2 0 0 4 4 3 3 1 1 2 2 2 2 3 3 1 1 0 0 4 4 4 1 0 2 3 1—2—4—3—0</pre>	<p style="text-align: center; color: cyan;">2584/ 4—1—2—0—3</p> <pre> 2 4 3 1 0 0 0 4 3 1 1 3 4 2 2 1 1 3 2 2 0 0 3 4 4 2 3 3 0 1 0 3 4 4 1 2 2 4 0 1 4 2 2 0 0 3 3 4 1 1 1 1 4 3 4 2 4 2 0 2 0 1 0 3 3 3 3 0 1 1 4 4 2 2 0 3 4 0 2 2 3 0 0 1 4 3 4 1 1 2 0 0 1 4 4 2 2 1 3 3 2 2 0 1 3 3 1 0 4 4 4 3 1 0 2 1—4—2—3—0</pre>
<p style="text-align: center; color: cyan;">2772/ 4—3—2—0—1</p> <pre> 3 0 1 2 4 0 0 2 4 3 3 1 1 4 2 1 2 3 1 2 4 4 3 0 0 2 4 1 4 1 2 1 0 0 3 2 4 0 3 3 0 3 2 4 4 1 1 0 3 2 3 3 2 1 0 0 0 2 4 4 4 3 2 1 1 2 1 4 3 3 0 0 2 1 4 1 1 4 0 2 1 4 4 3 2 3 0 3 0 2 4 4 1 0 0 2 3 1 2 3 2 0 3 3 1 1 0 2 4 4 0 2 3 4 1 3—4—2—1—0</pre>	<p style="text-align: center; color: cyan;">2789/ 4—1—3—2—0</p> <pre> 3 2 4 0 1 0 1 2 3 4 0 3 4 1 2 2 2 3 0 0 1 1 3 4 4 3 3 0 4 4 4 0 1 2 1 2 1 2 0 3 4 4 0 1 1 2 2 0 3 3 2 0 1 0 1 0 1 2 3 4 3 4 3 4 2 1 1 4 2 2 3 3 4 0 0 1 4 2 3 2 3 2 3 4 0 0 0 4 1 1 0 0 1 3 3 4 4 1 2 2 2 3 0 1 4 0 1 2 3 4 3 4 0 2 1 4—2—1—3—0</pre>	<p style="text-align: center; color: cyan;">2849/ 4—3—0—2—1</p> <pre> 3 0 4 1 2 0 2 1 1 4 3 3 4 2 0 2 0 3 2 1 1 4 3 0 4 2 3 1 0 2 4 3 0 2 1 1 0 4 4 3 4 1 2 4 0 2 3 0 1 3 3 1 4 2 4 0 1 2 3 4 0 2 0 3 1 1 3 4 1 2 4 0 2 3 0 1 0 0 4 3 3 2 4 1 0 2 4 3 1 2 0 4 1 0 3 3 2 1 4 2 4 2 0 1 1 0 3 3 2 4 2 3 0 4 1 3—2—4—1—0</pre>

[Count = 3008] OK!

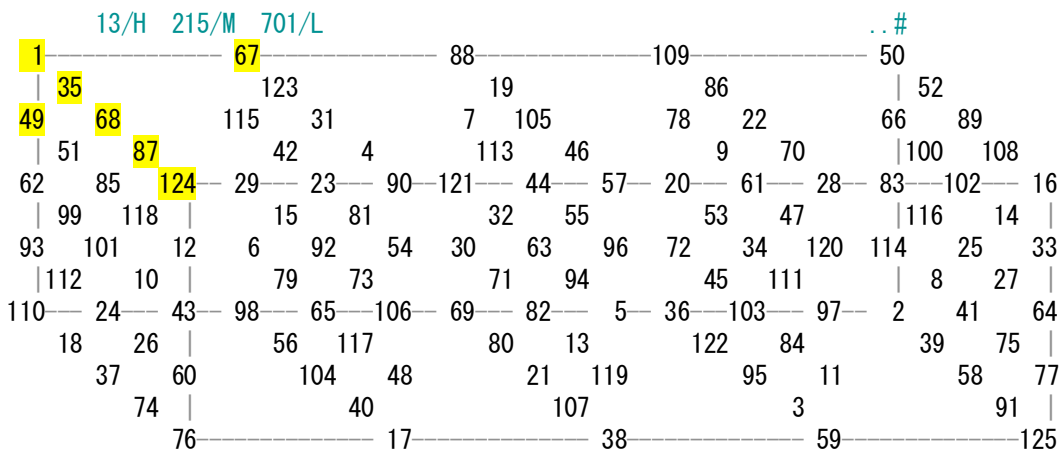
The compact list above shows the recent result of my research, though only a part. The total count of Latin Units is 3008.

What a big count it is! It means we have to check every combination of three Latin Units in over 27 billion ways (=3008 x 3008 x 3008)! Why!

6. How to Combine Latin Units and Compose our "Complete Euler Cubes" 5x5x5

At first we combine any three units picked up, calculate the positional data one after another according to the next equation and compose our final object as follows.

<p style="text-align: center; color: cyan;">13/H 0—2—3—4—1</p> <pre> 1 4 0 3 2 1 2 4 1 0 4 3 0 2 3 2 3 1 0 4 1 0 2 3 4 2 3 4 1 0 3 4 1 2 0 2 1 3 4 0 3 4 0 3 1 2 2 1 4 0 3 4 0 0 3 2 1 2 3 2 1 4 4 0 1 4 0 3 2 2 3 1 4 0 1 4 0 1 3 2 4 2 3 0 1 4 3 0 1 2 0 1 2 4 3 0 4 3 1 2 1 2 4 1 0 4 3 0 2 3 2 1 4 0 3 3—0—1—2—4</pre>	<p style="text-align: center; color: cyan;">215/M 0—3—2—1—4</p> <pre> 1 4 3 2 0 4 3 2 1 0 4 3 2 0 2 3 0 2 4 1 3 4 1 2 1 4 0 4 2 4 3 1 3 2 0 1 0 3 4 3 2 1 1 0 0 4 3 2 3 0 2 1 3 0 0 2 4 4 1 3 2 4 1 2 1 0 4 4 3 3 2 1 0 1 4 3 4 2 1 3 1 0 2 0 4 0 3 2 3 0 1 3 0 2 4 1 2 4 2 1 0 4 4 3 3 2 1 0 4 2 1 0 3 0—3—2—1—4</pre>	<p style="text-align: center; color: cyan;">701/L 0—1—2—3—4</p> <pre> 4 2 3 0 1 3 2 4 0 1 4 2 1 0 3 0 1 1 3 2 0 3 4 4 2 1 4 3 3 2 4 0 3 1 4 0 2 2 1 0 3 2 4 0 1 4 2 1 0 3 2 0 1 0 1 3 4 2 0 1 3 4 3 4 2 1 4 3 2 0 3 4 0 2 1 4 3 2 2 4 0 3 1 4 0 2 1 1 0 3 2 0 0 1 4 2 1 3 3 4 1 4 3 2 0 3 4 0 2 1 3 4 1 2 0 0—1—2—3—4</pre>
--	---	---



n_of_High, Middle, Low N_of_Object_Cube

$$(nH \times 5 + nM) \times 5 + nL + 1 = nH \times 25 + nM \times 5 + nL + 1 = NC$$

$$\begin{aligned}
 0H \times 25 + 0M \times 5 + 0L + 1 &= 0 + 0 + 0 + 1 = 1 && \dots n1C; \\
 1H \times 25 + 1M \times 5 + 4L + 1 &= 25 + 5 + 4 + 1 = 35 && \dots n2C; \\
 2H \times 25 + 3M \times 5 + 2L + 1 &= 50 + 15 + 2 + 1 = 68 && \dots n3C; \\
 3H \times 25 + 2M \times 5 + 1L + 1 &= 75 + 10 + 1 + 1 = 87 && \dots n4C; \\
 4H \times 25 + 4M \times 5 + 3L + 1 &= 100 + 20 + 3 + 1 = 124 && \dots n5C; \\
 1H \times 25 + 4M \times 5 + 3L + 1 &= 25 + 20 + 3 + 1 = 49 && \dots n6C; \\
 \dots & & & \\
 2H \times 25 + 3M \times 5 + 1L + 1 &= 50 + 15 + 1 + 1 = 67 && \dots n26C; \\
 \dots & & &
 \end{aligned}$$

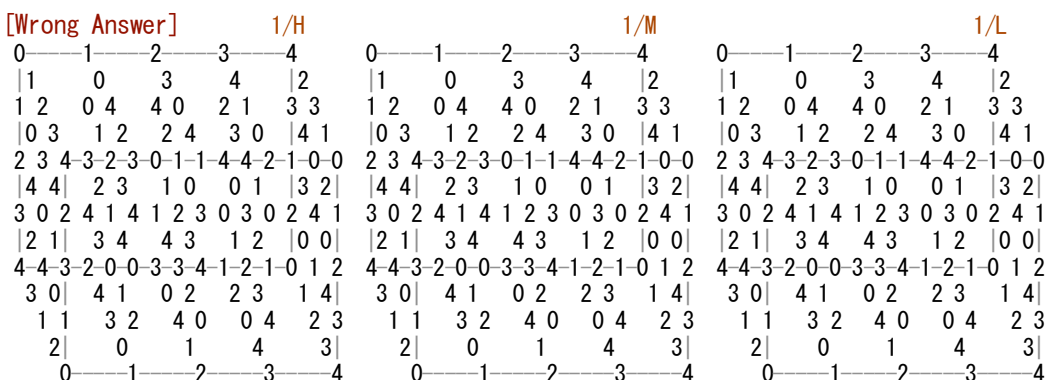
Why do we have to add 1 to the end of every calculation above? Because we want to match the two styles of diagram expression between Classical and Mathematical. The classical expression uses a series of natural numbers from 1 to 125, while the other mathematical one uses a series of integers from 0 to 124. And our Positional Number System of Base 5 also uses integers from 0 to 4.

One of the most important rules we should always obey, we must remember, is that we should make up our object of a series of numbers from 1 to 125 using each one strictly once. In the expression of Positional (5-th Increment) Number System, we have to use all {000 (N5i), 001 (N5i), 002 (N5i), 003 (N5i), 004 (N5i), 100 (N5i), 101 (N5i), ..., 434 (N5i), 440 (N5i), 441 (N5i), 442 (N5i), 443 (N5i), 444 (N5i)} taking each number strictly once, I say.

Neither duplication nor lack of any number must be found there.

For the next step, we have to examine every actual result one after another to find out whether it is right or wrong. Find if it completely obeys the first definition. And find if there is neither duplication nor lack of any number in our composition.

You should know that every combination of Latin Units does not always make the correct solution. But it sometimes makes a wrong solution, say, very often.



1/H	1/M	1/L	W1#											
1	32	1	63	94	125	63	94	125	63	94	125	63	94	125
32	63	1	125	94	125	63	125	63	32	1	94	32	1	94
63	94	125	94	63	94	1	32	32	125	125	63	32	1	1
94	1	63	125	32	125	32	63	94	1	94	1	63	125	32
125	32	94	63	1	1	94	94	125	32	63	32	1	32	63
	94	1	125	32	1	63	63	94	32	94	32	125	63	94
	32	32	94	63	125	1	32	125	1	125	63	94	1	125
	63	1	1	32	63	94	125	94	63	94	125	63	94	125

[Wrong Answer-2]

2/H	1/M	3/L
0-1-2-3-4	0-1-2-3-4	0-3-2-1-4
1 0 3 4 2	1 0 3 4 2	1 4 3 0 2
1 2 0 4 4 0 2 1 3 3	1 2 0 4 4 0 2 1 3 3	1 2 2 1 4 0 0 4 3 3
0 3 3 2 2 4 1 0 4 1	0 3 1 2 2 4 3 0 4 1	0 3 1 0 2 4 3 2 4 1
2 3 4 3 2 3 0 1 1 4 4 2 1 0 0	2 3 4 3 2 3 0 1 1 4 4 2 1 0 0	2 3 4 4 4 2 0 1 1 3 2 3 1 0 0
4 4 2 1 1 0 0 3 3 2	4 4 2 3 1 0 0 1 3 2	4 4 0 3 1 0 2 1 3 2
3 0 2 4 1 4 1 2 3 0 3 0 2 4 1	3 0 2 4 1 4 1 2 3 0 3 0 2 4 1	3 0 2 0 3 0 1 2 3 4 1 4 2 4 1
2 1 1 4 4 3 3 2 0 0	2 1 3 4 4 3 1 2 0 0	2 1 3 2 4 3 1 4 0 0
4 4 3 2 0 0 3 3 4 1 2 1 0 1 2	4 4 3 2 0 0 3 3 4 1 2 1 0 1 2	4 4 3 1 2 1 3 3 4 2 0 0 0 1 2
3 0 4 3 0 2 2 1 1 4	3 0 4 1 0 2 2 3 1 4	3 0 2 1 0 2 4 3 1 4
1 1 3 2 4 0 0 4 2 3	1 1 3 2 4 0 0 4 2 3	1 1 0 4 4 0 3 2 2 3
2 0 1 4 3	2 0 1 4 3	2 4 1 0 3
0-1-2-3-4	0-1-2-3-4	0-3-2-1-4

2/H	1/M	3/L	W2#											
1	34	5	63	92	125	63	94	121	35	94	94	63	94	125
32	63	3	122	125	61	35	94	61	35	94	94	63	94	125
63	94	82	61	63	125	44	3	44	3	125	32	94	63	125
94	1	63	121	34	121	32	63	94	5	92	5	63	125	32
125	32	44	123	125	94	82	65	82	65	1	1	32	63	125
	94	1	123	82	1	63	65	65	44	32	125	63	94	125
	32	32	91	65	125	1	4	4	123	63	94	94	125	125
	63	1	5	32	121	94	125	121	94	94	125	63	94	125
	1	34	63	92	125	63	94	125	94	125	63	94	125	125

[Wrong Answer-3]

12/H	582/M	645/L
0-3-1-2-4	0-1-3-2-4	0-3-4-2-1
1 4 3 0 2	3 0 1 4 2	3 4 0 1 2
1 2 2 0 4 4 0 1 3 3	3 2 2 4 0 0 4 3 1 1	4 2 1 1 0 3 3 0 2 4
2 3 3 2 0 0 1 4 4 1	2 1 1 2 4 4 3 0 0 3	2 4 3 2 1 1 0 3 4 0
3 0 4 4 4 1 0 3 2 1 2 3 2 1 0	1 4 4 0 0 3 4 1 2 3 2 1 2 3 0	2 3 1 4 2 0 3 4 2 1 1 4 0 0 3
0 4 2 1 1 2 4 3 3 0	4 0 2 3 3 2 0 1 1 4	0 1 2 0 4 2 3 4 1 3
2 4 3 0 1 0 3 2 1 4 3 4 1 0 2	2 0 1 4 3 4 1 2 3 0 1 0 3 4 2	3 1 0 2 0 4 1 2 3 0 4 2 4 3 1
4 1 1 0 2 3 3 2 0 4	0 3 3 4 2 1 1 2 4 0	1 3 0 1 2 0 4 2 3 4
4 3 2 1 2 3 2 1 4 3 0 0 4 1	4 1 2 3 2 1 2 3 0 1 4 4 0 0 3	1 4 4 0 3 3 2 0 1 4 2 0 3 1 2
3 0 0 3 4 4 2 1 1 2	1 4 4 1 0 0 2 3 3 2	4 0 1 4 3 3 2 1 0 2
1 1 3 4 0 0 4 2 2 3	3 3 1 0 4 4 0 2 2 1	0 2 4 1 1 4 3 3 2 0
2 4 1 0 3	2 0 3 4 1	2 3 4 0 1
0-2-3-1-4	0-2-1-3-4	3-2-0-1-4

12/H	582/M	645/L	W3#											
1	84	45	63	122	63	85	85	22	41	83	85	41	4	62
45	63	62	22	101	104	24	41	41	104	105	41	4	62	85
83	24	122	105	103	41	24	85	63	42	62	85	61	41	4
64	102	81	23	41	25	82	63	44	101	85	103	45	24	62

102	44	41	22	63	81	85	63	24	105					
122	85	65	41	64	84	63	41	102	85	23	21	4	102	43
	85	21	22	85	104	104	63	42	41	63	81			
	41	43	85	102	22	25	104	64	63	81				
	63		104		45		21		82					
	4		63		81		42		125					

Watch the 3 examples of wrong answers above. When you combine any two similar units, you will always have a wrong answer. I dare say, when you combine any two units which have too little difference or too much difference from each other, you will surely have a wrong solution. It has a lot of duplication or lack of same numbers.

Only a few, selected combinations could compose correct solutions.

How can we find such the good combinations as to make our correct object cubes?

We have to examine it two times: both before the calculation and after that.

Before all we have to make a reference that has 'resemblance' data between any two units, measuring how many variables have the same values or the complimentary ones. You can come here before you combine any two units, and refer to the table about their compatibility. And after the calculation, you also have to examine your composition to find if it has duplication or lack of any number.

It is another hardest job for us to have the set of Standard Solutions of our object cubes. We have to eliminate all the reflected patterns or the rotated ones from the Primitive Solutions. Standard solutions are found among primitive in 1/48 necessarily in any case of magic cubes. What can we do before or after our calculations?

We have to prepare two sets of Inequality Conditions defining the relations among these critical variables:

$n1 < n5$; $n1 < n21$; $n1 < n25$; $n1 < n101$; $n1 < n105$; $n1 < n121$; $n1 < n125$; $n2 < n6$; $n6 < n26$;

7. How to dictate our program for our 'C.E.C.' of Order5

Let me list out the second part of my Program, only a part.

```

/**/
long int cnt;
short int cnt0, cnt1, cnt2, cnt3;
short u1, u2, u3;
short CC; //Constant Sum of Complimentary Pairs: CC=4;
short nm[126]; //For storing the defined value of each variable
short bc[80][5]; //For the actual status of each Basic Condition: 'Used' or 'Un-used'
short d[4][129]; //For the temporary values listing out 3 by 3
short tluh[3009]; //For the status of high position checking if it is 'standard'
short tlu[3009][126]; //For storing all Latin Units made
/**/
/* Main Program */
int main(){
    short m,n;
    printf("\n*** 'Latin Cubes' of Order 5 for the Self-complimentary Type: ***\n");
    printf("*** by Kanji Setsuda on June 12, 2010 with Mac OSX & Xcode3.1.2 ***\n");
    CC=4; cnt=0; cnt0=0; cnt1=0; cnt3=0;
    for(n=0;n<126;n++){nm[n]=0;}
    for(m=1;m<80;m++){for(n=0;n<5;n++){bc[m][n]=0;}}
    for(n=0;n<3009;n++){tluh[n]=0;}
    nm[63]=2; //Set n63=2;
    bc[37][2]=1; bc[38][2]=1; bc[39][2]=1; bc[76][2]=1; bc[77][2]=1; bc[78][2]=1; bc[79][2]=1;
    stp01();
    if(cnt3>0){prdlu(cnt3);}
    mkreftbl();
    printf("\n*** 'Complete Euler Cubes' of Order 5 for the Self-complimentary Type: **\n");
    printf("*** Composed by Kanji Setsuda on June 12, 2010 with MacOSX & Xcode 3.1 ***\n");
    cnt=0; cnt3=0;
    cmbcmp();
}

```


13/H 117/M 674/L 1#

1-----59-----88-----117-----50
 | 35 111 19 98 | 52
 49 62 103 45 7 121 90 4 66 83
 | 51 93 34 22 113 30 17 56 | 100 114
 68 85 124 47 11 78 105 44 57 6 73 40 89 102 16
 | 99 112 | 3 95 32 71 65 29 | 116 8 |
 87 101 18 20 84 72 46 63 80 54 42 106 108 25 39
 | 118 10 | 97 61 55 94 31 123 | 14 27 |
 110 24 37 86 53 120 69 82 21 48 115 79 2 41 58
 | 12 26 | 70 109 96 13 104 92 33 75 |
 43 60 122 36 5 119 81 23 64 77
 | 74 | 28 107 15 91 |
 76-----9-----38-----67-----125

13/H 117/M 736/L

0-----2-----3-----4-----1 0-----1-----2-----3-----4 0-----1-----2-----3-----4
 | 1 4 0 3 | 2 | 1 2 3 4 0 | 0 | 4 0 1 2 3 4 | 3
 1 2 4 1 0 4 3 0 2 3 4 2 0 3 1 4 2 0 3 1 1 3 2 4 3 0 4 1 0 2
 | 2 3 1 0 4 1 0 2 | 3 4 | 0 3 1 4 2 0 3 1 | 4 2 | 0 2 1 3 2 4 3 0 | 4 1
 2 3 4 1 0 3 4 1 2 0 2 1 3 4 0 3 1 4 4 2 0 0 3 1 1 4 2 2 0 3 2 4 1 3 0 2 4 1 3 0 2 4 1 3 0
 | 3 4 | 0 3 1 2 2 1 | 4 0 | 4 2 | 0 3 1 4 2 0 | 3 1 | 1 3 | 2 4 3 0 4 1 | 0 2 |
 3 4 0 0 3 2 1 2 3 2 1 4 4 0 1 2 0 3 3 1 4 4 2 0 0 3 1 1 4 2 3 0 2 4 1 3 0 2 4 1 3 0 2 4 1
 | 4 0 | 3 2 2 3 1 4 | 0 1 | 3 1 | 4 2 0 3 1 4 | 2 0 | 2 4 | 3 0 4 1 0 2 | 1 3 |
 4 0 1 3 2 4 2 3 0 1 4 3 0 1 2 1 4 2 2 0 3 3 1 4 4 2 0 0 3 1 4 1 3 0 2 4 1 3 0 2 4 1 3 0 2
 0 1 | 2 4 3 0 4 3 | 1 2 | 2 0 | 3 1 4 2 0 3 | 1 4 | 3 0 | 4 1 0 2 | 1 3 2 4 |
 1 2 4 1 0 4 3 0 2 3 3 1 4 2 0 3 1 4 2 0 2 4 3 0 4 1 0 2 1 3
 | 2 | 1 4 0 3 | 4 | 0 1 2 3 | 1 | 2 3 4 0 |
 3-----0-----1-----2-----4 0-----1-----2-----3-----4 0-----1-----2-----3-----4

13/H 117/M 736/L 2#

1-----57-----88-----119-----50
 | 35 111 17 98 | 54
 47 64 103 45 9 121 90 2 66 83
 | 51 93 32 24 113 30 19 56 | 100 112
 68 85 122 49 11 78 105 42 59 6 73 40 87 104 16
 | 97 114 | 3 95 34 71 65 27 | 116 8 |
 89 101 18 20 82 74 46 63 80 52 44 106 108 25 37
 | 118 10 | 99 61 55 92 31 123 | 12 29 |
 110 22 39 86 53 120 67 84 21 48 115 77 4 41 58
 | 14 26 | 70 107 96 13 102 94 33 75 |
 43 60 124 36 5 117 81 23 62 79
 | 72 | 28 109 15 91 |
 76-----7-----38-----69-----125

13/H 117/M 1251/L

0-----2-----3-----4-----1 0-----1-----2-----3-----4 1-----0-----2-----4-----3
 | 1 4 0 3 | 2 | 1 2 3 4 0 | 0 | 3 1 0 2 3 4 | 4
 1 2 4 1 0 4 3 0 2 3 4 2 0 3 1 4 2 0 3 1 0 4 2 3 4 1 3 0 1 2
 | 2 3 1 0 4 1 0 2 | 3 4 | 0 3 1 4 2 0 3 1 | 4 2 | 1 2 0 4 2 3 4 1 | 3 0
 2 3 4 1 0 3 4 1 2 0 2 1 3 4 0 3 1 4 4 2 0 0 3 1 1 4 2 2 3 0 4 1 2 3 0 4 1 2 3 0 4 1
 | 3 4 | 0 3 1 2 2 1 | 4 0 | 4 2 | 0 3 1 4 2 0 | 3 1 | 0 4 | 2 3 4 1 3 0 | 1 2 |
 3 4 0 0 3 2 1 2 3 2 1 4 4 0 1 2 0 3 3 1 4 4 2 0 0 3 1 1 4 2 4 1 2 3 0 4 1 2 3 0 4 1 2 3 0
 | 4 0 | 3 2 2 3 1 4 | 0 1 | 3 1 | 4 2 0 3 1 4 | 2 0 | 2 3 | 4 1 3 0 1 2 | 0 4 |
 4 0 1 3 2 4 2 3 0 1 4 3 0 1 2 1 4 2 2 0 3 3 1 4 4 2 0 0 3 1 3 0 4 1 2 3 0 4 1 2 3 0 4 1 2
 0 1 | 2 4 3 0 4 3 | 1 2 | 2 0 | 3 1 4 2 0 3 | 1 4 | 4 1 | 3 0 1 2 0 4 2 3 |
 1 2 4 1 0 4 3 0 2 3 3 1 4 2 0 3 1 4 2 0 2 3 4 1 3 0 1 2 0 4
 | 2 | 1 4 0 3 | 4 | 0 1 2 3 | 0 | 2 4 3 1 |
 3-----0-----1-----2-----4 0-----1-----2-----3-----4 1-----0-----2-----4-----3

13/H 117/M 1251/L 3#

2-----56-----88-----120-----49
 | 34 112 16 98 | 55
 46 65 103 44 10 122 89 1 67 83
 | 52 93 31 25 113 29 20 57 | 99 111
 68 84 121 50 12 78 104 41 60 7 73 39 86 105 17
 | 96 115 | 3 94 35 72 64 26 | 117 8 |

```

90 102 18 19 81 75 47 63 79 51 45 107 108 24 36
|118 9 | 100 62 54 91 32 123 | 11 30 |
109— 21— 40— 87— 53— 119— 66— 85— 22— 48— 114— 76— 5 42 58
15 27 | 69 106 97 13 101 95 33 74 |
43 59 | 125 37 4 116 82 23 61 80
71 | 28 110 14 92 |
77— 6— 38— 70— 124

```

```

0— 2— 3— 4— 1 0— 1— 2— 3— 4 3— 0— 2— 4— 1
|1 4 0 3 |2 |1 2 3 4 |0 |1 3 0 2 |4
1 2 4 1 0 4 3 0 2 3 4 2 0 3 1 0 4 2 1 4 3 1 0 3 2
|2 3 1 0 4 1 0 2 |3 4 |0 3 1 4 2 0 3 1 |4 2 |3 2 0 4 2 1 4 3 |1 0
2 3 4— 1— 0— 3— 4— 1— 2— 0— 2— 1— 3— 4— 0 3 1 4 4— 2— 0— 0— 3— 1— 1— 4— 2— 2— 0— 3 2 1 0 4— 3— 2— 1— 0— 4— 3— 2— 1— 0— 4— 3
|3 4 | 0 3 1 2 2 1 |4 0 |4 2 | 0 3 1 4 2 0 |3 1 |0 4 | 2 1 4 3 1 0 |3 2 |
3 4 0 0 3 2 1 2 3 2 1 4 4 0 1 2 0 3 3 1 4 4 2 0 0 3 1 1 4 2 4 3 2 1 0 4 3 2 1 0 4 3 2 1 0
|4 0 | 3 2 2 3 1 4 |0 1 |3 1 | 4 2 0 3 1 4 |2 0 |2 1 | 4 3 1 0 3 2 |0 4 |
4 0— 1— 3— 2— 4— 2— 3— 0— 1— 4— 3— 0 1 2 1— 4— 2— 2— 0— 3— 3— 1— 4— 4— 2— 0— 0 3 1 1— 0— 4— 3— 2— 1— 0— 4— 3— 2— 1— 0— 4— 3 2
0 1 | 2 4 3 0 4 3 |2 |2 0 | 3 1 4 2 0 3 |1 4 |4 3 | 1 0 3 2 0 4 2 1 |
1 2 4 1 0 4 3 0 2 3 3 1 4 2 0 3 1 4 2 0 2 1 4 3 1 0 3 2 0 4
2 | 1 4 0 3 |4 | 0 1 2 3 |0 | 2 4 1 3 |
3— 0— 1— 2— 4 0— 1— 2— 3— 4 3— 0— 2— 4— 1

```

```

13/H 117/M 1819/L 4#
4— 56— 88— 120— 47
| 32 114 16 98 | 55
46 65 103 42 10 124 87 1 69 83
| 54 93 31 25 113 27 20 59 | 97 111
68 82 121— 50— 14— 78— 102— 41— 60— 9— 73— 37— 86— 105— 19
| 96 115 | 3 92 35 74 62 26 |119 8 |
90 104 18 17 81 75 49 63 77 51 45 109 108 22 36
|118 7 | 100 64 52 91 34 123 | 11 30 |
107— 21— 40— 89— 53— 117— 66— 85— 24— 48— 112— 76— 5 44 58
15 29 | 67 106 99 13 101 95 33 72 |
43 57 | 125 39 2 116 84 23 61 80
71 | 28 110 12 94 |
79— 6— 38— 70— 122

```

** 'Complete Euler Cubes' of Order 5 for the Self-complimentary Type: List-2 **
 ** Composed by Kanji Setsuda on June 12, 2010 with MacOSX & Xcode 3.1.2 **

```

13/H 117/M 674/L 1# 13/H 215/M 701/L 5#
1— 59— 88— 117— 50 1— 67— 88— 109— 50
|35 111 19 98 |52 |35 123 19 86 |52
49 62 103 45 7 121 90 4 66 83 49 68 115 31 7 105 78 22 66 89
|51 93 34 22 113 30 17 56 100 114 |51 87 42 4 113 46 9 70 100 108
68 85 124— 47— 11— 78— 105— 44— 57— 6— 73— 40— 89— 102— 16 62 85 124— 29— 23— 90— 121— 44— 57— 20— 61— 28— 83— 102— 16
|99 112 | 3 95 32 71 65 29 116 8 |99 118 | 15 81 32 55 53 47 116 14 |
87 101 18 20 84 72 46 63 80 54 42 106 108 25 39 93 101 12 6 92 54 30 63 96 72 34 120 114 25 33
118 10 | 97 61 55 94 31 123 |14 27 |112 10 | 79 73 71 94 45 111 | 8 27 |
110— 24— 37— 86— 53— 120— 69— 82— 21— 48— 115— 79— 2 41 58 110— 24— 43— 98— 65— 106— 69— 82— 5— 36— 103— 97— 2 41 64
12 26 | 70 109 96 13 104 92 33 75 |18 26 | 56 117 80 13 122 84 39 75 |
43 60 122 36 5 119 81 23 64 77 37 60 104 48 21 119 95 11 58 77
74 | 28 107 15 91 |74 | 40 107 3 91 |
76— 9— 38— 67— 125 76— 17— 38— 59— 125

13/H 480/M 701/L 9# 13/H 609/M 674/L 13#
1— 57— 88— 119— 50 1— 69— 88— 107— 50
|45 123 9 86 |52 |45 111 9 98 |52
49 58 115 41 17 105 78 22 56 89 49 62 103 35 17 121 90 4 56 93
|51 87 32 4 113 46 19 60 100 118 |51 83 44 22 113 30 7 66 100 114
62 95 124— 29— 23— 90— 121— 34— 67— 10— 61— 28— 93— 102— 6 58 95 124— 47— 11— 78— 105— 34— 67— 16— 73— 40— 89— 102— 6
|99 108 | 15 91 42 55 53 47 106 14 |99 112 | 3 85 42 71 65 29 106 18 |
83 101 12 16 82 54 30 63 96 72 44 110 114 25 43 87 101 8 10 94 72 46 63 80 54 32 116 118 25 39
112 20 | 79 73 71 84 35 111 |18 27 |108 20 | 97 61 55 84 41 123 |14 27 |
120— 24— 33— 98— 65— 116— 59— 92— 5— 36— 103— 97— 2 31 64 120— 24— 37— 86— 53— 110— 59— 92— 21— 48— 115— 79— 2 31 68
8 26 | 66 107 80 13 122 94 39 75 |12 26 | 60 119 96 13 104 82 43 75 |
37 70 104 48 21 109 85 11 68 77 33 70 122 36 5 109 91 23 64 77
74 | 40 117 3 81 |74 | 28 117 15 81 |
76— 7— 38— 69— 125 76— 19— 38— 57— 125

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13/H 859/M 674/L

17#

6 54 88 122 45
|30 111 24 93 |57
44 62 108 50 2 116 90 9 71 78
|56 98 29 17 113 35 22 51 |95 114
73 80 119 42 11 83 110 49 52 1 68 40 89 107 21
|94 112 | 8 100 27 66 65 34 121 3 |
87 106 23 25 79 67 41 63 85 59 47 101 103 20 39
123 5 | 92 61 60 99 26 118 |14 32 |
105 19 37 86 58 125 74 77 16 43 115 84 7 46 53
12 31 | 75 104 91 13 109 97 28 70 |
48 55 117 36 10 124 76 18 64 82
69 | 33 102 15 96 |
81 4 38 72 120

13/H 957/M 701/L

21#

6 72 88 104 45
|30 118 24 86 |57
44 73 115 26 2 110 83 17 71 89
|56 87 47 9 113 41 4 75 |95 103
62 80 119 34 18 90 116 49 52 25 61 33 78 107 21
|94 123 | 15 76 27 60 58 42 121 14 |
98 106 12 1 97 59 35 63 91 67 29 125 114 20 28
112 5 | 84 68 66 99 50 111 | 3 32 |
105 19 48 93 65 101 74 77 10 36 108 92 7 46 64
23 31 | 51 122 85 13 117 79 39 70 |
37 55 109 43 16 124 100 11 53 82
69 | 40 102 8 96 |
81 22 38 54 120

13/H1603/M 674/L

25#

16 54 88 122 35
|30 111 24 83 |67
34 62 118 50 2 106 90 19 71 78
|66 98 29 7 113 45 22 51 |85 114
73 80 109 32 11 93 120 49 52 1 58 40 89 117 21
|84 112 | 18 100 27 56 65 44 121 3 |
87 116 23 25 79 57 31 63 95 69 47 101 103 10 39
123 5 | 82 61 70 99 26 108 |14 42 |
105 9 37 86 68 125 74 77 6 33 115 94 17 46 53
12 41 | 75 104 81 13 119 97 28 60 |
48 55 107 36 20 124 76 8 64 92
59 | 43 102 15 96 |
91 4 38 72 110

13/H1699/M 701/L

29#

16 72 88 104 35
|30 108 24 86 |67
34 73 115 26 2 120 93 7 71 89
|66 87 47 19 113 31 4 75 |85 103
62 80 109 44 8 90 106 49 52 25 61 43 78 117 21
|84 123 | 15 76 27 70 68 32 121 14 |
98 116 12 1 97 69 45 63 81 57 29 125 114 10 28
112 5 | 94 58 56 99 50 111 | 3 42 |
105 9 48 83 65 101 74 77 20 36 118 82 17 46 64
23 41 | 51 122 95 13 107 79 39 60 |
37 55 119 33 6 124 100 11 53 92
59 | 40 102 18 96 |
91 22 38 54 110

16/H 72/M 674/L

33#

1 109 88 67 50
|35 11 119 98 |52
39 62 23 45 107 21 80 104 66 83
|71 93 34 72 3 30 117 6 |90 114
68 85 124 27 51 78 25 44 57 106 13 40 89 122 16
|79 102 | 73 95 32 61 15 49 116 8 |
97 121 18 70 84 112 26 63 100 14 42 56 108 5 29
118 10 | 77 111 65 94 31 53 |24 47 |
110 4 37 86 113 20 69 82 101 48 75 99 2 41 58
12 36 | 120 9 96 123 54 92 33 55 |
43 60 22 46 105 19 81 103 64 87
74 | 28 7 115 91 |
76 59 38 17 125

16/H 117/M 232/L

37#

1 108 90 67 49
|32 15 119 98 |51
48 65 5 44 107 22 89 101 66 83
|55 93 34 72 13 26 116 9 |97 115
70 84 124 47 62 76 4 41 58 106 23 40 88 105 17
|99 112 | 53 91 31 74 12 30 120 8 |
87 102 16 69 81 123 46 63 80 3 45 57 110 24 39
118 6 | 96 114 52 95 35 73 |14 27 |
109 21 38 86 103 20 68 85 122 50 64 79 2 42 56
11 29 | 117 10 100 113 54 92 33 71 |
43 60 25 37 104 19 82 121 61 78
75 | 28 7 111 94 |
77 59 36 18 125

16/H 118/M 404/L

69#

1 108 90 67 49
|33 25 117 89 |51
48 65 15 42 107 4 79 121 66 83
|55 92 32 54 14 46 116 8 |98 115
70 82 124 27 74 86 24 41 58 106 13 30 88 105 17
|97 114 | 64 91 31 53 3 50 120 7 |
87 104 16 69 81 103 26 63 100 23 45 57 110 22 39
119 6 | 76 123 73 95 35 62 |12 29 |
109 21 38 96 113 20 68 85 102 40 52 99 2 44 56
11 28 | 118 10 80 112 72 94 34 71 |
43 60 5 47 122 19 84 111 61 78
75 | 37 9 101 93 |
77 59 36 18 125

16/H 214/M 404/L

73#

1 118 90 57 49
|33 15 117 99 |51
48 70 5 32 107 24 89 101 66 88
|55 87 42 74 14 26 106 18 |98 110
65 82 124 47 64 76 4 41 58 116 23 40 83 105 17
|97 119 | 54 81 31 73 13 30 120 12 |
92 104 11 59 91 123 46 63 80 3 35 67 115 22 34
114 6 | 96 113 53 95 45 72 | 7 29 |
109 21 43 86 103 10 68 85 122 50 62 79 2 44 61
16 28 | 108 20 100 112 52 84 39 71 |
38 60 25 37 102 19 94 121 56 78
75 | 27 9 111 93 |
77 69 36 8 125

16/H 215/M 404/L

77#

1 118 90 57 49
|33 25 117 89 |51
48 70 15 32 107 4 79 121 66 88
|55 87 42 54 14 46 106 18 |98 110
65 82 124 27 74 86 24 41 58 116 13 30 83 105 17
|97 119 | 64 81 31 53 3 50 120 12 |
92 104 11 59 91 103 26 63 100 23 35 67 115 22 34
114 6 | 76 123 73 95 45 62 | 7 29 |
109 21 43 96 113 10 68 85 102 40 52 99 2 44 61
16 28 | 108 20 80 112 72 84 39 71 |
38 60 5 47 122 19 94 111 56 78
75 | 37 9 101 93 |
77 69 36 8 125

16/H 232/M 117/L

85#

1 112 98 59 45
|32 23 119 90 |51
40 73 21 44 107 10 93 101 54 87
|71 89 42 60 13 26 104 17 |85 123
74 92 120 35 58 76 16 29 62 102 15 48 88 121 9
|95 108 | 61 79 27 70 8 46 124 12 |
83 106 4 69 77 115 30 63 96 11 49 57 122 20 43
114 2 | 80 118 56 99 47 65 |18 31 |
117 5 38 78 111 24 64 97 110 50 68 91 6 34 52
3 41 | 109 22 100 113 66 84 37 55 |
39 72 25 33 116 19 82 105 53 86
75 | 36 7 103 94 |
81 67 28 14 125

16/H 234/M 117/L 93#

1 122 88 59 45
 |32 3 119 90 71
 50 73 11 44 107 10 93 101 54 87
 |51 89 42 60 13 46 124 17 |85 103
 64 92 120 35 58 86 16 29 52 102 15 48 98 121 9
 |95 108 | 61 99 47 70 8 26 104 12 |
 83 106 14 69 77 105 30 63 96 21 49 57 112 20 43
 114 22 | 100 118 56 79 27 65 |18 31 |
 117 5 28 78 111 24 74 97 110 40 68 91 6 34 62
 23 41 | 109 2 80 113 66 84 37 75 |
 39 72 25 33 116 19 82 115 53 76
 55 | 36 7 123 94 |
 81 67 38 4 125

16/H 270/M1240/L 109#

2 114 83 70 46
 |39 8 120 96 52
 40 58 22 45 116 21 78 102 59 89
 |72 95 41 71 3 27 109 14 |90 108
 69 91 121 26 53 77 25 34 64 107 15 33 88 122 20
 |76 103 | 75 84 32 65 13 47 119 16 |
 98 125 9 60 82 115 29 63 97 11 44 66 117 1 28
 110 7 | 79 113 61 94 42 51 |23 50 |
 106 4 38 93 111 19 62 92 101 49 73 100 5 35 57
 18 36 | 112 17 99 123 55 85 31 54 |
 37 67 24 48 105 10 81 104 68 86
 74 | 30 6 118 87 |
 80 56 43 12 124

22/H 54/M 221/L 545#

1 57 38 120 99
 |32 18 80 74 111
 37 65 5 101 96 24 59 82 118 43
 |78 93 34 49 112 107 16 11 |75 55
 58 21 124 116 62 90 4 45 66 97 103 28 40 84 7
 |20 109 | 72 91 31 53 113 50 |79 12 |
 100 104 70 39 85 123 117 63 9 3 41 87 56 22 26
 114 47 | 76 13 73 95 35 54 |17 106 |
 119 42 86 98 23 29 60 81 122 36 64 10 2 105 68
 71 51 | 115 110 19 14 77 92 33 48 |
 83 8 44 67 102 30 25 121 61 89
 15 | 52 46 108 94 |
 27 6 88 69 125

24/H 54/M 298/L 1057#

1 107 38 69 100
 |33 66 80 22 114
 37 62 54 4 96 121 10 85 118 43
 |76 95 32 48 13 9 119 111 |75 52
 58 24 124 16 115 90 105 42 67 97 53 28 39 81 6
 |20 108 | 123 91 34 55 61 47 |77 14 |
 99 101 70 40 82 23 17 63 109 103 44 86 56 25 27
 112 49 | 79 65 71 92 35 3 |18 106 |
 120 45 87 98 73 29 59 84 21 36 11 110 2 102 68
 74 51 | 15 7 117 113 78 94 31 50 |
 83 8 41 116 5 30 122 72 64 89
 12 | 104 46 60 93 |
 26 57 88 19 125

26/H 223/M 388/L 1089#

1 59 48 112 95
 |33 111 80 19 72
 34 74 12 2 76 116 70 85 123 38
 |86 90 44 43 58 7 122 71 | 5 104
 73 102 117 101 60 100 20 49 64 84 13 28 37 91 6
 |105 18 | 8 96 47 115 61 29 |94 57 |
 87 16 75 45 99 103 109 63 17 23 27 81 51 110 39
 |69 32 | 97 65 11 79 30 118 108 21 |
 120 35 89 98 113 42 62 77 106 26 66 25 9 24 53
 22 121 | 55 4 119 68 83 82 36 40 |
 88 3 41 56 10 50 124 114 52 92
 54 | 107 46 15 93 |
 31 14 78 67 125

28/H 54/M 223/L 1149#

1 57 40 118 99
 |32 18 76 74 115
 37 65 103 101 96 24 9 82 70 43
 |78 93 34 49 62 107 120 15 |21 51
 60 121 124 16 12 90 104 45 68 97 53 26 38 84 7
 |116 59 | 72 95 35 3 13 46 |79 112 |
 98 4 20 39 85 71 17 63 109 55 41 87 106 122 28
 |14 47 | 80 113 123 91 31 54 |67 10 |
 119 42 88 100 73 29 58 81 22 36 114 110 2 5 66
 75 105 | 111 6 19 64 77 92 33 48 |
 83 56 44 117 102 30 25 23 61 89
 11 | 52 50 108 94 |
 27 8 86 69 125

42/H 117/M 404/L 1185#

1 108 90 67 49
 |33 15 117 99 51
 48 65 55 42 7 24 89 101 116 83
 |105 92 32 74 64 26 16 8 |98 115
 70 82 124 47 114 76 104 41 58 6 73 40 88 5 17
 |97 14 | 54 91 31 123 113 30 |20 57 |
 87 4 66 19 81 23 46 63 80 103 45 107 60 122 39
 |69 106 | 96 13 3 95 35 72 112 29 |
 109 121 38 86 53 120 68 85 22 50 12 79 2 44 56
 11 28 | 118 110 100 62 52 94 34 21 |
 43 10 25 37 102 119 84 71 61 78
 75 | 27 9 111 93 |
 77 59 36 18 125

45/H 234/M 309/L 1241#

1 123 89 57 45
 |33 55 17 86 124
 48 72 14 41 107 110 95 4 51 88
 |105 90 42 9 61 46 24 118 |83 52
 64 91 119 32 60 87 20 29 53 101 113 50 98 22 6
 |92 59 | 111 96 49 18 58 27 | 5 115 |
 82 10 12 70 79 103 26 63 100 23 47 56 114 116 44
 |11 121 | 99 68 108 77 30 15 |67 34 |
 120 104 28 76 13 25 73 97 106 39 66 94 7 35 62
 74 43 | 8 102 80 65 117 84 36 21 |
 38 75 122 31 16 19 85 112 54 78
 2 | 40 109 71 93 |
 81 69 37 3 125

58/H 223/M 298/L 1281#

1 82 73 114 45
 |33 11 80 67 124
 57 72 14 104 26 16 95 35 123 88
 |86 90 42 43 108 109 24 21 |55 52
 98 4 119 101 60 75 20 97 37 32 113 78 64 41 6
 | 5 118 | 58 96 49 65 111 27 |92 9 |
 39 116 50 70 47 103 107 63 19 23 79 56 76 10 87
 117 34 | 99 15 61 77 30 68 | 8 121 |
 120 85 62 48 13 94 89 29 106 51 66 25 7 122 28
 74 71 | 105 102 17 18 83 84 36 40 |
 38 3 91 31 110 100 22 112 54 69
 2 | 59 46 115 93 |
 81 12 53 44 125

63/H 106/M 221/L 1377#

1 87 68 110 49
 |32 118 100 14 51
 67 65 5 21 46 104 89 42 108 83
 |98 93 34 29 52 7 116 71 |15 115
 88 101 124 106 62 60 4 85 36 47 23 78 70 44 17
 | 20 9 | 12 91 31 113 53 30 |99 72 |
 50 24 40 69 45 123 107 63 19 3 81 57 86 102 76
 |54 27 | 96 73 13 95 35 114 117 6 |
 109 82 56 48 103 79 90 41 122 66 64 20 2 25 38
 11 111 | 55 10 119 74 97 92 33 28 |
 43 18 84 37 22 80 105 121 61 59
 75 | 112 26 8 94 |
 77 16 58 39 125

100/H 234/M 309/L

1-----123-----64-----32-----95
|33 5 117 86 |74
98 72 14 91 107 10 70 104 26 38
|55 90 42 59 11 46 124 18 |83 102
39 41 119-82-60-37-20-79-78-101-13-75-73-122- 6
|92 109 | 61 96 49 68 8 27 105 15 |
57 110 12 45 29 103 76 63 50 23 97 81 114 16 69
111 21 | 99 118 58 77 30 65 |17 34 |
120- 4-53-51-113-25-48-47-106-89-66-44- 7 85 87
24 43 | 108 2 80 115 67 84 36 71 |
88 100 22 56 116 19 35 112 54 28
52 | 40 9 121 93 |
31-----94-----62-----3-----125

1793#

116/H 132/M 232/L

1-----118-----60-----37-----99
|32 75 19 78 111
98 65 5 84 117 102 59 21 36 43
|115 93 34 12 73 46 16 109 |77 55
40 44 124-97-62-26- 4-81-88-116-103-70-58-25- 7
|79 52 | 113 91 31 14 72 50 |20 108 |
57 22 6 39 41 123 96 63 30 3 85 87 120 104 69
|18 106 | 76 54 112 95 35 13 |74 47 |
119-101-68-56-23-10-38-45-122-100-64-29- 2 82 86
71 49 | 17 110 80 53 114 92 33 11 |
83 90 105 67 24 9 42 121 61 28
15 | 48 107 51 94 |
27-----89-----66-----8-----125

1889#

136/H 22/M 388/L

1-----39-----58-----122-----95
|33 101 20 89 |72
34 64 52 22 116 76 90 45 23 108
|66 120 84 83 48 47 2 51 115 14
113 102 97-21-40-70-80- 9-114-44-73- 8-57-91-26
| 5 98 | 38 16 107 65 71 109 |94 27 |
67 96 15 85 119 123 49 63 77 3 7 41 111 30 59
|99 32 | 17 55 61 19 110 88 |28 121 |
100-35-69-118-53-82-12-117-46-56-86-105-29 24 13
112 11 | 75 124 79 78 43 42 6 60 |
18 103 81 36 50 10 104 74 62 92
54 | 37 106 25 93 |
31-----4-----68-----87-----125

2305#

138/H 144/M 244/L

1-----44-----113-----57-----100
|33 72 5 91 114
37 62 60 110 21 96 79 29 118 18
|101 124 94 78 38 42 7 15 |75 56
58 20 95-122-36-11-80-109-59-41-73-123-14-77-27
|24 83 | 28 22 117 55 65 116 |81 39 |
120 76 74 86 19 103 34 63 92 23 107 40 52 50 6
|87 45 | 10 61 71 9 104 98 |43 102 |
99-49-112- 3-53-85-67-17-46-115-90- 4-31 106 68
70 51 | 111 119 84 88 48 32 2 25 |
108 8 97 47 30 105 16 66 64 89
12 | 35 121 54 93 |
26-----69-----13-----82-----125

2337#

139/H 54/M 167/L

1-----60-----112-----43-----99
|32 93 4 71 115
37 64 78 101 24 50 56 82 120 18
|103 118 34 49 86 81 20 15 |72 52
59 21 100-116-65-12-30-117-68-97-28-104-13-84-31
|16 85 | 75 17 107 53 38 124 |79 36 |
123 80 69 39 7 121 91 63 35 5 119 87 57 46 3
|90 47 | 2 88 73 19 109 51 |41 110 |
95-42-113-22-98-29-58- 9-96-114-61-10-26 105 67
74 54 | 111 106 45 40 77 92 8 23 |
108 6 44 70 76 102 25 48 62 89
11 | 55 122 33 94 |
27-----83-----14-----66-----125

2385#

143/H 22/M 223/L

1-----87-----60-----48-----119
|32 3 116 89 |75
57 65 28 46 16 4 114 117 100 83
|18 118 84 59 72 97 30 5 111 36
40 76 99-21-112-120-104-35-38-92-73-56-58-19- 2
|101 49 | 62 20 85 113 23 81 |44 52 |
93 24 115 109 95 71 47 63 79 55 31 17 11 102 33
|74 82 | 45 103 13 41 106 64 |77 25 |
124-107-68-70-53-34-88-91-22- 6-14-105-27 50 86
90 15 | 121 96 29 54 67 42 8 108 |
43 26 9 12 122 110 80 98 61 69
51 | 37 10 123 94 |
7-----78-----66-----39-----125

3025#

144/H 22/M 223/L

1-----87-----60-----48-----119
|32 103 16 89 |75
57 65 28 46 116 104 14 17 100 83
|18 118 84 9 72 97 30 55 111 36
40 76 99-121-62-70- 4-35-38-92-123-106-58-19- 2
|101 49 | 12 120 85 13 73 81 |44 52 |
93 24 115 59 95 21 47 63 79 105 31 67 11 102 33
|74 82 | 45 53 113 41 6 114 |77 25 |
124-107-68-20- 3-34-88-91-122-56-64- 5-27 50 86
90 15 | 71 96 29 54 117 42 8 108 |
43 26 109 112 22 10 80 98 61 69
51 | 37 110 23 94 |
7-----78-----66-----39-----125

3121#

166/H 54/M 298/L

1-----57-----38-----119-----100
|33 16 80 72 114
37 87 4 104 96 21 60 35 118 68
|51 70 82 98 113 109 19 11 |50 27
83 24 124-116-65-40- 5-42-67-47-103-78-64-81- 6
|20 108 | 73 41 34 55 111 97 |77 14 |
74 101 95 90 32 123 117 63 9 3 94 36 31 25 52
|112 49 | 29 15 71 92 85 53 |18 106 |
120-45-62-48-23-79-59-84-121-86-61-10- 2 102 43
99 76 | 115 107 17 13 28 44 56 75 |
58 8 91 66 105 30 22 122 39 89
12 | 54 46 110 93 |
26-----7-----88-----69-----125

3537#

167/H 54/M 139/L

1-----108-----40-----67-----99
|32 69 76 23 115
37 88 54 5 96 122 8 34 120 66
|55 70 82 97 14 9 116 111 |48 28
83 21 124-20-113-36-102-45-68-49-52-80-61-84- 7
|16 109 | 123 41 35 53 62 100 |79 12 |
75 104 93 87 31 25 19 63 107 101 95 39 33 22 51
114 47 | 26 64 73 91 85 3 |17 110 |
119-42-65-46-74-77-58-81-24-90-13-106- 2 105 43
98 78 | 15 10 117 112 29 44 56 71 |
60 6 92 118 4 30 121 72 38 89
11 | 103 50 57 94 |
27-----59-----86-----18-----125

3569#

202/H 117/M 404/L

1-----108-----65-----92-----49
|33 15 117 74 |76
98 90 5 42 107 24 39 101 66 58
|55 67 82 99 14 26 116 8 |48 115
70 32 124-47-64-51- 4-91-83-106-23-40-88-105-17
|97 114 | 54 41 31 73 13 80 120 7 |
37 104 16 69 81 123 96 63 30 3 45 57 110 22 89
119 6 | 46 113 53 95 85 72 |12 29 |
109-21-38-86-103-20-43-35-122-75-62-79- 2 94 56
11 78 | 118 10 100 112 27 44 59 71 |
68 60 25 87 102 19 84 121 36 28
50 | 52 9 111 93 |
77-----34-----61-----18-----125

3793#

212/H 72/M 691/L 3889#
 1-----109-----62-----93-----50
 |35-----11-----119-----72-----78
 87 88 75 45 9 21 26 104 118 57
 123 67 82 98 55 30 19 6 |36 114
 68 31 124-27-103-52-121-92-83-10-65-40-89-24-16
 |79 4 | 73 41 32 113 111 97 |20 60 |
 49 25 70 18 84 14 80 63 46 112 42 108 56 101 77
 |66 106 | 29 15 13 94 85 53 122 47 |
 110-102-37-86-61-116-43-34-5-74-23-99-2 95 58
 12 90 | 120 107 96 71 28 44 59 3 |
 69 8 22 100 105 117 81 51 38 39
 48 | 54 7 115 91 |
 76-----33-----64-----17-----125

221/H 22/M 54/L 4305#
 1-----37-----58-----124-----95
 |32-----54-----116-----90-----23
 33 113 101 21 20 80 87 42 74 59
 |66 69 82 85 48 47 4 3 115 111
 62 5 100-24-38-118-76-109-14-45-71-56-108-92-27
 |104 97 | 40 19 7 61 73 110 |91 28 |
 120 96 114 83 117 75 49 63 77 51 9 43 12 30 6
 |98 35 | 16 53 65 119 107 86 |29 22 |
 99-34-18-70-55-81-112-17-50-8-88-102-26 121 64
 15 11 | 123 122 79 78 41 44 57 60 |
 67 52 84 39 46 106 105 25 13 93
 103 | 36 10 72 94 |
 31-----2-----68-----89-----125

223/H 22/M 54/L 4353#
 1-----37-----108-----74-----95
 |32-----54-----16-----90-----123
 33 113 51 21 20 80 87 42 124 59
 |66 69 82 85 48 47 104 103 |15 11
 112 5 100-24-38-118-76-109-64-45-71-6-58-92-27
 | 4 97 | 40 119 107 61 73 10 |91 28 |
 70 96 114 83 117 25 49 63 77 101 9 43 12 30 56
 |98 35 | 116 53 65 19 7 86 |29 122 |
 99-34-68-120-55-81-62-17-50-8-88-102-26 121 14
 115 111 | 23 22 79 78 41 44 57 60 |
 67 2 84 39 46 106 105 75 13 93
 3 | 36 110 72 94 |
 31-----52-----18-----89-----125

224/H 54/M 298/L 4865#
 1-----57-----113-----44-----100
 |33-----91-----5-----72-----114
 37 112 79 4 21 46 60 85 118 68
 |51 70 32 48 88 84 119 111 |25 2
 108 24 99-16-65-115-30-117-67-97-28-3-64-81-31
 |20 83 | 73 116 109 55 36 22 |77 39 |
 74 76 120 40 107 23 92 63 34 108 19 86 6 50 52
 |87 49 | 104 90 71 17 10 53 |43 106 |
 95 45-62-123-98-29-59-9-96-11-61-110-27 102 18
 124 101 | 15 7 42 38 78 94 56 75 |
 58 8 41 66 80 105 122 47 14 89
 12 | 54 121 35 93 |
 26-----82-----13-----69-----125

232/H 16/M 117/L 4993#
 1-----72-----118-----39-----85
 |32-----103-----99-----70-----11
 60 113 101 84 47 30 93 21 14 67
 |111 69 82 40 53 6 24 77 |45 123
 114 92 100-35-38-16-76-9-62-22-55-108-68-121-29
 |95 48 | 61 19 7 90 28 106 124 52 |
 43 46 4 89 17 75 10 63 116 51 109 37 122 80 83
 |74 2 | 20 98 36 119 107 65 |78 31 |
 97-5-58-18-71-104-64-117-50-110-88-91-26 34 12
 3 81 | 49 102 120 73 86 44 57 15 |
 59 112 105 33 96 79 42 25 13 66
 115 | 56 27 23 94 |
 41-----87-----8-----54-----125

234/H 16/M 117/L 5121#
 1-----122-----68-----39-----85
 |32-----3-----99-----70-----111
 110 113 51 84 47 30 93 21 14 67
 |11 69 82 40 53 106 124 77 |45 23
 64 92 100-35-38-66-76-9-12-22-55-108-118-121-29
 |95 48 | 61 119 107 90 28 6 |24 52 |
 43 46 54 89 17 25 10 63 116 101 109 37 72 80 83
 |74 102 | 120 98 36 19 7 65 |78 31 |
 97-5-8-18-71-104-114-117-50-60-88-91-26 34 62
 103 81 | 49 2 20 73 86 44 57 115 |
 59 112 105 33 96 79 42 75 13 16
 15 | 56 27 123 94 |
 41-----87-----58-----4-----125

265/H 956/M 706/L 5761#
 6-----72-----90-----103-----44
 |55-----111-----24-----42-----83
 70 48 106 79 4 117 37 10 98 61
 |33 87 99 18 112 31 5 74 |66 105
 38 77 119-94-13-35-107-46-53-25-69-86-51-110-22
 |92 124 | 8 30 26 68 64 81 125 12 |
 97 109 11 3 50 67 41 63 85 59 76 123 115 17 29
 114 1 | 45 62 58 100 96 118 | 2 34 |
 104-16-75-40-57-101-73-80-19-91-113-32-7 49 88
 21 60 | 52 121 95 14 108 27 39 93 |
 65 28 116 89 9 122 47 20 78 56
 43 | 84 102 15 71 |
 82-----23-----36-----54-----120

266/H 117/M 674/L 5849#
 1-----109-----88-----67-----50
 |60-----11-----119-----48-----77
 74 37 3 95 107 21 40 104 91 58
 |26 93 84 72 13 30 117 6 |75 114
 43 85 124-97-61-28-5-44-57-106-23-90-64-102-16
 |99 112 | 53 45 32 71 15 79 116 8 |
 87 101 18 70 34 122 46 63 80 4 92 56 108 25 39
 118 10 | 47 111 55 94 81 73 |14 27 |
 110-24-62-36-103-20-69-82-121-98-65-29-2 41 83
 12 51 | 120 9 96 113 54 42 33 100 |
 68 35 22 86 105 19 31 123 89 52
 49 | 78 7 115 66 |
 76-----59-----38-----17-----125

270/H 16/M1240/L 5881#
 2-----74-----43-----90-----106
 |59-----28-----100-----116-----12
 60 38 102 85 96 101 18 22 39 69
 |112 95 81 111 3 7 49 54 |70 48
 89 91 121-6-13-17-105-34-64-47-55-33-68-122-80
 |16 23 | 115 44 32 65 53 107 |99 76 |
 118 125 29 40 42 75 9 63 117 51 84 86 97 1 8
 |50 27 | 19 73 61 94 82 11 103 110 |
 46-4-58-93-71-79-62-92-21-109-113-120-5 35 37
 78 56 | 72 77 119 123 15 45 31 14 |
 57 87 104 108 25 30 41 24 88 66
 114 | 10 26 98 67 |
 20-----36-----83-----52-----124

309/H 16/M 117/L 5909#
 1-----72-----93-----39-----110
 |57-----103-----49-----20-----86
 60 38 76 9 47 105 118 96 14 67
 |111 119 32 90 3 6 99 52 |70 48
 89 17 100-35-113-41-101-84-62-22-55-108-68-46-4
 |45 98 | 11 19 82 65 53 31 124 102 |
 43 121 29 114 92 75 10 63 116 51 34 12 97 5 83
 |24 2 | 95 73 61 44 107 115 |28 81 |
 122-80-58-18-71-104-64-42-25-85-13-91-26 109 37
 78 56 | 74 27 120 123 36 94 7 15 |
 59 112 30 8 21 79 117 50 88 66
 40 | 106 77 23 69 |
 16-----87-----33-----54-----125

314/H 16/M 117/L 6017#
 1-----97-----68-----39-----110
 |57-----103-----99-----20-----36
 85 38 51 9 47 105 118 96 14 67
 111 119 82 40 3 6 49 52 |70 98
 64 17 100-35-113-66-101-84-37-22-55-108-93-46-4
 |95 48 | 11 19 32 65 53 81 124 102 |
 43 121 54 114 92 50 10 63 116 76 34 12 72 5 83
 |24 2 | 45 73 61 94 107 115 |78 31 |
 122-80-33-18-71-104-89-42-25-60-13-91-26 109 62
 28 56 | 74 77 120 123 86 44 7 15 |
 59 112 30 8 21 79 117 75 88 41
 90 | 106 27 23 69 |
 16-----87-----58-----29-----125

338/H 956/M 706/L 6049#
 6-----72-----40-----103-----94
 |55-----111-----24-----92-----33
 70 98 106 29 4 117 87 10 48 61
 |83 37 49 18 112 81 5 74 |66 105
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 |42 124 | 8 80 76 68 64 31 125 12 |
 47 109 11 3 100 67 91 63 35 59 26 123 115 17 79
 |114 1 | 95 62 58 50 46 118 | 2 84 |
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 21 60 | 52 121 45 14 108 77 89 43 |
 65 78 116 39 9 122 97 20 28 56
 93 | 34 102 15 71 |
 32-----23-----86-----54-----120

339/H 117/M 674/L 6137#
 1-----109-----38-----67-----100
 |60-----11-----119-----98-----27
 74 87 3 45 107 21 90 104 41 58
 |76 43 34 72 13 80 117 6 |75 114
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 |49 112 | 53 95 82 71 15 29 116 8 |
 37 101 18 70 84 122 96 63 30 4 42 56 108 25 89
 |118 10 | 97 111 55 44 31 73 |14 77 |
 110-24-62-86-103-20-69-32-121-48-65-79-2 91 33
 12 51 | 120 9 46 113 54 92 83 50 |
 68 85 22 36 105 19 81 123 39 52
 99 | 28 7 115 66 |
 26-----59-----88-----17-----125

342/H 16/M1240/L 6169#
 2-----74-----93-----40-----106
 |59-----78-----50-----116-----12
 60 88 102 35 46 101 18 22 89 69
 |112 45 31 111 3 7 99 54 |70 98
 39 41 121-6-13-17-105-84-64-97-55-83-68-122-30
 |16 23 | 115 94 82 65 53 107 |49 26 |
 118 125 79 90 92 75 9 63 117 51 34 36 47 1 8
 |100 77 | 19 73 61 44 32 11 103 110 |
 96-4-58-43-71-29-62-42-21-109-113-120-5 85 87
 28 56 | 72 27 119 123 15 95 81 14 |
 57 37 104 108 25 80 91 24 38 66
 114 | 10 76 48 67 |
 20-----86-----33-----52-----124

381/H 16/M 117/L 6197#
 1-----72-----43-----89-----110
 |57-----103-----99-----20-----36
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 111 119 82 40 3 6 49 52 |70 98
 39 17 50-85-113-91-101-34-62-22-55-108-68-96-4
 |95 48 | 11 19 32 65 53 81 124 102 |
 93 121 79 114 42 75 10 63 116 51 84 12 47 5 33
 |24 2 | 45 73 61 94 107 115 |78 31 |
 122-30-58-18-71-104-64-92-25-35-13-41-76 109 87
 28 56 | 74 77 120 123 86 44 7 15 |
 59 112 80 8 21 29 117 100 38 66
 90 | 106 27 23 69 |
 16-----37-----83-----54-----125

385/H 22/M 54/L 6305#
 1-----87-----33-----74-----120
 |57-----4-----116-----40-----98
 83 88 51 46 20 5 112 117 49 59
 |16 119 32 60 73 97 79 3 115 36
 37 30 50-24-113-118-101-84-64-95-71-81-58-17-2
 |104 72 | 65 19 82 111 23 35 |41 78 |
 70 21 114 108 92 100 99 63 27 26 34 18 12 105 56
 |48 85 | 91 103 15 44 107 61 |54 22 |
 124-109-68-45-55-31-62-42-25-8-13-102-76 96 89
 90 11 | 123 47 29 53 66 94 7 110 |
 67 77 9 14 121 106 80 75 38 43
 28 | 86 10 122 69 |
 6-----52-----93-----39-----125

388/H 22/M 54/L 6337#
 1-----87-----58-----49-----120
 |57-----4-----116-----90-----48
 83 88 26 46 20 5 112 117 74 59
 |16 119 82 60 73 47 29 3 115 86
 62 30 50-24-113-118-101-84-89-95-71-56-33-17-2
 |104 72 | 65 19 32 111 23 85 |91 28 |
 45 21 114 108 92 75 99 63 27 51 34 18 12 105 81
 |98 35 | 41 103 15 94 107 61 |54 22 |
 124-109-93-70-55-31-37-42-25-8-13-102-76 96 64
 40 11 | 123 97 79 53 66 44 7 110 |
 67 52 9 14 121 106 80 100 38 43
 78 | 36 10 122 69 |
 6-----77-----68-----39-----125

389/H 22/M 223/L 6849#
 1-----87-----60-----48-----119
 |57-----103-----16-----89-----50
 82 90 28 46 116 104 14 17 75 58
 |18 118 84 9 72 47 30 55 111 86
 65 26 49-121-62-70-4-85-88-92-123-106-33-19-2
 |101 74 | 12 120 35 13 73 81 |94 27 |
 43 24 115 59 95 21 97 63 29 105 31 67 11 102 83
 |99 32 | 45 53 113 91 6 114 |52 25 |
 124-107-93-20-3-34-38-41-122-56-64-5-77 100 61
 40 15 | 71 96 79 54 117 42 8 108 |
 68 51 109 112 22 10 80 98 36 44
 76 | 37 110 23 69 |
 7-----78-----66-----39-----125

391/H 223/M 534/L 6885#
 1-----84-----73-----37-----120
 |59-----12-----101-----95-----48
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 111 112 94 70 8 34 47 23 |55 76
 74 30 45-102-58-123-16-97-87-85-11-51-38-119-9
 | 2 19 | 60 122 49 61 113 80 |91 33 |
 40 116 72 18 99 5 82 63 44 121 27 108 54 10 86
 |93 35 | 46 13 65 77 4 66 107 124 |
 117-7-88-75-115-41-39-29-110-3-68-24-81 96 52
 50 71 | 103 79 92 118 56 32 14 15 |
 64 104 17 57 106 21 100 90 28 43
 78 | 31 25 114 67 |
 6-----89-----53-----42-----125

404/H 16/M 117/L 6945#
 1-----72-----118-----39-----85
 |57-----103-----49-----95-----11
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 111 44 32 90 78 6 24 52 |70 123
 114 42 100-35-88-16-76-9-62-22-55-108-68-121-29
 |45 98 | 86 19 7 65 53 106 124 27 |
 43 96 4 89 17 75 10 63 116 51 109 37 122 30 83
 |99 2 | 20 73 61 119 107 40 |28 81 |
 97-5-58-18-71-104-64-117-50-110-38-91-26 84 12
 3 56 | 74 102 120 48 36 94 82 15 |
 59 112 105 33 46 79 92 25 13 66
 115 | 31 77 23 69 |
 41-----87-----8-----54-----125

<p>641/H 144/M 244/L</p> <pre> 1-----94-----113-----57-----50 83-----72-----5-----41-----114 87 62 60 110 21 46 29 79 118 18 101 124 44 28 88 92 7 15 75 56 58 20 45-122-86-11-30-109-59-91-73-123-14-27-77 24 33 78 22 117 55 65 116 31 89 120 26 74 36 19 103 84 63 42 23 107 90 52 100 6 37 95 10 61 71 9 104 48 93 102 49-99-112-3-53-35-67-17-96-115-40-4-81 106 68 70 51 111 119 34 38 98 82 2 25 108 8 47 97 80 105 16 66 64 39 12 85 121 54 43 76-----69-----13-----32-----125 </pre>	<p>10017#</p> <pre> 1-----87-----58-----124-----45 82-----54-----116-----40----- 23 83 113 101 21 20 30 37 92 74 59 66 69 32 35 98 97 4 3 115 111 62 5 50-24-88-118-26-109-14-95-71-56-108-42-77 104 47 90 19 7 61 73 110 41 78 120 46 114 33 117 75 99 63 27 51 9 93 12 80 6 48 85 16 53 65 119 107 36 79 22 49-84-18-70-55-31-112-17-100-8-38-102-76 121 64 15 11 123 122 29 28 91 94 57 60 67 52 34 89 96 106 105 25 13 43 103 86 10 72 44 81-----2-----68-----39-----125 </pre>	<p>651/H 22/M 54/L</p> <pre> 1-----87-----58-----124-----45 82-----54-----116-----40----- 23 83 113 101 21 20 30 37 92 74 59 66 69 32 35 98 97 4 3 115 111 62 5 50-24-88-118-26-109-14-95-71-56-108-42-77 104 47 90 19 7 61 73 110 41 78 120 46 114 33 117 75 99 63 27 51 9 93 12 80 6 48 85 16 53 65 119 107 36 79 22 49-84-18-70-55-31-112-17-100-8-38-102-76 121 64 15 11 123 122 29 28 91 94 57 60 67 52 34 89 96 106 105 25 13 43 103 86 10 72 44 81-----2-----68-----39-----125 </pre>	<p>10065#</p> <pre> 1-----122-----68-----89-----35 82-----3-----49-----70-----111 110 113 51 34 97 80 43 21 14 67 11 69 32 90 53 106 124 27 95 23 64 42 50-85-88-66-26-9-12-22-55-108-118-121-79 45 98 61 119 107 40 78 6 24 52 93 96 54 39 17 25 10 63 116 101 109 87 72 30 33 74 102 120 48 86 19 7 65 28 81 47-5-8-18-71-104-114-117-100-60-38-41-76 84 62 103 31 99 2 20 73 36 94 57 115 59 112 105 83 46 29 92 75 13 16 15 56 77 123 44 91-----37-----58-----4-----125 </pre>
<p>653/H 22/M 54/L</p> <pre> 1-----87-----108-----74-----45 82-----54-----16-----40-----123 83 113 51 21 20 30 37 92 124 59 66 69 32 35 98 97 104 103 15 11 112 5 50-24-88-118-26-109-64-95-71-6-58-42-77 4 47 90 119 107 61 73 10 41 78 70 46 114 33 117 25 99 63 27 101 9 93 12 80 56 48 85 116 53 65 19 7 36 79 122 49-84-68-120-55-31-62-17-100-8-38-102-76 121 14 115 111 23 22 29 28 91 94 57 60 67 2 34 89 96 106 105 75 13 43 3 86 110 72 44 81-----52-----18-----39-----125 </pre>	<p>10113#</p> <pre> 1-----122-----68-----89-----35 82-----3-----49-----70-----111 110 113 51 34 97 80 43 21 14 67 11 69 32 90 53 106 124 27 95 23 64 42 50-85-88-66-26-9-12-22-55-108-118-121-79 45 98 61 119 107 40 78 6 24 52 93 96 54 39 17 25 10 63 116 101 109 87 72 30 33 74 102 120 48 86 19 7 65 28 81 47-5-8-18-71-104-114-117-100-60-38-41-76 84 62 103 31 99 2 20 73 36 94 57 115 59 112 105 83 46 29 92 75 13 16 15 56 77 123 44 91-----37-----58-----4-----125 </pre>	<p>659/H 16/M 117/L</p> <pre> 1-----122-----68-----89-----35 82-----3-----49-----70-----111 110 113 51 34 97 80 43 21 14 67 11 69 32 90 53 106 124 27 95 23 64 42 50-85-88-66-26-9-12-22-55-108-118-121-79 45 98 61 119 107 40 78 6 24 52 93 96 54 39 17 25 10 63 116 101 109 87 72 30 33 74 102 120 48 86 19 7 65 28 81 47-5-8-18-71-104-114-117-100-60-38-41-76 84 62 103 31 99 2 20 73 36 94 57 115 59 112 105 83 46 29 92 75 13 16 15 56 77 123 44 91-----37-----58-----4-----125 </pre>	<p>10625#</p> <pre> 1-----122-----68-----89-----35 82-----3-----49-----70-----111 110 113 51 34 97 80 43 21 14 67 11 69 32 90 53 106 124 27 95 23 64 42 50-85-88-66-26-9-12-22-55-108-118-121-79 45 98 61 119 107 40 78 6 24 52 93 96 54 39 17 25 10 63 116 101 109 87 72 30 33 74 102 120 48 86 19 7 65 28 81 47-5-8-18-71-104-114-117-100-60-38-41-76 84 62 103 31 99 2 20 73 36 94 57 115 59 112 105 83 46 29 92 75 13 16 15 56 77 123 44 91-----37-----58-----4-----125 </pre>

** Counts according to the Values of n1: **

1: 1408, 2: 1056, 3: 0, 4: 1056, 5: 704, 6: 880, 7: 704, 8: 0,
9: 704, 10: 528, 11: 0, 12: 0, 13: 0, 14: 0, 15: 0, 16: 880,
17: 704, 18: 0, 19: 704, 20: 528, 21: 352, 22: 352, 23: 0, 24: 352,
25: 352, 26: 0, 27: 0, 28: 0, 29: 0, 30: 0, 31: 0, 32: 0,
33: 0, 34: 0, 35: 0, 36: 0, 37: 0, 38: 0, 39: 0, 40: 0,
41: 0, 42: 0, 43: 0, 44: 0, 45: 0, 46: 0, 47: 0, 48: 0,
49: 0, 50: 0, 51: 0, 52: 0, 53: 0, 54: 0, 55: 0, 56: 0,

[Total Count of Standard Solutions = 11264] OK!

9. What I think about the result:

How happy I am to have counted all the solutions and to report about them!
The list of solution counts above tells us all of them are the multiples of 176:
352=176x2; 528=176x3; 704=176x4; 880=176x5; 1056=176x6; 1408=176x8;
And 176=16x11=2⁴x11; The total count is finally divided as: 11264=2¹⁰x11;
What does it mean by these factors? What structure do they imply about?

How small the total count is! I must confess I once felt at a loss how to accept it.

But it is natural for any self-complimentary magic thing of odd orders to have its small solution count. Take an example of "Complete Euler Squares" of Order 5 for the Self-complimentary Type, and it reminds you of its only 32 standard solutions in all.

There are more solutions of "Non-Euler Type", far more, I guess.

The next job for us is to make 'Complete Euler Cubes' of Order 5 for the Pan-triangular Type. And the last job is to have 'C.E.C.' 5x5x5 for the Simultaneous Type.

(English Version written by Kanji Setsuda on June 28, 2010 with MacOSX and Xcode3)

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