

Chapter 4: Advanced Algebraic Study of Magic Cubes: Kanji Setsuda

Section 4-3 : Study on the Unique Structures of 'Composite & Pan-triagonal' Magic Cubes of Order 4

#1. I want to report about the new results of my additional study.

- (1) I have developed the newest program for getting the Basic Data of our object 'C&P' MC444. It is really the fastest program I could have ever got.
- (2) I have also developed my deeper understanding about the unique structures of our object, especially about the function of 7 groups of 'Complementary Pairs'.

#2. I had to develop the newest Computer Program for the Basic Data.

We usually want to have the Basic Data fast, when we should study our object. The faster the better, whenever we should have got the complete list of solutions and various monitor lists, either for the subjects of our analysis or for the reference data.

But, it has been a terrible task to get the 322560 primitive solutions of our object. It has really taken too long a time to wait until now. I have always felt we need to develop some new faster PC programs to compose the complete list of solutions.

But, what do we have to do? What can we do now?

How about importing all the new results of our recent study into our program?

The necessary information is present before us just as below.

* 2x16 Complementary Pairs on Pan-triagonals of 'C&P' MC444: CS=130; *

$$\begin{aligned}
 n1+n43=n3+n41=n6+n48=n8+n46=n9+n35=n11+n33=n14+n40=n16+n38= \\
 n18+n60=n20+n58=n21+n63=n23+n61=n26+n52=n28+n50=n29+n55=n31+n53=CS143; \\
 n2+n44=n4+n42=n5+n47=n7+n45=n10+n36=n12+n34=n13+n39=n15+n37= \\
 n17+n59=n19+n57=n22+n64=n24+n62=n25+n51=n27+n49=n30+n56=n32+n54=CS244;
 \end{aligned}$$

** Essential Complementary Pairs specified by Natural Numbers 1~64 **

$$\begin{aligned}
 CS=33: & (1, 32), (2, 31), (3, 30), (4, 29), (5, 28), (6, 27), (7, 26), (8, 25), \\
 \{ & (9, 24), (10, 23), (11, 22), (12, 21), (13, 20), (14, 19), (15, 18), (16, 17), \\
 DS=97: & (33, 64), (34, 63), (35, 62), (36, 61), (37, 60), (38, 59), (39, 58), (40, 57), \\
 & (41, 56), (42, 55), (43, 54), (44, 53), (45, 52), (46, 51), (47, 50), (48, 49); \dots OK! \\
 \\
 CS=49: & (1, 48), (2, 47), (3, 46), (4, 45), (5, 44), (6, 43), (7, 42), (8, 41), \\
 \{ & (9, 40), (10, 39), (11, 38), (12, 37), (13, 36), (14, 35), (15, 34), (16, 33), \\
 DS=81: & (17, 64), (18, 63), (19, 62), (20, 61), (21, 60), (22, 59), (23, 58), (24, 57), \\
 & (25, 56), (26, 55), (27, 54), (28, 53), (29, 52), (30, 51), (31, 50), (32, 49); \dots OK! \\
 \\
 CS=57: & (1, 56), (2, 55), (3, 54), (4, 53), (5, 52), (6, 51), (7, 50), (8, 49), \\
 \{ & (17, 40), (18, 39), (19, 38), (20, 37), (21, 36), (22, 35), (23, 34), (24, 33), \\
 DS=73: & (9, 64), (10, 63), (11, 62), (12, 61), (13, 60), (14, 59), (15, 58), (16, 57), \\
 & (25, 48), (26, 47), (27, 46), (28, 45), (29, 44), (30, 43), (31, 42), (32, 41); \dots OK! \\
 \\
 CS=61: & (1, 60), (2, 59), (3, 58), (4, 57), (9, 52), (10, 51), (11, 50), (12, 49), \\
 \{ & (17, 44), (18, 43), (19, 42), (20, 41), (25, 36), (26, 35), (27, 34), (28, 33), \\
 DS=69: & (5, 64), (6, 63), (7, 62), (8, 61), (13, 56), (14, 55), (15, 54), (16, 53), \\
 & (21, 48), (22, 47), (23, 46), (24, 45), (29, 40), (30, 39), (31, 38), (32, 37); \dots OK! \\
 \\
 CS=63: & (1, 62), (2, 61), (5, 58), (6, 57), (9, 54), (10, 53), (13, 50), (14, 49), \\
 \{ & (17, 46), (18, 45), (21, 42), (22, 41), (25, 38), (26, 37), (29, 34), (30, 33), \\
 DS=67: & (3, 64), (4, 63), (7, 60), (8, 59), (11, 56), (12, 55), (15, 52), (16, 51), \\
 & (19, 48), (20, 47), (23, 44), (24, 43), (27, 40), (28, 39), (31, 36), (32, 35); \dots OK! \\
 \\
 CS=64: & (1, 63), (3, 61), (5, 59), (7, 57), (9, 55), (11, 53), (13, 51), (15, 49), \\
 \{ & (17, 47), (19, 45), (21, 43), (23, 41), (25, 39), (27, 37), (29, 35), (31, 33), \\
 DS=66: & (2, 64), (4, 62), (6, 60), (8, 58), (10, 56), (12, 54), (14, 52), (16, 50), \\
 & (18, 48), (20, 46), (22, 44), (24, 42), (26, 40), (28, 38), (30, 36), (32, 34); \dots OK!
 \end{aligned}$$

CS=DS=65: (1,64), (2,63), (3,62), (4,61), (5,60), (6,59), (7,58), (8,57),
 (9,56), (10,55), (11,54), (12,53), (13,52), (14,51), (15,50), (16,49),
 (17,48), (18,47), (19,46), (20,45), (21,44), (22,43), (23,42), (24,41),
 (25,40), (26,39), (27,38), (28,37), (29,36), (30,35), (31,34), (32,33); ... OK!

Let me rearrange the above list into below, exchanging X-axis with Y, to improve the clear demonstration of the units of 7 constant 'followers' to their masters.

**** Re-arranged List of Essential Complementary Pairs led by their Masters ****

7 Groups: (S33,S97)(S49,S81)(S57,S73)(S61,S69)(S63,S67)(S64,S66)(S65=S65)
 (1, X) = {(1,32), (1,48), (1,56), (1,60), (1,62), (1,63), (1,64)};
 (2, X) = {(2,31), (2,47), (2,55), (2,59), (2,61), (2,64), (2,63)};
 (3, X) = {(3,30), (3,46), (3,54), (3,58), (3,64), (3,61), (3,62)};
 (4, X) = {(4,29), (4,45), (4,53), (4,57), (4,63), (4,62), (4,61)};
 (5, X) = {(5,28), (5,44), (5,52), (5,64), (5,58), (5,59), (5,60)};
 (6, X) = {(6,27), (6,43), (6,51), (6,63), (6,57), (6,60), (6,59)};
 (7, X) = {(7,26), (7,42), (7,50), (7,62), (7,60), (7,57), (7,58)};
 (8, X) = {(8,25), (8,41), (8,49), (8,61), (8,59), (8,58), (8,57)};
 (9, X) = {(9,24), (9,40), (9,64), (9,52), (9,54), (9,55), (9,56)};
 (10, X) = {(10,23), (10,39), (10,63), (10,51), (10,53), (10,56), (10,55)};
 (11, X) = {(11,22), (11,38), (11,62), (11,50), (11,56), (11,53), (11,54)};
 (12, X) = {(12,21), (12,37), (12,61), (12,49), (12,55), (12,54), (12,53)};
 (13, X) = {(13,20), (13,36), (13,60), (13,56), (13,50), (13,51), (13,52)};
 (14, X) = {(14,19), (14,35), (14,59), (14,55), (14,49), (14,52), (14,51)};
 (15, X) = {(15,18), (15,34), (15,58), (15,54), (15,52), (15,49), (15,50)};
 (16, X) = {(16,17), (16,33), (16,57), (16,53), (16,51), (16,50), (16,49)};
 (17, X) = {(17,16), (17,64), (17,40), (17,44), (17,46), (17,47), (17,48)};
 (18, X) = {(18,15), (18,63), (18,39), (18,43), (18,45), (18,48), (18,47)};
 (19, X) = {(19,14), (19,62), (19,38), (19,42), (19,48), (19,45), (19,46)};
 (20, X) = {(20,13), (20,61), (20,37), (20,41), (20,47), (20,46), (20,45)};
 (21, X) = {(21,12), (21,60), (21,36), (21,48), (21,42), (21,43), (21,44)};
 (22, X) = {(22,11), (22,59), (22,35), (22,47), (22,41), (22,44), (22,43)};
 (23, X) = {(23,10), (23,58), (23,34), (23,46), (23,44), (23,41), (23,42)};
 (24, X) = {(24, 9), (24,57), (24,33), (24,45), (24,43), (24,42), (24,41)};
 (25, X) = {(25, 8), (25,56), (25,48), (25,36), (25,38), (25,39), (25,40)};
 (26, X) = {(26, 7), (26,55), (26,47), (26,35), (26,37), (26,40), (26,39)};
 (27, X) = {(27, 6), (27,54), (27,46), (27,34), (27,40), (27,37), (27,38)};
 (28, X) = {(28, 5), (28,53), (28,45), (28,33), (28,39), (28,38), (28,37)};
 (29, X) = {(29, 4), (29,52), (29,44), (29,40), (29,34), (29,35), (29,36)};
 (30, X) = {(30, 3), (30,51), (30,43), (30,39), (30,33), (30,36), (30,35)};
 (31, X) = {(31, 2), (31,50), (31,42), (31,38), (31,36), (31,33), (31,34)};
 (32, X) = {(32, 1), (32,49), (32,41), (32,37), (32,35), (32,34), (32,33)};
 (33, X) = {(33,64), (33,16), (33,24), (33,28), (33,30), (33,31), (33,32)};
 (34, X) = {(34,63), (34,15), (34,23), (34,27), (34,29), (34,32), (34,31)};
 (35, X) = {(35,62), (35,14), (35,22), (35,26), (35,32), (35,29), (35,30)};
 (36, X) = {(36,61), (36,13), (36,21), (36,25), (36,31), (36,30), (36,29)};
 (37, X) = {(37,60), (37,12), (37,20), (37,32), (37,26), (37,27), (37,28)};
 (38, X) = {(38,59), (38,11), (38,19), (38,31), (38,25), (38,28), (38,27)};
 (39, X) = {(39,58), (39,10), (39,18), (39,30), (39,28), (39,25), (39,26)};
 (40, X) = {(40,57), (40, 9), (40,17), (40,29), (40,27), (40,26), (40,25)};
 (41, X) = {(41,56), (41, 8), (41,32), (41,20), (41,22), (41,23), (41,24)};
 (42, X) = {(42,55), (42, 7), (42,31), (42,19), (42,21), (42,24), (42,23)};
 (43, X) = {(43,54), (43, 6), (43,30), (43,18), (43,24), (43,21), (43,22)};
 (44, X) = {(44,53), (44, 5), (44,29), (44,17), (44,23), (44,22), (44,21)};
 (45, X) = {(45,52), (45, 4), (45,28), (45,24), (45,18), (45,19), (45,20)};
 (46, X) = {(46,51), (46, 3), (46,27), (46,23), (46,17), (46,20), (46,19)};
 (47, X) = {(47,50), (47, 2), (47,26), (47,22), (47,20), (47,17), (47,18)};
 (48, X) = {(48,49), (48, 1), (48,25), (48,21), (48,19), (48,18), (48,17)};
 (49, X) = {(49,48), (49,32), (49, 8), (49,12), (49,14), (49,15), (49,16)};
 (50, X) = {(50,47), (50,31), (50, 7), (50,11), (50,13), (50,16), (50,15)};
 (51, X) = {(51,46), (51,30), (51, 6), (51,10), (51,16), (51,13), (51,14)};
 (52, X) = {(52,45), (52,29), (52, 5), (52, 9), (52,15), (52,14), (52,13)};
 (53, X) = {(53,44), (53,28), (53, 4), (53,16), (53,10), (53,11), (53,12)};

- (56, X) = {(56,41), (56,25), (56, 1), (56,13), (56,11), (56,10), (56, 9)};
- (57, X) = {(57,40), (57,24), (57,16), (57, 4), (57, 6), (57, 7), (57, 8)};
- (58, X) = {(58,39), (58,23), (58,15), (58, 3), (58, 5), (58, 8), (58, 7)};
- (59, X) = {(59,38), (59,22), (59,14), (59, 2), (59, 8), (59, 5), (59, 6)};
- (60, X) = {(60,37), (60,21), (60,13), (60, 1), (60, 7), (60, 6), (60, 5)};
- (61, X) = {(61,36), (61,20), (61,12), (61, 8), (61, 2), (61, 3), (61, 4)};
- (62, X) = {(62,35), (62,19), (62,11), (62, 7), (62, 1), (62, 4), (62, 3)};
- (63, X) = {(63,34), (63,18), (63,10), (63, 6), (63, 4), (63, 1), (63, 2)};
- (64, X) = {(64,33), (64,17), (64, 9), (64, 5), (64, 3), (64, 2), (64, 1)};

And we found the total count of solutions could be calculated by the permutation:

$$322560 = \underline{5040} \times 64;$$

$$= 7P7 = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1$$

But, I don't want to explain precisely here how I imported them into my program. It might be awful to those who don't know very well about programming. Let me skip it, though I would present the whole list of my newest program instead in the end. I simply want anyone who likes to read it and comprehend what I have intended. It really takes only a few seconds to compose all the 322560 primitive solutions.

#3. Basic Data of 'C&P' MC444: The newest edition in 2015

Let's jump to the recent results produced by our new program now.

** 'Composite & Pan-triagonal' Magic Cubes of Order 4 **

** Compact List of Primitive Solutions Pre-normalized: New Edition in 2015 **

<p style="text-align: center;">1/ 1-----64-----5-----60</p> <pre> 62-----3-----58-----7 63 19 2 46 59 23 6 42 4 48--+61--17--+ 8--44--+57--21 10 45 55 20 14 41 51 24 53 18 12 47 49 22 16 43 56--28-- 9--37-- 52--32-- 13 33 11 39 54 26 15 35 50 30 38 27 34 31 25-----40-----29-----36 </pre>	<p style="text-align: center;">121/ 1-----63-----6-----60</p> <pre> 62-----4-----57-----7 64 19 2 45 59 24 5 42 3 48--+61--18--+ 8--43--+58--21 9 46 55 20 14 41 52 23 54 17 12 47 49 22 15 44 56--27-- 10--37-- 51--52-- 13 34 11 40 53 26 16 35 50 29 38 28 33 31 25-----39-----30-----36 </pre>	<p style="text-align: center;">241/ 1-----62-----7-----60</p> <pre> 63-----4-----57-----6 64 18 3 45 58 24 5 43 2 48--+61--19--+ 8--42--+59--21 9 47 54 20 15 41 52 22 55 17 12 46 49 23 14 44 56--26-- 11--37-- 50--32-- 13 35 10 40 53 27 16 34 51 29 39 28 33 30 25-----38-----31-----36 </pre>
<p style="text-align: center;">361/ 1-----60-----7-----62</p> <pre> 63-----6-----57-----4 64 18 5 43 58 24 3 45 2 48--+59--21--+ 8--42--+61--19 9 47 52 22 15 41 54 20 55 17 14 44 49 23 12 46 56--26-- 13--35-- 50--32-- 11 37 10 40 51 29 16 34 53 27 39 30 33 28 25-----36-----31-----38 </pre>	<p style="text-align: center;">481/ 1-----56-----11-----62</p> <pre> 63-----10-----53-----4 64 18 9 39 54 28 3 45 2 48--+55--25--+12--38--+61--19 5 47 52 26 15 37 58 20 59 17 14 40 49 27 8 46 60--22-- 13--35-- 50--52-- 7 41 6 44 51 29 16 34 57 23 43 30 33 24 21-----36-----31-----42 </pre>	<p style="text-align: center;">601/ 1-----48-----19-----62</p> <pre> 63-----18-----45-----4 64 10 17 39 46 28 3 53 2 56--+47--25--+20--38--+61--11 5 55 44 26 23 37 58 12 59 9 22 40 41 27 8 54 60--14-- 21--35-- 42--32-- 7 49 6 52 43 29 24 34 57 15 51 30 33 16 13-----36-----31-----50 </pre>
<p style="text-align: center;">721/ 1-----64-----5-----60</p> <pre> 62-----3-----58-----7 63 35 2 30 59 39 6 26 4 32--+61--33--+ 8--28--+57--37 10 29 55 36 14 25 51 40 53 34 12 31 49 38 16 27 56--44-- 9--21-- 52--48-- 13 17 11 23 54 42 15 19 50 46 22 43 18 47 41-----24-----45-----20 </pre>	<p style="text-align: center;">841/ 1-----63-----6-----60</p> <pre> 62-----4-----57-----7 64 35 2 29 59 40 5 26 3 32--+61--34--+ 8--27--+58--37 9 30 55 36 14 25 52 39 54 33 12 31 49 38 15 28 56--43-- 10--21-- 51--48-- 13 18 11 24 53 42 16 19 50 45 22 44 17 47 41-----23-----46-----20 </pre>	<p style="text-align: center;">961/ 1-----62-----7-----60</p> <pre> 63-----4-----57-----6 64 34 3 29 58 40 5 27 2 32--+61--35--+ 8--26--+59--37 9 31 54 36 15 25 52 38 55 33 12 30 49 39 14 28 56--42-- 11--21-- 50--48-- 13 19 10 24 53 43 16 18 51 45 23 44 17 46 41-----22-----47-----20 </pre>
<p style="text-align: center;">1081/ 1-----60-----7-----62</p> <pre> 63-----6-----57-----4 64 34 5 27 58 40 3 29 2 32--+59--37--+ 8--26--+61--35 9 31 52 38 15 25 54 36 55 33 14 28 49 39 12 30 56--42-- 13--19-- 50--48-- 11 21 10 24 51 45 16 18 53 43 23 46 17 44 41-----20-----47-----22 </pre>	<p style="text-align: center;">1201/ 1-----56-----11-----62</p> <pre> 63-----10-----53-----4 64 34 9 23 54 44 3 29 2 32--+55--41--+12--22--+61--35 5 31 52 42 15 21 58 36 59 33 14 24 49 43 8 30 60--38-- 13--19-- 50--48-- 7 25 6 28 51 45 16 18 57 39 27 46 17 40 37-----20-----47-----26 </pre>	<p style="text-align: center;">1321/ 1-----32-----35-----62</p> <pre> 63-----34-----29-----4 64 10 33 23 30 44 3 53 2 56--+31--41--+36--22--+61--11 5 55 28 42 39 21 58 12 59 9 38 24 25 43 8 54 60--14-- 37--19-- 26--48-- 7 49 6 52 27 45 40 18 57 15 51 46 17 16 13-----20-----47-----50 </pre>

1441/
 1-----64-----5-----60
 |62-----3-----58-----7
 63 35 2 30 59 39 6 26
 | 4 32--61--33--8--28--57--37
 18 29 | 47 36 | 22 25 | 43 40 |
 |45 34 |20 31 |41 38 |24 27
 48--52--|17--13--|44--56--|21 9 |
 19 15 46 50 23 11 42 54
 14 | 51 | 10 | 55 |
 49-----16-----53-----12

1561/
 1-----63-----6-----60
 |62-----4-----57-----7
 64 35 2 29 59 40 5 26
 | 3 32--61--34--8--27--58--37
 17 30 | 47 36 | 22 25 | 44 39 |
 |46 33 |20 31 |41 38 |23 28
 48--51--|18--13--|43--56--|21 10 |
 19 16 45 50 24 11 42 53
 14 | 52 | 9 | 55 |
 49-----15-----54-----12

1681/
 1-----62-----7-----60
 |63-----4-----57-----6
 64 34 3 29 58 40 5 27
 | 2 32--61--35--8--26--59--37
 17 31 | 46 36 | 23 25 | 44 38 |
 |47 33 |20 30 |41 39 |22 28
 48--50--|19--13--|42--56--|21 11 |
 18 16 45 51 24 10 43 53
 15 | 52 | 9 | 54 |
 49-----14-----55-----12

1801/
 1-----60-----7-----62
 |63-----6-----57-----4
 64 34 5 27 58 40 3 29
 | 2 32--59--37--8--26--61--35
 17 31 | 44 38 | 23 25 | 46 36 |
 |47 33 |22 28 |41 39 |20 30
 48--50--|21--11--|42--56--|19 13 |
 18 16 43 53 24 10 45 51
 15 | 54 | 9 | 52 |
 49-----12-----55-----14

1921/
 1-----48-----19-----62
 |63-----18-----45-----4
 64 34 17 15 46 52 3 29
 | 2 32--47--49--20--14--61--35
 5 31 | 44 50 | 23 13 | 58 36 |
 |59 33 |22 16 |41 51 | 8 30
 60--38--|21--11--|42--56--| 7 25 |
 6 28 43 53 24 10 57 39
 27 | 54 | 9 | 40 |
 37-----12-----55-----26

2041/
 1-----32-----35-----62
 |63-----34-----29-----4
 64 18 33 15 30 52 3 45
 | 2 48--31--49--36--14--61--19
 5 47 | 28 50 | 39 13 | 58 20 |
 |59 17 |38 16 |25 51 | 8 46
 60--22--|37--11--|26--56--| 7 41 |
 6 44 27 53 40 10 57 23
 43 | 54 | 9 | 24 |
 21-----12-----55-----42

2161/
 1-----64-----9-----56
 |62-----3-----54-----11
 63 35 2 30 55 43 10 22
 | 4 32--61--33--12--24--53--41
 18 29 | 47 36 | 26 21 | 39 44 |
 |45 34 |20 31 |37 42 |28 23
 48--52--|17--13--|40--60--|25 5 |
 19 15 46 50 27 7 38 58
 14 | 51 | 6 | 59 |
 49-----16-----57-----8

2881/
 1-----64-----9-----56
 |60-----5-----52-----13
 63 37 2 28 55 45 10 20
 | 6 32--59--33--14--24--51--41
 18 27 | 47 38 | 26 19 | 39 46 |
 |43 34 |22 31 |35 42 |30 23
 48--54--|17--11--|40--62--|25 3 |
 21 15 44 50 29 7 36 58
 12 | 53 | 4 | 61 |
 49-----16-----57-----8

3601/
 1-----64-----9-----56
 |60-----5-----52-----13
 62 37 3 28 54 45 11 20
 | 7 32--58--33--15--24--50--41
 19 26 | 46 39 | 27 18 | 38 47 |
 |42 35 |23 30 |34 43 |31 22
 48--55--|17--10--|40--63--|25 2 |
 21 14 44 51 29 6 36 59
 12 | 53 | 4 | 61 |
 49-----16-----57-----8

4321/
 1-----63-----10-----56
 |60-----6-----51-----13
 62 37 4 27 53 46 11 20
 | 7 32--57--34--16--23--50--41
 19 26 | 45 40 | 28 17 | 38 47 |
 |42 35 |24 29 |33 44 |31 22
 48--55--|18--9--39--64--|25 2 |
 21 14 43 52 30 5 36 59
 12 | 54 | 3 | 61 |
 49-----15-----58-----8

5041/
 2-----64-----5-----59
 |61-----3-----58-----8
 63 20 1 46 60 23 6 41
 | 4 47--62--17--7--44--57--22
 10 45 | 56 19 | 13 42 | 51 24 |
 |53 18 |11 48 |50 21 |16 43
 55--28--|9--38--|52--31--|14 33 |
 12 39 54 25 15 36 49 30
 37 | 27 | 34 | 32 |
 26-----40-----29-----35

10081/
 3-----64-----5-----58
 |61-----2-----59-----8
 62 20 1 47 60 22 7 41
 | 4 46--63--17--6--44--57--23
 11 45 | 56 18 | 13 43 | 50 24 |
 |53 19 |10 48 |51 21 |16 42
 54--28--|9--39--|52--30--|15 33 |
 12 38 55 25 14 36 49 31
 37 | 26 | 35 | 32 |
 27-----40-----29-----34

15121/
 4-----63-----6-----57
 |61-----2-----59-----8
 62 20 1 47 60 22 7 41
 | 3 45--64--18--5--43--58--24
 11 46 | 56 17 | 13 44 | 50 23 |
 |54 19 | 9 48 |52 21 |15 42
 53--27--|10--40--|51--29--|16 34 |
 12 38 55 25 14 36 49 31
 37 | 26 | 35 | 32 |
 28-----39-----30-----33

20161/
 5-----64-----3-----58
 |59-----2-----61-----8
 60 22 1 47 62 20 7 41
 | 6 44--63--17--4--46--57--23
 13 43 | 56 18 | 11 45 | 50 24 |
 |51 21 |10 48 |53 19 |16 42
 52--30--|9--39--|54--28--|15 33 |
 14 36 55 25 12 38 49 31
 35 | 26 | 37 | 32 |
 29-----40-----27-----34

25201/
 6-----63-----4-----57
 |59-----2-----61-----8
 60 22 1 47 62 20 7 41
 | 5 43--64--18--3--45--58--24
 13 44 | 56 17 | 11 46 | 50 23 |
 |52 21 | 9 48 |54 19 |15 42
 51--29--|10--40--|53--27--|16 34 |
 14 36 55 25 12 38 49 31
 35 | 26 | 37 | 32 |
 30-----39-----28-----33

30241/
 7-----62-----4-----57
 |58-----3-----61-----8
 60 23 1 46 63 20 6 41
 | 5 42--64--19--2--45--59--24
 13 44 | 56 17 | 10 47 | 51 22 |
 |52 21 | 9 48 |55 18 |14 43
 50--29--|11--40--|53--26--|16 35 |
 15 36 54 25 12 39 49 30
 34 | 27 | 37 | 32 |
 31-----38-----28-----33

35281/
 8-----61-----4-----57
 |58-----3-----62-----7
 59 23 2 46 63 19 6 42
 | 5 41--64--20--1--45--60--24
 14 44 | 55 17 | 10 48 | 51 21 |
 |52 22 | 9 47 |56 18 |13 43
 49--29--|12--40--|53--25--|16 36 |
 15 35 54 26 11 39 50 30
 34 | 27 | 38 | 31 |
 32-----37-----28-----33

40321/
 9-----64-----3-----54
 |55-----2-----61-----12
 56 26 1 47 62 20 11 37
 |10 40--63--17--4--46--53--27
 13 39 | 60 18 | 7 45 | 50 28 |
 |51 25 | 6 48 |57 19 |16 38
 52--30--|5--43--|58--24--|15 33 |
 14 36 59 21 8 42 49 31
 35 | 22 | 41 | 32 |
 29-----44-----23-----34

45361/
 10-----63-----4-----53
 |55-----2-----61-----12
 56 26 1 47 62 20 11 37
 | 9 39--64--18--3--45--54--28
 13 40 | 60 17 | 7 46 | 50 27 |
 |52 25 | 5 48 |58 19 |15 38
 51--29--|6--44--|57--23--|16 34 |
 14 36 59 21 8 42 49 31
 35 | 22 | 41 | 32 |
 30-----43-----24-----33

50401/
 11-----62-----4-----53
 |54-----3-----61-----12
 56 27 1 46 63 20 10 37
 | 9 38--64--19--2--45--55--28
 13 40 | 60 17 | 6 47 | 51 26 |
 |52 25 | 5 48 |59 18 |14 39
 50--29--|7--44--|57--22--|16 35 |
 15 36 58 21 8 43 49 30
 34 | 23 | 41 | 32 |
 31-----42-----24-----33

55441/
 12-----61-----4-----53
 |54-----3-----62-----11
 55 27 2 46 63 19 10 38
 | 9 37--64--20--1--45--56--28
 14 40 | 59 17 | 6 48 | 51 25 |
 |52 26 | 5 47 |60 18 |13 39
 49--29--|8--44--|57--21--|16 36 |
 15 35 58 22 7 43 50 30
 34 | 23 | 42 | 31 |
 32-----41-----24-----33

60481/
 13-----60-----6-----51
 |52 | 5 |59 |14
 56 29 | 1 44 | 63 22 | 10 35
 | 9 36--64--21--2--43--55--30
 11 40 | 62 17 | 4 47 | 53 26 |
 |54 25 | 3 48 | 61 18 | 12 39
 50--27--7--46--57--20--16 37 |
 15 38 | 58 19 | 8 45 | 49 28
 34 | 23 | 41 | 32 |
 31-----42-----24-----33

65521/
 14-----59-----6-----51
 |52 | 5 |60 |13
 55 29 | 2 44 | 63 21 | 10 36
 | 9 35--64--22--1--43--56--30
 12 40 | 61 17 | 4 48 | 53 25 |
 |54 26 | 3 47 | 62 18 | 11 39
 49--27--8--46--57--19--16 38 |
 15 37 | 58 20 | 7 45 | 50 28
 34 | 23 | 42 | 31 |
 32-----41-----24-----33

70561/
 15-----58-----7-----50
 |52 | 5 |60 |13
 54 29 | 3 44 | 62 21 | 11 36
 | 9 34--64--23--1--42--56--31
 12 40 | 61 17 | 4 48 | 53 25 |
 |55 27 | 2 46 | 63 19 | 10 38
 49--26--8--47--57--18--16 39 |
 14 37 | 59 20 | 6 45 | 51 28
 35 | 22 | 43 | 30 |
 32-----41-----24-----33

75601/
 16-----57-----7-----50
 |51 | 6 |60 |13
 53 30 | 4 43 | 62 21 | 11 36
 |10 33--63--24--1--42--56--31
 12 39 | 61 18 | 3 48 | 54 25 |
 |55 28 | 2 45 | 64 19 | 9 38
 49--26--8--47--58--17--15 40 |
 14 37 | 59 20 | 5 46 | 52 27
 35 | 22 | 44 | 29 |
 32-----41-----23-----34

80641/
 17-----64-----3-----46
 |47 | 2 |61 |20
 48 26 | 1 55 | 62 12 | 19 37
 |18 40--63--9--4--54--45--27
 21 39 | 60 10 | 7 53 | 42 28 |
 |43 25 | 6 56 | 57 11 | 24 38
 44--30--5--51--58--16--23 33 |
 22 36 | 59 13 | 8 50 | 41 31
 35 | 14 | 49 | 32 |
 29-----52-----15-----34

85681/
 18-----63-----4-----45
 |47 | 2 |61 |20
 48 26 | 1 55 | 62 12 | 19 37
 |17 39--64--10--3--53--46--28
 21 40 | 60 9 | 7 54 | 42 27 |
 |44 25 | 5 56 | 58 11 | 23 38
 43--29--6--52--57--15--24 34 |
 22 36 | 59 13 | 8 50 | 41 31
 35 | 14 | 49 | 32 |
 30-----51-----16-----33

90721/
 19-----62-----4-----45
 |46 | 3 |61 |20
 48 27 | 1 54 | 63 12 | 18 37
 |17 38--64--11--2--53--47--28
 21 40 | 60 9 | 6 55 | 43 26 |
 |44 25 | 5 56 | 59 10 | 22 39
 42--29--7--52--57--14--24 35 |
 23 36 | 58 13 | 8 51 | 41 30
 34 | 15 | 49 | 32 |
 31-----50-----16-----33

95761/
 20-----61-----4-----45
 |46 | 3 |62 |19
 47 27 | 2 54 | 63 11 | 18 38
 |17 37--64--12--1--53--48--28
 22 40 | 59 9 | 6 56 | 43 25 |
 |44 26 | 5 55 | 60 10 | 21 39
 41--29--8--52--57--13--24 36 |
 23 35 | 58 14 | 7 51 | 42 30
 34 | 15 | 50 | 31 |
 32-----49-----16-----33

100801/
 21-----60-----6-----43
 |44 | 5 |59 |22
 48 29 | 1 52 | 63 14 | 18 35
 |17 36--64--13--2--51--47--30
 19 40 | 62 9 | 4 55 | 45 26 |
 |46 25 | 3 56 | 61 10 | 20 39
 42--27--7--54--57--12--24 37 |
 23 38 | 58 11 | 8 53 | 41 28
 34 | 15 | 49 | 32 |
 31-----50-----16-----33

105841/
 22-----59-----6-----43
 |44 | 5 |60 |21
 47 29 | 2 52 | 63 13 | 18 36
 |17 35--64--14--1--51--48--30
 20 40 | 61 9 | 4 56 | 45 25 |
 |46 26 | 3 55 | 62 10 | 19 39
 41--27--8--54--57--11--24 38 |
 23 37 | 58 12 | 7 53 | 42 28
 34 | 15 | 50 | 31 |
 32-----49-----16-----33

110881/
 23-----58-----7-----42
 |44 | 5 |60 |21
 46 29 | 3 52 | 62 13 | 19 36
 |17 34--64--15--1--50--48--31
 20 40 | 61 9 | 4 56 | 45 25 |
 |47 27 | 2 54 | 63 11 | 18 38
 41--26--8--55--57--10--24 39 |
 22 37 | 59 12 | 6 53 | 43 28
 35 | 14 | 51 | 30 |
 32-----49-----16-----33

115921/
 24-----57-----7-----42
 |43 | 6 |60 |21
 45 30 | 4 51 | 62 13 | 19 36
 |18 33--63--16--1--50--48--31
 20 39 | 61 10 | 3 56 | 46 25 |
 |47 28 | 2 53 | 64 11 | 17 38
 41--26--8--55--58--9--23 40 |
 22 37 | 59 12 | 5 54 | 44 27
 35 | 14 | 52 | 29 |
 32-----49-----15-----34

120961/
 25-----56-----10-----39
 |40 | 9 |55 |26
 48 29 | 1 52 | 63 14 | 18 35
 |17 36--64--13--2--51--47--30
 19 44 | 62 5 | 4 59 | 45 22 |
 |46 21 | 3 60 | 61 6 | 20 43
 38--23--11--58--53--8--28 41 |
 27 42 | 54 7 | 12 57 | 37 24
 34 | 15 | 49 | 32 |
 31-----50-----16-----33

126001/
 26-----55-----10-----39
 |40 | 9 |56 |25
 47 29 | 2 52 | 63 13 | 18 36
 |17 35--64--14--1--51--48--30
 20 44 | 61 5 | 4 60 | 45 21 |
 |46 22 | 3 59 | 62 6 | 19 43
 37--23--12--58--53--7--28 42 |
 27 41 | 54 8 | 11 57 | 38 24
 34 | 15 | 50 | 31 |
 32-----49-----16-----33

131041/
 27-----54-----11-----38
 |40 | 9 |56 |25
 46 29 | 3 52 | 62 13 | 19 36
 |17 34--64--15--1--50--48--31
 20 44 | 61 5 | 4 60 | 45 21 |
 |47 23 | 2 58 | 63 7 | 18 42
 37--22--12--59--53--6--28 43 |
 26 41 | 55 8 | 10 57 | 39 24
 35 | 14 | 51 | 30 |
 32-----49-----16-----33

136081/
 28-----53-----11-----38
 |39 | 10 |56 |25
 45 30 | 4 51 | 62 13 | 19 36
 |18 33--63--16--1--50--48--31
 20 43 | 61 6 | 3 60 | 46 21 |
 |47 24 | 2 57 | 64 7 | 17 42
 37--22--12--59--54--5--27 44 |
 26 41 | 55 8 | 9 58 | 40 23
 35 | 14 | 52 | 29 |
 32-----49-----15-----34

141121/
 29-----52-----13-----36
 |40 | 9 |56 |25
 44 27 | 5 54 | 60 11 | 21 38
 |17 34--64--15--1--50--48--31
 22 46 | 59 3 | 6 62 | 43 19 |
 |47 23 | 2 58 | 63 7 | 18 42
 35--20--14--61--51--4--30 45 |
 26 41 | 55 8 | 10 57 | 39 24
 37 | 12 | 53 | 28 |
 32-----49-----16-----33

146161/
 30-----51-----13-----36
 |39 | 10 |56 |25
 43 28 | 6 53 | 60 11 | 21 38
 |18 33--63--16--1--50--48--31
 22 45 | 59 4 | 5 62 | 44 19 |
 |47 24 | 2 57 | 64 7 | 17 42
 35--20--14--61--52--3--29 46 |
 26 41 | 55 8 | 9 58 | 40 23
 37 | 12 | 54 | 27 |
 32-----49-----15-----34

151201/
 31-----50-----13-----36
 |38 | 11 |56 |25
 42 28 | 7 53 | 60 10 | 21 39
 |19 33--62--16--1--51--48--30
 23 45 | 58 4 | 5 63 | 44 18 |
 |46 24 | 3 57 | 64 6 | 17 43
 34--20--15--61--52--2--29 47 |
 27 41 | 54 8 | 9 59 | 40 22
 37 | 12 | 55 | 26 |
 32-----49-----14-----35

156241/
 32-----49-----14-----35
 |37 | 12 |55 |26
 41 28 | 8 53 | 59 10 | 22 39
 |20 33--61--16--2--51--47--30
 23 45 | 58 4 | 5 63 | 44 18 |
 |46 24 | 3 57 | 64 6 | 17 43
 34--19--15--62--52--1--29 48 |
 27 42 | 54 7 | 9 60 | 40 21
 38 | 11 | 56 | 25 |
 31-----50-----13-----36

161281/
 33-----64-----3-----30
 |31 | 2 |61 |36
 32 42 | 1 55 | 62 12 | 35 21
 |34 24--63--9--4--54--29--43
 37 23 | 60 10 | 7 53 | 26 44 |
 |27 41 | 6 56 | 57 11 | 40 22
 28--46--5--51--58--16--39 17 |
 38 20 | 59 13 | 8 50 | 25 47
 19 | 14 | 49 | 48 |
 45-----52-----15-----18

166321/
 34-----63-----4-----29
 |31 | 2 | 61 |36
 32 42 | 1 55 | 62 12 | 35 21
 |33 23--+64--10--+ 3--53--+30--44
 37 24 | 60 9 | 7 54 | 26 43 |
 |28 41 | 5 56 | 58 11 | 39 22
 27--45--| 6--52--|57--15--|40 18 |
 38 20 | 59 13 | 8 50 | 25 47
 19 | 14 | 49 | 48 |
 46-----51-----16-----17

171361/
 35-----62-----4-----29
 |30 | 3 | 61 |36
 32 43 | 1 54 | 63 12 | 34 21
 |33 22--+64--11--+ 2--53--+31--44
 37 24 | 60 9 | 6 55 | 27 42 |
 |28 41 | 5 56 | 59 10 | 38 23
 26--45--| 7--52--|57--14--|40 19 |
 39 20 | 58 13 | 8 51 | 25 46
 18 | 15 | 49 | 48 |
 47-----50-----16-----17

176401/
 36-----61-----4-----29
 |30 | 3 | 62 |35
 31 43 | 2 54 | 63 11 | 34 22
 |33 21--+64--12--+ 1--53--+32--44
 38 24 | 59 9 | 6 56 | 27 41 |
 |28 42 | 5 55 | 60 10 | 37 23
 25--45--| 8--52--|57--13--|40 20 |
 39 19 | 58 14 | 7 51 | 26 46
 18 | 15 | 50 | 47 |
 48-----49-----16-----17

181441/
 37-----60-----6-----27
 |28 | 5 | 59 |38
 32 45 | 1 52 | 63 14 | 34 19
 |33 20--+64--13--+ 2--51--+31--46
 35 24 | 62 9 | 4 55 | 29 42 |
 |30 41 | 3 56 | 61 10 | 36 23
 26--43--| 7--54--|57--12--|40 21 |
 39 22 | 58 11 | 8 53 | 25 44
 18 | 15 | 49 | 48 |
 47-----50-----16-----17

186481/
 38-----59-----6-----27
 |28 | 5 | 60 |37
 31 45 | 2 52 | 63 13 | 34 20
 |33 19--+64--14--+ 1--51--+32--46
 36 24 | 61 9 | 4 56 | 29 41 |
 |30 42 | 3 55 | 62 10 | 35 23
 25--43--| 8--54--|57--11--|40 22 |
 39 21 | 58 12 | 7 53 | 26 44
 18 | 15 | 50 | 47 |
 48-----49-----16-----17

191521/
 39-----58-----7-----26
 |28 | 5 | 60 |37
 30 45 | 3 52 | 62 13 | 35 20
 |33 18--+64--15--+ 1--50--+32--47
 36 24 | 61 9 | 4 56 | 29 41 |
 |31 43 | 2 54 | 63 11 | 34 22
 25--42--| 8--55--|57--10--|40 23 |
 38 21 | 59 12 | 6 53 | 27 44
 19 | 14 | 51 | 46 |
 48-----49-----16-----17

196561/
 40-----57-----7-----26
 |27 | 6 | 60 |37
 29 46 | 4 51 | 62 13 | 35 20
 |34 17--+63--16--+ 1--50--+32--47
 36 23 | 61 10 | 3 56 | 30 41 |
 |31 44 | 2 53 | 64 11 | 33 22
 25--42--| 8--55--|58--9--|39 24 |
 38 21 | 59 12 | 5 54 | 28 43
 19 | 14 | 52 | 45 |
 48-----49-----15-----18

201601/
 41-----56-----10-----23
 |24 | 9 | 55 |42
 32 45 | 1 52 | 63 14 | 34 19
 |33 20--+64--13--+ 2--51--+31--46
 35 28 | 62 5 | 4 59 | 29 38 |
 |30 37 | 3 60 | 61 6 | 36 27
 22--39--|11--58--|53--8--|44 25 |
 43 26 | 54 7 | 12 57 | 21 40
 18 | 15 | 49 | 48 |
 47-----50-----16-----17

206641/
 42-----55-----10-----23
 |24 | 9 | 56 |41
 31 45 | 2 52 | 63 13 | 34 20
 |33 19--+64--14--+ 1--51--+32--46
 36 28 | 61 5 | 4 60 | 29 37 |
 |30 38 | 3 59 | 62 6 | 35 27
 21--39--|12--58--|53--7--|44 26 |
 43 25 | 54 8 | 11 57 | 22 40
 18 | 15 | 50 | 47 |
 48-----49-----16-----17

211681/
 43-----54-----11-----22
 |24 | 9 | 56 |41
 30 45 | 3 52 | 62 13 | 35 20
 |33 18--+64--15--+ 1--50--+32--47
 36 28 | 61 5 | 4 60 | 29 37 |
 |31 39 | 2 58 | 63 7 | 34 26
 21--38--|12--59--|53--6--|44 27 |
 42 25 | 55 8 | 10 57 | 23 40
 19 | 14 | 51 | 46 |
 48-----49-----16-----17

216721/
 44-----53-----11-----22
 |23 | 10 | 56 |41
 29 46 | 4 51 | 62 13 | 35 20
 |34 17--+63--16--+ 1--50--+32--47
 36 27 | 61 6 | 3 60 | 30 37 |
 |31 40 | 2 57 | 64 7 | 33 26
 21--38--|12--59--|54--5--|43 28 |
 42 25 | 55 8 | 9 58 | 24 39
 19 | 14 | 52 | 45 |
 48-----49-----15-----18

221761/
 45-----52-----13-----20
 |24 | 9 | 56 |41
 28 43 | 5 54 | 60 11 | 37 22
 |33 18--+64--15--+ 1--50--+32--47
 38 30 | 59 3 | 6 62 | 27 35 |
 |31 39 | 2 58 | 63 7 | 34 26
 19--36--|14--61--|51--4--|46 29 |
 42 25 | 55 8 | 10 57 | 23 40
 21 | 12 | 53 | 44 |
 48-----49-----16-----17

226801/
 46-----51-----13-----20
 |23 | 10 | 56 |41
 27 44 | 6 53 | 60 11 | 37 22
 |34 17--+63--16--+ 1--50--+32--47
 38 29 | 59 4 | 5 62 | 28 35 |
 |31 40 | 2 57 | 64 7 | 33 26
 19--36--|14--61--|52--3--|45 30 |
 42 25 | 55 8 | 9 58 | 24 39
 21 | 12 | 54 | 43 |
 48-----49-----15-----18

231841/
 47-----50-----13-----20
 |22 | 11 | 56 |41
 26 44 | 7 53 | 60 10 | 37 23
 |35 17--+62--16--+ 1--51--+32--46
 39 29 | 58 4 | 5 63 | 28 34 |
 |30 40 | 3 57 | 64 6 | 33 27
 18--36--|15--61--|52--2--|45 31 |
 43 25 | 54 8 | 9 59 | 24 38
 21 | 12 | 55 | 42 |
 48-----49-----14-----19

236881/
 48-----49-----14-----19
 |21 | 12 | 55 |42
 25 44 | 8 53 | 59 10 | 38 23
 |36 17--+61--16--+ 2--51--+31--46
 39 29 | 58 4 | 5 63 | 28 34 |
 |30 40 | 3 57 | 64 6 | 33 27
 18--35--|15--62--|52--1--|45 32 |
 43 26 | 54 7 | 9 60 | 24 37
 22 | 11 | 56 | 41 |
 47-----50-----13-----20

241921/
 49-----48-----18-----15
 |16 | 17 | 47 |50
 32 53 | 1 44 | 63 22 | 34 11
 |33 12--+64--21--+ 2--43--+31--54
 35 28 | 62 5 | 4 59 | 29 38 |
 |30 37 | 3 60 | 61 6 | 36 27
 14--39--|19--58--|45--8--|52 25 |
 51 26 | 46 7 | 20 57 | 13 40
 10 | 23 | 41 | 56 |
 55-----42-----24-----9

246961/
 50-----47-----18-----15
 |16 | 17 | 48 |49
 31 53 | 2 44 | 63 21 | 34 12
 |33 11--+64--22--+ 1--43--+32--54
 36 28 | 61 5 | 4 60 | 29 37 |
 |30 38 | 3 59 | 62 6 | 35 27
 13--39--|20--58--|45--7--|52 26 |
 51 25 | 46 8 | 19 57 | 14 40
 10 | 23 | 42 | 55 |
 56-----41-----24-----9

252001/
 51-----46-----19-----14
 |16 | 17 | 48 |49
 30 53 | 3 44 | 62 21 | 35 12
 |33 10--+64--23--+ 1--42--+32--55
 36 28 | 61 5 | 4 60 | 29 37 |
 |31 39 | 2 58 | 63 7 | 34 26
 13--38--|20--59--|45--6--|52 27 |
 50 25 | 47 8 | 18 57 | 15 40
 11 | 22 | 43 | 54 |
 56-----41-----24-----9

257041/
 52-----45-----19-----14
 |15 | 18 | 48 |49
 29 54 | 4 43 | 62 21 | 35 12
 |34 9--+63--24--+ 1--42--+32--55
 36 27 | 61 6 | 3 60 | 30 37 |
 |31 40 | 2 57 | 64 7 | 33 26
 13--38--|20--59--|46--5--|51 28 |
 50 25 | 47 8 | 17 58 | 16 39
 11 | 22 | 44 | 53 |
 56-----41-----23-----10

262081/
 53-----44-----21-----12
 |16 | 17 | 48 |49
 28 51 | 5 46 | 60 19 | 37 14
 |33 10--+64--23--+ 1--42--+32--55
 38 30 | 59 3 | 6 62 | 27 35 |
 |31 39 | 2 58 | 63 7 | 34 26
 11--36--|22--61--|43--4--|54 29 |
 50 25 | 47 8 | 18 57 | 15 40
 13 | 20 | 45 | 52 |
 56-----41-----24-----9

267121/
 54-----43-----21-----12
 |15 | 18 | 48 |49
 27 52 | 6 45 | 60 19 | 37 14
 |34 9--+63--24--+ 1--42--+32--55
 38 29 | 59 4 | 5 62 | 28 35 |
 |31 40 | 2 57 | 64 7 | 33 26
 11--36--|22--61--|44--3--|53 30 |
 50 25 | 47 8 | 17 58 | 16 39
 13 | 20 | 46 | 51 |
 56-----41-----23-----10

<pre> 272161/ 55-----42-----21-----12 14 19 48 49 26 52 7 45 60 18 37 15 35 9-- 62--24-- 1--43-- 32--54 39 29 58 4 5 63 28 34 30 40 3 57 64 6 33 27 10--36-- 23--61-- 44-- 2-- 53 31 51 25 46 8 17 59 16 38 13 20 47 50 56-----41-----22-----11 </pre>	<pre> 277201/ 56-----41-----22-----11 13 20 47 50 25 52 8 45 59 18 38 15 36 9-- 61--24-- 2--43-- 31--54 39 29 58 4 5 63 28 34 30 40 3 57 64 6 33 27 10--35-- 23--62-- 44-- 1-- 53 32 51 26 46 7 17 60 16 37 14 19 48 49 55-----42-----21-----12 </pre>	<pre> 282241/ 57-----40-----25----- 8 16 17 48 49 24 51 9 46 56 19 41 14 33 6-- 64--27-- 1--38-- 32--59 42 30 55 3 10 62 23 35 31 43 2 54 63 11 34 22 7--36-- 26--61-- 39-- 4-- 58 29 50 21 47 12 18 53 15 44 13 20 45 52 60-----37-----28----- 5 </pre>
<pre> 287281/ 58-----39-----25----- 8 15 18 48 49 23 52 10 45 56 19 41 14 34 5-- 63--28-- 1--38-- 32--59 42 29 55 4 9 62 24 35 31 44 2 53 64 11 33 22 7--36-- 26--61-- 40-- 3-- 57 30 50 21 47 12 17 54 16 43 13 20 46 51 60-----37-----27----- 6 </pre>	<pre> 292321/ 59-----38-----25----- 8 14 19 48 49 22 52 11 45 56 18 41 15 35 5-- 62--28-- 1--39-- 32--58 43 29 54 4 9 63 24 34 30 44 3 53 64 10 33 23 6--36-- 27--61-- 40-- 2-- 57 31 51 21 46 12 17 55 16 42 13 20 47 50 60-----37-----26----- 7 </pre>	<pre> 297361/ 60-----37-----26----- 7 13 20 47 50 21 52 12 45 55 18 42 15 36 5-- 61--28-- 2--39-- 31--58 43 29 54 4 9 63 24 34 30 44 3 53 64 10 33 23 6--35-- 27--62-- 40-- 1-- 57 32 51 22 46 11 17 56 16 41 14 19 48 49 59-----38-----25----- 8 </pre>
<pre> 302401/ 61-----36-----25----- 8 12 21 48 49 20 54 13 43 56 18 41 15 37 3-- 60--30-- 1--39-- 32--58 45 27 52 6 9 63 24 34 28 46 5 51 64 10 33 23 4--38-- 29--59-- 40-- 2-- 57 31 53 19 44 14 17 55 16 42 11 22 47 50 62-----35-----26----- 7 </pre>	<pre> 307441/ 62-----35-----26----- 7 11 22 47 50 19 54 14 43 55 18 42 15 38 3-- 59--30-- 2--39-- 31--58 45 27 52 6 9 63 24 34 28 46 5 51 64 10 33 23 4--37-- 29--60-- 40-- 1-- 57 32 53 20 44 13 17 56 16 41 12 21 48 49 61-----36-----25----- 8 </pre>	<pre> 312481/ 63-----34-----27----- 6 10 23 46 51 18 55 15 42 54 19 43 14 39 2-- 58--31-- 3--38-- 30--59 45 26 52 7 9 62 24 35 28 47 5 50 64 11 33 22 4--37-- 29--60-- 40-- 1-- 57 32 53 20 44 13 17 56 16 41 12 21 48 49 61-----36-----25----- 8 </pre>
<pre> 317521/ 64-----33-----28----- 5 9 24 45 52 17 55 16 42 53 19 44 14 40 2-- 57--31-- 4--38-- 29--59 46 26 51 7 10 62 23 35 27 47 6 50 63 11 34 22 3--37-- 30--60-- 39-- 1-- 58 32 54 20 43 13 18 56 15 41 12 21 48 49 61-----36-----25----- 8 </pre>	<p>[Solution Counts(when n1=1/All) = 5040/322560]</p>	

[Monitor List 1: Solution Counts according to the Positions of Value 1]

1: 5040, 2: 5040, 3: 5040, 4: 5040, 5: 5040, 6: 5040, 7: 5040, 8: 5040,
9: 5040, 10: 5040, 11: 5040, 12: 5040, 13: 5040, 14: 5040, 15: 5040, 16: 5040,
17: 5040, 18: 5040, 19: 5040, 20: 5040, 21: 5040, 22: 5040, 23: 5040, 24: 5040,
25: 5040, 26: 5040, 27: 5040, 28: 5040, 29: 5040, 30: 5040, 31: 5040, 32: 5040,
33: 5040, 34: 5040, 35: 5040, 36: 5040, 37: 5040, 38: 5040, 39: 5040, 40: 5040,
41: 5040, 42: 5040, 43: 5040, 44: 5040, 45: 5040, 46: 5040, 47: 5040, 48: 5040,
49: 5040, 50: 5040, 51: 5040, 52: 5040, 53: 5040, 54: 5040, 55: 5040, 56: 5040,
57: 5040, 58: 5040, 59: 5040, 60: 5040, 61: 5040, 62: 5040, 63: 5040, 64: 5040

[Monitor List 2: Solution Counts according to the Values of n43 when n1=1]

1: 0, 2: 0, 3: 0, 4: 0, 5: 0, 6: 0, 7: 0, 8: 0,
9: 0, 10: 0, 11: 0, 12: 0, 13: 0, 14: 0, 15: 0, 16: 0,
17: 0, 18: 0, 19: 0, 20: 0, 21: 0, 22: 0, 23: 0, 24: 0,
25: 0, 26: 0, 27: 0, 28: 0, 29: 0, 30: 0, 31: 0, 32: 720,
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: 720,
49: 0, 50: 0, 51: 0, 52: 0, 53: 0, 54: 0, 55: 0, 56: 720,
57: 0, 58: 0, 59: 0, 60: 720, 61: 0, 62: 720, 63: 720, 64: 720

[Monitor List 3: Primitive Solutions with precise Check-Sum Errors]

	1/	CS	Rw,C1,&P1	Pantriagonals	Composite	Fours
1	64	5	60	0	0	0
62	3	58	7	0	0	0
63	19	2	46	59	23	6
4	48	61	17	8	44	57
10	45	55	20	14	41	51
53	18	12	47	49	22	16
56	28	9	37	52	32	13
11	39	54	26	15	35	50
38	27	34	31	36	40	43
25	40	29	36	0	0	0

721/										CS	Rw,C1,&P1	Pantriagonals	Composite	Fours	
1	64	5	60							0	0	0	0	0	0
62	3	58	7							0	0	0	0	0	0
63	35	2	30	59	39	6	26			0	0	0	0	0	0
4	32	61	33	8	28	57	37			0	0	0	0	0	0
10	29	55	36	14	25	51	40			0	0	0	0	0	0
53	34	12	31	49	38	16	27			0	0	0	0	0	0
56	44	9	21	52	48	13	17			0	0	0	0	0	0
11	23	54	42	15	19	50	46			0	0	0	0	0	0
22	43	18	47							0	0	0	0	0	0
41	24	45	20							0	0	0	0	0	0

1441/										CS	Rw,C1,&P1	Pantriagonals	Composite	Fours	
1	64	5	60							0	0	0	0	0	0
62	3	58	7							0	0	0	0	0	0
63	35	2	30	59	39	6	26			0	0	0	0	0	0
4	32	61	33	8	28	57	37			0	0	0	0	0	0
18	29	47	36	22	25	43	40			0	0	0	0	0	0
45	34	20	31	41	38	24	27			0	0	0	0	0	0
48	52	17	13	44	56	21	9			0	0	0	0	0	0
19	15	46	50	23	11	42	54			0	0	0	0	0	0
14	51	10	55							0	0	0	0	0	0
49	16	53	12							0	0	0	0	0	0

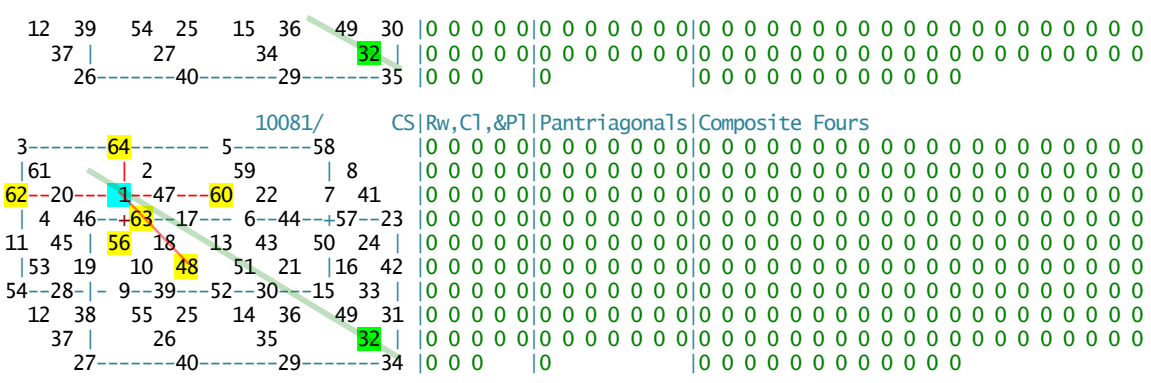
2161/										CS	Rw,C1,&P1	Pantriagonals	Composite	Fours	
1	64	9	56							0	0	0	0	0	0
62	3	54	11							0	0	0	0	0	0
63	35	2	30	55	43	10	22			0	0	0	0	0	0
4	32	61	33	12	24	53	41			0	0	0	0	0	0
18	29	47	36	26	21	39	44			0	0	0	0	0	0
45	34	20	31	37	42	28	23			0	0	0	0	0	0
48	52	17	13	40	60	25	5			0	0	0	0	0	0
19	15	46	50	27	7	38	58			0	0	0	0	0	0
14	51	6	59							0	0	0	0	0	0
49	16	57	8							0	0	0	0	0	0

2881/										CS	Rw,C1,&P1	Pantriagonals	Composite	Fours	
1	64	9	56							0	0	0	0	0	0
60	5	52	13							0	0	0	0	0	0
63	37	2	28	55	45	10	20			0	0	0	0	0	0
6	32	59	33	14	24	51	41			0	0	0	0	0	0
18	27	47	38	26	19	39	46			0	0	0	0	0	0
43	34	22	31	35	42	30	23			0	0	0	0	0	0
48	54	17	11	40	62	25	3			0	0	0	0	0	0
21	15	44	50	29	7	36	58			0	0	0	0	0	0
12	53	4	61							0	0	0	0	0	0
49	16	57	8							0	0	0	0	0	0

3601/										CS	Rw,C1,&P1	Pantriagonals	Composite	Fours	
1	64	9	56							0	0	0	0	0	0
60	5	52	13							0	0	0	0	0	0
62	37	3	28	54	45	11	20			0	0	0	0	0	0
7	32	58	33	15	24	50	41			0	0	0	0	0	0
19	26	46	39	27	18	38	47			0	0	0	0	0	0
42	35	23	30	34	43	31	22			0	0	0	0	0	0
48	55	17	10	40	63	25	2			0	0	0	0	0	0
21	14	44	51	29	6	36	59			0	0	0	0	0	0
12	53	4	61							0	0	0	0	0	0
49	16	57	8							0	0	0	0	0	0

4321/										CS	Rw,C1,&P1	Pantriagonals	Composite	Fours	
1	63	10	56							0	0	0	0	0	0
60	6	51	13							0	0	0	0	0	0
62	37	4	27	53	46	11	20			0	0	0	0	0	0
7	32	57	34	16	23	50	41			0	0	0	0	0	0
19	26	45	40	28	17	38	47			0	0	0	0	0	0
42	35	24	29	33	44	31	22			0	0	0	0	0	0
48	55	18	9	39	64	25	2			0	0	0	0	0	0
21	14	43	52	30	5	36	59			0	0	0	0	0	0
12	54	3	61							0	0	0	0	0	0
49	15	58	8							0	0	0	0	0	0

5041/										CS	Rw,C1,&P1	Pantriagonals	Composite	Fours	
2	64	5	59							0	0	0	0	0	0
61	3	58	8							0	0	0	0	0	0
63	20	1	46	60	23	6	41			0	0	0	0	0	0
4	47	62	17	7	44	57	22			0	0	0	0	0	0
10	45	56	19	13	42	51	24			0	0	0	0	0	0
53	18	11	48	50	21	16	43			0	0	0	0	0	0
55	28	9	38	52	31	14	33			0	0	0	0	0	0



Our new program could run very fast, and all the results are quite satisfactory.

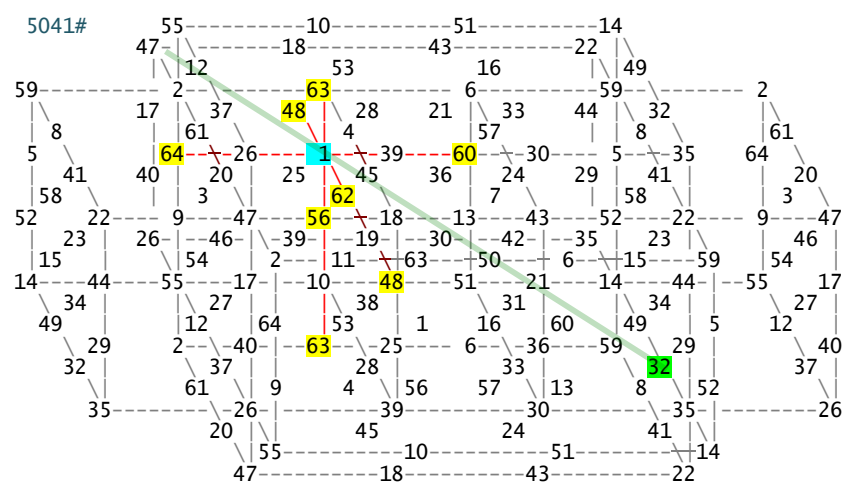
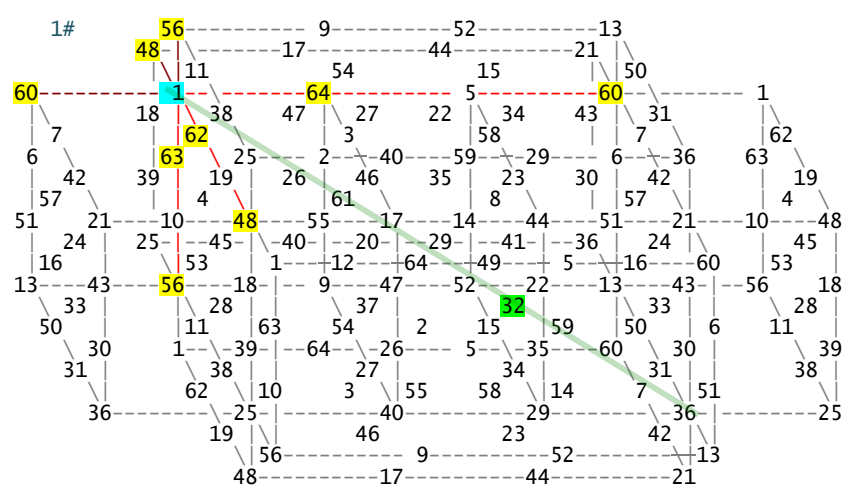
You may possibly wonder if I might be illogical, because I put the conclusions before the definitions in our discussion. But, don't worry about it. Only the past conclusions were imported into the present definitions. These two discussions are a little different from each other in their 'tenses'. The result itself proves to be all right.

Whenever the result is correct, you may well improve the program to make run fast.

#4. The Unit of Master Number 1 and its own 7 Fixed 'Followers' around it

As you see in the above list of sample solutions, Number 1 is always accompanied by the 7 fixed followers {64, 63, 62, 60, 56, 48 and 32} around it, what we found in the last section. You could count the ways how they sit on their fixed positions as:

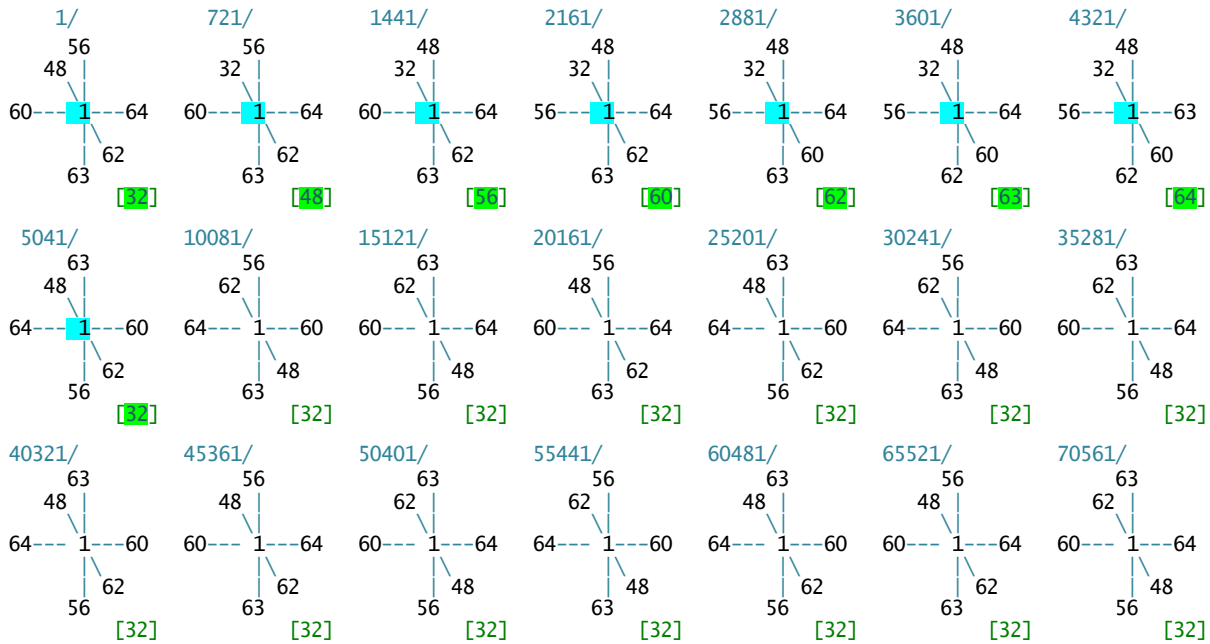
$$7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 = 5040; \text{ It is the problem of Permutation: } 7P7 = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1;$$



The above two diagrams show the real adjacent positions next to 1 in the extended space. The followers would always keep their relative positions and sit on the nearest

seats to their master, even when their unit should go away from n1, as you see.

*** 'Composite & Pan-triagonal' Magic Cubes of Order 4 ***
 * 3-Dimensional 6 Adjacent Numbers next to 1 and [PSC] *



- 75601: { 1, 60, 64, 63, 56, 48, 62, 32 }; 80641: { 1, 60, 64, 63, 56, 48, 62, 32 }; 85681: { 1, 64, 60, 56, 63, 48, 62, 32 }; 90721: { 1, 64, 60, 63, 56, 62, 48, 32 }; 95761: { 1, 60, 64, 56, 63, 62, 48, 32 }; 100801: { 1, 60, 64, 63, 56, 48, 62, 32 }; 105841: { 1, 64, 60, 56, 63, 48, 62, 32 }; 110881: { 1, 64, 60, 63, 56, 62, 48, 32 }; 115921: { 1, 60, 64, 56, 63, 62, 48, 32 }; 120961: { 1, 64, 60, 56, 63, 48, 62, 32 }; 126001: { 1, 60, 64, 63, 56, 48, 62, 32 }; 131041: { 1, 60, 64, 56, 63, 62, 48, 32 }; 136081: { 1, 64, 60, 63, 56, 62, 48, 32 }; 141121: { 1, 64, 60, 56, 63, 48, 62, 32 }; 146161: { 1, 60, 64, 63, 56, 48, 62, 32 }; 151201: { 1, 60, 64, 56, 63, 62, 48, 32 }; 156241: { 1, 64, 60, 63, 56, 62, 48, 32 }; 161281: { 1, 60, 64, 63, 56, 62, 48, 32 }; 166321: { 1, 64, 60, 56, 63, 62, 48, 32 }; 171361: { 1, 64, 60, 63, 56, 48, 62, 32 }; 176401: { 1, 60, 64, 56, 63, 48, 62, 32 }; 181441: { 1, 60, 64, 63, 56, 62, 48, 32 }; 186481: { 1, 64, 60, 56, 63, 62, 48, 32 }; 191521: { 1, 64, 60, 63, 56, 48, 62, 32 }; 196561: { 1, 60, 64, 56, 63, 48, 62, 32 }; 201601: { 1, 64, 60, 56, 63, 62, 48, 32 }; 206641: { 1, 60, 64, 63, 56, 62, 48, 32 }; 211681: { 1, 60, 64, 56, 63, 48, 62, 32 }; 216721: { 1, 64, 60, 63, 56, 48, 62, 32 }; 221761: { 1, 64, 60, 56, 63, 62, 48, 32 }; 226801: { 1, 60, 64, 63, 56, 62, 48, 32 }; 231841: { 1, 60, 64, 56, 63, 48, 62, 32 }; 236881: { 1, 64, 60, 63, 56, 48, 62, 32 }; 241921: { 1, 64, 60, 63, 56, 48, 62, 32 }; 246961: { 1, 60, 64, 56, 63, 48, 62, 32 }; 252001: { 1, 60, 64, 63, 56, 62, 48, 32 }; 257041: { 1, 64, 60, 56, 63, 62, 48, 32 }; 262081: { 1, 64, 60, 63, 56, 48, 62, 32 }; 267121: { 1, 60, 64, 63, 56, 62, 48, 32 }; 272161: { 1, 60, 64, 63, 56, 62, 48, 32 }; 277201: { 1, 64, 60, 56, 63, 62, 48, 32 }; 282241: { 1, 60, 64, 56, 63, 48, 62, 32 }; 287281: { 1, 64, 60, 63, 56, 48, 62, 32 }; 292321: { 1, 64, 60, 56, 63, 62, 48, 32 }; 297361: { 1, 60, 64, 63, 56, 62, 48, 32 }; 302401: { 1, 60, 64, 56, 63, 48, 62, 32 }; 307441: { 1, 64, 60, 63, 56, 48, 62, 32 }; 312481: { 1, 64, 60, 56, 63, 62, 48, 32 }; 317521: { 1, 60, 64, 63, 56, 62, 48, 32 }; [Solution Counts(when n1=1/A1)] = 5040/322560

The list above tells us what the fixed members of the Unit Number 1 really are. Samples are taken from the primitive solutions. As you see, {64, 63, 62, 60, 56, 48 and 32} are always the 'old good fellows' to Number 1, with no exception.

As far as the number 1 might go anywhere onto n1, n2, n3, ..., n63 or n64 freely and equally, the total solution counts could be calculated as: 5040 x 64 = 322560;

That means the Unit Number 1 with its 7 fixed followers actually determines the total counts of the primitive solutions of our object 'C&P' MC444. I already discussed about it in the last section 4-2.

But, why could the Unit Number 1 determine the most important factors of our object? Why could this only one team determine everything?

It should be natural for us to wonder what it really means.

What role does any other number beside the number 1 have?

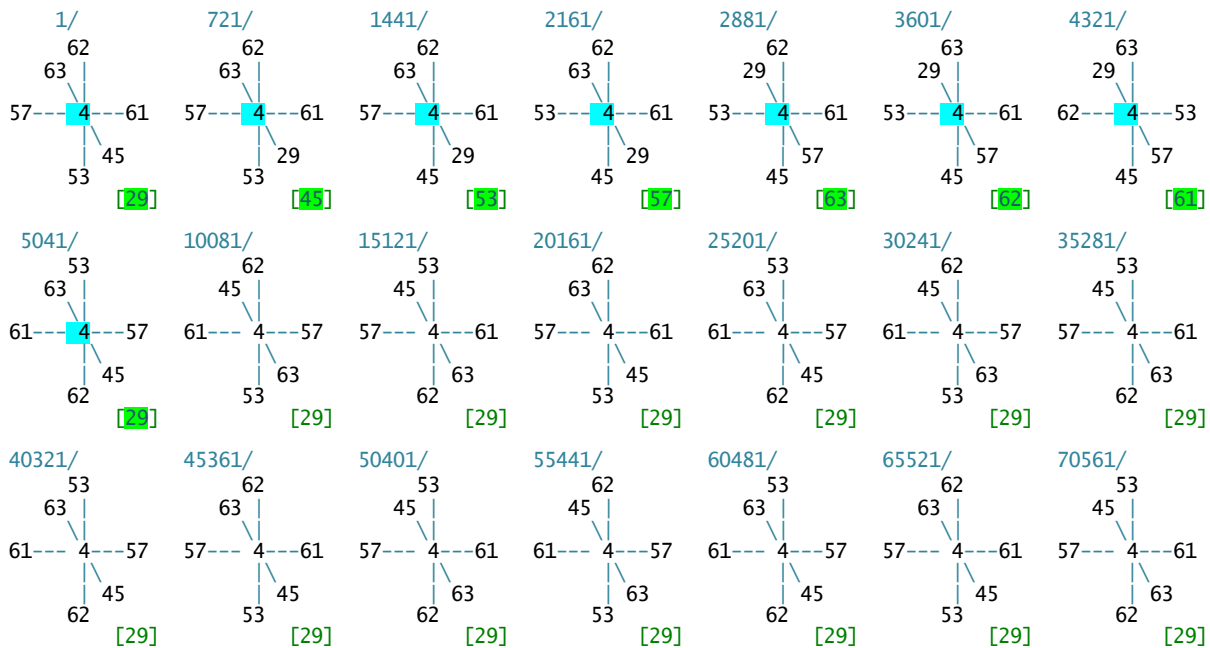
How about the units of Number 2, 4 or 5? Let's check and find how they work.

#5. Units of other Numbers with their own 7 Fixed 'Followers' around them

How about the numbers 2, 4, 5 or 13, then? Do they also have their own 7 fixed followers around them? Do they sit on the fixed positions around their masters?

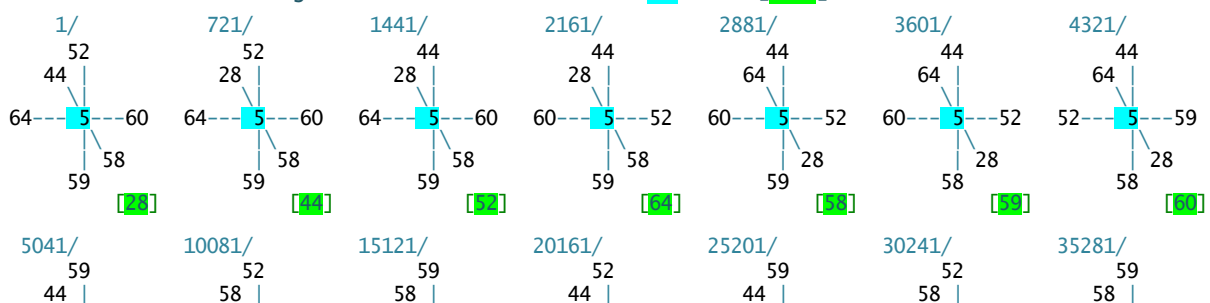
75601: { 3, 62, 58, 61, 54, 64, 46, 30 }; 80641: { 3, 62, 58, 61, 54, 64, 46, 30 }; 85681: { 3, 58, 62, 54, 61, 64, 46, 30 };
 90721: { 3, 58, 62, 61, 54, 46, 64, 30 }; 95761: { 3, 62, 58, 54, 61, 46, 64, 30 }; 100801: { 3, 62, 58, 61, 54, 64, 46, 30 };
 105841: { 3, 58, 62, 54, 61, 64, 46, 30 }; 110881: { 3, 58, 62, 61, 54, 46, 64, 30 }; 115921: { 3, 62, 58, 54, 61, 46, 64, 30 };
 120961: { 3, 58, 62, 54, 61, 64, 46, 30 }; 126001: { 3, 62, 58, 61, 54, 64, 46, 30 }; 131041: { 3, 62, 58, 54, 61, 46, 64, 30 };
 136081: { 3, 58, 62, 61, 54, 46, 64, 30 }; 141121: { 3, 58, 62, 54, 61, 64, 46, 30 }; 146161: { 3, 62, 58, 61, 54, 64, 46, 30 };
 151201: { 3, 62, 58, 54, 61, 46, 64, 30 }; 156241: { 3, 58, 62, 61, 54, 46, 64, 30 }; 161281: { 3, 62, 58, 61, 54, 46, 64, 30 };
 166321: { 3, 58, 62, 54, 61, 46, 64, 30 }; 171361: { 3, 58, 62, 61, 54, 64, 46, 30 }; 176401: { 3, 62, 58, 54, 61, 64, 46, 30 };
 181441: { 3, 62, 58, 61, 54, 46, 64, 30 }; 186481: { 3, 58, 62, 54, 61, 46, 64, 30 }; 191521: { 3, 58, 62, 61, 54, 64, 46, 30 };
 196561: { 3, 62, 58, 54, 61, 64, 46, 30 }; 201601: { 3, 58, 62, 54, 61, 46, 64, 30 }; 206641: { 3, 62, 58, 61, 54, 46, 64, 30 };
 211681: { 3, 62, 58, 54, 61, 46, 64, 30 }; 216721: { 3, 58, 62, 61, 54, 64, 46, 30 }; 221761: { 3, 58, 62, 54, 61, 46, 64, 30 };
 226801: { 3, 62, 58, 61, 54, 46, 64, 30 }; 231841: { 3, 62, 58, 54, 61, 64, 46, 30 }; 236881: { 3, 58, 62, 61, 54, 64, 46, 30 };
 241921: { 3, 58, 62, 61, 54, 64, 46, 30 }; 246961: { 3, 62, 58, 54, 61, 64, 46, 30 }; 252001: { 3, 62, 58, 61, 54, 46, 64, 30 };
 257041: { 3, 58, 62, 54, 61, 46, 64, 30 }; 262081: { 3, 58, 62, 61, 54, 64, 46, 30 }; 267121: { 3, 62, 58, 54, 61, 64, 46, 30 };
 272161: { 3, 62, 58, 61, 54, 46, 64, 30 }; 277201: { 3, 58, 62, 61, 54, 64, 46, 30 }; 282241: { 3, 62, 58, 54, 61, 46, 64, 30 };
 287281: { 3, 58, 62, 61, 54, 64, 46, 30 }; 292321: { 3, 58, 62, 54, 61, 46, 64, 30 }; 297361: { 3, 62, 58, 61, 54, 46, 64, 30 };
 302401: { 3, 62, 58, 54, 61, 64, 46, 30 }; 307441: { 3, 58, 62, 61, 54, 64, 46, 30 }; 312481: { 3, 58, 62, 54, 61, 46, 64, 30 };
 317521: { 3, 62, 58, 61, 54, 46, 64, 30 }; [Solution Counts(when n1=1/A1)] = 5040/322560

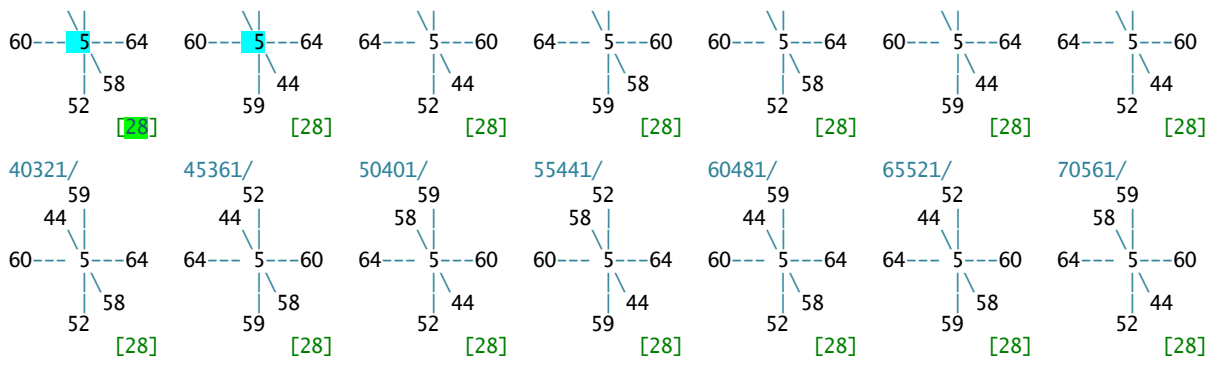
* 3-Dimensional 6 Adjacent Numbers next to 4 and [PSC] *



75601: { 4, 57, 61, 53, 62, 63, 45, 29 }; 80641: { 4, 57, 61, 53, 62, 63, 45, 29 }; 85681: { 4, 61, 57, 62, 53, 63, 45, 29 };
 90721: { 4, 61, 57, 53, 62, 45, 63, 29 }; 95761: { 4, 57, 61, 62, 53, 45, 63, 29 }; 100801: { 4, 57, 61, 53, 62, 63, 45, 29 };
 105841: { 4, 61, 57, 62, 53, 63, 45, 29 }; 110881: { 4, 61, 57, 53, 62, 45, 63, 29 }; 115921: { 4, 57, 61, 62, 53, 45, 63, 29 };
 120961: { 4, 61, 57, 62, 53, 63, 45, 29 }; 126001: { 4, 57, 61, 53, 62, 63, 45, 29 }; 131041: { 4, 57, 61, 62, 53, 45, 63, 29 };
 136081: { 4, 61, 57, 53, 62, 45, 63, 29 }; 141121: { 4, 61, 57, 62, 53, 63, 45, 29 }; 146161: { 4, 57, 61, 53, 62, 63, 45, 29 };
 151201: { 4, 57, 61, 62, 53, 45, 63, 29 }; 156241: { 4, 61, 57, 53, 62, 45, 63, 29 }; 161281: { 4, 57, 61, 53, 62, 45, 63, 29 };
 166321: { 4, 61, 57, 62, 53, 45, 63, 29 }; 171361: { 4, 61, 57, 53, 62, 63, 45, 29 }; 176401: { 4, 57, 61, 62, 53, 63, 45, 29 };
 181441: { 4, 57, 61, 53, 62, 45, 63, 29 }; 186481: { 4, 61, 57, 62, 53, 45, 63, 29 }; 191521: { 4, 61, 57, 53, 62, 63, 45, 29 };
 196561: { 4, 57, 61, 62, 53, 63, 45, 29 }; 201601: { 4, 61, 57, 62, 53, 45, 63, 29 }; 206641: { 4, 57, 61, 53, 62, 45, 63, 29 };
 211681: { 4, 57, 61, 62, 53, 63, 45, 29 }; 216721: { 4, 61, 57, 53, 62, 63, 45, 29 }; 221761: { 4, 61, 57, 62, 53, 45, 63, 29 };
 226801: { 4, 57, 61, 62, 45, 63, 29 }; 231841: { 4, 57, 61, 62, 53, 63, 45, 29 }; 236881: { 4, 61, 57, 53, 62, 63, 45, 29 };
 241921: { 4, 61, 57, 53, 62, 63, 45, 29 }; 246961: { 4, 57, 61, 62, 53, 63, 45, 29 }; 252001: { 4, 57, 61, 53, 62, 45, 63, 29 };
 257041: { 4, 61, 57, 62, 53, 45, 63, 29 }; 262081: { 4, 61, 57, 53, 62, 63, 45, 29 }; 267121: { 4, 57, 61, 62, 53, 63, 45, 29 };
 272161: { 4, 57, 61, 53, 62, 45, 63, 29 }; 277201: { 4, 61, 57, 62, 53, 45, 63, 29 }; 282241: { 4, 57, 61, 62, 53, 63, 45, 29 };
 287281: { 4, 61, 57, 53, 62, 63, 45, 29 }; 292321: { 4, 61, 57, 62, 53, 45, 63, 29 }; 297361: { 4, 57, 61, 53, 62, 45, 63, 29 };
 302401: { 4, 57, 61, 62, 53, 63, 45, 29 }; 307441: { 4, 61, 57, 53, 62, 63, 45, 29 }; 312481: { 4, 61, 57, 62, 53, 45, 63, 29 };
 317521: { 4, 57, 61, 53, 62, 45, 63, 29 }; [Solution Counts(when n1=1/A1)] = 5040/322560

* 3-Dimensional 6 Adjacent Numbers next to 5 and [PSC] *





75601: { 5, 64, 60, 59, 52, 44, 58, 28 }; 80641: { 5, 64, 60, 59, 52, 44, 58, 28 }; 85681: { 5, 60, 64, 52, 59, 44, 58, 28 };
 90721: { 5, 60, 64, 59, 52, 58, 44, 28 }; 95761: { 5, 64, 60, 52, 59, 58, 44, 28 }; 100801: { 5, 64, 60, 59, 52, 44, 58, 28 };
 105841: { 5, 60, 64, 52, 59, 44, 58, 28 }; 110881: { 5, 60, 64, 59, 52, 58, 44, 28 }; 115921: { 5, 64, 60, 52, 59, 58, 44, 28 };
 120961: { 5, 60, 64, 52, 59, 44, 58, 28 }; 126001: { 5, 64, 60, 59, 52, 44, 58, 28 }; 131041: { 5, 64, 60, 52, 59, 58, 44, 28 };
 136081: { 5, 60, 64, 59, 52, 58, 44, 28 }; 141121: { 5, 60, 64, 52, 59, 44, 58, 28 }; 146161: { 5, 64, 60, 59, 52, 44, 58, 28 };
 151201: { 5, 64, 60, 52, 59, 58, 44, 28 }; 156241: { 5, 60, 64, 59, 52, 58, 44, 28 }; 161281: { 5, 64, 60, 59, 52, 58, 44, 28 };
 166321: { 5, 60, 64, 52, 59, 58, 44, 28 }; 171361: { 5, 60, 64, 59, 52, 44, 58, 28 }; 176401: { 5, 64, 60, 52, 59, 44, 58, 28 };
 181441: { 5, 64, 60, 59, 52, 44, 58, 28 }; 186481: { 5, 60, 64, 52, 59, 58, 44, 28 }; 191521: { 5, 60, 64, 59, 52, 44, 58, 28 };
 196561: { 5, 64, 60, 52, 59, 44, 58, 28 }; 201601: { 5, 60, 64, 52, 59, 58, 44, 28 }; 206641: { 5, 64, 60, 59, 52, 58, 44, 28 };
 211681: { 5, 64, 60, 52, 59, 44, 58, 28 }; 216721: { 5, 60, 64, 59, 52, 44, 58, 28 }; 221761: { 5, 60, 64, 52, 59, 58, 44, 28 };
 226801: { 5, 64, 60, 59, 52, 58, 44, 28 }; 231841: { 5, 64, 60, 52, 59, 44, 58, 28 }; 236881: { 5, 60, 64, 59, 52, 44, 58, 28 };
 241921: { 5, 60, 64, 59, 52, 44, 58, 28 }; 246961: { 5, 64, 60, 52, 59, 44, 58, 28 }; 252001: { 5, 64, 60, 59, 52, 58, 44, 28 };
 257041: { 5, 60, 64, 52, 59, 58, 44, 28 }; 262081: { 5, 60, 64, 59, 52, 44, 58, 28 }; 267121: { 5, 64, 60, 52, 59, 44, 58, 28 };
 272161: { 5, 64, 60, 59, 52, 58, 44, 28 }; 277201: { 5, 60, 64, 52, 59, 58, 44, 28 }; 282241: { 5, 64, 60, 52, 59, 44, 58, 28 };
 287281: { 5, 60, 64, 59, 52, 44, 58, 28 }; 292321: { 5, 60, 64, 52, 59, 58, 44, 28 }; 297361: { 5, 64, 60, 59, 52, 58, 44, 28 };
 302401: { 5, 64, 60, 52, 59, 44, 58, 28 }; 307441: { 5, 60, 64, 59, 52, 44, 58, 28 }; 312481: { 5, 60, 64, 52, 59, 58, 44, 28 };
 317521: { 5, 64, 60, 59, 52, 58, 44, 28 }; [Solution Counts(when n1=1/A11) = 5040/322560]

OK!

** Recompiled and Listed by Kanji Setsuda on
 Jul. 4, 2015 with MacOSX 10.10.4 & Xcode 6.4 **

As you see all those 4 examples above, each number of {2, 3, 4 and 5} also has its own 7 'fixed followers' around it and makes a unit, with no exceptions, just the same as in the case of Unit Number 1.

And I could find that they are equally based upon the next list of Complementary Pairs specified by the consecutive Natural Numbers 1~64.

** Re-arranged List of Essential Complementary Pairs led by their Masters **

7 Groups: (S33, S97) (S49, S81) (S57, S73) (S61, S69) (S63, S67) (S64, S66) (S65=S65)
 (1, X) = {(1, 32), (1, 48), (1, 56), (1, 60), (1, 62), (1, 63), (1, 64)};
 (2, X) = {(2, 31), (2, 47), (2, 55), (2, 59), (2, 61), (2, 64), (2, 63)};
 (3, X) = {(3, 30), (3, 46), (3, 54), (3, 58), (3, 64), (3, 61), (3, 62)};
 (4, X) = {(4, 29), (4, 45), (4, 53), (4, 57), (4, 63), (4, 62), (4, 61)};
 (5, X) = {(5, 28), (5, 44), (5, 52), (5, 64), (5, 58), (5, 59), (5, 60)};
 (13, X) = {(13, 20), (13, 36), (13, 60), (13, 56), (13, 50), (13, 51), (13, 52)};
 (17, X) = {(17, 16), (17, 64), (17, 40), (17, 44), (17, 46), (17, 47), (17, 48)};
 (49, X) = {(49, 48), (49, 32), (49, 8), (49, 12), (49, 14), (49, 15), (49, 16)};

We could naturally imagine that every numbers 1~64 equally have their own units with their 7 fixed followers and always move along with them onto n1~n64.

All are parallel with one another, and equally obey the uniform style of existence.

It is not the monopoly of the Unit Number 1 at all, though it would like to accept the 'representative role' of all because of its top positions to appear first in every lists.

#6. How about the Transformation Method for the Units Number 2 and 3?

*** Reconstruction of CPMC444 by Pan-magic Plane Shift Transformation ***

[16/T] 236902#
 48 17 44 21
 | 1 64 5 60
 18 62 47 3 22 58 43 7
 | 63 19 2 46 59 23 6 42
 39 4 26 61 35 8 30 57 |
 | 10 45 55 20 14 41 51 24
 25 53 40 12 29 49 36 16 |
 | 56 28 9 37 52 32 13 33
 11 54 15 50 |
 38 27 34 31

[17/T] 101204#
 21 48 17 44
 | 60 1 64 5
 43 7 18 62 47 3 22 58
 | 6 42 63 19 2 46 59 23
 30 57 39 4 26 61 35 8 |
 | 51 24 10 45 55 20 14 41
 36 16 25 53 40 12 29 49 |
 | 13 33 56 28 9 37 52 32
 50 11 54 15 |
 31 38 27 34

[18/T] 216742#
 44 21 48 17
 | 5 60 1 64
 22 58 43 7 18 62 47 3
 | 59 23 6 42 63 19 2 46
 35 8 30 57 39 4 26 61 |
 | 14 41 51 24 10 45 55 20
 29 49 36 16 25 53 40 12 |
 | 52 32 13 33 56 28 9 37
 15 50 11 54 |
 34 31 38 27

[19/T] 81044#
 17 44 21 48
 | 64 5 60 1
 47 3 22 58 43 7 18 62
 | 2 46 59 23 6 42 63 19
 26 61 35 8 30 57 39 4 |
 | 55 20 14 41 51 24 10 45
 40 12 29 49 36 16 25 53 |
 | 9 37 52 32 13 33 56 28
 54 15 50 11 |
 27 34 31 38

[20/T] 121055#
 25 40 29 36
 | 56 9 52 13
 48 11 17 54 44 15 21 50
 | 1 38 64 27 5 34 60 31
 18 62 47 3 22 58 43 7 |
 | 63 19 2 46 59 23 6 42
 39 4 26 61 35 8 30 57 |
 | 10 45 55 20 14 41 51 24
 53 12 49 16 |
 28 37 32 33

[21/T] 176851#
 36 25 40 29
 | 13 56 9 52
 21 50 48 11 17 54 44 15
 | 60 31 1 38 64 27 5 34
 43 7 18 62 47 3 22 58 |
 | 6 42 63 19 2 46 59 23
 30 57 39 4 26 61 35 8 |
 | 51 24 10 45 55 20 14 41
 16 53 12 49 |
 33 28 37 32

[22/T] 141215#
 29 36 25 40
 | 52 13 56 9
 44 15 21 50 48 11 17 54
 | 5 34 60 31 1 38 64 27
 22 58 43 7 18 62 47 3 |
 | 59 23 6 42 63 19 2 46
 35 8 30 57 39 4 26 61 |
 | 14 41 51 24 10 45 55 20
 49 16 53 12 |
 32 33 28 37

[23/T] 197011#
 40 29 36 25
 | 9 52 13 56
 17 54 44 15 21 50 48 11
 | 64 27 5 34 60 31 1 38
 47 3 22 58 43 7 18 62 |
 | 2 46 59 23 6 42 63 19
 26 61 35 8 30 57 39 4 |
 | 55 20 14 41 51 24 10 45
 12 49 16 53 |
 37 32 33 28

[24/T] 191542#
 39 26 35 30
 | 10 55 14 51
 25 53 40 12 29 49 36 16
 | 56 28 9 37 52 32 13 33
 48 11 17 54 44 15 21 50 |
 | 1 38 64 27 5 34 60 31
 18 62 47 3 22 58 43 7 |
 | 63 19 2 46 59 23 6 42
 4 61 8 57 |
 45 20 41 24

[25/T] 146564#
 30 39 26 35
 | 51 10 55 14
 36 16 25 53 40 12 29 49
 | 13 33 56 28 9 37 52 32
 21 50 48 11 17 54 44 15 |
 | 60 31 1 38 64 27 5 34
 43 7 18 62 47 3 22 58 |
 | 6 42 63 19 2 46 59 23
 57 4 61 8 |
 24 45 20 41

[26/T] 171382#
 35 30 39 26
 | 14 51 10 55
 29 49 36 16 25 53 40 12
 | 52 32 13 33 56 28 9 37
 44 15 21 50 48 11 17 54 |
 | 5 34 60 31 1 38 64 27
 22 58 43 7 18 62 47 3 |
 | 59 23 6 42 63 19 2 46
 8 57 4 61 |
 41 24 45 20

[27/T] 126404#
 26 35 30 39
 | 55 14 51 10
 40 12 29 49 36 16 25 53
 | 9 37 52 32 13 33 56 28
 17 54 44 15 21 50 48 11 |
 | 64 27 5 34 60 31 1 38
 47 3 22 58 43 7 18 62 |
 | 2 46 59 23 6 42 63 19
 61 8 57 4 |
 20 41 24 45

[28/T] 85775#
 18 47 22 43
 | 63 2 59 6
 39 4 26 61 35 8 30 57
 | 10 45 55 20 14 41 51 24
 25 53 40 12 29 49 36 16 |
 | 56 28 9 37 52 32 13 33
 48 11 17 54 44 15 21 50 |
 | 1 38 64 27 5 34 60 31
 62 3 58 7 |
 19 46 23 42

[29/T] 212131#
 43 18 47 22
 | 6 63 2 59
 30 57 39 4 26 61 35 8
 | 51 24 10 45 55 20 14 41
 36 16 25 53 40 12 29 49 |
 | 13 33 56 28 9 37 52 32
 21 50 48 11 17 54 44 15 |
 | 60 31 1 38 64 27 5 34
 7 62 3 58 |
 42 19 46 23

[30/T] 105935#
 22 43 18 47
 | 59 6 63 2
 35 8 30 57 39 4 26 61
 | 14 41 51 24 10 45 55 20
 29 49 36 16 25 53 40 12 |
 | 52 32 13 33 56 28 9 37
 44 15 21 50 48 11 17 54 |
 | 5 34 60 31 1 38 64 27
 58 7 62 3 |
 23 42 19 46

[31/T] 232291#
 47 22 43 18
 | 2 59 6 63
 26 61 35 8 30 57 39 4
 | 55 20 14 41 51 24 10 45
 40 12 29 49 36 16 25 53 |
 | 9 37 52 32 13 33 56 28
 17 54 44 15 21 50 48 11 |
 | 64 27 5 34 60 31 1 38
 3 58 7 62 |
 46 23 42 19

[32/T] 90721#
 19 46 23 42
 | 48 17 44 21
 45 1 20 64 41 5 24 60
 | 18 62 47 3 22 58 43 7
 28 63 37 2 32 59 33 6 |
 | 39 4 26 61 35 8 30 57
 38 10 27 55 34 14 31 51 |
 | 25 53 40 12 29 49 36 16
 56 9 52 13 |
 11 54 15 50

[33/T] 207031#
 42 19 46 23
 | 21 48 17 44
 24 60 45 1 20 64 41 5
 | 43 7 18 62 47 3 22 58
 33 6 28 63 37 2 32 59 |
 | 30 57 39 4 26 61 35 8
 31 51 38 10 27 55 34 14 |
 | 36 16 25 53 40 12 29 49
 13 56 9 52 |
 50 11 54 15

[34/T] 110881#
 23 42 19 46
 | 44 21 48 17
 41 5 24 60 45 1 20 64
 | 22 58 43 7 18 62 47 3
 32 59 33 6 28 63 37 2 |
 | 35 8 30 57 39 4 26 61
 34 14 31 51 38 10 27 55 |
 | 29 49 36 16 25 53 40 12
 52 13 56 9 |
 15 50 11 54

[35/T] 227191#
 46 23 42 19
 | 17 44 21 48
 20 64 41 5 24 60 45 1
 | 47 3 22 58 43 7 18 62
 37 2 32 59 33 6 28 63 |
 | 26 61 35 8 30 57 39 4
 27 55 34 14 31 51 38 10 |
 | 40 12 29 49 36 16 25 53
 9 52 13 56 |
 54 15 50 11

[36/T] 186561#
 38 27 34 31
 | 25 40 29 36
 19 56 46 9 23 52 42 13
 | 48 11 17 54 44 15 21 50
 45 1 20 64 41 5 24 60 |
 | 18 62 47 3 22 58 43 7
 28 63 37 2 32 59 33 6 |
 | 39 4 26 61 35 8 30 57
 10 55 14 51 |
 53 12 49 16

[37/T] 151645# 31-----38-----27-----34
|36 25 40 |29
42 13 19 56 46 9 23 52
|21 50--48-11--17--54--44--15
24 60 |45 1 20 64 41 5 |
|43 7 18 62 47 3 |22 58
33--6--28-63-37-2--32-59 |
30 57 39 4 26 61 35 8
51 | 10 55 14 |
16-----53-----12-----49

[38/T] 166401# 34-----31-----38-----27
|29 36 25 40
46 9 23 52 42 13 19 56
|44 15--21--50--48-11--17--54
41 5 |24 60 45 1 20 64 |
|22 58 43 7 18 62 |47 3
32-59--33-6--28-63-37 2 |
35 8 30 57 39 4 26 61
14 | 51 10 55 |
49-----16-----53-----12

[39/T] 131485# 27-----34-----31-----38
|40 29 36 25
46 9 23 52 42 13 19 56
|17 54--44-15--21--50--48-11
20 64 |41 5 24 60 45 1 |
|47 3 22 58 43 7 |18 62
37--2--32-59--33-6--28 63 |
26 61 35 8 30 57 39 4
55 | 14 51 10 |
12-----49-----16-----53

[40/T] 136081# 28-----37-----32-----33
|39 26 35 30
38 10 27 55 34 14 31 51
|25 53--40-12--29-49--36--16
19 56 |46 9 23 52 42 13 |
|48 11 17 54 44 15 |21 50
45-1-20-64-41-5--24 60 |
18 62 47 3 22 58 43 7
63 | 2 59 6 |
4-----61-----8-----57

[41/T] 161671# 33-----28-----37-----32
|30 39 26 35
31 51 38 10 27 55 34 14
|36 16--25-53--40-12--29-49
42 13 |19 56 46 9 23 52 |
|21 50 48 11 17 54 |44 15
24-60-45-1-20-64-41 5 |
43 7 18 62 47 3 22 58
6 | 63 2 59 |
57-----4-----61-----8

[42/T] 156241# 32-----33-----28-----37
|35 30 39 26
34 14 31 51 38 10 27 55
|29 49--36-16--25-53--40-12
23 52 |42 13 19 56 46 9 |
|44 15 21 50 48 11 |17 54
41-5-24-60-45-1-20 64 |
22 58 43 7 18 62 47 3
59 | 6 63 2 |
8-----57-----4-----61

[43/T] 181831# 37-----32-----33-----28
|26 35 30 39
27 55 34 14 31 51 38 10
|40 12--29-49--36-16--25-53
46 9 |23 52 42 13 19 56 |
|17 54 44 15 21 50 |48 11
20-64-41-5--24-60-45 1 |
47 3 22 58 43 7 18 62
2 | 59 6 63 |
61-----8-----57-----4

[44/T] 221841# 45-----20-----41-----24
|18 47 22 43
28 63 37 2 32 59 33 6
|39 4--26-61--35-8--30-57
38 10 |27 55 34 14 31 51 |
|25 53 40 12 29 49 |36 16
19-56-46-9--23-52--42 13 |
48 11 17 54 44 15 21 50
1 | 64 5 60 |
62-----3-----58-----7

[45/T] 116365# 24-----45-----20-----41
|43 18 47 22
33 6 28 63 37 2 32 59
|30 57--39-4--26-61--35--8
31 51 |38 10 27 55 34 14 |
|36 16 25 53 40 12 |29 49
42-13-19-56-46-9--23 52 |
21 50 48 11 17 54 44 15
60 | 1 64 5 |
7-----62-----3-----58

[46/T] 201681# 41-----24-----45-----20
|22 43 18 47
32 59 33 6 28 63 37 2
|35 8--30-57--39-4--26-61
34 14 |31 51 38 10 27 55 |
|29 49 36 16 25 53 |40 12
23-52-42-13-19-56-46 9 |
44 15 21 50 48 11 17 54
5 | 60 1 64 |
58-----7-----62-----3

[47/T] 96205# 20-----41-----24-----45
|47 22 43 18
37 2 32 59 33 6 28 63
|26 61--35-8--30-57--39-4
27 55 |34 14 31 51 38 10 |
|40 12 29 49 36 16 |25 53
46-9-23-52-42-13-19 56 |
17 54 44 15 21 50 48 11
64 | 5 60 1 |
3-----58-----7-----62

[48/T] 307462# 62-----3-----58-----7
|19 46 23 42
4 48 61 17 8 44 57 21
|45 1-20-64-41-5--24-60
53 18 |12 47 49 22 16 43 |
|28 63 37 2 32 59 |33 6
11-39-54-26-15-35-50 30 |
38 10 27 55 34 14 31 51
25 | 40 29 36 |
56-----9-----52-----13

[49/T] 30644# 7-----62-----3-----58
|42 19 46 23
57 21 4 48 61 17 8 44
|24 60--45-1-20-64--41-5
16 43 |53 18 12 47 49 22 |
|33 6 28 63 37 2 |32 59
50-30-11-39-54-26-15 35 |
31 51 38 10 27 55 34 14
36 | 25 40 29 |
13-----56-----9-----52

[50/T] 287302# 58-----7-----62-----3
|23 42 19 46
8 44 57 21 4 48 61 17
|41 5--24-60-45-1-20-64
49 22 |16 43 53 18 12 47 |
|32 59 33 6 28 63 |37 2
15-35-50-30-11-39-54 26 |
34 14 31 51 38 10 27 55
29 | 36 25 40 |
52-----13-----56-----9

[51/T] 10484# 3-----58-----7-----62
|46 23 42 19
61 17 8 44 57 21 4 48
|20 64--41-5--24-60--45-1
12 47 |49 22 16 43 53 18 |
|37 2 32 59 33 6 |28 63
54-26-15-35-50-30-11 39 |
27 55 34 14 31 51 38 10
40 | 29 36 25 |
9-----52-----13-----56

[52/T] 50495# 11-----54-----15-----50
|38 27 34 31
62 25 3 40 58 29 7 36
|19 56--46-9--23-52--42-13
4 48 |61 17 8 44 57 21 |
|45 1 20 64 41 5 |24 60
53-18-12-47-49-22-16 43 |
28 63 37 2 32 59 33 6
39 | 26 35 30 |
10-----55-----14-----51

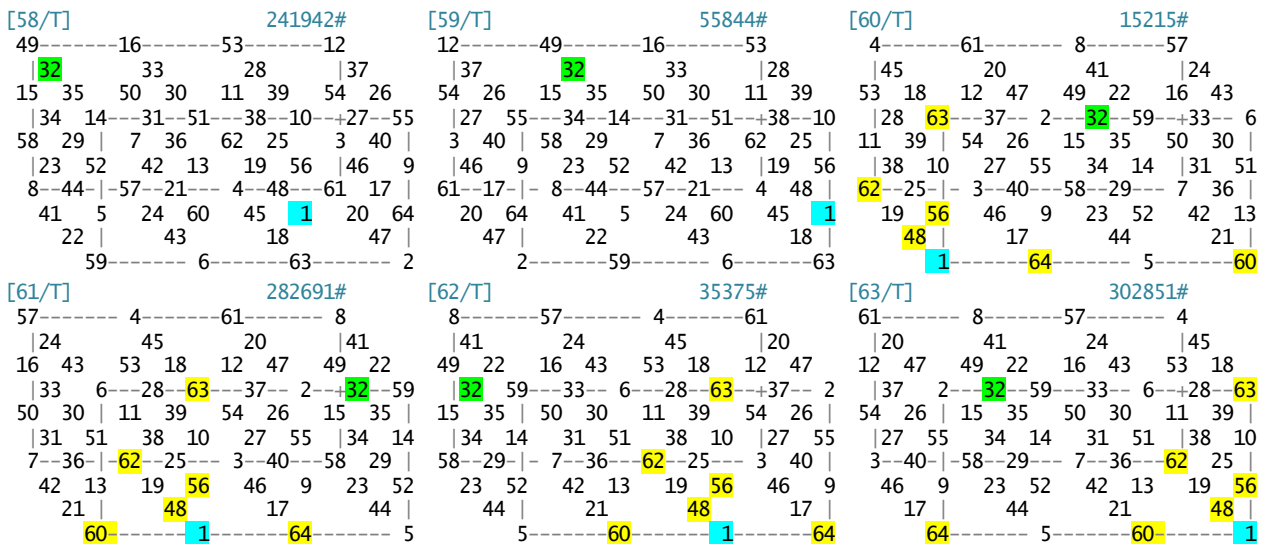
[53/T] 247411# 50-----11-----54-----15
|31 38 27 34
7 36 62 25 3 40 58 29
|42 13--19-56-46-9--23-52
57 21 |4 48 61 17 8 44 |
|24 60 45 1 20 64 |41 5
16-43-53-18-12-47-49 22 |
33 6 28 63 37 2 32 59
30 | 39 26 35 |
51-----10-----55-----14

[54/T] 70655# 15-----50-----11-----54
|34 31 38 27
58 29 7 36 62 25 3 40
|23 52--42-13--19-56--46--9
8 44 |57 21 4 48 61 17 |
|41 5 24 60 45 1 |20 64
49-22-16-43-53-18-12 47 |
32 59 33 6 28 63 37 2
35 | 30 39 26 |
14-----51-----10-----55

[55/T] 267571# 54-----15-----50-----11
|27 34 31 38
3 40 58 29 7 36 62 25
|46 9--23-52--42-13--19-56
61 17 |8 44 57 21 4 48 |
|20 64 41 5 24 60 |45 1
12-47-49-22-16-43-53 18 |
37 2 32 59 33 6 28 63
26 | 35 30 39 |
55-----14-----51-----10

[56/T] 262102# 53-----12-----49-----16
|28 37 32 33
11 39 54 26 15 35 50 30
|38 10--27-55--34-14--31-51
62 25 |3 40 58 29 7 36 |
|19 56 46 9 23 52 |42 13
4-48-61-17--8-44--57 21 |
45 1 20 64 41 5 24 60
18 | 47 22 43 |
63-----2-----59-----6

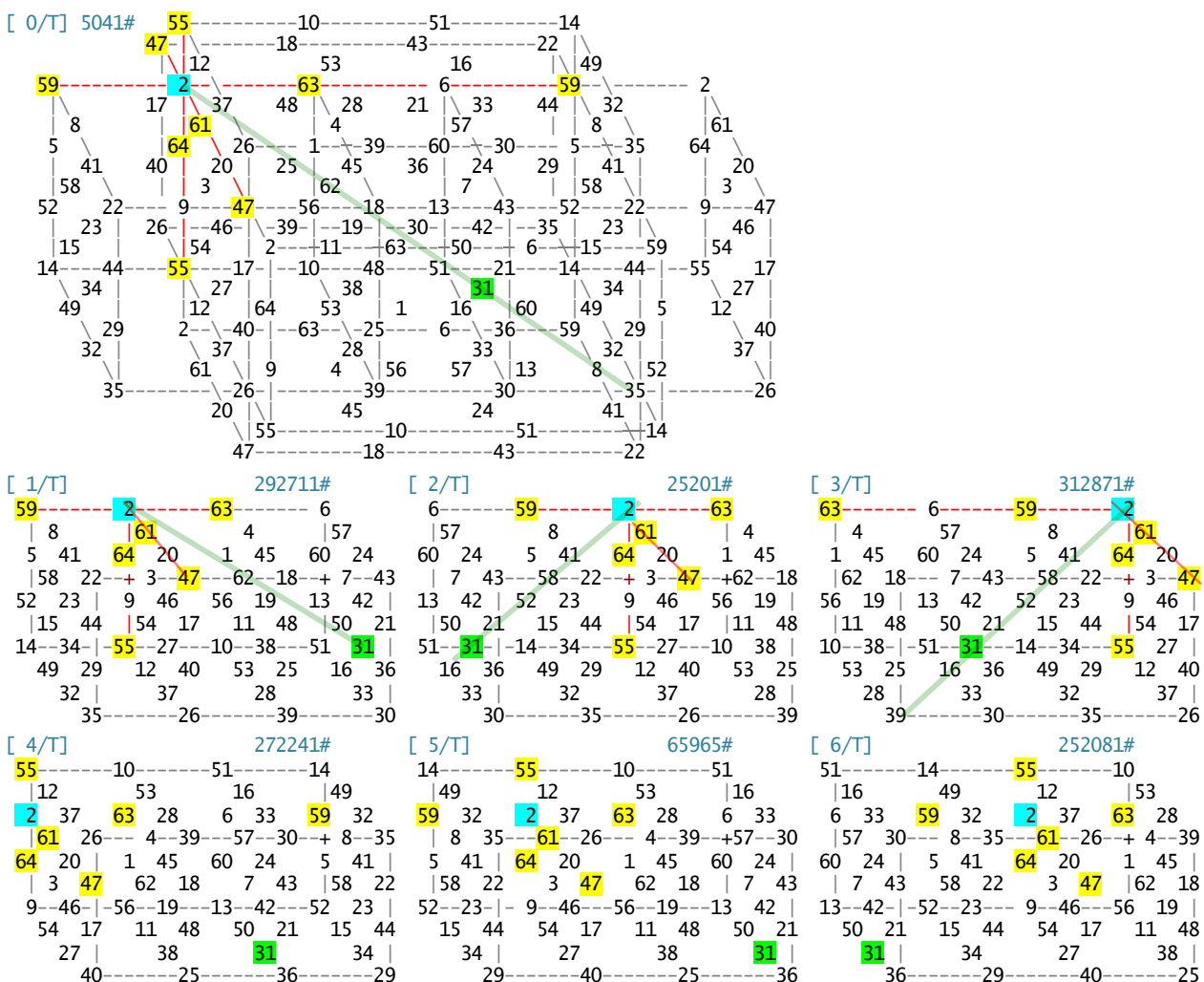
[57/T] 76004# 16-----53-----12-----49
|33 28 37 32
50 30 11 39 54 26 15 35
|31 51--38-10--27-55--34-14
7 36 |62 25 3 40 58 29 |
|42 13 19 56 46 9 |23 52
57-21-4-48-61-17--8 44 |
24 60 45 1 20 64 41 5
43 | 18 47 22 |
6-----63-----2-----59



In the last Section, I reported about the deductive method of Panmagic Plane Shift Transformation, by which I proved we could successfully reconstruct all the 322560 primitive solutions from the basic data when $n1=1$. Let's review it here as above ↑.

The first diagram demonstrates the Basic Data when $n1=1$ in the extended space.

If we move Number 1 and its 7 followers along with it onto the next position by this transformation method, we can make another solution as a result. When we move the unit onto the next position again, we can really make the second result, and so on.



(Continues)

If we use the Basic Data when n1=2 shown just as above, can we also succeed in reconstructing 'C&P' MC4 by the same Panmagic Plane Shift Transformation?

Let's make another experiment and check the results here.

(Continued)

<p>[7/T] 45805#</p> <pre> 10-----51-----14-----55 53 16 49 12 63 28 6 33 59 32 2 37 4 39--57--30--8--35--61--26 1 45 60 24 5 41 64 20 62 18 7 43 58 22 3 47 56--19-- 13--42--52--23--9 46 11 48 50 21 15 44 54 17 38 31 34 27 25-----36-----29-----40 </pre>	<p>[8/T] 40321#</p> <pre> 9-----56-----13-----52 54 11 50 15 55 27 10 38 51 31 14 34 12 40--53--25--16--36--49--29 2 37 63 28 6 33 59 32 61 26 4 39 57 30 8 35 64--20-- 1--45--60--24--5 41 3 47 62 18 7 43 58 22 46 19 42 23 17-----48-----21-----44 </pre>	<p>[9/T] 257431#</p> <pre> 52-----9-----56-----13 15 54 11 50 14 34 55 27 10 38 51 31 49 29--12--40--53--25--16--36 59 32 2 37 63 28 6 33 8 35 61 26 4 39 57 30 5--41-- 64--20--1--45--60 24 58 22 3 47 62 18 7 43 23 46 19 42 44-----17-----48-----21 </pre>
<p>[10/T] 60481#</p> <pre> 13-----52-----9-----56 50 15 54 11 51 31 14 34 55 27 10 38 16 36--49--29--12--40--53--25 6 33 59 32 2 37 63 28 57 30 8 35 61 26 4 39 60--24-- 5--41--64--20--1 45 7 43 58 22 3 47 62 18 42 23 46 19 21-----44-----17-----48 </pre>	<p>[11/T] 277591#</p> <pre> 56-----13-----52-----9 11 50 15 54 10 38 51 31 14 34 55 27 53 25--16--36--49--29--12--40 63 28 6 33 59 32 2 37 4 39 57 30 8 35 61 26 1--45-- 60--24--5--41--64 20 62 18 7 43 58 22 3 47 19 42 23 46 48-----21-----44-----17 </pre>	<p>[12/T] 317601#</p> <pre> 64-----1-----60-----5 3 62 7 58 9 46 56 19 13 42 52 23 54 17--11--48--50--21--15--44 55 27 10 38 51 31 14 34 12 40 53 25 16 36 49 29 2--37-- 63--28--6--33--59 32 61 26 4 39 57 30 8 35 20 45 24 41 47-----18-----43-----22 </pre>
<p>[13/T] 20605#</p> <pre> 5-----64-----1-----60 58 3 62 7 52 23 9 46 56 19 13 42 15 44--54--17--11--48--50--21 14 34 55 27 10 38 51 31 49 29 12 40 53 25 16 36 59--32-- 2--37--63--28--6 33 8 35 61 26 4 39 57 30 41 20 45 24 22-----47-----18-----43 </pre>	<p>[14/T] 297441#</p> <pre> 60-----5-----64-----1 7 58 3 62 13 42 52 23 9 46 56 19 50 21--15--44--54--17--11--48 51 31 14 34 55 27 10 38 16 36 49 29 12 40 53 25 6--33-- 59--32--2--37--63 28 57 30 8 35 61 26 4 39 24 41 20 45 43-----22-----47-----18 </pre>	<p>[15/T] 445#</p> <pre> 1-----60-----5-----64 62 7 58 3 56 19 13 42 52 23 9 46 11 48--50--21--15--44--54--17 10 38 51 31 14 34 55 27 53 25 16 36 49 29 12 40 63--28-- 6--33--59--32--2 37 4 39 57 30 8 35 61 26 45 24 41 20 18-----43-----22-----47 </pre>
<p>[16/T] 231862#</p> <pre> 47-----18-----43-----22 2 63 6 59 17 61 48 4 21 57 44 8 64 20--1--45--60--24--5--41 40 3 25 62 36 7 29 58 9 46 56 19 13 42 52 23 26--54-- 39--11--30--50--35 15 55 27 10 38 51 31 14 34 12 53 16 49 37-----28-----33-----32 </pre>	<p>[17/T] 106244#</p> <pre> 22-----47-----18-----43 59 2 63 6 44 8 17 61 48 4 21 57 5 41--64--20--1--45--60--24 29 58 40 3 25 62 36 7 52 23 9 46 56 19 13 42 35--15-- 26--54--39--11--30 50 14 34 55 27 10 38 51 31 49 12 53 16 32-----37-----28-----33 </pre>	<p>[18/T] 211702#</p> <pre> 43-----22-----47-----18 6 59 2 63 21 57 44 8 17 61 48 4 60 24--5--41--64--20--1--45 36 7 29 58 40 3 25 62 13 42 52 23 9 46 56 19 30--50-- 35--15--26--54--39 11 51 31 14 34 55 27 10 38 16 49 12 53 33-----32-----37-----28 </pre>
<p>[19/T] 86084#</p> <pre> 18-----43-----22-----47 63 6 59 2 48 4 21 57 44 8 17 61 1 45--60--24--5--41--64--20 25 62 36 7 29 58 40 3 56 19 13 42 52 23 9 46 39--11-- 30--50--35--15--26 54 10 38 51 31 14 34 55 27 53 16 49 12 28-----33-----32-----37 </pre>	<p>[20/T] 126095#</p> <pre> 26-----39-----30-----35 55 10 51 14 47 12 18 53 43 16 22 49 2 37--63--28--6--33--59--32 17 61 48 4 21 57 44 8 64 20 1 45 60 24 5 41 40--3-- 25--62--36--7--29 58 9 46 56 19 13 42 52 23 54 11 50 15 27-----38-----31-----34 </pre>	<p>[21/T] 171811#</p> <pre> 35-----26-----39-----30 14 55 10 51 22 49 47 12 18 53 43 16 59 32--2--37--63--28--6--33 44 8 17 61 48 4 21 57 5 41 64 20 1 45 60 24 29--58-- 40--3--25--62--36 7 52 23 9 46 56 19 13 42 15 54 11 50 34-----27-----38-----31 </pre>
<p>[22/T] 146255#</p> <pre> 30-----35-----26-----39 51 14 55 10 43 16 22 49 47 12 18 53 6 33--59--32--2--37--63--28 21 57 44 8 17 61 48 4 60 24 5 41 64 20 1 45 36--7-- 29--58--40--3--25 62 13 42 52 23 9 46 56 19 50 15 54 11 31-----34-----27-----38 </pre>	<p>[23/T] 191971#</p> <pre> 39-----30-----35-----26 10 51 14 55 18 53 43 16 22 49 47 12 63 28--6--33--59--32--2--37 48 4 21 57 44 8 17 61 1 45 60 24 5 41 64 20 25--62-- 36--7--29--58--40 3 56 19 13 42 52 23 9 46 11 50 15 54 38-----31-----34-----27 </pre>	<p>[24/T] 196582#</p> <pre> 40-----25-----36-----29 9 56 13 52 26 54 39 11 30 50 35 15 55 27--10--38--51--31--14--34 47 12 18 53 43 16 22 49 2 37 63 28 6 33 59 32 17--61-- 48--4--21--57--44 8 64 20 1 45 60 24 5 41 3 62 7 58 46-----19-----42-----23 </pre>

[Reconstruction in the Case n1=2]

** Calculated and Listed by Kanji Setsuda on July 4, 2015 with MacOSX 10.10.4 & Xcode 6.4 **

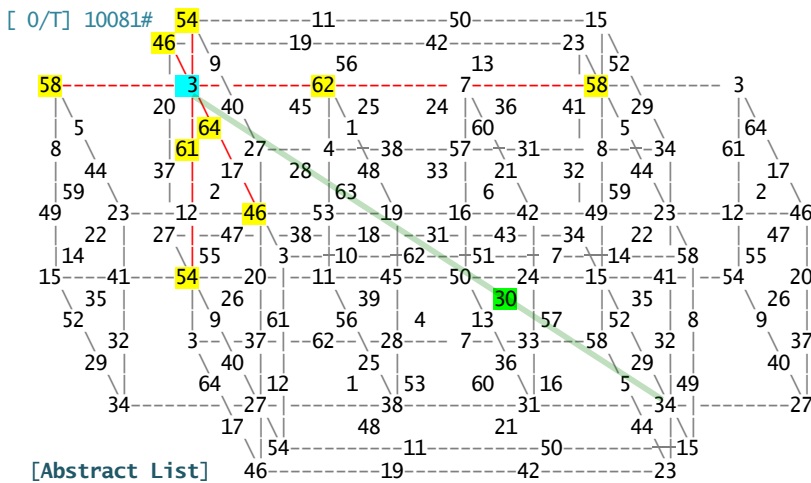
<p>[25/T] 141524# 29-----40-----25-----36 52 9 56 13 35 15 26 54 39 11 30 50 14 34--55-27--10--38--51--31 22 49 47 12 18 53 43 16 59 32 2 37 63 28 6 33 44--8- 17-61--48-4--21 57 5 41 64 20 1 45 60 24 58 3 62 7 23-----46-----19-----42</p>	<p>[26/T] 176422# 36-----29-----40-----25 13 52 9 56 30 50 35 15 26 54 39 11 51 31--14--34--55-27--10--38 43 16 22 49 47 12 18 53 6 33 59 32 2 37 63 28 21--57- 44--8--17-61--48 4 60 24 5 41 64 20 1 45 7 58 3 62 42-----23-----46-----19</p>	<p>[27/T] 121364# 25-----36-----29-----40 56 13 52 9 39 11 30 50 35 15 26 54 10 38--51-31--14--34--55-27 18 53 43 16 22 49 47 12 63 28 6 33 59 32 2 37 48--4- 21--57--44--8--17 61 1 45 60 24 5 41 64 20 62 7 58 3 19-----42-----23-----46</p>
<p>[28/T] 80735# 17-----48-----21-----44 64 1 60 5 40 3 25 62 36 7 29 58 9 46--56-19--13-42--52--23 26 54 39 11 30 50 35 15 55 27 10 38 51 31 14 34 47--12- 18-53--43-16--22 49 2 37 63 28 6 33 59 32 61 4 57 8 20-----45-----24-----41</p>	<p>[29/T] 217171# 44-----17-----48-----21 5 64 1 60 29 58 40 3 25 62 36 7 52 23--9-46--56-19--13-42 35 15 26 54 39 11 30 50 14 34 55 27 10 38 51 31 22--49- 47-12--18-53--43 16 59 32 2 37 63 28 6 33 8 61 4 57 41-----20-----45-----24</p>	<p>[30/T] 100895# 21-----44-----17-----48 60 5 64 1 36 7 29 58 40 3 25 62 13 42--52-23--9-46--56-19 30 50 35 15 26 54 39 11 51 31 14 34 55 27 10 38 43--16- 22-49--47-12--18 53 6 33 59 32 2 37 63 28 57 8 61 4 24-----41-----20-----45</p>
<p>[31/T] 237331# 48-----21-----44-----17 1 60 5 64 25 62 36 7 29 58 40 3 56 19--13-42--52-23--9-46 39 11 30 50 35 15 26 54 10 38 51 31 14 34 55 27 18--53- 43-16--22-49--47 12 63 28 6 33 59 32 2 37 4 57 8 61 45-----24-----41-----20</p>	<p>[32/T] 95761# 20-----45-----24-----41 47 18 43 22 46 2 19 63 42 6 23 59 17 61--48-4--21-57--44-8 27 64 38 1 31 60 34 5 40 3 25 62 36 7 29 58 37--9- 28-56--33-13--32 52 26 54 39 11 30 50 35 15 55 10 51 14 12-----53-----16-----49</p>	<p>[33/T] 201991# 41-----20-----45-----24 22 47 18 43 23 59 46 2 19 63 42 6 44 8--17-61--48-4--21-57 34 5 27 64 38 1 31 60 29 58 40 3 25 62 36 7 32--52- 37--9--28-56--33 13 35 15 26 54 39 11 30 50 14 55 10 51 49-----12-----53-----16</p>
<p>[34/T] 115921# 24-----41-----20-----45 43 22 47 18 42 6 23 59 46 2 19 63 21 57--44-8--17-61--48-4 31 60 34 5 27 64 38 1 36 7 29 58 40 3 25 62 33--13- 32-52--37--9--28 56 30 50 35 15 26 54 39 11 51 14 55 10 16-----49-----12-----53</p>	<p>[35/T] 222151# 45-----24-----41-----20 18 43 22 47 19 63 42 6 23 59 46 2 48 4--21-57--44-8--17-61 38 1 31 60 34 5 27 64 25 62 36 7 29 58 40 3 28--56- 33-13--32-52--37 9 39 11 30 50 35 15 26 54 10 51 14 55 53-----16-----49-----12</p>	<p>[36/T] 181521# 37-----28-----33-----32 26 39 30 35 20 55 45 10 24 51 41 14 47 12--18-53--43-16--22-49 46 2 19 63 42 6 23 59 17 61 48 4 21 57 44 8 27--64- 38--1--31-60--34 5 40 3 25 62 36 7 29 58 9 56 13 52 54-----11-----50-----15</p>
<p>[37/T] 156685# 32-----37-----28-----33 35 26 39 30 41 14 20 55 45 10 24 51 22 49--47-12--18-53--43-16 23 59 46 2 19 63 42 6 44 8 17 61 48 4 21 57 34--5- 27-64--38-1--31 60 29 58 40 3 25 62 36 7 52 9 56 13 15-----54-----11-----50</p>	<p>[38/T] 161361# 33-----32-----37-----28 30 35 26 39 24 51 41 14 20 55 45 10 43 16--22-49--47-12--18-53 42 6 23 59 46 2 19 63 21 57 44 8 17 61 48 4 31--60- 34--5--27-64--38 1 36 7 29 58 40 3 25 62 13 52 9 56 50-----15-----54-----11</p>	<p>[39/T] 136525# 28-----33-----32-----37 39 30 35 26 45 10 24 51 41 14 20 55 18 53--43-16--22-49--47-12 19 63 42 6 23 59 46 2 48 4 21 57 44 8 17 61 38--1- 31-60--34--5--27 64 25 62 36 7 29 58 40 3 56 13 52 9 11-----50-----15-----54</p>
<p>[40/T] 131041# 27-----38-----31-----34 40 25 36 29 37 9 28 56 33 13 32 52 26 54--39-11--30-50--35-15 20 55 45 10 24 51 41 14 47 12 18 53 43 16 22 49 46--2- 19-63--42-6--23 59 17 61 48 4 21 57 44 8 64 1 60 5 3-----62-----7-----58</p>	<p>[41/T] 166711# 34-----27-----38-----31 29 40 25 36 32 52 37 9 28 56 33 13 35 15--26-54--39-11--30-50 41 14 20 55 45 10 24 51 22 49 47 12 18 53 43 16 23--59- 46-2--19-63--42 6 44 8 17 61 48 4 21 57 5 64 1 60 58-----3-----62-----7</p>	<p>[42/T] 151201# 31-----34-----27-----38 36 29 40 25 33 13 32 52 37 9 28 56 30 50--35-15--26-54--39-11 24 51 41 14 20 55 45 10 43 16 22 49 47 12 18 53 42--6- 23-59--46-2--19 63 21 57 44 8 17 61 48 4 60 5 64 1 7-----58-----3-----62</p>
<p>[43/T] 186871# 38-----31-----34-----27 25 36 29 40 28 56 33 13 32 52 37 9 39 11--30-50--35-15--26-54 45 10 24 51 41 14 20 55 18 53 43 16 22 49 47 12 19--63- 42-6--23-59--46 2 48 4 21 57 44 8 17 61 1 60 5 64 62-----7-----58-----3</p>	<p>[44/T] 226881# 46-----19-----42-----23 17 48 21 44 27 64 38 1 31 60 34 5 40 3--25-62--36-7--29-58 37 9 28 56 33 13 32 52 26 54 39 11 30 50 35 15 20--55- 45-10--24-51--41 14 47 12 18 53 43 16 22 49 2 63 6 59 61-----4-----57-----8</p>	<p>[45/T] 111325# 23-----46-----19-----42 44 17 48 21 34 5 27 64 38 1 31 60 29 58--40-3--25-62--36-7 32 52 37 9 28 56 33 13 35 15 26 54 39 11 30 50 41--14- 20-55--45-10--24 51 22 49 47 12 18 53 43 16 59 2 63 6 8-----61-----4-----57</p>

<p>[46/T] 206721#</p> <pre> 42-----23-----46-----19 21-----44-----17-----48 31 60 34 5 27 64 38 1 36 7--29-58--40-- 3--25--62 33 13 32 52 37 9 28 56 30 50 35 15 26 54 39 11 24-51- 41-14--20-55--45 10 43 16 22 49 47 12 18 53 6 59 2 63 57-----8-----61-----4 </pre>	<p>[47/T] 91165#</p> <pre> 19-----42-----23-----46 48-----21-----44-----17 38 1 31 60 34 5 27 64 25 62--36-- 7--29-58--40-- 3 28 56 33 13 32 52 37 9 39 11 30 50 35 15 26 54 45-10- 24-51--41-14--20 55 18 53 43 16 22 49 47 12 63 6 59 2 4-----57-----8-----61 </pre>	<p>[48/T] 302422#</p> <pre> 61-----4-----57-----8 20-----45-----24-----41 3 47 62 18 7 43 58 22 46 2--19-63--42-- 6--23--59 54 17 11 48 50 21 15 44 27 64 38 1 31 60 34 5 12-40- 53-25--16-36--49 29 37 9 28 56 33 13 32 52 26 39 30 35 55-----10-----51-----14 </pre>
<p>[49/T] 35684#</p> <pre> 8-----61-----4-----57 41-----20-----45-----24 58 22 3 47 62 18 7 43 23 59--46-- 2--19-63--42-- 6 15 44 54 17 11 48 50 21 34 5 27 64 38 1 31 60 49-29- 12-40--53-25--16 36 32 52 37 9 28 56 33 13 35 26 39 30 14-----55-----10-----51 </pre>	<p>[50/T] 282262#</p> <pre> 57-----8-----61-----4 24-----41-----20-----45 7 43 58 22 3 47 62 18 42 6--23-59--46-- 2--19--63 50 21 15 44 54 17 11 48 31 60 34 5 27 64 38 1 16-36- 49-29--12-40--53 25 33 13 32 52 37 9 28 56 30 35 26 39 51-----14-----55-----10 </pre>	<p>[51/T] 15524#</p> <pre> 4-----57-----8-----61 45-----24-----41-----20 62 18 7 43 58 22 3 47 19 63--42-- 6--23-59--46-- 2 11 48 50 21 15 44 54 17 38 1 31 60 34 5 27 64 53-25- 16-36--49-29--12 40 28 56 33 13 32 52 37 9 39 30 35 26 10-----51-----14-----55 </pre>
<p>[52/T] 55535#</p> <pre> 12-----53-----16-----49 37-----28-----33-----32 61 26 4 39 57 30 8 35 20 55--45-10--24-51--41-14 3 47 62 18 7 43 58 22 46 2 19 63 42 6 23 59 54-17- 11-48--50-21--15 44 27 64 38 1 31 60 34 5 40 25 36 29 9-----56-----13-----52 </pre>	<p>[53/T] 242371#</p> <pre> 49-----12-----53-----16 32-----37-----28-----33 8 35 61 26 4 39 57 30 41 14--20-55--45-10--24-51 58 22 3 47 62 18 7 43 23 59 46 2 19 63 42 6 15-44- 54-17--11-48--50 21 34 5 27 64 38 1 31 60 29 40 25 36 52-----9-----56-----13 </pre>	<p>[54/T] 75695#</p> <pre> 16-----49-----12-----53 33-----32-----37-----28 57 30 8 35 61 26 4 39 24 51--41-14--20-55--45-10 7 43 58 22 3 47 62 18 42 6 23 59 46 2 19 63 50-21- 15-44--54-17--11 48 31 60 34 5 27 64 38 1 36 29 40 25 13-----52-----9-----56 </pre>
<p>[55/T] 262531#</p> <pre> 53-----16-----49-----12 28-----33-----32-----37 4 39 57 30 8 35 61 26 45 10--24-51--41-14--20-55 62 18 7 43 58 22 3 47 19 63 42 6 23 59 46 2 11-48- 50-21--15-44--54 17 38 1 31 60 34 5 27 64 25 36 29 40 56-----13-----52-----9 </pre>	<p>[56/T] 267142#</p> <pre> 54-----11-----50-----15 27-----38-----31-----34 12 40 53 25 16 36 49 29 37 9--28-56--33-13--32-52 61 26 4 39 57 30 8 35 20 55 45 10 24 51 41 14 3-47- 62-18-- 7-43--58 22 46 2 19 63 42 6 23 59 17 48 21 44 64-----1-----60-----5 </pre>	<p>[57/T] 70964#</p> <pre> 15-----54-----11-----50 34-----27-----38-----31 49 29 12 40 53 25 16 36 32 52--37-- 9--28-56--33-13 8 35 61 26 4 39 57 30 41 14 20 55 45 10 24 51 58-22- 3-47--62-18-- 7 43 23 59 46 2 19 63 42 6 44 17 48 21 5-----64-----1-----60 </pre>
<p>[58/T] 246982#</p> <pre> 50-----15-----54-----11 31-----34-----27-----38 16 36 49 29 12 40 53 25 33 13--32-52--37-- 9--28--56 57 30 8 35 61 26 4 39 24 51 41 14 20 55 45 10 7-43- 58-22-- 3-47--62 18 42 6 23 59 46 2 19 63 21 44 17 48 60-----5-----64-----1 </pre>	<p>[59/T] 50804#</p> <pre> 11-----50-----15-----54 38-----31-----34-----27 53 25 16 36 49 29 12 40 28 56--33-13--32-52--37-- 9 4 39 57 30 8 35 61 26 45 10 24 51 41 14 20 55 62-18- 7-43--58-22-- 3 47 19 63 42 6 23 59 46 2 48 21 44 17 1-----60-----5-----64 </pre>	<p>[60/T] 10175#</p> <pre> 3-----62-----7-----58 46-----19-----42-----23 54 17 11 48 50 21 15 44 27 64--38-- 1--31--60--34-- 5 12 40 53 25 16 36 49 29 37 9 28 56 33 13 32 52 61-26- 4-39--57-30-- 8 35 20 55 45 10 24 51 41 14 20 55 45 10 24 51 41 14 47 18 43 22 2-----63-----6-----59 </pre>
<p>[61/T] 287731#</p> <pre> 58-----3-----62-----7 23-----46-----19-----42 15 44 54 17 11 48 50 21 34 5--27-64--38-- 1--31--60 49 29 12 40 53 25 16 36 32 52 37 9 28 56 33 13 8-35- 61-26-- 4-39--57 30 41 14 20 55 45 10 24 51 22 47 18 43 59-----2-----63-----6 </pre>	<p>[62/T] 30335#</p> <pre> 7-----58-----3-----62 42-----23-----46-----19 50 21 15 44 54 17 11 48 31 60--34-- 5--27-64--38-- 1 16 36 49 29 12 40 53 25 33 13 32 52 37 9 28 56 57-30- 8-35--61-26-- 4 39 24 51 41 14 20 55 45 10 43 22 47 18 6-----59-----2-----63 </pre>	<p>[63/T] 307891#</p> <pre> 62-----7-----58-----3 19-----42-----23-----46 11 48 50 21 15 44 54 17 38 1--31--60--34-- 5--27--64 53 25 16 36 49 29 12 40 28 56 33 13 32 52 37 9 4-39- 57-30-- 8-35--61 26 45 10 24 51 41 14 20 55 18 43 22 47 63-----6-----59-----2 </pre>

If we use the Basic Data when n1=3 such as below, can we also succeed in reconstructing 'C&P' MC4 by the same Panmagic Plane Shift Transformation?

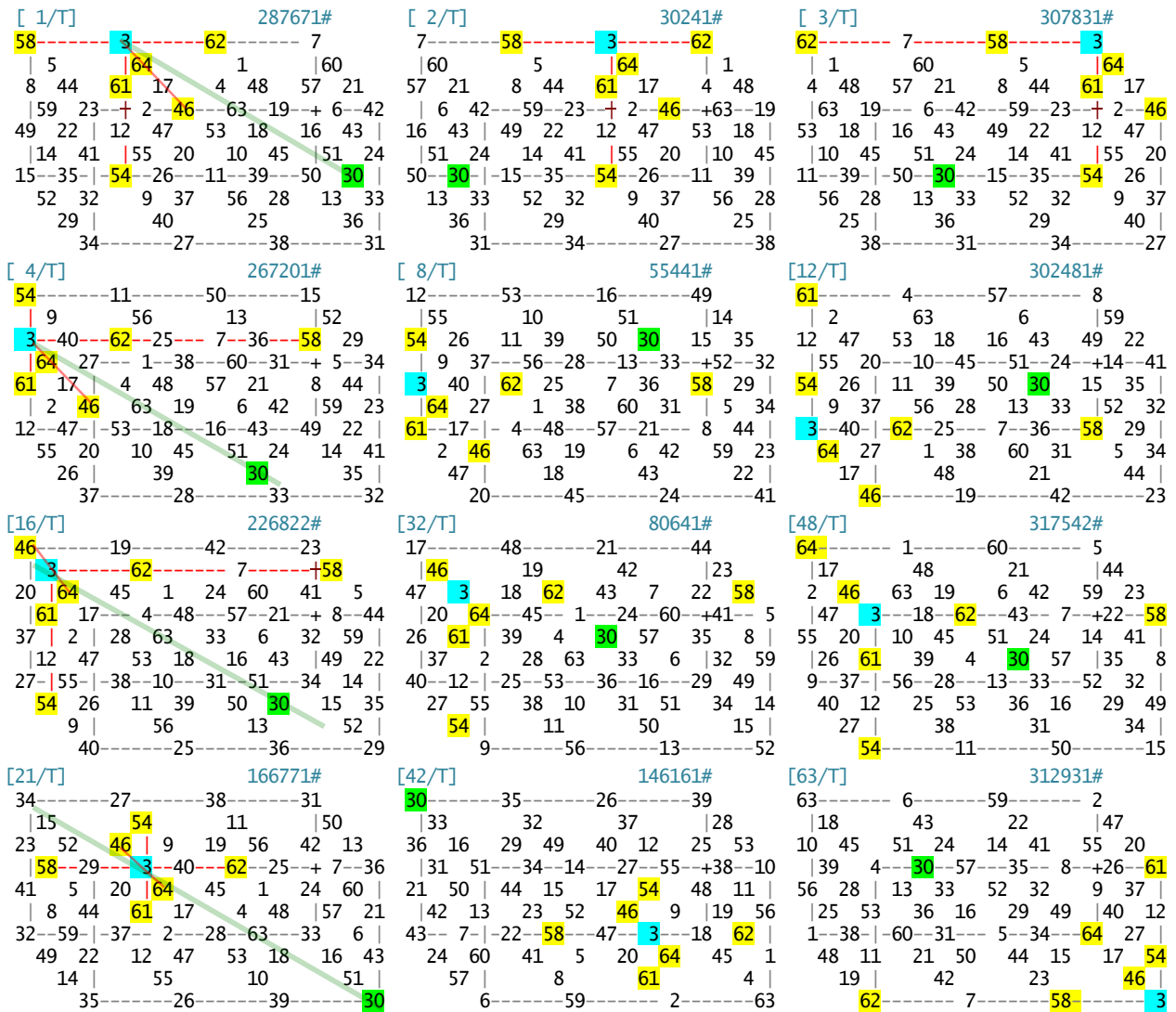
Let's make one more experiment and check the results here, though I must present the abstrct compact list with 16 results instead of 64.

** Calculated and Listed by Kanji Setsuda on
 July 4, 2015 with MacOSX 10.10.4 & Xcode 6.4 **



[Abstract List]

[Specified Old Number ↓]



[OK!]

I know I should have listed out all the 322560 reconstruction results here, but it is too big to do that. Allow me to skip it and imagine what it should be, please.

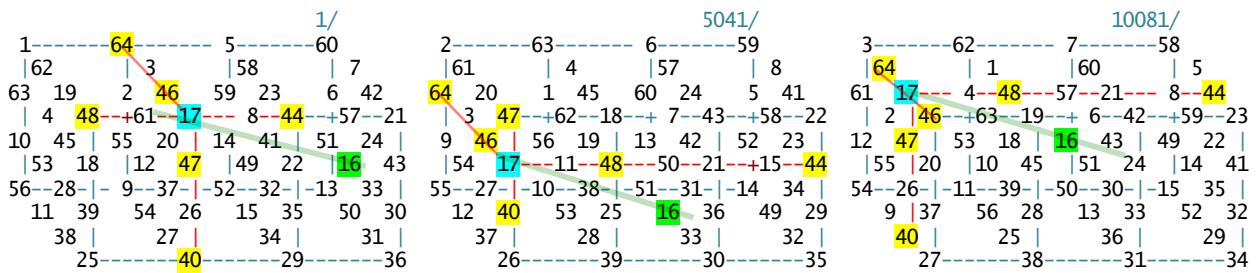
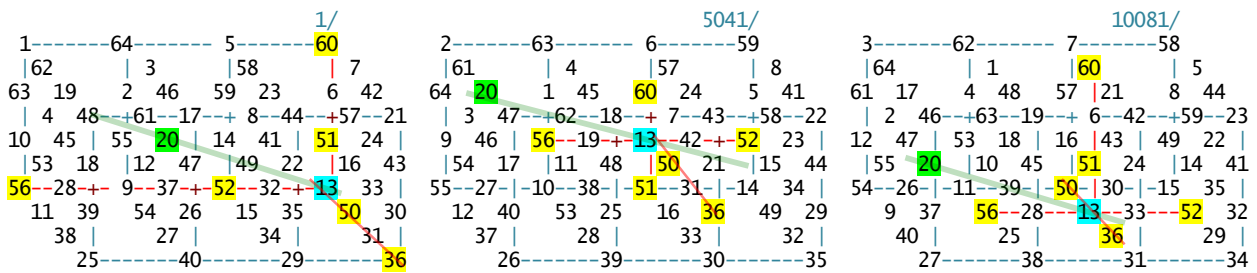
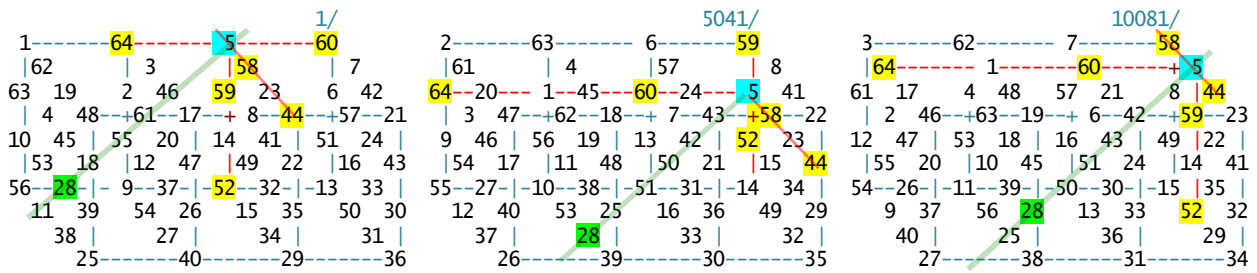
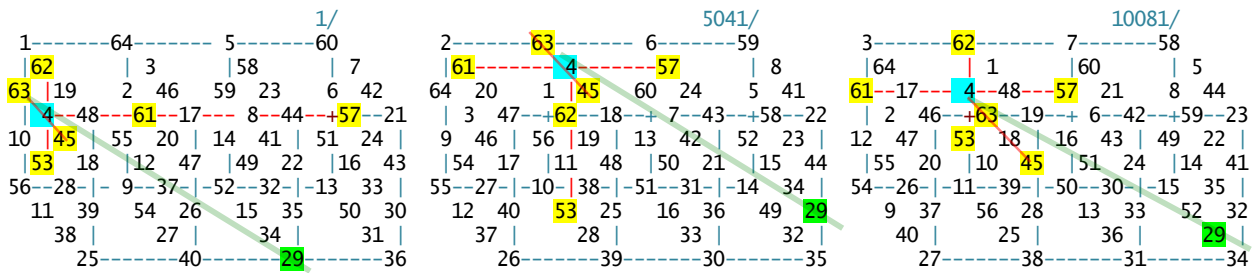
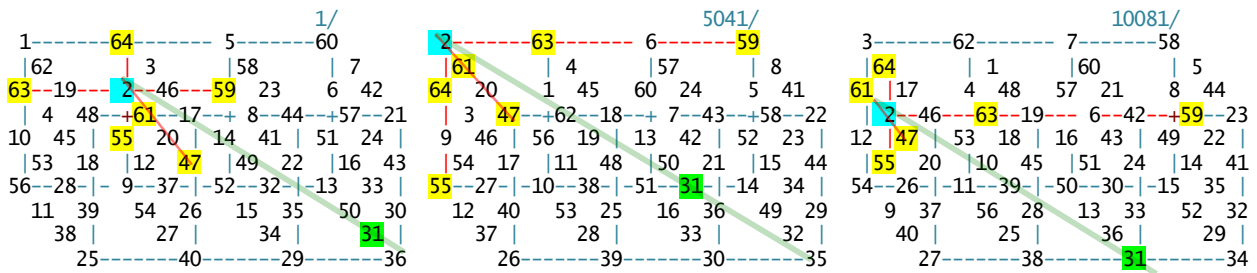
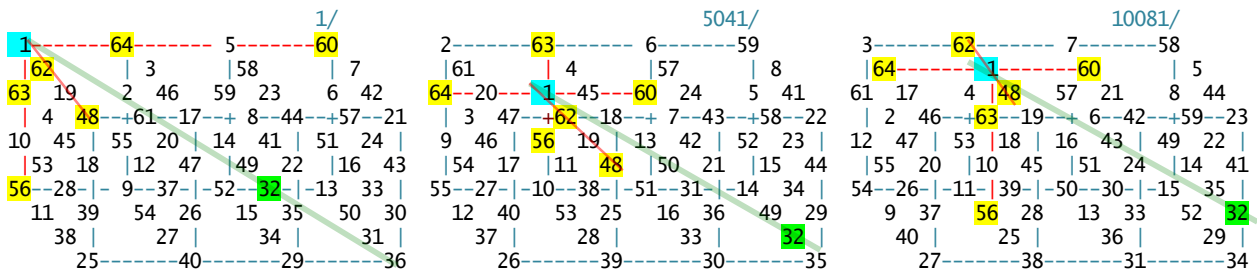
Each number of 1~64 with its fellows could certainly reconstruct the same result of 322560 primitive solutions of our object by the 64 times of Transformation from the 5040 Basic Data in each case. Each unit could make $5040 \times 64 = 322560$ results.

It should happen equally and simultaneously in the uniform style of reconstruction. This must explain about the 'parallel unity' of dynamic structures of our object.

Watch the next diagrams below, which shows each unit of its masters {1, 2, 4, 5, 13, 17} could go anywhere along with its own 7 fixed followers.

Find the existence of **parallel unity** in both the same solutions and different ones.

** List 2: Numbers 1, 2, 4, 5, 13, 17 with their own 7 Fixed Followers **



** Calculated and Listed by Kanji Setsuda on
 Jul. 4, 2015 with MacOSX 10.10.4 & Xcode 6.4 **

** Re-arranged List of Essential Complementary Pairs led by their Masters **

7 Groups: (S33, S97) (S49, S81) (S57, S73) (S61, S69) (S63, S67) (S64, S66) (S65=S65)
 (1, X) = {(1, 32), (1, 48), (1, 56), (1, 60), (1, 62), (1, 63), (1, 64)};
 (2, X) = {(2, 31), (2, 47), (2, 55), (2, 59), (2, 61), (2, 64), (2, 63)};
 (3, X) = {(3, 30), (3, 46), (3, 54), (3, 58), (3, 64), (3, 61), (3, 62)};
 (4, X) = {(4, 29), (4, 45), (4, 53), (4, 57), (4, 63), (4, 62), (4, 61)};
 (5, X) = {(5, 28), (5, 44), (5, 52), (5, 64), (5, 58), (5, 59), (5, 60)};
 ⋮
 (13, X) = {(13, 20), (13, 36), (13, 60), (13, 56), (13, 50), (13, 51), (13, 52)};
 ⋮
 (17, X) = {(17, 16), (17, 64), (17, 40), (17, 44), (17, 46), (17, 47), (17, 48)};

And find that every numbers really respect and obey the precise specification of Complementary Pairs instructed by the consecutive Natural Numbers 1~64.

How amazing! What a miracle really happens to exist!

#7. What are the true reasons for the existence of these unique structures?

I had better say simply again.

It is the combination of two reasons that makes such a 'miracle' happen to exist:

- (1) The precise structure of 'C&P' MC4 with so many Complementary Pairs as 7x2x16
- (2) The practical specification from the consecutive Natural Numbers 1~64.

The concordance is necessary between the request of 7 groups of Complementary Pairs by our object 'C&P' MC4 and the supply of 7 groups of real Complementary Pairs by the consecutive Natural Numbers 1~64. It surely makes the miracle exist.

#8. The Meaning of Total Count of the Standard Solutions

In the former Section 4, we found the 6720 Standard Solutions for our object.

But we didn't know very well about why 6720 is divided for its factors:

$$6720 = 7 \times 5 \times 3 \times 2^6;$$

What does it mean by 7 x 5 x 3?

This could be explained by the factors of 322560, the total count of the Primitive Solutions of our object: $322560 = 5040 \times 64 = 7P7 \times 2^6 = 7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 \times 2^6$;

And the primitive solutions count 48 times as many as the standard solutions.

Divide 322560 by 48, and you can get 6720, the total count of standard solutions.

$$\frac{322560}{48} = \frac{7 \times 6 \times 5 \times 4 \times 3 \times 2 \times 1 \times 2^6}{6 \times 4 \times 2}$$

$$\therefore 6720 = 7 \times 5 \times 3 \times 2^6$$

Therefore the '7 x 5 x 3' must mean the 'inheritance' of 7P7 with a big loss.

#9. How to make the 'C&P' MC444 by your own hand

At the end of this article, let me introduce you something extra.

I want to explain about how to make a sample solution of our object 'C&P' MC4 by your own hand, without using any computer.

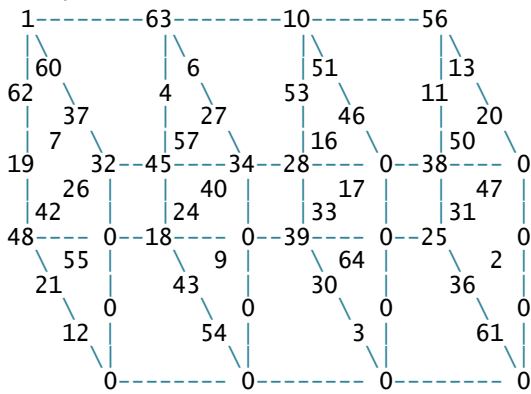
Before all will you prepare a sheet of paper, a pen and your good brain, please?

For the preparation you have to learn the 8 numbers on the 8 positions by heart as shown in the [Start] diagram. Put the number 1 on n1 first of all, and put the other 7 numbers {64, 63, 62, 60, 56, 48 and 32} on {n2, n4, n5, n13, n17, n49 and n43}.

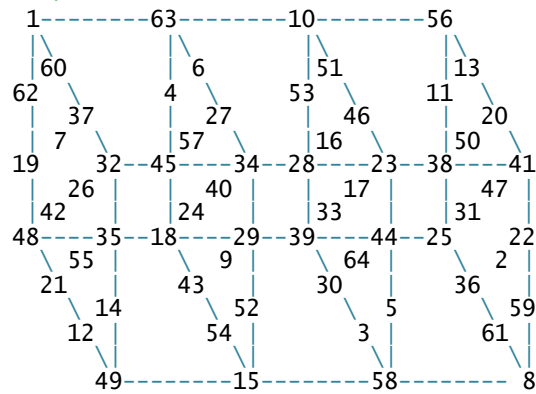
You can select the order of putting those 7 numbers on the 7 fixed positions freely as you like. (I put 64 in the n43 to make 'C&C' MC4 in the [Start]. This is my choice.)

** How to make 'Composite & Pan-triagonal' Magic Cubes of Order 4 **

[Step 6]



[Step 7] Goal in!



**** Used Equations to calculate the values of those elements ****

* Transform the Start Diagram into the Step 1: CSM=130; *

$$tn[3]=CSM-tn[1]-tn[2]-tn[4]; \quad tn[9]=CSM-tn[1]-tn[5]-tn[13]; \quad tn[33]=CSM-tn[1]-tn[17]-tn[49];$$

* Transform the Step 1 Diagram into the Step 2: CSM=130; *

$$tn[6]=CSM-tn[1]-tn[2]-tn[5]; \quad tn[7]=CSM-tn[2]-tn[3]-tn[6]; \quad tn[8]=CSM-tn[3]-tn[4]-tn[7];$$

* Transform the Step 2 Diagram into the Step 3: CSM=130; *

$$tn[10]=CSM-tn[5]-tn[6]-tn[9]; \quad tn[14]=CSM-tn[9]-tn[10]-tn[13]; \quad tn[18]=CSM-tn[1]-tn[2]-tn[17]; \\ tn[19]=CSM-tn[2]-tn[3]-tn[18]; \quad tn[20]=CSM-tn[3]-tn[4]-tn[19];$$

* Transform the Step 3 Diagram into the Step 4: CSM=130; *

$$tn[21]=CSM-tn[1]-tn[5]-tn[17]; \quad tn[25]=CSM-tn[5]-tn[9]-tn[21]; \quad tn[29]=CSM-tn[9]-tn[13]-tn[25]; \\ tn[34]=CSM-tn[17]-tn[33]-tn[18]; \quad tn[50]=CSM-tn[33]-tn[34]-tn[49];$$

* Transform the Step 4 Diagram into the Step 5 *

$$tn[11]=CSM-tn[6]-tn[7]-tn[10]; \quad tn[12]=CSM-tn[7]-tn[8]-tn[11]; \quad tn[15]=CSM-tn[10]-tn[11]-tn[14]; \\ tn[16]=CSM-tn[11]-tn[12]-tn[15]; \quad tn[22]=CSM-tn[17]-tn[18]-tn[21]; \quad tn[23]=CSM-tn[18]-tn[19]-tn[22]; \\ tn[24]=CSM-tn[19]-tn[20]-tn[23]; \quad tn[26]=CSM-tn[21]-tn[22]-tn[25]; \quad tn[30]=CSM-tn[25]-tn[26]-tn[29];$$

* Transform the Step 5 Diagram into the Step 6 *

$$tn[27]=CSM-tn[22]-tn[23]-tn[26]; \quad tn[28]=CSM-tn[23]-tn[24]-tn[27]; \quad tn[31]=CSM-tn[26]-tn[27]-tn[30]; \\ tn[32]=CSM-tn[27]-tn[28]-tn[31]; \quad tn[37]=CSM-tn[17]-tn[33]-tn[21]; \quad tn[38]=CSM-tn[18]-tn[34]-tn[22]; \\ tn[35]=CSM-tn[18]-tn[19]-tn[34]; \quad tn[36]=CSM-tn[19]-tn[20]-tn[35]; \quad tn[39]=CSM-tn[19]-tn[23]-tn[35]; \\ tn[40]=CSM-tn[20]-tn[24]-tn[36]; \quad tn[41]=CSM-tn[21]-tn[25]-tn[37]; \quad tn[42]=CSM-tn[25]-tn[26]-tn[41]; \\ tn[45]=CSM-tn[25]-tn[29]-tn[41]; \quad tn[46]=CSM-tn[26]-tn[30]-tn[42]; \quad tn[44]=CSM-tn[24]-tn[28]-tn[40]; \\ tn[47]=CSM-tn[27]-tn[31]-tn[43]; \quad tn[48]=CSM-tn[28]-tn[32]-tn[44];$$

* Transform the Step 6 Diagram into the Step 7 *

$$tn[51]=CSM-tn[34]-tn[35]-tn[50]; \quad tn[52]=CSM-tn[35]-tn[36]-tn[51]; \quad tn[53]=CSM-tn[33]-tn[37]-tn[49]; \\ tn[54]=CSM-tn[34]-tn[38]-tn[50]; \quad tn[55]=CSM-tn[35]-tn[39]-tn[51]; \quad tn[56]=CSM-tn[36]-tn[40]-tn[52]; \\ tn[57]=CSM-tn[37]-tn[41]-tn[53]; \quad tn[58]=CSM-tn[38]-tn[42]-tn[54]; \quad tn[59]=CSM-tn[39]-tn[43]-tn[55]; \\ tn[60]=CSM-tn[40]-tn[44]-tn[56]; \quad tn[61]=CSM-tn[41]-tn[45]-tn[57]; \quad tn[62]=CSM-tn[42]-tn[46]-tn[58]; \\ tn[63]=CSM-tn[43]-tn[47]-tn[59]; \quad tn[64]=CSM-tn[44]-tn[48]-tn[60];$$

[OK!]

**** Recompiled and Listed by Kanji Setsuda on**

July 6, 2015 with MacOSX 10.10.4 & Xcode 6.4 **

You could finally obtain the precious piece of 'C&P' Magic Cube of Order 4.

You would surely be proud of your smart demonstration by your own hand.

If you change the sitting order of those 7 'good fellows' around 1, you can get your different 5040 solutions in all. This is one of the strongest points of this method.

Written on Aug.20, 2015 with MacOSX 10.10.5 and Xcode 6.4

by Kanji Setsuda: jag12001@nifty.com: E-Mail Address

<< Appendix: List of the Newest Program: Edition of 2015 >>

```
/** 'Composite & Pan-triagonal' Magic Cubes of Order 4: **
/** Compact List of Primitive Solutions Pre-normalized **
/** File: 'CPMC444P.c' Dictated by Kanji Setsuda **
/** in '02','07','12 and Rivised on Jan.10, 2015; Recompiled **
/** on July 4, 2015 with MacOSX 10.10.4 and Xcode 6.4 **
//
#include <stdio.h>
//
// Global Var.
long int cnt, cnt1, cnt2;
long cntnr[7];
short cnt3;
short CC, SSM, LSM;
short nm[65], uflg[65];
short tn[7][65];
short cnt01[65], cnt43[65];
short CS1, CS2;
//
short cp[64][7]={
  {32, 48, 56, 60, 62, 63, 64},
  {31, 47, 55, 59, 61, 64, 63},
  {30, 46, 54, 58, 64, 61, 62},
  {29, 45, 53, 57, 63, 62, 61},
  {28, 44, 52, 64, 58, 59, 60},
  {27, 43, 51, 63, 57, 60, 59},
  {26, 42, 50, 62, 60, 57, 58},
  {25, 41, 49, 61, 59, 58, 57},
  {24, 40, 64, 52, 54, 55, 56},
  {23, 39, 63, 51, 53, 56, 55},
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  { 7, 55, 47, 35, 37, 40, 39},
  { 6, 54, 46, 34, 40, 37, 38},
  { 5, 53, 45, 33, 39, 38, 37},
  { 4, 52, 44, 40, 34, 35, 36},
  { 3, 51, 43, 39, 33, 36, 35},
  { 2, 50, 42, 38, 36, 33, 34},
  { 1, 49, 41, 37, 35, 34, 33},
  {64, 16, 24, 28, 30, 31, 32},
  {63, 15, 23, 27, 29, 32, 31},
  {62, 14, 22, 26, 32, 29, 30},
  {61, 13, 21, 25, 31, 30, 29},
  {60, 12, 20, 32, 26, 27, 28},
  {59, 11, 19, 31, 25, 28, 27},
  {58, 10, 18, 30, 28, 25, 26},
  {57,  9, 17, 29, 27, 26, 25},
  {56,  8, 32, 20, 22, 23, 24},
  {55,  7, 31, 19, 21, 24, 23},
```

```

{54, 6, 30, 18, 24, 21, 22},
{53, 5, 29, 17, 23, 22, 21},
{52, 4, 28, 24, 18, 19, 20},
{51, 3, 27, 23, 17, 20, 19},
{50, 2, 26, 22, 20, 17, 18},
{49, 1, 25, 21, 19, 18, 17},
{48, 32, 8, 12, 14, 15, 16},
{47, 31, 7, 11, 13, 16, 15},
{46, 30, 6, 10, 16, 13, 14},
{45, 29, 5, 9, 15, 14, 13},
{44, 28, 4, 16, 10, 11, 12},
{43, 27, 3, 15, 9, 12, 11},
{42, 26, 2, 14, 12, 9, 10},
{41, 25, 1, 13, 11, 10, 9},
{40, 24, 16, 4, 6, 7, 8},
{39, 23, 15, 3, 5, 8, 7},
{38, 22, 14, 2, 8, 5, 6},
{37, 21, 13, 1, 7, 6, 5},
{36, 20, 12, 8, 2, 3, 4},
{35, 19, 11, 7, 1, 4, 3},
{34, 18, 10, 6, 4, 1, 2},
{33, 17, 9, 5, 3, 2, 1}
};
//
// Functions(Sub-Routines)
void stp01(void), stp02(void), stp03(void), stp04(void);
void stp05(void), stp06(void), stp07(void), stp08(void);
void stp09(void), stp10(void), stp11(void), stp12(void);
void stp13(void), stp14(void), stp15(void), stp16(void);
void stp17(void), stp18(void), stp19(void), stp20(void);
void stp21(void), stp22(void), stp23(void), stp24(void);
void stp25(void), stp26(void), stp27(void), stp28(void);
void stp29(void), stp30(void), stp31(void), stp32(void);
void stp33(void), stp34(void), stp35(void), stp36(void);
void stp37(void), stp38(void), stp39(void), stp40(void);
void stp41(void), stp42(void), stp43(void), stp44(void);
void stp45(void), stp46(void), stp47(void), stp48(void);
void stp49(void), stp50(void), stp51(void), stp52(void);
void stp53(void), stp54(void), stp55(void), stp56(void);
void stp57(void), stp58(void), stp59(void), stp60(void);
void stp61(void), stp62(void), stp63(void), stp64(void);
void stp65(void);
void ansprint(void);
void prans(short x);
void fnd01(void);
void prcnt01(void), prcnt43(void);
//
/* Main Program */
int main(){
short n;
printf("\n");
printf("*** 'Composite & Pan-triagonal' Magic Cubes of Order 4 ***\n");
printf(" ** Compact List of Primitive Solutions Pre-normalized **\n");
CC=65; SSM=130; LSM=130; cnt=0; cnt3=0;
for(n=1;n<65;n++){nm[n]=0; uflg[n]=0; cnt01[n]=0; cnt43[n]=0;};
stp01(); // Begin the Calculations
if(cnt3>0){prans(cnt3);}
printf(" [Solution Counts(when n1=1/All) = %ld/%ld]\n",cnt1,cnt);
printf("\n");
printf("* Monitor List 1: Solution Counts according to the Positions of Number 1 *\n");
prcnt01();
printf("* Monitor List 2: Solution Counts according to the Values of n43 when n1=1 *\n");
prcnt43();
printf(" OK!\n");
}

```

```

printf("*** Recompiled and Listed by Kanji Setsuda on\n");
printf("    Jul. 4, 2015 with MacOSX 10.10.4 & Xcode 6.4 **\n");
printf("\n");
return 0;
}
//
/* Begin the Calculations *
/* Search Level #1: *
//Set n1
void stp01(){
    short a;
    for(a=1;a<65;a++){
        if(uflg[a]==0){cnt2=0;
            nm[1]=a; uflg[a]=1;
            stp02();
            uflg[a]=0;}
    }
}
//Set n43
void stp02(){
    short a,c;
    for(c=0;c<7;c++){
        a=cp[nm[1]-1][c];
        if(uflg[a]==0){if(nm[1]==1){cnt2=0;}
            CS1=nm[1]+a; CS2=LSM-CS1;
            nm[43]=a; uflg[a]=1;
            stp03();
            uflg[a]=0;}
    }
}
//Set n2
void stp03(){
    short a,c;
    for(c=6;c>=0;c--){
        a=cp[nm[1]-1][c];
        if(uflg[a]==0){
            nm[2]=a; uflg[a]=1;
            stp04();
            uflg[a]=0;}
    }
}
//Set n44=CS2-n2;
void stp04(){
    short a;
    a=CS2-nm[2];
    if((0<a)&&(a<65)){
        if(uflg[a]==0){if(nm[1]==1){cnt2=0;}
            nm[44]=a; uflg[a]=1;
            stp05();
            uflg[a]=0;}}
}
//Set n5
void stp05(){
    short a,c;
    for(c=6;c>=0;c--){
        a=cp[nm[1]-1][c];
        if(uflg[a]==0){
            nm[5]=a; uflg[a]=1;
            stp06();
            uflg[a]=0;}
    }
}
//Set n47=CS2-n5;
void stp06(){

```

```

short a;
a=CS2-nm[5];
if((0<a)&&(a<65)){
    if(uflg[a]==0){
        nm[47]=a; uflg[a]=1;
        stp07();
        uflg[a]=0;}}
}
//Set n6=LSM-n1-n2-n5
void stp07(){
    short a;
    a=LSM-nm[1]-nm[2]-nm[5];
    if((0<a)&&(a<65)){
        if(uflg[a]==0){
            nm[6]=a; uflg[a]=1;
            stp08();
            uflg[a]=0;}}
}
//Set n48=LSM-n43-n44-n47
void stp08(){
    short a,b;
    a=LSM-nm[43]-nm[44]-nm[47];
    b=CS1-nm[6];
    if((0<a)&&(a<65)&&(a==b)){
        if(uflg[a]==0){
            nm[48]=a; uflg[a]=1;
            stp09();
            uflg[a]=0;}}
}
//Set n17
void stp09(){
    short a,c;
    for(c=6;c>=0;c--){
        a=cp[nm[1]-1][c];
        if(uflg[a]==0){
            nm[17]=a; uflg[a]=1;
            stp10();
            uflg[a]=0;}
    }
}
//Set n59=CS2-n17;
void stp10(){
    short a;
    a=CS2-nm[17];
    if((0<a)&&(a<65)){
        if(uflg[a]==0){
            nm[59]=a; uflg[a]=1;
            stp11();
            uflg[a]=0;}}
}
//Set n21=LSM-n1-n5-n17
void stp11(){
    short a;
    a=LSM-nm[1]-nm[5]-nm[17];
    if((0<a)&&(a<65)){
        if(uflg[a]==0){
            nm[21]=a; uflg[a]=1;
            stp12();
            uflg[a]=0;}}
}
//Set n63=LSM-n43-n47-n59
void stp12(){
    short a,b;
    a=LSM-nm[43]-nm[47]-nm[59];

```



```

    b=CS1-nm[21];
    if((0<a)&&(a<65)&&(a==b)){
        if(uflg[a]==0){
            nm[63]=a; uflg[a]=1;
            stp13();
            uflg[a]=0;}}
}
//Set n18=LSM-n1-n2-n17
void stp13(){
    short a;
    a=LSM-nm[1]-nm[2]-nm[17];
    if((0<a)&&(a<65)){
        if(uflg[a]==0){
            nm[18]=a; uflg[a]=1;
            stp14();
            uflg[a]=0;}}
}
//Set n60=LSM-n43-n44-n59
void stp14(){
    short a,b;
    a=LSM-nm[43]-nm[44]-nm[59];
    b=CS1-nm[18];
    if((0<a)&&(a<65)&&(a==b)){
        if(uflg[a]==0){
            nm[60]=a; uflg[a]=1;
            stp15();
            uflg[a]=0;}}
}
//Set n22=LSM-n17-n18-n21
void stp15(){
    short a,b,c;
    a=LSM-nm[17]-nm[18]-nm[21];
    b=LSM-nm[5]-nm[6]-nm[21];
    c=LSM-nm[2]-nm[6]-nm[18];
    if((a==b)&&(a==c)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[22]=a; uflg[a]=1;
            stp16();
            uflg[a]=0;}}
}
//Set n64=LSM-n59-n60-n63
void stp16(){
    short a,b,c;
    a=LSM-nm[59]-nm[60]-nm[63];
    b=LSM-nm[47]-nm[48]-nm[63];
    c=LSM-nm[44]-nm[48]-nm[60];
    if((a==b)&&(a==c)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[64]=a; uflg[a]=1;
            stp17();
            uflg[a]=0;}}
}
/* Search Level #2: *
//Set n4
void stp17(){
    short a,c;
    for(c=6;c>=0;c--){
        a=cp[nm[1]-1][c];
        if(uflg[a]==0){
            nm[4]=a; uflg[a]=1;
            stp18();
            uflg[a]=0;}
    }
}
}

```

```

//Set n42=CS2-n4;
void stp18(){
  short a;
  a=CS2-nm[4];
  if((0<a)&&(a<65)){
    if(uflg[a]==0){
      nm[42]=a; uflg[a]=1;
      stp19();
      uflg[a]=0;}}
}
//Set n3=LSM-n1-n2-n4
void stp19(){
  short a;
  a=LSM-nm[1]-nm[2]-nm[4];
  if((0<a)&&(a<65)){
    if(uflg[a]==0){
      nm[3]=a; uflg[a]=1;
      stp20();
      uflg[a]=0;}}
}
//Set n41=LSM-n42-n43-n44
void stp20(){
  short a,b;
  a=LSM-nm[42]-nm[43]-nm[44];
  b=CS1-nm[3];
  if((0<a)&&(a<65)&&(a==b)){
    if(uflg[a]==0){
      nm[41]=a; uflg[a]=1;
      stp21();
      uflg[a]=0;}}
}
//Set n7=LSM-n2-n3-n6
void stp21(){
  short a;
  a=LSM-nm[2]-nm[3]-nm[6];
  if((0<a)&&(a<65)){
    if(uflg[a]==0){
      nm[7]=a; uflg[a]=1;
      stp22();
      uflg[a]=0;}}
}
//Set n45=LSM-n44-n41-n48
void stp22(){
  short a,b;
  a=LSM-nm[44]-nm[41]-nm[48];
  b=CS2-nm[7];
  if((0<a)&&(a<65)&&(a==b)){
    if(uflg[a]==0){
      nm[45]=a; uflg[a]=1;
      stp23();
      uflg[a]=0;}}
}
//Set n8=LSM-n3-n4-n7
void stp23(){
  short a,b;
  a=LSM-nm[3]-nm[4]-nm[7];
  b=LSM-nm[4]-nm[1]-nm[5];
  if((0<a)&&(a<65)&&(a==b)){
    if(uflg[a]==0){
      nm[8]=a; uflg[a]=1;
      stp24();
      uflg[a]=0;}}
}
//Set n46=LSM-n41-n42-n45

```

```

void stp24(){
short a,b,c;
a=LSM-nm[41]-nm[42]-nm[45];
b=LSM-nm[42]-nm[43]-nm[47];
c=CS1-nm[8];
if((0<a)&&(a<65)&&(a==b)&&(a==c)){
if(uflg[a]==0){
nm[46]=a; uflg[a]=1;
stp25();
uflg[a]=0;}}
}
//Set n19=LSM-n2-n3-n18
void stp25(){
short a;
a=LSM-nm[2]-nm[3]-nm[18];
if((0<a)&&(a<65)){
if(uflg[a]==0){
nm[19]=a; uflg[a]=1;
stp26();
uflg[a]=0;}}
}
//Set n57=LSM-n44-n41-n60
void stp26(){
short a,b;
a=LSM-nm[44]-nm[41]-nm[60];
b=CS2-nm[19];
if((0<a)&&(a<65)&&(a==b)){
if(uflg[a]==0){
nm[57]=a; uflg[a]=1;
stp27();
uflg[a]=0;}}
}
//Set n20=LSM-n3-n4-n19
void stp27(){
short a,b;
a=LSM-nm[3]-nm[4]-nm[19];
b=LSM-nm[4]-nm[1]-nm[17];
if((0<a)&&(a<65)){
if((a==b)&&(uflg[a]==0)){
nm[20]=a; uflg[a]=1;
stp28();
uflg[a]=0;}}
}
//Set n58=LSM-n41-n42-n57
void stp28(){
short a,b;
a=LSM-nm[41]-nm[42]-nm[57];
b=LSM-nm[42]-nm[43]-nm[59];
if((0<a)&&(a<65)){
if((a==b)&&(uflg[a]==0)){
nm[58]=a; uflg[a]=1;
stp29();
uflg[a]=0;}}
}
//Set n23=LSM-n18-n19-n22
void stp29(){
short a,b,c;
a=LSM-nm[18]-nm[19]-nm[22];
b=LSM-nm[6]-nm[7]-nm[22];
c=LSM-nm[3]-nm[7]-nm[19];
if((a==b)&&(a==c)){
if((0<a)&&(a<65)&&(uflg[a]==0)){
nm[23]=a; uflg[a]=1;
stp30();
}
}
}

```

```

        uflg[a]=0;}}
}
//Set n61=LSM-n41-n45-n57
void stp30(){
    short a,b,c;
    a=LSM-nm[41]-nm[45]-nm[57];
    b=LSM-nm[48]-nm[45]-nm[64];
    c=LSM-nm[41]-nm[45]-nm[57];
    if((a==b)&&(a==c)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[61]=a; uflg[a]=1;
            stp31();
            uflg[a]=0;}}
}
//Set n24=LSM-n7-n8-n23
void stp31(){
    short a,b,c,d,e;
    a=LSM-nm[7]-nm[8]-nm[23];
    b=LSM-nm[4]-nm[8]-nm[20];
    c=LSM-nm[19]-nm[20]-nm[23];
    d=LSM-nm[20]-nm[17]-nm[21];
    e=LSM-nm[8]-nm[5]-nm[21];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[24]=a; uflg[a]=1;
            stp32();
            uflg[a]=0;}}
}
//Set n62=LSM-n58-n59-n63
void stp32(){
    short a,b,c,d,e;
    a=LSM-nm[45]-nm[46]-nm[61];
    b=LSM-nm[46]-nm[47]-nm[63];
    c=LSM-nm[57]-nm[58]-nm[61];
    d=LSM-nm[58]-nm[59]-nm[63];
    e=LSM-nm[42]-nm[46]-nm[58];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[62]=a; uflg[a]=1;
            stp33();
            uflg[a]=0;}}
}
/* Search Level #3: *
//Set n13
void stp33(){
    short a,c;
    for(c=6;c>=0;c--){
        a=cp[nm[1]-1][c];
        if(uflg[a]==0){
            nm[13]=a; uflg[a]=1;
            stp34();
            uflg[a]=0;}
    }
}
//Set n39=CS2-n13;
void stp34(){
    short a;
    a=CS2-nm[13];
    if((0<a)&&(a<65)){
        if(uflg[a]==0){
            nm[39]=a; uflg[a]=1;
            stp35();
            uflg[a]=0;}}
}

```

```

//Set n9=LSM-n1-n5-n13
void stp35(){
  short a,b;
  a=LSM-nm[1]-nm[5]-nm[13];
  b=LSM-nm[57]-nm[61]-nm[13];
  if((0<a)&&(a<65)){
    if((a==b)&&(uflg[a]==0)){
      nm[9]=a; uflg[a]=1;
      stp36();
      uflg[a]=0;}}
}
//Set n35=LSM-n39-n43-n47
void stp36(){
  short a,b;
  a=LSM-nm[39]-nm[43]-nm[47];
  b=LSM-nm[19]-nm[23]-nm[39];
  if((0<a)&&(a<65)){
    if((a==b)&&(uflg[a]==0)){
      nm[35]=a; uflg[a]=1;
      stp37();
      uflg[a]=0;}}
}
//Set n25=LSM-n5-n9-n21
void stp37(){
  short a,b;
  a=LSM-nm[5]-nm[9]-nm[21];
  b=LSM-nm[9]-nm[41]-nm[57];
  if((0<a)&&(a<65)&&(a==b)){
    if(uflg[a]==0){
      nm[25]=a; uflg[a]=1;
      stp38();
      uflg[a]=0;}}
}
//Set n51=LSM-n47-n35-n63
void stp38(){
  short a,b,c;
  a=LSM-nm[47]-nm[35]-nm[63];
  b=LSM-nm[3]-nm[19]-nm[35];
  c=CS2-nm[25];
  if((0<a)&&(a<65)&&(a==b)&&(a==c)){
    if(uflg[a]==0){
      nm[51]=a; uflg[a]=1;
      stp39();
      uflg[a]=0;}}
}
//Set n10=LSM-n5-n6-n9
void stp39(){
  short a,b;
  a=LSM-nm[5]-nm[6]-nm[9];
  b=LSM-nm[57]-nm[58]-nm[9];
  if((0<a)&&(a<65)&&(a==b)){
    if(uflg[a]==0){
      nm[10]=a; uflg[a]=1;
      stp40();
      uflg[a]=0;}}
}
//Set n36=LSM-n47-n48-n35
void stp40(){
  short a,b,c;
  a=LSM-nm[47]-nm[48]-nm[35];
  b=LSM-nm[19]-nm[20]-nm[35];
  c=CS2-nm[10];
  if((0<a)&&(a<65)&&(a==b)&&(a==c)){
    if(uflg[a]==0){

```

```

        nm[36]=a; uflg[a]=1;
        stp41();
        uflg[a]=0;}}
}
//Set n11=LSM-n27-n43-n59
void stp41(){
    short a,b;
    a=LSM-nm[6]-nm[7]-nm[10];
    b=LSM-nm[58]-nm[59]-nm[10];
    if((0<a)&&(a<65)){
        if((a==b)&&(uflg[a]==0)){
            nm[11]=a; uflg[a]=1;
            stp42();
            uflg[a]=0;}}
}
//Set n33=LSM-n48-n45-n36
void stp42(){
    short a,b;
    a=LSM-nm[48]-nm[45]-nm[36];
    b=LSM-nm[20]-nm[17]-nm[36];
    if((0<a)&&(a<65)){
        if((a==b)&&(uflg[a]==0)){
            nm[33]=a; uflg[a]=1;
            stp43();
            uflg[a]=0;}}
}
//Set n12=LSM-n7-n8-n11
void stp43(){
    short a,b;
    a=LSM-nm[7]-nm[8]-nm[11];
    b=LSM-nm[8]-nm[5]-nm[9];
    if((0<a)&&(a<65)&&(a==b)){
        if(uflg[a]==0){
            nm[12]=a; uflg[a]=1;
            stp44();
            uflg[a]=0;}}
}
//Set n34=LSM-n45-n46-n33
void stp44(){
    short a,b,c;
    a=LSM-nm[45]-nm[46]-nm[33];
    b=LSM-nm[46]-nm[47]-nm[35];
    c=CS2-nm[12];
    if((0<a)&&(a<65)&&(a==b)&&(a==c)){
        if(uflg[a]==0){
            nm[34]=a; uflg[a]=1;
            stp45();
            uflg[a]=0;}}
}
/* Search Level #4: *
//Set n14=LSM-n9-n10-n13
void stp45(){
    short a,b,c;
    a=LSM-nm[9]-nm[10]-nm[13];
    b=LSM-nm[13]-nm[1]-nm[2];
    c=LSM-nm[61]-nm[62]-nm[13];
    if((0<a)&&(a<65)&&(a==b)){
        if((a==c)&&(uflg[a]==0)){
            nm[14]=a; uflg[a]=1;
            stp46();
            uflg[a]=0;}}
}
//Set n40=LSM-n35-n36-n39
void stp46(){

```

```

short a,b,c;
a=LSM-nm[35]-nm[36]-nm[39];
b=LSM-nm[39]-nm[43]-nm[44];
c=LSM-nm[23]-nm[24]-nm[39];
if((0<a)&&(a<65)&&(a==b)){
    if((a==c)&&(uflg[a]==0)){
        nm[40]=a; uflg[a]=1;
        stp47();
        uflg[a]=0;}}
}
//Set n15=LSM-n10-n11-n14
void stp47(){
short a,b,c;
a=LSM-nm[10]-nm[11]-nm[14];
b=LSM-nm[14]-nm[2]-nm[3];
c=LSM-nm[62]-nm[63]-nm[14];
if((0<a)&&(a<65)&&(a==b)){
    if((a==c)&&(uflg[a]==0)){
        nm[15]=a; uflg[a]=1;
        stp48();
        uflg[a]=0;}}
}
//Set n37=LSM-n36-n33-n40
void stp48(){
short a,b,c;
a=LSM-nm[36]-nm[33]-nm[40];
b=LSM-nm[40]-nm[44]-nm[41];
c=LSM-nm[24]-nm[21]-nm[40];
if((0<a)&&(a<65)&&(a==b)){
    if((a==c)&&(uflg[a]==0)){
        nm[37]=a; uflg[a]=1;
        stp49();
        uflg[a]=0;}}
}
//Set n16=LSM-n11-n12-n15
void stp49(){
short a,b,c,d;
a=LSM-nm[11]-nm[12]-nm[15];
b=LSM-nm[12]-nm[9]-nm[13];
c=LSM-nm[15]-nm[3]-nm[4];
d=LSM-nm[13]-nm[4]-nm[1];
if((a==b)&&(a==c)&&(a==d)){
    if((0<a)&&(a<65)&&(uflg[a]==0)){
        nm[16]=a; uflg[a]=1;
        stp50();
        uflg[a]=0;}}
}
//Set n38=LSM-n33-n34-n37
void stp50(){
short a,b,c,d;
a=LSM-nm[33]-nm[34]-nm[37];
b=LSM-nm[34]-nm[35]-nm[39];
c=LSM-nm[37]-nm[41]-nm[42];
d=LSM-nm[39]-nm[42]-nm[43];
if((a==b)&&(a==c)&&(a==d)){
    if((0<a)&&(a<65)&&(uflg[a]==0)){
        nm[38]=a; uflg[a]=1;
        stp51();
        uflg[a]=0;}}
}
//Set n29=LSM-n9-n13-n25
void stp51(){
short a,b,c,d;
a=LSM-nm[9]-nm[13]-nm[25];

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b=LSM-nm[25]-nm[41]-nm[45];
c=LSM-nm[13]-nm[1]-nm[17];
d=LSM-nm[17]-nm[45]-nm[33];
if((a==b)&&(a==c)&&(a==d)){
    if((0<a)&&(a<65)&&(uflg[a]==0)){
        nm[29]=a; uflg[a]=1;
        stp52();
        uflg[a]=0;}}
}
//Set n55=LSM-n35-n39-n51
void stp52(){
    short a,b,c,d;
    a=LSM-nm[35]-nm[39]-nm[51];
    b=LSM-nm[51]-nm[3]-nm[7];
    c=LSM-nm[39]-nm[43]-nm[59];
    d=LSM-nm[59]-nm[7]-nm[11];
    if((a==b)&&(a==c)&&(a==d)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[55]=a; uflg[a]=1;
            stp53();
            uflg[a]=0;}}
}
//Set n26=LSM-n21-n22-n25
void stp53(){
    short a,b,c,d,e;
    a=LSM-nm[21]-nm[22]-nm[25];
    b=LSM-nm[9]-nm[10]-nm[25];
    c=LSM-nm[25]-nm[41]-nm[42];
    d=LSM-nm[6]-nm[10]-nm[22];
    e=LSM-nm[22]-nm[38]-nm[42];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[26]=a; uflg[a]=1;
            stp54();
            uflg[a]=0;}}
}
//Set n52=LSM-n35-n36-n31
void stp54(){
    short a,b,c,d,e;
    a=LSM-nm[35]-nm[36]-nm[51];
    b=LSM-nm[51]-nm[3]-nm[4];
    c=LSM-nm[48]-nm[36]-nm[64];
    d=LSM-nm[64]-nm[16]-nm[4];
    e=LSM-nm[51]-nm[3]-nm[4];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[52]=a; uflg[a]=1;
            stp55();
            uflg[a]=0;}}
}
//Set n30=LSM-n25-n26-n29
void stp55(){
    short a,b,c,d;
    a=LSM-nm[25]-nm[26]-nm[29];
    b=LSM-nm[13]-nm[14]-nm[29];
    c=LSM-nm[29]-nm[45]-nm[46];
    d=LSM-nm[29]-nm[17]-nm[18];
    if((a==b)&&(a==c)&&(a==d)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[30]=a; uflg[a]=1;
            stp56();
            uflg[a]=0;}}
}
//Set n56=LSM-n51-n52-n55

```

```

void stp56(){
short a,b,c,d,e;
a=LSM-nm[51]-nm[52]-nm[55];
b=LSM-nm[55]-nm[59]-nm[60];
c=LSM-nm[36]-nm[40]-nm[52];
d=LSM-nm[52]-nm[4]-nm[8];
e=LSM-nm[40]-nm[44]-nm[60];
if((a==b)&&(a==c)&&(a==d)&&(a==e)){
if((0<a)&&(a<65)&&(uflg[a]==0)){
nm[56]=a; uflg[a]=1;
stp57();
uflg[a]=0;}}
}
//Set n27=LSM-n22-n23-n26
void stp57(){
short a,b,c,d,e;
a=LSM-nm[22]-nm[23]-nm[26];
b=LSM-nm[7]-nm[11]-nm[23];
c=LSM-nm[23]-nm[39]-nm[43];
d=LSM-nm[10]-nm[11]-nm[26];
e=LSM-nm[26]-nm[42]-nm[43];
if((a==b)&&(a==c)&&(a==d)&&(a==e)){
if((0<a)&&(a<65)&&(uflg[a]==0)){
nm[27]=a; uflg[a]=1;
stp58();
uflg[a]=0;}}
}
//Set n49=LSM-n64-n61-n52
void stp58(){
short a,b,c,d,e;
a=LSM-nm[64]-nm[61]-nm[52];
b=LSM-nm[45]-nm[61]-nm[33];
c=LSM-nm[61]-nm[13]-nm[1];
d=LSM-nm[52]-nm[4]-nm[1];
e=LSM-nm[1]-nm[17]-nm[33];
if((a==b)&&(a==c)&&(a==d)&&(a==e)){
if((0<a)&&(a<65)&&(uflg[a]==0)){
nm[49]=a; uflg[a]=1;
stp59();
uflg[a]=0;}}
}
//Set n31=LSM-n26-n27-n30
void stp59(){
short a,b,c,d,e;
a=LSM-nm[26]-nm[27]-nm[30];
b=LSM-nm[14]-nm[15]-nm[30];
c=LSM-nm[30]-nm[46]-nm[47];
d=LSM-nm[11]-nm[15]-nm[27];
e=LSM-nm[27]-nm[43]-nm[47];
if((a==b)&&(a==c)&&(a==d)&&(a==e)){
if((0<a)&&(a<65)&&(uflg[a]==0)){
nm[31]=a; uflg[a]=1;
stp60();
uflg[a]=0;}}
}
//Set n53=LSM-n56-n60-n57
void stp60(){
short a,b,c,d,e;
a=LSM-nm[56]-nm[60]-nm[57];
b=LSM-nm[40]-nm[37]-nm[56];
c=LSM-nm[56]-nm[8]-nm[5];
d=LSM-nm[37]-nm[41]-nm[57];
e=LSM-nm[57]-nm[5]-nm[9];
if((a==b)&&(a==c)&&(a==d)&&(a==e)){

```

```

    if((0<a)&&(a<65)&&(uflg[a]==0)){
        nm[53]=a; uflg[a]=1;
        stp61();
        uflg[a]=0;}}
}
//Set n28=LSM-n23-n24-n27
void stp61(){
    short a,b,c,d,e;
    a=LSM-nm[23]-nm[24]-nm[27];
    b=LSM-nm[11]-nm[12]-nm[27];
    c=LSM-nm[27]-nm[43]-nm[44];
    d=LSM-nm[8]-nm[12]-nm[24];
    e=LSM-nm[24]-nm[40]-nm[44];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[28]=a; uflg[a]=1;
            stp62();
            uflg[a]=0;}}
}
//Set n50=LSM-n62-n63-n51
void stp62(){
    short a,b,c,d,e;
    a=LSM-nm[62]-nm[63]-nm[51];
    b=LSM-nm[34]-nm[35]-nm[51];
    c=LSM-nm[51]-nm[2]-nm[3];
    d=LSM-nm[46]-nm[34]-nm[62];
    e=LSM-nm[62]-nm[14]-nm[2];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[50]=a; uflg[a]=1;
            stp63();
            uflg[a]=0;}}
}
//Set n32=LSM-n27-n28-n31
void stp63(){
    short a,b,c,d,e;
    a=LSM-nm[27]-nm[28]-nm[31];
    b=LSM-nm[15]-nm[16]-nm[31];
    c=LSM-nm[31]-nm[47]-nm[48];
    d=LSM-nm[12]-nm[16]-nm[28];
    e=LSM-nm[28]-nm[44]-nm[48];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[32]=a; uflg[a]=1;
            stp64();
            uflg[a]=0;}}
}
//Set n54=LSM-n50-n51-n55
void stp64(){
    short a,b,c,d,e;
    a=LSM-nm[50]-nm[51]-nm[55];
    b=LSM-nm[55]-nm[58]-nm[59];
    c=LSM-nm[38]-nm[39]-nm[55];
    d=LSM-nm[55]-nm[6]-nm[7];
    e=LSM-nm[58]-nm[6]-nm[10];
    if((a==b)&&(a==c)&&(a==d)&&(a==e)){
        if((0<a)&&(a<65)&&(uflg[a]==0)){
            nm[54]=a; uflg[a]=1;
            stp65();
            uflg[a]=0;}}
}
//The Last Check of Line-Sums
void stp65(){
    short sm1,sm2,sm3;

```

```

sm1=nm[1]+nm[22]+nm[43]+nm[64];
sm2=nm[4]+nm[23]+nm[42]+nm[61];
sm3=nm[13]+nm[26]+nm[39]+nm[52];
if((sm1==LSM)&&(sm2==LSM)&&(sm3==LSM)){
    ansprint(); /* Print the Answers *
}
}
//
/* Print the Answers *
void ansprint(){
    short m,n;
    cnt++; cnt2++;
    fnd01();
    if(nm[1]==1){cnt1=cnt; m=nm[43]; cnt43[m]++;}
    if(cnt2==1){
        cntr[cnt3]=cnt;
        for(n=1;n<65;n++){tn[cnt3][n]=nm[n];}
        cnt3++;
        if(cnt3==3){prans(cnt3); cnt3=0;}
    }
}
//
/* Print the Answers: Sub *
void prans(short x){
    short n;
    for(n=0;n<x;n++){printf("%29ld/",cntr[n]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" %2d-----%2d-----%2d-----%2d",tn[n][1],tn[n][2],tn[n][3],tn[n][4]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" |%2d      |%2d      |%2d      |%2d",tn[n][17],tn[n][18],tn[n][19],tn[n][20]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" %2d %2d %2d %2d %2d %2d %2d %2d",
            tn[n][5],tn[n][33],tn[n][6],tn[n][34],tn[n][7],tn[n][35],tn[n][8],tn[n][36]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" |%2d %2d--+%2d--%2d--+%2d--%2d--+%2d--%2d",
            tn[n][21],tn[n][49],tn[n][22],tn[n][50],tn[n][23],tn[n][51],tn[n][24],tn[n][52]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" %2d %2d | %2d %2d | %2d %2d | %2d %2d |",
            tn[n][9],tn[n][37],tn[n][10],tn[n][38],tn[n][11],tn[n][39],tn[n][12],tn[n][40]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" |%2d %2d %2d %2d %2d %2d %2d %2d",
            tn[n][25],tn[n][53],tn[n][26],tn[n][54],tn[n][27],tn[n][55],tn[n][28],tn[n][56]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" %2d--%2d-|-%2d--%2d-|-%2d--%2d-|-%2d %2d |",
            tn[n][13],tn[n][41],tn[n][14],tn[n][42],tn[n][15],tn[n][43],tn[n][16],tn[n][44]);
        if(n+1<x){printf(" ");}}
    printf("\n");
    for(n=0;n<x;n++){
        printf(" %2d %2d %2d %2d %2d %2d %2d %2d",
            tn[n][29],tn[n][57],tn[n][30],tn[n][58],tn[n][31],tn[n][59],tn[n][32],tn[n][60]);

```

```

    if(n+1<x){printf(" ");}}
printf("\n");
for(n=0;n<x;n++){
    printf("    %2d |    %2d |    %2d |    %2d |",tn[n][45],tn[n][46],tn[n][47],tn[n][48]);
    if(n+1<x){printf(" ");}}
printf("\n");
for(n=0;n<x;n++){
    printf("    %2d-----%2d-----%2d-----%2d",tn[n][61],tn[n][62],tn[n][63],tn[n][64]);
    if(n+1<x){printf(" ");}}
printf("\n");
}
//
/* Find 1 and Count solutions with that position *
void fnd01(){
    short m;
    m=0;
    for(m=1;m<65;m++){
        if(nm[m]==1){cnt01[m]++;}
    }
}
//
/* Solution Counts according to the Positions of Value 1 *
void prcnt01(){
    short m,n;
    for(m=1;m<65;m++){n=cnt01[m];
        printf("%5d:%5d,",m,n);
        if((m%8)==0){printf("\n");}
    }
    printf("\n");
}
//
/* Solution Counts according to the Values of n43 when n1=1 *
void prcnt43(){
    short m,n;
    for(m=1;m<65;m++){n=cnt43[m];
        printf("%5d:%4d,",m,n);
        if((m%8)==0){printf("\n");}
    }
    printf("\n");
}
//
//(End_Of_File)

```