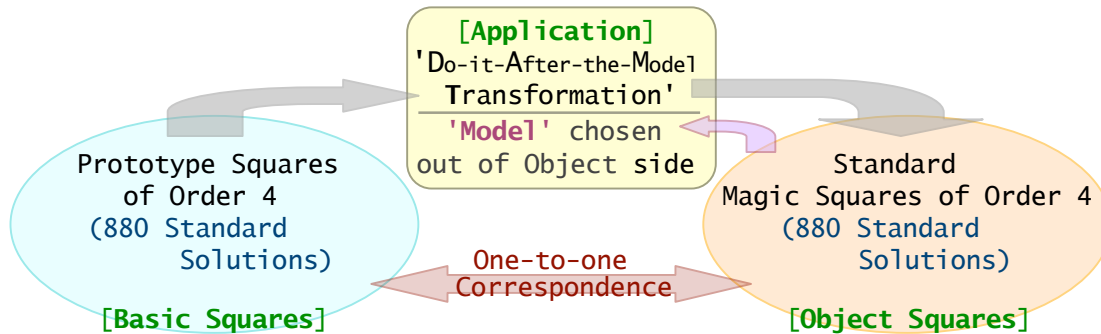


# Chapter 1 : Fundamental Study of 'Prototype' Squares and 'Do-it-After-the-Model Transformation': Kanji Setsuda

## Section 2-3 : Prototype Squares of Order 4 for the Standard Magic Type and its DAM Transformation

Let's go on studying about the two 'parallel worlds' of magic squares and the beautiful correspondence between them, taking the Standard Magic Squares of Order 4, 'Prototype' ones and its 'Do-it-After-the-Model Transformation' for the topics here.



### #1. Our Object: Standard Magic Squares of Order 4

/\*\* Basic Definitions of Standard Magic Squares of Order 4

```

[Basic Form]  [Object Model]
-----
|n1|n2|n3|n4| | 1| 5|16|12|
|---+---+---+| |---+---+---+|
|n5|n6|n7|n8| | 8|14| 3| 9|
|---+---+---+| |---+---+---+|
|n9|10|11|12| |10| 4|13| 7|
|---+---+---+| |---+---+---+|
|13|14|15|16| |15|11| 2| 6|
|---+---+---+| |---+---+---+|

```

**\*\* Basic Conditions: \*\***  
 $n1+n2+n3+n4=C \dots rw1; \quad | \quad n1+n5+n9+n13=C \dots cl1;$   
 $n5+n6+n7+n8=C \dots rw2; \quad | \quad n2+n6+n10+n14=C \dots cl2;$   
 $n9+n10+n11+n12=C \dots rw3; \quad | \quad n3+n7+n11+n15=C \dots cl3;$   
 $n13+n14+n15+n16=C \dots rw4; \quad | \quad n4+n8+n12+n16=C \dots cl4;$   
**\*\* Conditions for the Primary Diagonals: \*\***  
 $n1+n6+n11+n16=C \dots pd1; \quad | \quad n4+n7+n10+n13=C \dots pb1;$   
**\*\* List-forming Inequality Conditions: \*\***  
 $n1 < n4; \quad n1 < n13; \quad n1 < n16; \quad \text{and} \quad n4 < n13; \quad **/$

The object we are going to deal with is one of the most basic types of MS44 and it has been well known to us for a long time. It is usually defined in such the way as listed above, and is known to have the standard solutions as many as 880. This standard set contains both 48 solutions of the Self-complementary Magic type and 48 ones of the Pan-diagonal Magic type included as the sub-sets of it. Therefore, 784 (=880-48-48) solutions are contained in it for the purely 'standard' type.

#### \*\* Reference List-1 of Standard Magic Squares of Order 4: \*\*

[Standard Solutions with Check-Sums: Types: Self-complementary/S; Pan-diagonal/P]

1/ Rw P1\ /34/22/46/34 P2Sums		3/ Rw P1\ /22/34/46/34 P2Sums		7/ Rw P1\ /28/34/40/34 P2Sums		16/P Rw P1\ /34/34/34/34 P2Sums		22/P Rw P1\ /34/34/34/34 P2Sums	
1 5 16 12 34 34\ 8 14 3 9 34 30\ 10 4 13 7 34 46\ 15 11 2 6 34 26\ -----  34 34 34 34 Column /34/22/46/34 P2Sums	1 6 15 12 34 34\ 11 16 5 2 34 38\ 8 3 10 13 34 34\ 14 9 4 7 34 30\ -----  34 34 34 34 Column /22/34/46/34 P2Sums	1 7 12 14 34 34\ 10 16 3 5 34 36\ 8 2 13 11 34 34\ 15 9 6 4 34 32\ -----  34 34 34 34 Column /28/34/40/34 P2Sums	1 8 11 14 34 34\ 12 13 2 7 34 34\ 6 3 16 9 34 34\ 15 10 5 4 34 34\ -----  34 34 34 34 Column /34/34/34/34 P2Sums	1 8 13 12 34 34\ 14 11 2 7 34 34\ 4 5 16 9 34 34\ 15 10 3 6 34 34\ -----  34 34 34 34 Column /34/34/34/34 P2Sums					
23/P Rw P1\ /34/34/34/34 P2Sums		33/ Rw P1\ /32/18/52/34 P2Sums		38/ Rw P1\ /31/20/51/34 P2Sums		52/ Rw P1\ /28/34/40/34 P2Sums		63/P Rw P1\ /34/34/34/34 P2Sums	
1 8 13 12 34 34\ 15 10 3 6 34 34\ 4 5 16 9 34 34\ 14 11 2 7 34 34\ -----  34 34 34 34 Column /34/34/34/34 P2Sums	1 9 16 8 34 34\ 4 12 5 13 34 32\ 14 6 11 3 34 50\ 15 7 2 10 34 20\ -----  34 34 34 34 Column /32/18/52/34 P2Sums	1 10 15 8 34 34\ 3 13 6 12 34 37\ 14 4 11 5 34 48\ 16 7 2 9 34 17\ -----  34 34 34 34 Column /31/20/51/34 P2Sums	1 11 8 14 34 34\ 6 16 3 9 34 36\ 12 2 13 7 34 34\ 15 5 10 4 34 32\ -----  34 34 34 34 Column /28/34/40/34 P2Sums	1 12 7 14 34 34\ 8 13 2 11 34 34\ 10 3 16 5 34 34\ 15 6 9 4 34 34\ -----  34 34 34 34 Column /34/34/34/34 P2Sums					

74/P Rw P1\ 1 12 13 8 34 34\ 14 7 2 11 34 34\ 4 9 16 5 34 34\ 15 6 3 10 34 34		75/P Rw P1\ 1 12 13 8 34 34\ 15 6 3 10 34 34\ 4 9 16 5 34 34\ 14 7 2 11 34 34		81/S Rw P1\ 1 12 14 7 34 34\ 8 13 11 2 34 42\ 15 6 4 9 34 34\ 10 3 5 16 34 26		84/S Rw P1\ 1 12 14 7 34 34\ 15 6 4 9 34 28\ 8 13 11 2 34 34\ 10 3 5 16 34 40		89/S Rw P1\ 1 12 15 6 34 34\ 8 13 10 3 34 42\ 14 7 4 9 34 34\ 11 2 5 16 34 26	
34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /10/34/58/34 P2Sums		34 34 34 34 Co1umn /24/34/44/34 P2Sums		34 34 34 34 Co1umn /10/34/58/34 P2Sums	
93/S Rw P1\ 1 12 15 6 34 34\ 14 7 4 9 34 30\ 8 13 10 3 34 34\ 11 2 5 16 34 38		95/ Rw P1\ 1 13 8 12 34 34\ 3 15 6 10 34 38\ 16 2 11 5 34 38\ 14 4 9 7 34 26		116/ Rw P1\ 1 14 7 12 34 34\ 4 15 6 9 34 38\ 16 3 10 5 34 34\ 13 2 11 8 34 30		118/P Rw P1\ 1 14 7 12 34 34\ 8 11 2 13 34 34\ 10 5 16 3 34 34\ 15 4 9 6 34 34		129/P Rw P1\ 1 14 11 8 34 34\ 12 7 2 13 34 34\ 6 9 16 3 34 34\ 15 4 5 10 34 34	
34 34 34 34 Co1umn /22/34/46/34 P2Sums		34 34 34 34 Co1umn /26/30/46/34 P2Sums		34 34 34 34 Co1umn /22/34/46/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums	
130/P Rw P1\ 1 14 11 8 34 34\ 15 4 5 10 34 34\ 6 9 16 3 34 34\ 12 7 2 13 34 34		134/S Rw P1\ 1 14 12 7 34 34\ 8 11 13 2 34 46\ 15 4 6 9 34 34\ 10 5 3 16 34 22		137/S Rw P1\ 1 14 12 7 34 34\ 15 4 6 9 34 32\ 8 11 13 2 34 34\ 10 5 3 16 34 36		142/S Rw P1\ 1 14 15 4 34 34\ 8 11 10 5 34 46\ 12 7 6 9 34 34\ 13 2 3 16 34 22		146/S Rw P1\ 1 14 15 4 34 34\ 12 7 6 9 34 38\ 8 11 10 5 34 34\ 13 2 3 16 34 30	
34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /14/34/54/34 P2Sums		34 34 34 34 Co1umn /28/34/40/34 P2Sums		34 34 34 34 Co1umn /14/34/54/34 P2Sums		34 34 34 34 Co1umn /22/34/46/34 P2Sums	
148/ Rw P1\ 1 15 6 12 34 34\ 4 14 7 9 34 40\ 16 2 11 5 34 34\ 13 3 10 8 34 28		149/P Rw P1\ 1 15 6 12 34 34\ 8 10 3 13 34 34\ 11 5 16 2 34 34\ 14 4 9 7 34 34		159/P Rw P1\ 1 15 10 8 34 34\ 12 6 3 13 34 34\ 7 9 16 2 34 34\ 14 4 5 11 34 34		161/P Rw P1\ 1 15 10 8 34 34\ 14 4 5 11 34 34\ 7 9 16 2 34 34\ 12 6 3 13 34 34		168/S Rw P1\ 1 15 12 6 34 34\ 8 10 13 3 34 48\ 14 4 7 9 34 34\ 11 5 2 16 34 20	
34 34 34 34 Co1umn /24/34/44/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /16/34/52/34 P2Sums	
172/S Rw P1\ 1 15 12 6 34 34\ 14 4 7 9 34 36\ 8 10 13 3 34 34\ 11 5 2 16 34 32		178/S Rw P1\ 1 15 14 4 34 34\ 8 10 11 5 34 48\ 12 6 7 9 34 34\ 13 3 2 16 34 20		182/S Rw P1\ 1 15 14 4 34 34\ 12 6 7 9 34 40\ 8 10 11 5 34 34\ 13 3 2 16 34 28		184/ Rw P1\ 1 16 5 12 34 34\ 8 13 4 9 34 42\ 10 3 14 7 34 26\ 15 2 11 6 34 34		209/ Rw P1\ 2 5 15 12 34 34\ 11 16 6 1 34 38\ 8 3 9 14 34 34\ 13 10 4 7 34 30	
34 34 34 34 Co1umn /28/34/40/34 P2Sums		34 34 34 34 Co1umn /16/34/52/34 P2Sums		34 34 34 34 Co1umn /24/34/44/34 P2Sums		34 34 34 34 Co1umn /26/42/34/34 P2Sums		34 34 34 34 Co1umn /22/34/46/34 P2Sums	
217/ Rw P1\ 2 6 15 11 34 34\ 7 13 4 10 34 34\ 9 3 14 8 34 46\ 16 12 1 5 34 22		219/ Rw P1\ 2 7 11 14 34 34\ 5 16 4 9 34 34\ 12 1 13 8 34 42\ 15 10 6 3 34 26		223/P Rw P1\ 2 7 12 13 34 34\ 11 14 1 8 34 34\ 5 4 15 10 34 34\ 16 9 6 3 34 34		230/P Rw P1\ 2 7 14 11 34 34\ 13 12 1 8 34 34\ 3 6 15 10 34 34\ 16 9 4 5 34 34		231/P Rw P1\ 2 7 14 11 34 34\ 16 9 4 5 34 34\ 3 6 15 10 34 34\ 13 12 1 8 34 34	
34 34 34 34 Co1umn /38/22/42/34 P2Sums		34 34 34 34 Co1umn /34/26/42/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums		34 34 34 34 Co1umn /34/34/34/34 P2Sums	
236/ Rw P1\ 2 8 11 13 34 34\ 3 16 5 10 34 35\ 14 1 12 7 34 44\ 15 9 6 4 34 23		245/ Rw P1\ 2 9 15 8 34 34\ 7 16 10 1 34 46\ 12 3 5 14 34 34\ 13 6 4 11 34 22		259/ Rw P1\ 2 10 15 7 34 34\ 3 11 6 14 34 36\ 13 5 12 4 34 50\ 16 8 1 9 34 16		264/ Rw P1\ 2 11 7 14 34 34\ 5 16 4 9 34 38\ 12 1 13 8 34 34\ 15 6 10 3 34 30		298/ Rw P1\ 2 12 7 13 34 34\ 5 15 4 10 34 40\ 11 1 14 8 34 34\ 16 6 9 3 34 28	
34 34 34 34 Co1umn /33/24/45/34 P2Sums		34 34 34 34 Co1umn /14/34/54/34 P2Sums		34 34 34 34 Co1umn /36/18/48/34 P2Sums		34 34 34 34 Co1umn /30/34/38/34 P2Sums		34 34 34 34 Co1umn /32/34/36/34 P2Sums	
307/ Rw P1\ 2 13 7 12 34 34\ 3 16 6 9 34 42\ 14 1 11 8 34 34\ 15 4 10 5 34 26		329/ Rw P1\ 2 14 7 11 34 34\ 3 15 6 10 34 44\ 13 1 12 8 34 34\ 16 4 9 5 34 24		352/ Rw P1\ 2 15 5 12 34 34\ 3 14 8 9 34 42\ 16 1 11 6 34 34\ 13 4 10 7 34 26		377/ Rw P1\ 2 16 5 11 34 34\ 3 13 8 10 34 44\ 15 1 12 6 34 34\ 14 4 9 7 34 24		409/ Rw P1\ 3 2 16 13 34 34\ 8 15 1 10 34 24\ 9 6 12 7 34 46\ 14 11 5 4 34 32	
34 34 34 34 Co1umn /26/34/42/34 P2Sums		34 34 34 34 Co1umn /28/34/40/34 P2Sums		34 34 34 34 Co1umn /26/34/42/34 P2Sums		34 34 34 34 Co1umn /28/34/40/34 P2Sums		34 34 34 34 Co1umn /36/22/44/34 P2Sums	
411/ Rw P1\ 3 5 14 12 34 34\ 10 16 7 1 34 40\ 8 2 9 15 34 34\ 13 11 4 6 34 28		415/ Rw P1\ 3 6 12 13 34 34\ 8 11 5 10 34 32\ 9 2 16 7 34 46\ 14 15 1 4 34 24		434/ Rw P1\ 3 7 14 10 34 34\ 2 12 5 15 34 26\ 16 6 11 1 34 54\ 13 9 4 8 34 22		436/ Rw P1\ 3 8 13 10 34 34\ 1 15 6 12 34 37\ 14 2 11 7 34 48\ 16 9 4 5 34 17		444/ Rw P1\ 3 9 14 8 34 34\ 6 16 11 1 34 48\ 12 2 5 15 34 34\ 13 7 4 10 34 20	

34 34 34 34 Co1umn /24/34/44/34 P2Sums	34 34 34 34 Co1umn /44/22/36/34 P2Sums	34 34 34 34 Co1umn /38/14/50/34 P2Sums	34 34 34 34 Co1umn /35/20/47/34 P2Sums	34 34 34 34 Co1umn /16/34/52/34 P2Sums
456/ Rw P1\ 3 10 13 8 34 34\ 2 16 11 5 34 47\ 15 1 6 12 34 40\ 14 7 4 9 34 15\ -----	474/ Rw P1\ 3 11 14 6 34 34\ 2 10 7 15 34 38\ 13 5 12 4 34 50\ 16 8 1 9 34 14\ -----	478/ Rw P1\ 3 12 6 13 34 34\ 7 16 2 9 34 36\ 10 5 11 8 34 26\ 14 1 15 4 34 40\ -----	494/ Rw P1\ 3 13 6 12 34 34\ 2 16 7 9 34 42\ 15 1 10 8 34 34\ 14 4 11 5 34 26\ -----	520/ Rw P1\ 3 14 5 12 34 34\ 2 15 8 9 34 42\ 16 1 10 7 34 34\ 13 4 11 6 34 26\ -----
34 34 34 34 Co1umn /21/28/53/34 P2Sums	34 34 34 34 Co1umn /38/18/46/34 P2Sums	34 34 34 34 Co1umn /24/42/36/34 P2Sums	34 34 34 34 Co1umn /26/34/42/34 P2Sums	34 34 34 34 Co1umn /26/34/42/34 P2Sums
538/ Rw P1\ 3 15 6 10 34 34\ 1 13 8 12 34 42\ 16 2 11 5 34 38\ 14 4 9 7 34 22\ -----	553/ Rw P1\ 3 16 2 13 34 34\ 7 12 6 9 34 44\ 10 1 15 8 34 26\ 14 5 11 4 34 32\ -----	575/ Rw P1\ 4 5 14 11 34 34\ 1 15 8 10 34 33\ 16 2 9 7 34 52\ 13 12 3 6 34 17\ -----	596/ Rw P1\ 4 6 13 11 34 34\ 9 15 8 2 34 44\ 7 1 10 16 34 34\ 14 12 3 5 34 24\ -----	604/ Rw P1\ 4 7 13 10 34 34\ 9 14 8 3 34 46\ 6 1 11 16 34 34\ 15 12 2 5 34 22\ -----
34 34 34 34 Co1umn /30/30/42/34 P2Sums	34 34 34 34 Co1umn /32/42/28/34 P2Sums	34 34 34 34 Co1umn /35/16/51/34 P2Sums	34 34 34 34 Co1umn /28/34/40/34 P2Sums	34 34 34 34 Co1umn /30/34/38/34 P2Sums
612/ Rw P1\ 4 8 13 9 34 34\ 1 11 6 16 34 30\ 15 5 12 2 34 54\ 14 10 3 7 34 18\ -----	614/ Rw P1\ 4 9 14 7 34 34\ 1 15 12 6 34 45\ 16 2 5 11 34 44\ 13 8 3 10 34 13\ -----	634/ Rw P1\ 4 10 13 7 34 34\ 5 15 12 2 34 52\ 11 1 6 16 34 34\ 14 8 3 9 34 16\ -----	648/ Rw P1\ 4 11 13 6 34 34\ 5 14 12 3 34 54\ 10 1 7 16 34 34\ 15 8 2 9 34 14\ -----	660/ Rw P1\ 4 12 13 5 34 34\ 1 9 8 16 34 38\ 14 6 11 3 34 50\ 15 7 2 10 34 14\ -----
34 34 34 34 Co1umn /42/14/46/34 P2Sums	34 34 34 34 Co1umn /23/24/55/34 P2Sums	34 34 34 34 Co1umn /20/34/48/34 P2Sums	34 34 34 34 Co1umn /22/34/46/34 P2Sums	34 34 34 34 Co1umn /38/18/46/34 P2Sums
664/ Rw P1\ 4 13 6 11 34 34\ 1 16 7 10 34 42\ 15 2 9 8 34 34\ 14 3 12 5 34 26\ -----	682/ Rw P1\ 4 14 5 11 34 34\ 1 15 8 10 34 42\ 16 2 9 7 34 34\ 13 3 12 6 34 26\ -----	710/ Rw P1\ 4 15 5 10 34 34\ 1 14 8 11 34 42\ 16 3 9 6 34 34\ 13 2 12 7 34 26\ -----	736/ Rw P1\ 4 16 5 9 34 34\ 1 13 8 12 34 46\ 14 2 11 7 34 34\ 15 3 10 6 34 22\ -----	753/ Rw P1\ 5 2 16 11 34 34\ 4 15 1 14 34 18\ 13 10 8 3 34 50\ 12 7 9 6 34 34\ -----
34 34 34 34 Co1umn /26/34/42/34 P2Sums	34 34 34 34 Co1umn /26/34/42/34 P2Sums	34 34 34 34 Co1umn /26/34/42/34 P2Sums	34 34 34 34 Co1umn /30/34/38/34 P2Sums	34 34 34 34 Co1umn /34/18/50/34 P2Sums
755/ Rw P1\ 5 3 16 10 34 34\ 2 13 8 11 34 29\ 15 4 9 6 34 56\ 12 14 1 7 34 17\ -----	762/ Rw P1\ 5 4 14 11 34 34\ 2 13 3 16 34 20\ 15 8 10 1 34 54\ 12 9 7 6 34 28\ -----	769/ Rw P1\ 5 8 10 11 34 34\ 2 9 7 16 34 28\ 15 4 14 1 34 54\ 12 13 3 6 34 20\ -----	775/ Rw P1\ 5 9 12 8 34 34\ 4 16 13 1 34 48\ 14 2 3 15 34 34\ 11 7 6 10 34 20\ -----	779/ Rw P1\ 5 10 8 11 34 34\ 1 14 4 15 34 28\ 16 7 9 2 34 42\ 12 3 13 6 34 32\ -----
34 34 34 34 Co1umn /39/12/51/34 P2Sums	34 34 34 34 Co1umn /40/14/48/34 P2Sums	34 34 34 34 Co1umn /48/14/40/34 P2Sums	34 34 34 34 Co1umn /16/34/52/34 P2Sums	34 34 34 34 Co1umn /32/26/44/34 P2Sums
789/ Rw P1\ 5 11 8 10 34 34\ 4 6 9 15 34 34\ 13 3 16 2 34 50\ 12 14 1 7 34 18\ -----	797/ Rw P1\ 5 12 9 8 34 34\ 2 15 14 3 34 50\ 16 1 4 13 34 34\ 11 6 7 10 34 18\ -----	801/ Rw P1\ 5 14 4 11 34 34\ 1 10 8 15 34 36\ 16 3 13 2 34 42\ 12 7 9 6 34 24\ -----	803/ Rw P1\ 5 15 4 10 34 34\ 2 12 7 13 34 36\ 16 6 9 3 34 34\ 11 1 14 8 34 32\ -----	804/ Rw P1\ 5 16 2 11 34 34\ 3 8 10 13 34 42\ 14 1 15 4 34 38\ 12 9 7 6 34 22\ -----
34 34 34 34 Co1umn /50/18/34/34 P2Sums	34 34 34 34 Co1umn /18/34/50/34 P2Sums	34 34 34 34 Co1umn /40/26/36/34 P2Sums	34 34 34 34 Co1umn /28/34/40/34 P2Sums	34 34 34 34 Co1umn /42/30/30/34 P2Sums
817/ Rw P1\ 6 3 15 10 34 34\ 1 12 8 13 34 26\ 16 5 9 4 34 58\ 11 14 2 7 34 18\ -----	822/ Rw P1\ 6 4 15 9 34 34\ 3 13 2 16 34 18\ 14 12 7 1 34 50\ 11 5 10 8 34 34\ -----	825/ Rw P1\ 6 7 12 9 34 34\ 1 15 4 14 34 25\ 16 10 5 3 34 44\ 11 2 13 8 34 33\ -----	831/ Rw P1\ 6 9 12 7 34 34\ 1 15 14 4 34 47\ 16 2 3 13 34 40\ 11 8 5 10 34 15\ -----	837/ Rw P1\ 6 10 11 7 34 34\ 3 15 14 2 34 52\ 13 1 4 16 34 34\ 12 8 5 9 34 16\ -----
34 34 34 34 Co1umn /42/10/50/34 P2Sums	34 34 34 34 Co1umn /34/18/50/34 P2Sums	34 34 34 34 Co1umn /27/24/51/34 P2Sums	34 34 34 34 Co1umn /21/28/53/34 P2Sums	34 34 34 34 Co1umn /20/34/48/34 P2Sums
841/ Rw P1\ 6 11 10 7 34 34\ 1 16 13 4 34 50\ 15 2 3 14 34 34\ 12 5 8 9 34 18\ -----	845/ Rw P1\ 6 12 7 9 34 34\ 2 16 13 3 34 50\ 15 1 4 14 34 30\ 11 5 10 8 34 22\ -----	857/ Rw P1\ 6 15 3 10 34 34\ 1 12 8 13 34 38\ 16 5 9 4 34 34\ 11 2 14 7 34 30\ -----	864/ Rw P1\ 6 16 3 9 34 34\ 1 11 8 14 34 40\ 15 5 10 4 34 34\ 12 2 13 7 34 28\ -----	865/ Rw P1\ 7 2 16 9 34 34\ 6 15 1 12 34 18\ 11 14 4 5 34 42\ 10 3 13 8 34 42\ -----
34 34 34 34 Co1umn /18/34/50/34 P2Sums	34 34 34 34 Co1umn /18/38/46/34 P2Sums	34 34 34 34 Co1umn /30/34/38/34 P2Sums	34 34 34 34 Co1umn /32/34/36/34 P2Sums	34 34 34 34 Co1umn /26/26/50/34 P2Sums
867/ Rw P1\ 7 4 14 9 34 34\ -----	871/ Rw P1\ 7 6 12 9 34 34\ -----	873/ Rw P1\ 7 12 6 9 34 34\ -----	875/ Rw P1\ 7 14 4 9 34 34\ -----	879/ Rw P1\ 7 16 2 9 34 34\ -----

```

 2 13  3 16|34|18\  1 14  4 15|34|22\  2  5 11 16|34|34\  1  6 12 15|34|38\  5  4 14 11|34|46\
15 12  6  1|34|50\ 16 11  5  2|34|46\ 15  4 14  1|34|50\ 16  3 13  2|34|46\ 12  1 15  6|34|38\
10  5 11  8|34|34\ 10  3 13  8|34|34\ 10 13  3  8|34|18\ 10 11  5  8|34|18\ 10 13  3  8|34|18\
-----+-----+-----+-----+-----+
|34|34|34|34|Column |34|34|34|34|Column |34|34|34|34|Column |34|34|34|34|Column |34|34|34|34|Column
/34/18/50/34|P2Sums /30/22/50/34|P2Sums /50/18/34/34|P2Sums /46/22/34/34|P2Sums /46/30/26/34|P2Sums
[Total Count = 880] OK!
[Listed by Kanji Setsuda on Sep.21, 2010 with MacOSX & Xcode 3.1.2]

```

## #2. Selection of the 'Model' and Composition of 'Prototype Squares' of Order 4

Let's select the 'Model' to design our 'Do-it-After-the-Model Transformation' system, compose the 'Prototype Squares' according to that model, and finally reconstruct our object, all of Standard Magic Squares of Order 4 again by those tools.

And let's compare the result of our experiment to the Reference List-1 shown above to find whether they are truly the same with each other or not.

- (1) Take one solution in the list above for the Model, and design our Transformation system. Pick up the first one for the representative of 'purely Standard' MS44 now.
- (2) Define the basic conditions of our Prototype Squares according to that Model.

```

/**/
/* Make 'Prototype Squares' and Define the Application 'DAMT'
 [Object Model] [Basic Form]
   | 1| 5|16|12|  | 1| 2| 3| 4|   ** Basic Conditions of Prototype Squares 4x4: **
   |---+---+---+| |---+---+---+|   n1+n5+n16+n12=C ...rw1; | n1+n8+n10+n15=C ...cl1;
   | 8|14| 3| 9|  | 5| 6| 7| 8|   n8+n14+n3+n9=C ...rw2; | n5+n14+n4+n11=C ...cl2;
   |---+---+---+| |---+---+---+|   n10+n4+n13+n7=C ...rw3; | n16+n3+n13+n2=C ...cl3;
   |10| 4|13| 7|  | 9|10|11|12|  n15+n11+n2+n6=C ...rw4; | n12+n9+n7+n6=C ...cl4;
   |---+---+---+| |---+---+---+|   ** Pan-diagonal Conditions of Prototype Squares: **
   |15|11| 2| 6|  |13|14|15|16|  n1+n14+n13+n6=C ...pd1; | n12+n3+n4+n15=C ...pb4;
   |'---+'---+'---+'| |'---+'---+'---+'|   ** List-forming Inequality Conditions **
                                     n1<n6; n1<n12; n1<n15; and n12<n15; */
/**/
/* Program for the 'Do-it-After-the-Model Transformation' */
/* Transform Prototype into Object */
void damt(void){
    dnm[1]=nm[1];   dnm[2]=nm[5];   dnm[3]=nm[16];   dnm[4]=nm[12];
    dnm[5]=nm[8];   dnm[6]=nm[14];   dnm[7]=nm[3];   dnm[8]=nm[9];
    dnm[9]=nm[10];  dnm[10]=nm[4];   dnm[11]=nm[13];  dnm[12]=nm[7];
    dnm[13]=nm[15]; dnm[14]=nm[11];  dnm[15]=nm[2];   dnm[16]=nm[6];
}
/**/

```

- (3) Solve those simultaneous equations above as an 'Inverse Function' of the DAMT and obtain the list of Prototype solutions as many as 880 in all.

<pre> /* PList-1: (for Comparison) */ /* Make Reference List of Standard MS44 */ /* Set N1 */ void deep01(){     short a;     for(a=1;a&lt;10;a++){         if(uflg[a]==0){             nm[1]=a; uflg[a]=1;             deep02();             uflg[a]=0;}         } } /* Set N2 */ void deep02(){     short a; </pre>	<pre>     for(a=1;a&lt;17;a++){         if(uflg[a]==0){             nm[2]=a; uflg[a]=1;             deep03();             uflg[a]=0;}         } } /* Set N3 */ void deep03(){     short a;     for(a=1;a&lt;17;a++){         if(uflg[a]==0){             nm[3]=a; uflg[a]=1;             deep04();             uflg[a]=0;}         } } </pre>
---	---

```

}
}
/* Set n4=LSM-n1-n2-n3 & n4>N1 */
void deep04(){
short a;
a=LSM-nm[1]-nm[2]-nm[3];
if((nm[1]<a)&&(a<17)){
if(uflg[a]==0){
nm[4]=a; uflg[a]=1;
deep05();
uflg[a]=0;}}
}
/* Set N5 */
void deep05(){
short a;
for(a=1;a<17;a++){
if(uflg[a]==0){
nm[5]=a; uflg[a]=1;
deep06();
uflg[a]=0;}}
}
}
/* Set N6 */
void deep06(){
short a;
for(a=1;a<17;a++){
if(uflg[a]==0){
nm[6]=a; uflg[a]=1;
deep07();
uflg[a]=0;}}
}
}
/* Set N7 */
void deep07(){
short a;
for(a=1;a<17;a++){
if(uflg[a]==0){
nm[7]=a; uflg[a]=1;
deep08();
uflg[a]=0;}}
}
}
/* Set n8=LSM-n5-n6-n7 */
void deep08(){
short a;
a=LSM-nm[5]-nm[6]-nm[7];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[8]=a; uflg[a]=1;
deep09();
uflg[a]=0;}}
}
}
/* Level 2: */
/* Set N9 */
void deep09(){
short a;
for(a=1;a<17;a++){
if(uflg[a]==0){
nm[9]=a; uflg[a]=1;
deep10();
uflg[a]=0;}}
}
}
/* Set n13=LSM-n1-n5-n9 & n13>N4 */
void deep10(){

```

```

short a;
a=LSM-nm[1]-nm[5]-nm[9];
if((nm[4]<a)&&(a<17)){
if(uflg[a]==0){
nm[13]=a; uflg[a]=1;
deep11();
uflg[a]=0;}}
}
/* Set n10=LSM-n4-n7-n13 */
void deep11(){
short a;
a=LSM-nm[4]-nm[7]-nm[13];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[10]=a; uflg[a]=1;
deep12();
uflg[a]=0;}}
}
}
/* Set n14=LSM-n2-n6-n10 */
void deep12(){
short a;
a=LSM-nm[2]-nm[6]-nm[10];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[14]=a; uflg[a]=1;
deep13();
uflg[a]=0;}}
}
}
/* Set N11 */
void deep13(){
short a;
for(a=1;a<17;a++){
if(uflg[a]==0){
nm[11]=a; uflg[a]=1;
deep14();
uflg[a]=0;}}
}
}
}
/* Set n12=LSM-n9-n10-n11 */
void deep14(){
short a;
a=LSM-nm[9]-nm[10]-nm[11];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[12]=a; uflg[a]=1;
deep15();
uflg[a]=0;}}
}
}
/* Set n15=LSM-n3-n7-n11 */
void deep15(){
short a;
a=LSM-nm[3]-nm[7]-nm[11];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[15]=a; uflg[a]=1;
deep16();
uflg[a]=0;}}
}
}
/* Set n16=LSM-n13-n14-n15 & n16>N1 */
void deep16(){
short a,b,c;
a=LSM-nm[13]-nm[14]-nm[15];
b=LSM-nm[4]-nm[8]-nm[12];
c=LSM-nm[1]-nm[6]-nm[11];
if((nm[1]<a)&&(a<17)){

```

```

    if((a==b)&&(a==c)){
        if(uflg[a]==0){
            nm[16]=a; uflg[a]=1;
            ansrecord();
            uflg[a]=0;}}
}
/**/
/* Record the Answers */
void ansrecord(){
    short n;
    cnt++;
    st[cnt][0]=cnt;
    for(n=1;n<17;n++){st[cnt][n]=nm[n];}
    st[cnt][17]=chktyp();
}
/**/

/* PList-2: */
/* Prototype Squares according to the Model */
/* Set N1 */
void stp01(){
    short a;
    for(a=1;a<10;a++){
        if(uflg[a]==0){
            nm[1]=a; uflg[a]=1;
            stp02();
            uflg[a]=0;}
    }
}
/* Set N5 */
void stp02(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[5]=a; uflg[a]=1;
            stp03();
            uflg[a]=0;}
    }
}
/* Set N16 */
void stp03(){
    short a;
    for(a=16;a>0;a--){
        if(uflg[a]==0){
            nm[16]=a; uflg[a]=1;
            stp04();
            uflg[a]=0;}
    }
}
/* Set n12=LSM-n1-n5-n16 & n12>N1 */
void stp04(){
    short a;
    a=LSM-nm[1]-nm[5]-nm[16];
    if((nm[1]<a)&&(a<17)){
        if(uflg[a]==0){
            nm[12]=a; uflg[a]=1;
            stp05();
            uflg[a]=0;}}
}
/* Set N8 */
void stp05(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[8]=a; uflg[a]=1;

```

```

        stp06();
        uflg[a]=0;}
    }
}
/* Set N14 */
void stp06(){
    short a;
    for(a=16;a>0;a--){
        if(uflg[a]==0){
            nm[14]=a; uflg[a]=1;
            stp07();
            uflg[a]=0;}
    }
}
/* Set N3 */
void stp07(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[3]=a; uflg[a]=1;
            stp08();
            uflg[a]=0;}
    }
}
/* Set n9=LSM-n8-n14-n3 */
void stp08(){
    short a;
    a=LSM-nm[8]-nm[14]-nm[3];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[9]=a; uflg[a]=1;
            stp09();
            uflg[a]=0;}}
}
/* Level 2: */
/* Set N10 */
void stp09(){
    short a;
    for(a=16;a>0;a--){
        if(uflg[a]==0){
            nm[10]=a; uflg[a]=1;
            stp10();
            uflg[a]=0;}
    }
}
/* Set n15=LSM-n1-n8-n10 & n15>N12 */
void stp10(){
    short a;
    a=LSM-nm[1]-nm[8]-nm[10];
    if((nm[12]<a)&&(a<17)){
        if(uflg[a]==0){
            nm[15]=a; uflg[a]=1;
            stp11();
            uflg[a]=0;}}
}
/* Set n4=LSM-n12-n3-n15 */
void stp11(){
    short a;
    a=LSM-nm[12]-nm[3]-nm[15];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[4]=a; uflg[a]=1;
            stp12();
            uflg[a]=0;}}
}
}

```

```

/* Set n11=LSM-n5-n14-n4 */
void stp12(){
short a;
a=LSM-nm[5]-nm[14]-nm[4];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[11]=a; uflg[a]=1;
stp13();
uflg[a]=0;}}
}
/* Set N13 */
void stp13(){
short a;
for(a=16;a>0;a--){
if(uflg[a]==0){
nm[13]=a; uflg[a]=1;
stp14();
uflg[a]=0;}}
}
}
/* Set n7=LSM-n10-n4-n13 */
void stp14(){
short a;
a=LSM-nm[10]-nm[4]-nm[13];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[7]=a; uflg[a]=1;
stp15();
uflg[a]=0;}}
}
}
/* Set n2=LSM-n16-n3-n13 */
void stp15(){
short a;
a=LSM-nm[16]-nm[3]-nm[13];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[2]=a; uflg[a]=1;
stp16();
uflg[a]=0;}}
}
}
/* Set n6=LSM-n15-n11-n2 & n6>N1 */
void stp16(){
short a,b,c;
a=LSM-nm[15]-nm[11]-nm[2];
b=LSM-nm[12]-nm[9]-nm[7];
c=LSM-nm[1]-nm[14]-nm[13];
if((nm[1]<a)&&(a<17)){
if((a==b)&&(a==c)){
if(uflg[a]==0){
nm[6]=a; uflg[a]=1;
ansprint();
uflg[a]=0;}}}
}
}
/**/
/* Print the Solutions */
void ansprint(){
short cn,n;
cn=cnt3*2;
for(n=1;n<17;n++){dt[cn][n]=nm[n];}
cnt1++; dt[cn][0]=cnt1;
damt();
for(n=1;n<17;n++){dt[cn+1][n]=dnm[n];}
n=findnmb();
dt[cn+1][0]=n; lnm[n]++;
dt[cn+1][17]=st[n][17];
cnt3++;
if(cnt3==3){pr6ans(); cnt3=0;
for(n=0;n<6;n++){dt[n][0]=0;}}
}
}
/**/

```

Compare those styles of Programming between making the reference list (PList-1) and the next one of Prototype solutions (PList-2) to know how the 'Inverse Function' of DAMT is solved. Do you notice they are quite similar to each other?

(4) Apply the DAM Transformation to each Prototype solution and reconstruct each object one. Repeat the same job of applying it to one after another until the end.

**[Prototype Squares and the Standard Magic Objects Reconstructed by DAMT]**  
**[Prototype/P; Object:S/Self-Complementary; C/Complete; \_/Standard Type]**

1/P _/1				2/P _/2				3/P _/5																			
1	2	3	4	1	2	3	4	1	2	3	4	1	5	16	12	1	3	5	4	1	6	16	11				
5	6	7	8	5	6	9	10	5	6	9	10	5	6	9	10	5	6	9	10	5	6	9	10	12	15	5	2
9	10	11	12	9	10	11	12	9	10	11	12	9	10	11	12	9	10	11	12	9	10	11	12	7	4	10	13
13	14	15	16	13	14	15	16	13	14	15	16	13	14	15	16	13	14	15	16	13	14	15	16	14	9	3	8
4/P _/6				5/P _/3				6/P _/4																			
1	3	2	7	1	4	5	3	1	6	15	12	1	3	2	7	1	6	15	12								
6	8	10	15	6	7	13	11	6	7	13	11	6	8	9	16	6	8	9	16	16	11	2	5				
5	4	9	11	5	4	9	12	5	4	9	12	5	4	10	12	5	4	10	12	4	7	14	9				
13	12	14	16	13	12	14	15	13	12	14	15	13	12	14	15	13	12	14	15	13	10	3	8				
7/P _/14				8/P _/15				9/P _/8																			
1	2	5	4	1	2	3	6	1	7	16	10	1	3	4	2	1	7	14	12								
7	8	13	12	7	8	11	14	7	8	11	14	7	5	8	6	7	5	8	6	6	15	4	9				
3	6	9	10	3	6	9	10	3	6	9	10	3	6	9	10	3	6	9	10	11	2	13	8				
11	14	15	16	11	14	15	16	11	14	15	16	11	14	15	16	11	14	15	16	16	10	3	5				

10/P	_/9	11/P	_/10	12/P	_/11
1 3 2 4	1 7 14 12	1 3 4 2	1 7 14 12	1 4 5 2	1 7 14 12
7 5 6 8	8 13 2 11	7 5 11 9	9 15 4 6	7 6 13 10	10 16 5 3
11 9 10 12	9 4 15 6	6 8 10 12	8 2 13 11	3 8 9 12	8 2 11 13
15 13 16 14	16 10 3 5	13 15 16 14	16 10 3 5	11 16 15 14	15 9 4 6
13/P	_/12	14/P	_/13	15/P	_/7
1 3 2 4	1 7 14 12	1 2 3 6	1 7 14 12	1 6 3 2	1 7 12 14
7 5 9 11	11 13 2 8	7 8 9 16	16 10 3 5	7 4 11 10	10 16 3 5
8 6 10 12	6 4 15 9	5 4 11 12	4 6 15 9	5 8 9 14	8 2 13 11
15 13 16 14	16 10 3 5	15 10 13 14	13 11 2 8	13 16 15 12	15 9 6 4
16/P	_/29	17/P	_/30	18/P	_/31
1 2 5 3	1 8 15 10	1 2 3 5	1 8 15 10	1 2 5 3	1 8 15 10
8 7 6 4	4 14 5 11	8 7 4 6	6 12 3 13	8 7 13 11	11 14 5 4
11 13 9 10	13 3 12 6	13 11 9 10	11 5 14 4	4 6 9 10	6 3 12 13
12 14 16 15	16 9 2 7	14 12 16 15	16 9 2 7	12 14 16 15	16 9 2 7
19/P	_/32	20/P	_/25	21/P	_/26
1 2 3 5	1 8 15 10	1 3 5 2	1 8 14 11	1 3 2 5	1 8 14 11
8 7 11 13	13 12 3 6	8 6 7 4	4 15 5 10	8 6 4 7	7 12 2 13
6 4 9 10	4 5 14 11	10 13 9 11	13 2 12 7	13 10 9 11	10 5 15 4
14 12 16 15	16 9 2 7	12 15 16 14	16 9 3 6	15 12 16 14	16 9 3 6
22/P	_/27	23/P	_/28	24/P	_/21
1 3 5 2	1 8 14 11	1 3 2 5	1 8 14 11	1 4 6 2	1 8 13 12
8 6 13 10	10 15 5 4	8 6 10 13	13 12 2 7	8 7 5 3	3 15 6 10
4 7 9 11	7 2 12 13	7 4 9 11	4 5 15 10	10 16 9 12	16 2 11 5
12 15 16 14	16 9 3 6	15 12 16 14	16 9 3 6	11 15 14 13	14 9 4 7
25/P	C/22	26/P	C/23	27/P	_/24
1 3 2 5	1 8 13 12	1 2 3 5	1 8 13 12	1 4 2 6	1 8 13 12
8 6 9 14	14 11 2 7	8 7 9 15	15 10 3 6	8 7 10 16	16 11 2 5
7 4 10 12	4 5 16 9	6 4 11 12	4 5 16 9	5 3 9 12	3 6 15 10
16 11 15 13	15 10 3 6	16 10 14 13	14 11 2 7	15 11 14 13	14 9 4 7
28/P	_/17	29/P	_/18	30/P	_/19
1 5 3 2	1 8 12 13	1 5 2 3	1 8 12 13	1 5 3 2	1 8 12 13
8 4 7 6	6 15 3 10	8 4 6 7	7 14 2 11	8 4 11 10	10 15 3 6
10 11 9 13	11 2 14 7	11 10 9 13	10 3 15 6	6 7 9 13	7 2 14 11
14 15 16 12	16 9 5 4	15 14 16 12	16 9 5 4	14 15 16 12	16 9 5 4
31/P	_/20	32/P	C/16	33/P	_/34
1 5 2 3	1 8 12 13	1 5 2 3	1 8 11 14	1 3 5 7	1 9 16 8
8 4 10 11	11 14 2 7	8 4 9 12	12 13 2 7	9 11 2 4	4 12 5 13
7 6 9 13	6 3 15 10	7 6 10 14	6 3 16 9	13 15 6 8	15 7 10 2
15 14 16 12	16 9 5 4	16 13 15 11	15 10 5 4	10 12 14 16	14 6 3 11
34/P	_/33	35/P	_/35	36/P	_/36
1 2 5 6	1 9 16 8	1 3 10 4	1 9 16 8	1 2 5 6	1 9 16 8
9 10 3 4	4 12 5 13	9 13 11 7	7 15 10 2	9 10 13 14	14 12 5 3
13 14 7 8	14 6 11 3	2 14 6 8	14 4 5 11	3 4 7 8	4 6 11 13
11 12 15 16	15 7 2 10	5 15 12 16	12 6 3 13	11 12 15 16	15 7 2 10
37/P	_/37	38/P	_/49	39/P	_/48
1 3 5 7	1 9 16 8	1 5 9 6	1 10 16 7	1 3 9 4	1 10 16 7
9 11 13 15	15 12 5 2	10 14 11 8	8 15 9 2	10 12 13 8	8 15 9 2
2 4 6 8	4 7 10 13	2 13 3 7	13 6 4 11	2 11 5 7	11 4 6 13
10 12 14 16	14 6 3 11	4 15 12 16	12 3 5 14	6 15 14 16	14 5 3 12
40/P	_/51	41/P	_/50	42/P	_/38
1 5 2 13	1 10 16 7	1 3 2 11	1 10 16 7	1 2 6 4	1 10 15 8
10 14 4 15	15 8 2 9	10 12 6 15	15 8 2 9	10 9 5 3	3 13 6 12
9 6 3 7	6 13 11 4	9 4 5 7	4 11 13 6	12 14 7 8	14 4 11 5
11 8 12 16	12 3 5 14	13 8 14 16	14 5 3 12	11 13 16 15	16 7 2 9



43/P	_/40	44/P	_/39	45/P	_/42
1 2 11 3	1 10 15 8	1 2 4 6	1 10 15 8	1 6 9 5	1 10 15 8
10 13 9 5	5 14 11 4	10 9 3 5	5 11 4 14	10 13 11 7	7 16 9 2
4 16 7 8	16 3 6 9	14 12 7 8	12 6 13 3	2 14 3 8	14 5 4 11
6 14 12 15	12 7 2 13	13 11 16 15	16 7 2 9	4 16 12 15	12 3 6 13
46/P	_/41	47/P	_/43	48/P	_/44
1 4 9 3	1 10 15 8	1 2 6 4	1 10 15 8	1 2 4 6	1 10 15 8
10 11 13 7	7 16 9 2	10 9 14 12	12 13 6 3	10 9 12 14	14 11 4 5
2 12 5 8	12 3 6 13	3 5 7 8	5 4 11 14	5 3 7 8	3 6 13 12
6 16 14 15	14 5 4 11	11 13 16 15	16 7 2 9	13 11 16 15	16 7 2 9
49/P	_/47	50/P	_/46	51/P	_/45
1 5 2 13	1 10 15 8	1 3 2 11	1 10 15 8	1 2 3 11	1 10 15 8
10 14 3 16	16 7 2 9	10 12 5 16	16 7 2 9	10 13 4 16	16 6 3 9
9 6 4 8	6 13 12 3	9 4 6 8	4 11 14 5	9 5 7 8	5 11 14 4
12 7 11 15	11 4 5 14	14 7 13 15	13 6 3 12	14 6 12 15	12 7 2 13
52/P	_/60	53/P	_/59	54/P	_/62
1 5 9 7	1 11 16 6	1 2 9 4	1 11 16 6	1 5 3 13	1 11 16 6
11 15 10 8	8 14 9 3	11 12 13 8	8 14 9 3	11 15 4 14	14 8 3 9
3 13 2 6	13 7 4 10	3 10 5 6	10 4 7 13	9 7 2 6	7 13 10 4
4 14 12 16	12 2 5 15	7 14 15 16	15 5 2 12	10 8 12 16	12 2 5 15
55/P	_/61	56/P	_/54	57/P	_/53
1 2 3 10	1 11 16 6	1 7 9 5	1 11 14 8	1 4 9 2	1 11 14 8
11 12 7 14	14 8 3 9	11 13 10 6	6 16 9 3	11 10 13 6	6 16 9 3
9 4 5 6	4 10 13 7	3 15 2 8	15 5 4 10	3 12 5 8	12 2 7 13
13 8 15 16	15 5 2 12	4 16 12 14	12 2 7 13	7 16 15 14	15 5 4 10
58/P	_/55	59/P	_/58	60/P	_/57
1 3 12 4	1 11 14 8	1 5 3 13	1 11 14 8	1 2 3 10	1 11 14 8
11 15 9 7	7 13 12 2	11 15 2 16	16 6 3 9	11 12 5 16	16 6 3 9
2 16 6 8	16 4 5 9	9 7 4 8	7 13 12 2	9 4 7 8	4 10 15 5
5 13 10 14	10 6 3 15	12 6 10 14	10 4 5 15	15 6 13 14	13 7 2 12
61/P	_/56	62/P	_/52	63/P	_/85
1 3 4 12	1 11 14 8	1 10 3 2	1 11 8 14	1 2 8 4	1 12 15 6
11 15 2 16	16 5 4 9	11 4 7 6	6 16 3 9	12 11 7 3	3 13 8 10
9 7 6 8	7 12 13 2	9 12 5 14	12 2 13 7	10 14 5 6	14 4 9 7
13 5 10 14	10 6 3 15	13 16 15 8	15 5 10 4	9 13 16 15	16 5 2 11
64/P	_/86	65/P	_/88	66/P	_/87
1 2 9 3	1 12 15 6	1 2 9 3	1 12 15 6	1 2 4 8	1 12 15 6
12 11 10 4	4 14 9 7	12 11 13 7	7 14 9 4	12 11 3 7	7 9 4 14
7 13 5 6	13 3 8 10	4 10 5 6	10 3 8 13	14 10 5 6	10 8 13 3
8 14 16 15	16 5 2 11	8 14 16 15	16 5 2 11	13 9 16 15	16 5 2 11
67/P	S/89	68/P	_/91	69/P	_/90
1 5 10 7	1 12 15 6	1 2 8 4	1 12 15 6	1 2 3 9	1 12 15 6
12 16 9 8	8 13 10 3	12 11 14 10	10 13 8 3	12 11 4 10	10 8 3 13
3 14 2 6	14 7 4 9	3 7 5 6	7 4 9 14	13 7 5 6	7 9 14 4
4 13 11 15	11 2 5 16	9 13 16 15	16 5 2 11	14 8 16 15	16 5 2 11
70/P	_/92	71/P	_/94	72/P	S/93
1 2 3 9	1 12 15 6	1 2 4 8	1 12 15 6	1 5 4 13	1 12 15 6
12 11 7 13	13 8 3 10	12 11 10 14	14 9 4 7	12 16 3 14	14 7 4 9
10 4 5 6	4 9 14 7	7 3 5 6	3 8 13 10	9 8 2 6	8 13 10 3
14 8 16 15	16 5 2 11	13 9 16 15	16 5 2 11	10 7 11 15	11 2 5 16
73/P	_/79	74/P	_/80	75/P	S/81
1 3 9 2	1 12 14 7	1 3 9 2	1 12 14 7	1 5 11 6	1 12 14 7
12 10 11 4	4 15 9 6	12 10 13 6	6 15 9 4	12 16 9 8	8 13 11 2
6 13 5 7	13 2 8 11	4 11 5 7	11 2 8 13	2 15 3 7	15 6 4 9
8 15 16 14	16 5 3 10	8 15 16 14	16 5 3 10	4 13 10 14	10 3 5 16

76/P	_/82	77/P	_/83	78/P	S/84
1 3 2 9	1 12 14 7	1 3 2 9	1 12 14 7	1 5 4 13	1 12 14 7
12 10 4 11	11 8 2 13	12 10 6 13	13 8 2 11	12 16 2 15	15 6 4 9
13 6 5 7	6 9 15 4	11 4 5 7	4 9 15 6	9 8 3 7	8 13 11 2
15 8 16 14	16 5 3 10	15 8 16 14	16 5 3 10	11 6 10 14	10 3 5 16
79/P	_/68	80/P	_/69	81/P	_/71
1 4 7 3	1 12 13 8	1 4 10 2	1 12 13 8	1 7 10 5	1 12 13 8
12 9 6 2	2 14 7 11	12 11 9 3	3 15 10 6	12 14 9 6	6 15 10 3
11 15 5 8	15 3 10 6	6 16 5 8	16 2 7 9	3 16 2 8	16 5 4 9
10 14 16 13	16 5 4 9	7 15 14 13	14 5 4 11	4 15 11 13	11 2 7 14
82/P	_/70	83/P	_/72	84/P	_/73
1 4 3 7	1 12 13 8	1 6 11 5	1 12 13 8	1 4 7 3	1 12 13 8
12 9 2 6	6 10 3 15	12 15 9 7	7 14 11 2	12 9 15 11	11 14 7 2
15 11 5 8	11 7 14 2	2 16 3 8	16 5 4 9	2 6 5 8	6 3 10 15
14 10 16 13	16 5 4 9	4 14 10 13	10 3 6 15	10 14 16 13	16 5 4 9
85/P	C/74	86/P	_/76	87/P	C/75
1 3 2 9	1 12 13 8	1 4 3 7	1 12 13 8	1 2 3 9	1 12 13 8
12 10 5 14	14 7 2 11	12 9 11 15	15 10 3 6	12 11 5 15	15 6 3 10
11 4 6 8	4 9 16 5	6 2 5 8	2 7 14 11	10 4 7 8	4 9 16 5
16 7 15 13	15 6 3 10	14 10 16 13	16 5 4 9	16 6 14 13	14 7 2 11
88/P	_/78	89/P	_/77	90/P	_/64
1 3 4 7	1 12 13 8	1 4 2 10	1 12 13 8	1 9 3 2	1 12 8 13
12 10 11 16	16 9 4 5	12 11 6 16	16 7 2 9	12 4 7 6	6 15 3 10
5 2 6 8	2 7 14 11	9 3 5 8	3 10 15 6	10 11 5 13	11 2 14 7
14 9 15 13	15 6 3 10	15 7 14 13	14 5 4 11	14 15 16 8	16 5 9 4
91/P	_/65	92/P	_/66	93/P	_/67
1 9 2 3	1 12 8 13	1 9 3 2	1 12 8 13	1 9 2 3	1 12 8 13
12 4 6 7	7 14 2 11	12 4 11 10	10 15 3 6	12 4 10 11	11 14 2 7
11 10 5 13	10 3 15 6	6 7 5 13	7 2 14 11	7 6 5 13	6 3 15 10
15 14 16 8	16 5 9 4	14 15 16 8	16 5 9 4	15 14 16 8	16 5 9 4
94/P	C/63	95/P	_/110	96/P	_/112
1 9 2 3	1 12 7 14	1 2 7 8	1 13 16 4	1 3 9 7	1 13 16 4
12 4 5 8	8 13 2 11	13 14 5 6	6 10 7 11	13 15 10 8	8 12 9 5
11 10 6 14	10 3 16 5	11 12 3 4	12 8 9 5	5 11 2 4	11 7 6 10
16 13 15 7	15 6 9 4	9 10 15 16	15 3 2 14	6 12 14 16	14 2 3 15
97/P	_/111	98/P	_/115	99/P	_/114
1 2 9 6	1 13 16 4	1 2 7 8	1 13 16 4	1 3 5 11	1 13 16 4
13 14 11 8	8 12 9 5	13 14 11 12	12 10 7 5	13 15 6 12	12 8 5 9
5 10 3 4	10 6 7 11	5 6 3 4	6 8 9 11	9 7 2 4	7 11 10 6
7 12 15 16	15 3 2 14	9 10 15 16	15 3 2 14	10 8 14 16	14 2 3 15
100/P	_/113	101/P	_/100	102/P	_/99
1 2 5 10	1 13 16 4	1 6 7 4	1 13 12 8	1 5 7 3	1 13 12 8
13 14 7 12	12 8 5 9	13 10 5 2	2 14 7 11	13 9 6 2	2 14 7 11
9 6 3 4	6 10 11 7	11 16 3 8	16 4 9 5	11 15 4 8	15 3 10 6
11 8 15 16	15 3 2 14	9 14 15 12	15 3 6 10	10 14 16 12	16 4 5 9
103/P	_/101	104/P	_/103	105/P	_/102
1 5 10 2	1 13 12 8	1 7 9 3	1 13 12 8	1 6 9 2	1 13 12 8
13 11 9 3	3 15 10 6	13 11 10 4	4 16 9 5	13 10 11 4	4 16 9 5
6 16 4 8	16 2 7 9	5 15 2 8	15 3 6 10	5 14 3 8	14 2 7 11
7 15 14 12	14 4 5 11	6 16 14 12	14 2 7 11	7 16 15 12	15 3 6 10
106/P	_/104	107/P	_/105	108/P	_/106
1 5 3 7	1 13 12 8	1 5 7 3	1 13 12 8	1 5 3 7	1 13 12 8
13 9 2 6	6 10 3 15	13 9 15 11	11 14 7 2	13 9 11 15	15 10 3 6
15 11 4 8	11 7 14 2	2 6 4 8	6 3 10 15	6 2 4 8	2 7 14 11
14 10 16 12	16 4 5 9	10 14 16 12	16 4 5 9	14 10 16 12	16 4 5 9

109/P	_/109	110/P	_/108	111/P	_/107
1 5 2 10	1 13 12 8	1 3 5 11	1 13 12 8	1 2 5 10	1 13 12 8
13 11 6 16	16 7 2 9	13 15 2 16	16 4 5 9	13 14 3 16	16 4 5 9
9 3 4 8	3 10 15 6	9 7 6 8	7 11 14 2	9 6 7 8	6 10 15 3
15 7 14 12	14 4 5 11	14 4 10 12	10 6 3 15	15 4 11 12	11 7 2 14
112/P	_/95	113/P	_/97	114/P	_/96
1 9 6 2	1 13 8 12	1 11 5 3	1 13 8 12	1 10 5 2	1 13 8 12
13 7 5 3	3 15 6 10	13 7 6 4	4 16 5 9	13 6 7 4	4 16 5 9
10 16 4 12	16 2 11 5	9 15 2 12	15 3 10 6	9 14 3 12	14 2 11 7
11 15 14 8	14 4 9 7	10 16 14 8	14 2 11 7	11 16 15 8	15 3 10 6
115/P	_/98	116/P	_/138	117/P	_/139
1 9 2 6	1 13 8 12	1 2 8 6	1 14 15 4	1 2 9 5	1 14 15 4
13 7 10 16	16 11 2 5	14 13 7 5	5 11 8 10	14 13 10 6	6 12 9 7
5 3 4 12	3 6 15 10	10 12 3 4	12 6 9 7	7 11 3 4	11 5 8 10
15 11 14 8	14 4 9 7	9 11 16 15	16 3 2 13	8 12 16 15	16 3 2 13
118/P	_/141	119/P	_/140	120/P	S/142
1 2 9 5	1 14 15 4	1 2 6 8	1 14 15 4	1 3 10 7	1 14 15 4
14 13 11 7	7 12 9 6	14 13 5 7	7 9 6 12	14 16 9 8	8 11 10 5
6 10 3 4	10 5 8 11	12 10 3 4	10 8 11 5	5 12 2 4	12 7 6 9
8 12 16 15	16 3 2 13	11 9 16 15	16 3 2 13	6 11 13 15	13 2 3 16
121/P	_/144	122/P	_/143	123/P	_/145
1 2 8 6	1 14 15 4	1 2 5 9	1 14 15 4	1 2 5 9	1 14 15 4
14 13 12 10	10 11 8 5	14 13 6 10	10 8 5 11	14 13 7 11	11 8 5 10
5 7 3 4	7 6 9 12	11 7 3 4	7 9 12 6	10 6 3 4	6 9 12 7
9 11 16 15	16 3 2 13	12 8 16 15	16 3 2 13	12 8 16 15	16 3 2 13
124/P	_/147	125/P	S/146	126/P	_/132
1 2 6 8	1 14 15 4	1 3 6 11	1 14 15 4	1 5 9 2	1 14 12 7
14 13 10 12	12 9 6 7	14 16 5 12	12 7 6 9	14 10 11 4	4 15 9 6
7 5 3 4	5 8 11 10	9 8 2 4	8 11 10 5	6 13 3 7	13 2 8 11
11 9 16 15	16 3 2 13	10 7 13 15	13 2 3 16	8 15 16 12	16 3 5 10
127/P	_/133	128/P	S/134	129/P	_/135
1 5 9 2	1 14 12 7	1 3 13 4	1 14 12 7	1 5 2 9	1 14 12 7
14 10 13 6	6 15 9 4	14 16 9 8	8 11 13 2	14 10 4 11	11 8 2 13
4 11 3 7	11 2 8 13	2 15 5 7	15 4 6 9	13 6 3 7	6 9 15 4
8 15 16 12	16 3 5 10	6 11 10 12	10 5 3 16	15 8 16 12	16 3 5 10
130/P	_/136	131/P	S/137	132/P	_/126
1 5 2 9	1 14 12 7	1 3 6 11	1 14 12 7	1 7 10 3	1 14 11 8
14 10 6 13	13 8 2 11	14 16 2 15	15 4 6 9	14 12 9 4	4 15 10 5
11 4 3 7	4 9 15 6	9 8 5 7	8 11 13 2	5 16 2 8	16 3 6 9
15 8 16 12	16 3 5 10	13 4 10 12	10 5 3 16	6 15 13 11	13 2 7 12
133/P	_/128	134/P	_/127	135/P	C/129
1 6 12 4	1 14 11 8	1 4 13 3	1 14 11 8	1 5 2 9	1 14 11 8
14 15 9 7	7 13 12 2	14 15 9 7	7 12 13 2	14 10 3 12	12 7 2 13
2 16 3 8	16 4 5 9	2 16 5 8	16 3 6 9	13 6 4 8	6 9 16 3
5 13 10 11	10 3 6 15	6 12 10 11	10 5 4 15	16 7 15 11	15 4 5 10
136/P	C/130	137/P	_/131	138/P	_/122
1 2 5 9	1 14 11 8	1 6 4 12	1 14 11 8	1 9 5 2	1 14 8 11
14 13 3 15	15 4 5 10	14 15 2 16	16 5 4 9	14 6 7 4	4 15 5 10
10 6 7 8	6 9 16 3	9 7 3 8	7 12 13 2	10 13 3 11	13 2 12 7
16 4 12 11	12 7 2 13	13 5 10 11	10 3 6 15	12 15 16 8	16 3 9 6
139/P	_/123	140/P	_/124	141/P	_/125
1 9 2 5	1 14 8 11	1 9 5 2	1 14 8 11	1 9 2 5	1 14 8 11
14 6 4 7	7 12 2 13	14 6 13 10	10 15 5 4	14 6 10 13	13 12 2 7
13 10 3 11	10 5 15 4	4 7 3 11	7 2 12 13	7 4 3 11	4 5 15 10
15 12 16 8	16 3 9 6	12 15 16 8	16 3 9 6	15 12 16 8	16 3 9 6

142/P	_/116	143/P	_/117	144/P	_/119
1 11 6 3	1 14 7 12	1 10 4 2	1 14 7 12	1 10 2 4	1 14 7 12
14 8 5 4	4 15 6 9	14 5 8 6	6 15 4 9	14 5 6 8	8 13 2 11
9 16 2 12	16 3 10 5	9 11 3 12	11 2 13 8	11 9 3 12	9 4 15 6
10 15 13 7	13 2 11 8	13 15 16 7	16 3 10 5	15 13 16 7	16 3 10 5
145/P	C/118	146/P	_/120	147/P	_/121
1 9 2 5	1 14 7 12	1 10 4 2	1 14 7 12	1 10 2 4	1 14 7 12
14 6 3 8	8 11 2 13	14 5 11 9	9 15 4 6	14 5 9 11	11 13 2 8
13 10 4 12	10 5 16 3	6 8 3 12	8 2 13 11	8 6 3 12	6 4 15 9
16 11 15 7	15 4 9 6	13 15 16 7	16 3 10 5	15 13 16 7	16 3 10 5
148/P	_/174	149/P	_/175	150/P	_/177
1 3 8 6	1 15 14 4	1 3 9 5	1 15 14 4	1 3 9 5	1 15 14 4
15 13 7 5	5 11 8 10	15 13 10 6	6 12 9 7	15 13 11 7	7 12 9 6
10 12 2 4	12 6 9 7	7 11 2 4	11 5 8 10	6 10 2 4	10 5 8 11
9 11 16 14	16 2 3 13	8 12 16 14	16 2 3 13	8 12 16 14	16 2 3 13
151/P	_/176	152/P	S/178	153/P	_/180
1 3 6 8	1 15 14 4	1 2 11 6	1 15 14 4	1 3 8 6	1 15 14 4
15 13 5 7	7 9 6 12	15 16 9 8	8 10 11 5	15 13 12 10	10 11 8 5
12 10 2 4	10 8 11 5	5 12 3 4	12 6 7 9	5 7 2 4	7 6 9 12
11 9 16 14	16 2 3 13	7 10 13 14	13 3 2 16	9 11 16 14	16 2 3 13
154/P	_/179	155/P	_/181	156/P	_/183
1 3 5 9	1 15 14 4	1 3 5 9	1 15 14 4	1 3 6 8	1 15 14 4
15 13 6 10	10 8 5 11	15 13 7 11	11 8 5 10	15 13 10 12	12 9 6 7
11 7 2 4	7 9 12 6	10 6 2 4	6 9 12 7	7 5 2 4	5 8 11 10
12 8 16 14	16 2 3 13	12 8 16 14	16 2 3 13	11 9 16 14	16 2 3 13
157/P	S/182	158/P	_/164	159/P	_/165
1 2 7 10	1 15 14 4	1 5 8 4	1 15 12 6	1 5 9 3	1 15 12 6
15 16 5 12	12 6 7 9	15 11 7 3	3 13 8 10	15 11 10 4	4 14 9 7
9 8 3 4	8 10 11 5	10 14 2 6	14 4 9 7	7 13 2 6	13 3 8 10
11 6 13 14	13 3 2 16	9 13 16 12	16 2 5 11	8 14 16 12	16 2 5 11
160/P	_/167	161/P	_/166	162/P	S/168
1 5 9 3	1 15 12 6	1 5 4 8	1 15 12 6	1 2 13 4	1 15 12 6
15 11 13 7	7 14 9 4	15 11 3 7	7 9 4 14	15 16 9 8	8 10 13 3
4 10 2 6	10 3 8 13	14 10 2 6	10 8 13 3	3 14 5 6	14 4 7 9
8 14 16 12	16 2 5 11	13 9 16 12	16 2 5 11	7 10 11 12	11 5 2 16
163/P	_/170	164/P	_/169	165/P	_/171
1 5 8 4	1 15 12 6	1 5 3 9	1 15 12 6	1 5 3 9	1 15 12 6
15 11 14 10	10 13 8 3	15 11 4 10	10 8 3 13	15 11 7 13	13 8 3 10
3 7 2 6	7 4 9 14	13 7 2 6	7 9 14 4	10 4 2 6	4 9 14 7
9 13 16 12	16 2 5 11	14 8 16 12	16 2 5 11	14 8 16 12	16 2 5 11
166/P	_/173	167/P	S/172	168/P	_/154
1 5 4 8	1 15 12 6	1 2 7 10	1 15 12 6	1 7 6 4	1 15 10 8
15 11 10 14	14 9 4 7	15 16 3 14	14 4 7 9	15 9 5 3	3 13 6 12
7 3 2 6	3 8 13 10	9 8 5 6	8 10 13 3	12 14 2 8	14 4 11 5
13 9 16 12	16 2 5 11	13 4 11 12	11 5 2 16	11 13 16 10	16 2 7 9
169/P	_/155	170/P	_/157	171/P	_/156
1 6 11 2	1 15 10 8	1 7 11 3	1 15 10 8	1 7 4 6	1 15 10 8
15 12 9 4	4 14 11 5	15 13 9 5	5 14 11 4	15 9 3 5	5 11 4 14
5 16 3 8	16 2 7 9	4 16 2 8	16 3 6 9	14 12 2 8	12 6 13 3
7 14 13 10	13 3 6 12	6 14 12 10	12 2 7 13	13 11 16 10	16 2 7 9
172/P	_/158	173/P	_/160	174/P	C/159
1 4 13 2	1 15 10 8	1 7 6 4	1 15 10 8	1 5 3 9	1 15 10 8
15 14 9 6	6 12 13 3	15 9 14 12	12 13 6 3	15 11 2 12	12 6 3 13
3 16 5 8	16 2 7 9	3 5 2 8	5 4 11 14	13 7 4 8	7 9 16 2
7 12 11 10	11 5 4 14	11 13 16 10	16 2 7 9	16 6 14 10	14 4 5 11

175/P	_/162	176/P	C/161	177/P	_/163
1 7 4 6	1 15 10 8	1 3 5 9	1 15 10 8	1 7 3 11	1 15 10 8
15 9 12 14	14 11 4 5	15 13 2 14	14 4 5 11	15 13 4 16	16 6 3 9
5 3 2 8	3 6 13 12	11 7 6 8	7 9 16 2	9 5 2 8	5 11 14 4
13 11 16 10	16 2 7 9	16 4 12 10	12 6 3 13	14 6 12 10	12 2 7 13
178/P	_/150	179/P	_/151	180/P	_/152
1 9 5 3	1 15 8 10	1 9 3 5	1 15 8 10	1 9 5 3	1 15 8 10
15 7 6 4	4 14 5 11	15 7 4 6	6 12 3 13	15 7 13 11	11 14 5 4
11 13 2 10	13 3 12 6	13 11 2 10	11 5 14 4	4 6 2 10	6 3 12 13
12 14 16 8	16 2 9 7	14 12 16 8	16 2 9 7	12 14 16 8	16 2 9 7
181/P	_/153	182/P	_/148	183/P	C/149
1 9 3 5	1 15 8 10	1 10 7 2	1 15 6 12	1 9 3 5	1 15 6 12
15 7 11 13	13 12 3 6	15 8 5 4	4 14 7 9	15 7 2 8	8 10 3 13
6 4 2 10	4 5 14 11	9 16 3 12	16 2 11 5	13 11 4 12	11 5 16 2
14 12 16 8	16 2 9 7	11 14 13 6	13 3 10 8	16 10 14 6	14 4 9 7
184/P	_/204	185/P	_/203	186/P	_/205
1 3 10 5	1 16 13 4	1 3 8 7	1 16 13 4	1 2 11 5	1 16 13 4
16 14 9 6	6 11 10 7	16 14 5 6	6 9 8 11	16 15 9 7	7 10 11 6
7 12 2 4	12 5 8 9	11 12 2 4	12 7 10 5	6 12 3 4	12 5 8 9
8 11 15 13	15 2 3 14	10 9 15 13	15 2 3 14	8 10 14 13	14 3 2 15
187/P	_/206	188/P	_/207	189/P	_/208
1 3 6 9	1 16 13 4	1 2 7 9	1 16 13 4	1 3 8 7	1 16 13 4
16 14 5 10	10 7 6 11	16 15 5 11	11 6 7 10	16 14 11 12	12 9 8 5
11 8 2 4	8 9 12 5	10 8 3 4	8 9 12 5	5 6 2 4	6 7 10 11
12 7 15 13	15 2 3 14	12 6 14 13	14 3 2 15	10 9 15 13	15 2 3 14
190/P	_/199	191/P	_/200	192/P	_/201
1 5 10 3	1 16 11 6	1 2 13 3	1 16 11 6	1 5 4 9	1 16 11 6
16 12 9 4	4 13 10 7	16 15 9 7	7 10 13 4	16 12 3 10	10 7 4 13
7 14 2 6	14 3 8 9	4 14 5 6	14 3 8 9	13 8 2 6	8 9 14 3
8 13 15 11	15 2 5 12	8 10 12 11	12 5 2 15	14 7 15 11	15 2 5 12
193/P	_/202	194/P	_/195	195/P	_/196
1 2 7 9	1 16 11 6	1 5 11 2	1 16 10 7	1 3 13 2	1 16 10 7
16 15 3 13	13 4 7 10	16 12 9 4	4 13 11 6	16 14 9 6	6 11 13 4
10 8 5 6	8 9 14 3	6 15 3 7	15 2 8 9	4 15 5 7	15 2 8 9
14 4 12 11	12 5 2 15	8 13 14 10	14 3 5 12	8 11 12 10	12 5 3 14
196/P	_/197	197/P	_/198	198/P	_/191
1 5 4 9	1 16 10 7	1 3 6 9	1 16 10 7	1 7 6 5	1 16 9 8
16 12 2 11	11 6 4 13	16 14 2 13	13 4 6 11	16 10 3 4	4 11 6 13
13 8 3 7	8 9 15 2	11 8 5 7	8 9 15 2	13 14 2 8	14 5 12 3
15 6 14 10	14 3 5 12	15 4 12 10	12 5 3 14	12 11 15 9	15 2 7 10
199/P	_/190	200/P	_/193	201/P	_/192
1 6 7 5	1 16 9 8	1 7 6 5	1 16 9 8	1 6 4 10	1 16 9 8
16 11 2 4	4 10 7 13	16 10 13 14	14 11 6 3	16 13 2 14	14 5 4 11
13 15 3 8	15 5 12 2	3 4 2 8	4 5 12 13	11 7 3 8	7 10 15 2
12 10 14 9	14 3 6 11	12 11 15 9	15 2 7 10	15 5 12 9	12 3 6 13
202/P	_/194	203/P	_/188	204/P	_/189
1 6 7 5	1 16 9 8	1 9 6 3	1 16 7 10	1 9 4 5	1 16 7 10
16 11 13 15	15 10 7 2	16 8 5 4	4 13 6 11	16 8 3 6	6 11 4 13
2 4 3 8	4 5 12 13	11 14 2 10	14 3 12 5	13 12 2 10	12 5 14 3
12 10 14 9	14 3 6 11	12 13 15 7	15 2 9 8	14 11 15 7	15 2 9 8
205/P	_/186	206/P	_/187	207/P	_/184
1 9 7 2	1 16 6 11	1 9 4 5	1 16 6 11	1 11 4 3	1 16 5 12
16 8 5 4	4 13 7 10	16 8 2 7	7 10 4 13	16 6 7 8	8 13 4 9
10 15 3 11	15 2 12 5	13 12 3 11	12 5 15 2	9 10 2 12	10 3 14 7
12 13 14 6	14 3 9 8	15 10 14 6	14 3 9 8	14 13 15 5	15 2 11 6



Let's have another experiment using another Model and DAMT, composing another set of Prototype Squares and reconstructing all the object solutions again by them.

**\*\* Reference List-2 of Standard Magic Squares of Order 4: \*\***

[Standard Solutions with Check-Sums: Types: Self-complementary/S; Pan-diagonal/P]

1/S Rw P1\ 1 15 14 4 34 34\ 12 6 7 9 34 40\ 8 10 11 5 34 34\ 13 3 2 16 34 28\  34 34 34 34 Co1umn /24/34/44/34 P2Sums	2/S Rw P1\ 1 15 14 4 34 34\ 8 10 11 5 34 48\ 12 6 7 9 34 34\ 13 3 2 16 34 20\  34 34 34 34 Co1umn /16/34/52/34 P2Sums	3/S Rw P1\ 1 14 15 4 34 34\ 12 7 6 9 34 38\ 8 11 10 5 34 34\ 13 2 3 16 34 30\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	4/S Rw P1\ 1 14 15 4 34 34\ 8 11 10 5 34 46\ 12 7 6 9 34 34\ 13 2 3 16 34 22\  34 34 34 34 Co1umn /14/34/54/34 P2Sums	5/S Rw P1\ 1 15 12 6 34 34\ 14 4 7 9 34 36\ 8 10 13 3 34 34\ 11 5 2 16 34 32\  34 34 34 34 Co1umn /28/34/40/34 P2Sums
6/S Rw P1\ 1 15 12 6 34 34\ 8 10 13 3 34 48\ 14 4 7 9 34 34\ 11 5 2 16 34 20\  34 34 34 34 Co1umn /16/34/52/34 P2Sums	7/S Rw P1\ 1 12 15 6 34 34\ 14 7 4 9 34 30\ 8 13 10 3 34 34\ 11 2 5 16 34 38\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	8/S Rw P1\ 1 12 15 6 34 34\ 8 13 10 3 34 42\ 14 7 4 9 34 34\ 11 2 5 16 34 26\  34 34 34 34 Co1umn /10/34/58/34 P2Sums	9/S Rw P1\ 1 14 12 7 34 34\ 15 4 6 9 34 32\ 8 11 13 2 34 34\ 10 5 3 16 34 36\  34 34 34 34 Co1umn /28/34/40/34 P2Sums	10/S Rw P1\ 1 14 12 7 34 34\ 8 11 13 2 34 46\ 15 4 6 9 34 34\ 10 5 3 16 34 22\  34 34 34 34 Co1umn /14/34/54/34 P2Sums
11/S Rw P1\ 1 12 14 7 34 34\ 15 6 4 9 34 28\ 8 13 11 2 34 34\ 10 3 5 16 34 40\  34 34 34 34 Co1umn /24/34/44/34 P2Sums	12/S Rw P1\ 1 12 14 7 34 34\ 8 13 11 2 34 42\ 15 6 4 9 34 34\ 10 3 5 16 34 26\  34 34 34 34 Co1umn /10/34/58/34 P2Sums	13/Rw P1\ 1 16 13 4 34 34\ 11 6 7 10 34 42\ 8 9 12 5 34 34\ 14 3 2 15 34 26\  34 34 34 34 Co1umn /26/34/42/34 P2Sums	29/Rw P1\ 1 16 13 4 34 34\ 12 9 8 5 34 50\ 6 7 10 11 34 26\ 15 2 3 14 34 26\  34 34 34 34 Co1umn /18/42/42/34 P2Sums	45/Rw P1\ 1 15 14 4 34 34\ 12 9 6 7 34 47\ 5 8 11 10 34 28\ 16 2 3 13 34 27\  34 34 34 34 Co1umn /21/40/41/34 P2Sums
62/P Rw P1\ 1 15 10 8 34 34\ 14 4 5 11 34 34\ 7 9 16 2 34 34\ 12 6 3 13 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	65/P Rw P1\ 1 14 11 8 34 34\ 15 4 5 10 34 34\ 6 9 16 3 34 34\ 12 7 2 13 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	71/Rw P1\ 1 16 11 6 34 34\ 10 7 4 13 34 38\ 8 9 14 3 34 34\ 15 2 5 12 34 30\  34 34 34 34 Co1umn /30/34/38/34 P2Sums	83/Rw P1\ 1 15 12 6 34 34\ 14 9 4 7 34 45\ 3 8 13 10 34 24\ 16 2 5 11 34 33\  34 34 34 34 Co1umn /23/44/35/34 P2Sums	101/P Rw P1\ 1 15 10 8 34 34\ 12 6 3 13 34 34\ 7 9 16 2 34 34\ 14 4 5 11 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums
105/P Rw P1\ 1 12 13 8 34 34\ 15 6 3 10 34 34\ 4 9 16 5 34 34\ 14 7 2 11 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	111/Rw P1\ 1 14 12 7 34 34\ 13 8 2 11 34 38\ 4 9 15 6 34 30\ 16 3 5 10 34 34\  34 34 34 34 Co1umn /30/38/34/34 P2Sums	121/P Rw P1\ 1 14 11 8 34 34\ 12 7 2 13 34 34\ 6 9 16 3 34 34\ 15 4 5 10 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	125/P Rw P1\ 1 12 13 8 34 34\ 14 7 2 11 34 34\ 4 9 16 5 34 34\ 15 6 3 10 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	129/Rw P1\ 1 15 10 8 34 34\ 14 11 4 5 34 47\ 3 6 13 12 34 20\ 16 2 7 9 34 35\  34 34 34 34 Co1umn /21/48/33/34 P2Sums
145/Rw P1\ 1 16 7 10 34 34\ 6 11 4 13 34 38\ 12 5 14 3 34 34\ 15 2 9 8 34 30\  34 34 34 34 Co1umn /30/34/38/34 P2Sums	157/Rw P1\ 1 15 8 10 34 34\ 13 12 3 6 34 45\ 4 5 14 11 34 20\ 16 2 9 7 34 37\  34 34 34 34 Co1umn /23/48/31/34 P2Sums	165/P Rw P1\ 1 15 6 12 34 34\ 8 10 3 13 34 34\ 11 5 16 2 34 34\ 14 4 9 7 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	169/P Rw P1\ 1 8 13 12 34 34\ 15 10 3 6 34 34\ 4 5 16 9 34 34\ 14 11 2 7 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	173/Rw P1\ 1 14 8 11 34 34\ 13 12 2 7 34 42\ 4 5 15 10 34 22\ 16 3 9 6 34 38\  34 34 34 34 Co1umn /26/46/30/34 P2Sums
183/P Rw P1\ 1 14 7 12 34 34\ 8 11 2 13 34 34\ 10 5 16 3 34 34\ 15 4 9 6 34 34\  34 34 34 34 Co1umn /30/34/38/34 P2Sums	185/P Rw P1\ 1 8 13 12 34 34\ 14 11 2 7 34 34\ 4 5 16 9 34 34\ 15 10 3 6 34 34\  34 34 34 34 Co1umn /23/48/31/34 P2Sums	189/Rw P1\ 1 14 7 12 34 34\ 11 13 2 8 34 41\ 6 4 15 9 34 24\ 16 3 10 5 34 37\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	197/Rw P1\ 1 12 8 13 34 34\ 11 14 2 7 34 40\ 6 3 15 10 34 26\ 16 5 9 4 34 36\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	205/P Rw P1\ 1 12 7 14 34 34\ 8 13 2 11 34 34\ 10 3 16 5 34 34\ 15 6 9 4 34 34\  34 34 34 34 Co1umn /26/46/30/34 P2Sums
207/P Rw P1\ 1 8 11 14 34 34\ 12 13 2 7 34 34\ 6 3 16 9 34 34\ 15 10 5 4 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	209/Rw P1\ 2 15 14 3 34 34\ 12 5 8 9 34 42\ 7 10 11 6 34 34\ 13 4 1 16 34 26\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	225/S Rw P1\ 2 16 13 3 34 34\ 11 5 8 10 34 44\ 7 9 12 6 34 34\ 14 4 1 15 34 24\  34 34 34 34 Co1umn /27/44/31/34 P2Sums	226/S Rw P1\ 2 16 13 3 34 34\ 7 9 12 6 34 52\ 11 5 8 10 34 34\ 14 4 1 15 34 16\  34 34 34 34 Co1umn /28/42/32/34 P2Sums	227/S Rw P1\ 2 13 16 3 34 34\ 11 8 5 10 34 38\ 7 12 9 6 34 34\ 14 1 4 15 34 30\  34 34 34 34 Co1umn /28/42/32/34 P2Sums
227/S Rw P1\ 2 13 16 3 34 34\ 11 8 5 10 34 38\ 7 12 9 6 34 34\ 14 1 4 15 34 30\  34 34 34 34 Co1umn /20/34/48/34 P2Sums	227/S Rw P1\ 2 13 16 3 34 34\ 11 8 5 10 34 38\ 7 12 9 6 34 34\ 14 1 4 15 34 30\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	227/S Rw P1\ 2 13 16 3 34 34\ 11 8 5 10 34 38\ 7 12 9 6 34 34\ 14 1 4 15 34 30\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	227/S Rw P1\ 2 13 16 3 34 34\ 11 8 5 10 34 38\ 7 12 9 6 34 34\ 14 1 4 15 34 30\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	227/S Rw P1\ 2 13 16 3 34 34\ 11 8 5 10 34 38\ 7 12 9 6 34 34\ 14 1 4 15 34 30\  34 34 34 34 Co1umn /22/34/46/34 P2Sums

228/S Rw P1\ 2 13 16 3 34 34\ 7 12 9 6 34 46\ 11 8 5 10 34 34\ 14 1 4 15 34 22\  34 34 34 34 Co1umn /14/34/54/34 P2Sums	229/S Rw P1\ 2 16 11 5 34 34\ 13 3 8 10 34 40\ 7 9 14 4 34 34\ 12 6 1 15 34 28\  34 34 34 34 Co1umn /32/34/36/34 P2Sums	230/S Rw P1\ 2 16 11 5 34 34\ 7 9 14 4 34 52\ 13 3 8 10 34 34\ 12 6 1 15 34 16\  34 34 34 34 Co1umn /20/34/48/34 P2Sums	231/S Rw P1\ 2 11 16 5 34 34\ 13 8 3 10 34 30\ 7 14 9 4 34 34\ 12 1 6 15 34 38\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	232/S Rw P1\ 2 11 16 5 34 34\ 7 14 9 4 34 42\ 13 8 3 10 34 34\ 12 1 6 15 34 26\  34 34 34 34 Co1umn /10/34/58/34 P2Sums
237/Rw P1\ 2 16 13 3 34 34\ 12 7 6 9 34 45\ 5 10 11 8 34 28\ 15 1 4 14 34 29\  34 34 34 34 Co1umn /23/40/39/34 P2Sums	253/Rw P1\ 2 15 14 3 34 34\ 11 10 7 6 34 50\ 5 8 9 12 34 26\ 16 1 4 13 34 26\  34 34 34 34 Co1umn /18/42/42/34 P2Sums	269/Rw P1\ 2 16 11 5 34 34\ 14 7 4 9 34 43\ 3 10 13 8 34 24\ 15 1 6 12 34 35\  34 34 34 34 Co1umn /25/44/33/34 P2Sums	291/Rw P1\ 2 15 12 5 34 34\ 9 8 3 14 34 38\ 7 10 13 4 34 34\ 16 1 6 11 34 30\  34 34 34 34 Co1umn /30/34/38/34 P2Sums	303/Rw P1\ 2 16 9 7 34 34\ 5 14 11 4 34 55\ 12 1 8 13 34 28\ 15 3 6 10 34 19\  34 34 34 34 Co1umn /17/40/45/34 P2Sums
319/Rw P1\ 2 15 10 7 34 34\ 13 12 5 4 34 50\ 3 6 11 14 34 18\ 16 1 8 9 34 34\  34 34 34 34 Co1umn /18/50/34/34 P2Sums	337/Rw P1\ 2 16 7 9 34 34\ 14 11 4 5 34 47\ 3 6 13 12 34 16\ 15 1 10 8 34 39\  34 34 34 34 Co1umn /21/52/29/34 P2Sums	353/Rw P1\ 2 15 8 9 34 34\ 5 12 3 14 34 38\ 11 6 13 4 34 34\ 16 1 10 7 34 30\  34 34 34 34 Co1umn /30/34/38/34 P2Sums	365/Rw P1\ 2 16 5 11 34 34\ 9 14 7 4 34 51\ 8 1 12 13 34 20\ 15 3 10 6 34 31\  34 34 34 34 Co1umn /21/48/33/34 P2Sums	373/Rw P1\ 2 15 6 11 34 34\ 9 14 3 8 34 44\ 7 4 13 10 34 22\ 16 1 12 5 34 36\  34 34 34 34 Co1umn /24/46/32/34 P2Sums
389/Rw P1\ 2 11 8 13 34 34\ 14 12 1 7 34 37\ 3 5 16 10 34 24\ 15 6 9 4 34 41\  34 34 34 34 Co1umn /31/44/27/34 P2Sums	397/Rw P1\ 2 12 7 13 34 34\ 5 15 4 10 34 40\ 11 1 14 8 34 34\ 16 6 9 3 34 28\  34 34 34 34 Co1umn /32/34/36/34 P2Sums	409/Rw P1\ 3 14 12 5 34 34\ 15 2 8 9 34 36\ 6 11 13 4 34 34\ 10 7 1 16 34 32\  34 34 34 34 Co1umn /32/34/36/34 P2Sums	417/P Rw P1\ 3 16 9 6 34 34\ 13 2 7 12 34 34\ 8 11 14 1 34 34\ 10 5 4 15 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	425/S Rw P1\ 3 16 10 5 34 34\ 13 2 8 11 34 40\ 6 9 15 4 34 34\ 12 7 1 14 34 28\  34 34 34 34 Co1umn /36/34/32/34 P2Sums
433/Rw P1\ 3 16 9 6 34 34\ 5 10 15 4 34 54\ 14 1 8 11 34 34\ 12 7 2 13 34 14\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	441/Rw P1\ 3 16 10 5 34 34\ 15 6 4 9 34 42\ 2 11 13 8 34 22\ 14 1 7 12 34 38\  34 34 34 34 Co1umn /26/46/30/34 P2Sums	457/Rw P1\ 3 16 9 6 34 34\ 7 12 13 2 34 58\ 10 1 8 15 34 26\ 14 5 4 11 34 18\  34 34 34 34 Co1umn /18/42/42/34 P2Sums	473/Rw P1\ 3 14 12 5 34 34\ 9 8 2 15 34 36\ 6 11 13 4 34 34\ 16 1 7 10 34 32\  34 34 34 34 Co1umn /32/34/36/34 P2Sums	485/Rw P1\ 3 15 10 6 34 34\ 2 14 11 7 34 54\ 13 1 8 12 34 34\ 16 4 5 9 34 14\  34 34 34 34 Co1umn /22/34/46/34 P2Sums
505/Rw P1\ 3 16 6 9 34 34\ 15 10 4 5 34 46\ 2 7 13 12 34 14\ 14 1 11 8 34 42\  34 34 34 34 Co1umn /22/54/26/34 P2Sums	523/Rw P1\ 3 15 6 10 34 34\ 12 13 8 1 34 53\ 5 2 11 16 34 16\ 14 4 9 7 34 33\  34 34 34 34 Co1umn /19/52/31/34 P2Sums	539/Rw P1\ 3 14 8 9 34 34\ 5 12 2 15 34 36\ 10 7 13 4 34 34\ 16 1 11 6 34 32\  34 34 34 34 Co1umn /32/34/36/34 P2Sums	551/Rw P1\ 3 15 6 10 34 34\ 2 14 7 11 34 46\ 13 1 12 8 34 34\ 16 4 9 5 34 22\  34 34 34 34 Co1umn /30/34/38/34 P2Sums	567/Rw P1\ 3 16 2 13 34 34\ 9 12 6 7 34 46\ 8 1 15 10 34 22\ 14 5 11 4 34 34\  34 34 34 34 Co1umn /30/46/26/34 P2Sums
575/P Rw P1\ 4 15 10 5 34 34\ 14 1 8 11 34 34\ 7 12 13 2 34 34\ 9 6 3 16 34 34\  34 34 34 34 Co1umn /34/34/34/34 P2Sums	585/Rw P1\ 4 16 9 5 34 34\ 13 1 8 12 34 36\ 7 11 14 2 34 34\ 10 6 3 15 34 32\  34 34 34 34 Co1umn /36/34/32/34 P2Sums	593/Rw P1\ 4 16 9 5 34 34\ 13 1 8 12 34 38\ 6 10 15 3 34 34\ 11 7 2 14 34 30\  34 34 34 34 Co1umn /38/34/30/34 P2Sums	601/S Rw P1\ 4 15 9 6 34 34\ 14 1 7 12 34 36\ 5 10 16 3 34 34\ 11 8 2 13 34 32\  34 34 34 34 Co1umn /40/34/28/34 P2Sums	609/Rw P1\ 4 16 9 5 34 34\ 6 10 15 3 34 58\ 11 1 8 14 34 30\ 13 7 2 12 34 14\  34 34 34 34 Co1umn /22/38/42/34 P2Sums
625/Rw P1\ 4 16 9 5 34 34\ 1 13 12 8 34 52\ 15 3 6 10 34 34\ 14 2 7 11 34 16\  34 34 34 34 Co1umn /20/34/48/34 P2Sums	641/Rw P1\ 4 16 9 5 34 34\ 1 13 12 8 34 54\ 14 2 7 11 34 34\ 15 3 6 10 34 14\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	663/Rw P1\ 4 15 10 5 34 34\ 1 14 11 8 34 54\ 13 2 7 12 34 34\ 16 3 6 9 34 14\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	675/Rw P1\ 4 16 5 9 34 34\ 14 7 2 11 34 37\ 3 10 15 6 34 20\ 13 1 12 8 34 45\  34 34 34 34 Co1umn /31/48/23/34 P2Sums	699/Rw P1\ 4 16 5 9 34 34\ 3 15 10 6 34 52\ 13 1 8 12 34 26\ 14 2 11 7 34 24\  34 34 34 34 Co1umn /20/42/40/34 P2Sums
717/Rw P1\ 4 16 5 9 34 34\ 1 13 8 12 34 46\ 14 2 11 7 34 34\ 15 3 10 6 34 22\  34 34 34 34 Co1umn /20/34/48/34 P2Sums	741/Rw P1\ 4 15 6 9 34 34\ 1 14 7 12 34 46\ 13 2 11 8 34 34\ 16 3 10 5 34 22\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	753/S Rw P1\ 5 11 10 8 34 34\ 16 2 3 13 34 24\ 4 14 15 1 34 34\ 9 7 6 12 34 44\  34 34 34 34 Co1umn /22/34/46/34 P2Sums	757/Rw P1\ 5 12 9 8 34 34\ 15 2 3 14 34 26\ 4 13 16 1 34 34\ 10 7 6 11 34 42\  34 34 34 34 Co1umn /31/48/23/34 P2Sums	761/Rw P1\ 5 12 9 8 34 34\ 14 3 2 15 34 26\ 4 13 16 1 34 34\ 11 6 7 10 34 42\  34 34 34 34 Co1umn /20/42/40/34 P2Sums



```

-----+-----+-----+-----+-----+-----
|34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn
/30/34/38/34|P2Sums /30/34/38/34|P2Sums /40/34/28/34|P2Sums /42/34/26/34|P2Sums /42/34/26/34|P2Sums
      765/|Rw|P1\      773/|Rw|P1\      785/|Rw|P1\      801/|Rw|P1\      817/|Rw|P1\
  5 11 10 8|34|34\   5 16  4 9|34|34\   5 16  3 10|34|34\   5 16  2 11|34|34\   6 11 10 7|34|34\
 15  4  1 14|34|27\  15 10  6 3|34|48\  13  8 11  2|34|54\  13  8 10  3|34|52\  16  1  4 13|34|26\
  2 13 16  3|34|32\  2  7 11 14|34|10\  4  1 14 15|34|18\  4  1 15 14|34|18\  3 14 15  2|34|34\
 12  6  7  9|34|43\  12  1 13  8|34|44\  12  9  6  7|34|30\  12  9  7  6|34|32\  9  8  5 12|34|42\
-----+-----+-----+-----+-----+-----
|34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn
/41/36/25/34|P2Sums /20/58/24/34|P2Sums /30/50/22/34|P2Sums /32/50/20/34|P2Sums /42/34/26/34|P2Sums
      823/S|Rw|P1\      824/S|Rw|P1\      825/|Rw|P1\      833/|Rw|P1\      837/|Rw|P1\
  6  9 12  7|34|34\   6  9 12  7|34|34\   6 12  9  7|34|34\   6 11 10  7|34|34\   6 15  4  9|34|34\
 15  4  1 14|34|22\   3 16 13  2|34|46\  16  3  2 13|34|29\  13  4  1 16|34|26\  14  7 12  1|34|54\
  3 16 13  2|34|34\  15  4  1 14|34|34\   1 14 15  4|34|28\   3 14 15  2|34|34\   3  2 13 16|34|18\
 10  5  8 11|34|46\  10  5  8 11|34|22\  11  5  8 10|34|45\  12  5  8  9|34|42\  11 10  5  8|34|30\
-----+-----+-----+-----+-----+-----
|34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn
/38/34/30/34|P2Sums /14/34/54/34|P2Sums /39/40/23/34|P2Sums /42/34/26/34|P2Sums /30/50/22/34|P2Sums
      853/|Rw|P1\      854/P|Rw|P1\      856/P|Rw|P1\      865/|Rw|P1\
  6 16  3  9|34|34\   6 15  4  9|34|34\   6  3 16  9|34|34\   7 16  2  9|34|34\
  1 11  8 14|34|40\   3 10  5 16|34|34\  15 10  5  4|34|34\  11  4 14  5|34|52\
 15  5 10  4|34|34\  13  8 11  2|34|34\   1  8 11 14|34|34\   6  1 15 12|34|26\
 12  2 13  7|34|28\  12  1 14  7|34|34\  12 13  2  7|34|34\  10 13  3  8|34|24\
-----+-----+-----+-----+-----+-----
|34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn |34|34|34|34|Co|umn
/32/34/36/34|P2Sums /34/34/34/34|P2Sums /34/34/34/34|P2Sums /40/42/20/34|P2Sums [Total Count=880]
OK! [Listed by Kanji Setsuda on Sep.21, 2010 with MacOSX & Xcode 3.1.2]

```

This set of object solutions above is just the same with the Reference List-1 in Page 1, having the same content, but only changing the printing order of solutions. Let's have another Model next such as below with the new definition of DAMT.

```

/* Make the new Prototype Squares and Application DAMT
[Object Model] [Basic Form]
-----+-----+-----+-----+-----+-----
| 1|15|14| 4| | 1| 2| 3| 4|   ** Basic Conditions of Prototype Squares 4x4: **
|---+---+---+| |---+---+---+|   n1+n15+n14+n4=C ...rw1; | n1+n12+n8+n13=C ...cl1;
|12| 6| 7| 9| | 5| 6| 7| 8|   n12+n6+n7+n9=C ...rw2; | n15+n6+n10+n3=C ...cl2;
|---+---+---+| |---+---+---+|   n8+n10+n11+n5=C ...rw3; | n14+n7+n11+n2=C ...cl3;
| 8|10|11| 5| | 9|10|11|12|   n13+n3+n2+n16=C ...rw4; | n4+n9+n5+n16=C ...cl4;
|---+---+---+| |---+---+---+|   ** Pan-diagonal Conditions of Prototype Squares **
|13| 3| 2|16| |13|14|15|16|   n1+n6+n11+n16=C ...pd1; | n4+n7+n10+n13=C ...pb4;
|---+---+---+| |---+---+---+|   ** List-forming Inequality Conditions **
|'---+'---+'---+'| |'---+'---+'---+'|   n1<n16; n1<n4; n1<n13; and n4<n13; */

/* Program for the 'Do-it-After-the-Model Transformation' */
/* Transform Prototype into Object */
void damt(void){
  dnm[1]=nm[1];   dnm[2]=nm[15];   dnm[3]=nm[14];   dnm[4]=nm[4];
  dnm[5]=nm[12];  dnm[6]=nm[6];   dnm[7]=nm[7];   dnm[8]=nm[9];
  dnm[9]=nm[8];   dnm[10]=nm[10];  dnm[11]=nm[11]; dnm[12]=nm[5];
  dnm[13]=nm[13]; dnm[14]=nm[3];   dnm[15]=nm[2];   dnm[16]=nm[16];
}
/**/

```

Solve those simultaneous equations above as an 'Inverse Function' of the DAMT and obtain the list of Prototype solutions as many as 880 in all.

```

/* PList-3: (for Comparison) */
/* Make Reference List-2 of Standard MS44 */
/* Set N1 */
void deep01C(){
  short a;
  for(a=1;a<10;a++){
    if(uflg[a]==0){
      nm[1]=a; uflg[a]=1;
      deep02C();
      uflg[a]=0;}
  }
}

```

```

/* Set N16(>N1) */
void deep02(){
  short a;
  for(a=16;a>nm[1];a--){
    if(uflg[a]==0){
      nm[16]=a; uflg[a]=1;
      deep03();
      uflg[a]=0;}
  }
}
/* Set N4(>N1) */
void deep03(){
  short a;
  for(a=nm[1]+1;a<17;a++){
    if(uflg[a]==0){
      nm[4]=a; uflg[a]=1;
      deep04();
      uflg[a]=0;}
  }
}
/* Set N13(>N4) */
void deep04(){
  short a;
  for(a=16;a>nm[4];a--){
    if(uflg[a]==0){
      nm[13]=a; uflg[a]=1;
      deep05();
      uflg[a]=0;}
  }
}
/* Set N2 */
void deep05(){
  short a;
  for(a=16;a>0;a--){
    if(uflg[a]==0){
      nm[2]=a; uflg[a]=1;
      deep06();
      uflg[a]=0;}
  }
}
/* Set n3=LSM-n1-n2-n4 */
void deep06(){
  short a;
  a=LSM-nm[1]-nm[2]-nm[4];
  if((0<a)&&(a<17)){
    if(uflg[a]==0){
      nm[3]=a; uflg[a]=1;
      deep07();
      uflg[a]=0;}}
}
/* Set N15 */
void deep07(){
  short a;
  for(a=1;a<17;a++){
    if(uflg[a]==0){
      nm[15]=a; uflg[a]=1;
      deep08();
      uflg[a]=0;}
  }
}
/* Set n14=LSM-n16-n15-n13 */
void deep08(){
  short a;
  a=LSM-nm[16]-nm[15]-nm[13];
  if((0<a)&&(a<17)){

```

```

    if(uflg[a]==0){
      nm[14]=a; uflg[a]=1;
      deep09();
      uflg[a]=0;}}
  }
/* Level 2: */
/* Set N5 */
void deep09(){
  short a;
  for(a=16;a>0;a--){
    if(uflg[a]==0){
      nm[5]=a; uflg[a]=1;
      deep10();
      uflg[a]=0;}
  }
}
/* Set n9=LSM-n1-n5-n13 */
void deep10(){
  short a;
  a=LSM-nm[1]-nm[5]-nm[13];
  if((0<a)&&(a<17)){
    if(uflg[a]==0){
      nm[9]=a; uflg[a]=1;
      deep11();
      uflg[a]=0;}}
  }
}
/* Set N12 */
void deep11(){
  short a;
  for(a=1;a<17;a++){
    if(uflg[a]==0){
      nm[12]=a; uflg[a]=1;
      deep12();
      uflg[a]=0;}
  }
}
/* Set n8=LSM-n4-n12-n16 */
void deep12(){
  short a;
  a=LSM-nm[4]-nm[12]-nm[16];
  if((0<a)&&(a<17)){
    if(uflg[a]==0){
      nm[8]=a; uflg[a]=1;
      deep13();
      uflg[a]=0;}}
  }
}
/* Set N6 */
void deep13(){
  short a;
  for(a=1;a<17;a++){
    if(uflg[a]==0){
      nm[6]=a; uflg[a]=1;
      deep14();
      uflg[a]=0;}
  }
}
/* Set n7=LSM-n5-n6-n8 */
void deep14(){
  short a;
  a=LSM-nm[5]-nm[6]-nm[8];
  if((0<a)&&(a<17)){
    if(uflg[a]==0){
      nm[7]=a; uflg[a]=1;
      deep15();
      uflg[a]=0;}}
  }
}

```

```

}
/* Set n10=LSM-n2-n6-n14 */
void deep15(){
  short a,b;
  a=LSM-nm[2]-nm[6]-nm[14];
  b=LSM-nm[4]-nm[7]-nm[13];
  if((0<a)&&(a<17)){
    if((a==b)&&(uflg[a]==0)){
      nm[10]=a; uflg[a]=1;
      deep16();
      uflg[a]=0;}}
}
/* Set n11=LSM-n9-n10-n12 */
void deep16(){
  short a,b,c;
  a=LSM-nm[1]-nm[6]-nm[16];
  b=LSM-nm[3]-nm[7]-nm[15];
  c=LSM-nm[9]-nm[10]-nm[12];
  if((0<a)&&(a<17)){
    if((a==b)&&(a==c)){
      if(uflg[a]==0){
        nm[11]=a; uflg[a]=1;
        ansrecord();
        uflg[a]=0;}}}
}
/**/
/* Record the Answers */
void ansrecord(){
  short n;
  cnt++;
  st[cnt][0]=cnt;
  for(n=1;n<17;n++){st[cnt][n]=nm[n];}
  st[cnt][17]=chktyp();
}
/**/

/* PList-4: */
/* Prototype Squares according to the Model */
/* Set N1 */
void stp01(){
  short a;
  for(a=1;a<10;a++){
    if(uflg[a]==0){
      nm[1]=a; uflg[a]=1;
      stp02();
      uflg[a]=0;}
  }
}
/* Set N16(>N1) */
void stp02(){
  short a;
  for(a=16;a>nm[1];a--){
    if(uflg[a]==0){
      nm[16]=a; uflg[a]=1;
      stp03();
      uflg[a]=0;}
  }
}
/* Set N4(>N1) */
void stp03(){
  short a;
  for(a=nm[1]+1;a<17;a++){
    if(uflg[a]==0){
      nm[4]=a; uflg[a]=1;
      stp04();
      uflg[a]=0;}
  }
}
/* Set N13(>N4) */
void stp04(){
  short a;
  for(a=16;a>nm[4];a--){
    if(uflg[a]==0){
      nm[13]=a; uflg[a]=1;
      stp05();
      uflg[a]=0;}
  }
}
/* Set N2 */
void stp05(){
  short a;
  for(a=1;a<17;a++){
    if(uflg[a]==0){
      nm[2]=a; uflg[a]=1;
      stp06();
      uflg[a]=0;}
  }
}
/* Set n3=LSM-n13-n2-n16 */
void stp06(){
  short a;
  a=LSM-nm[13]-nm[2]-nm[16];
  if((0<a)&&(a<17)){
    if(uflg[a]==0){
      nm[3]=a; uflg[a]=1;
      stp07();
      uflg[a]=0;}}
}
/* Set N15 */
void stp07(){
  short a;
  for(a=16;a>0;a--){
    if(uflg[a]==0){
      nm[15]=a; uflg[a]=1;
      stp08();
      uflg[a]=0;}
  }
}
/* Set n14=LSM-n1-n15-n4 */
void stp08(){
  short a;
  a=LSM-nm[1]-nm[15]-nm[4];
  if((0<a)&&(a<17)){
    if(uflg[a]==0){
      nm[14]=a; uflg[a]=1;
      stp09();
      uflg[a]=0;}}}
}
/* Level 2: */
/* Set N5 */
void stp09(){
  short a;
  for(a=1;a<17;a++){
    if(uflg[a]==0){
      nm[5]=a; uflg[a]=1;
      stp10();
      uflg[a]=0;}
  }
}
/* Set n9=LSM-n4-n5-n16 */

```

```

void stp10(){
short a;
a=LSM-nm[4]-nm[5]-nm[16];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[9]=a; uflg[a]=1;
stp11();
uflg[a]=0;}}
}
/* Set N12 */
void stp11(){
short a;
for(a=16;a>0;a--){
if(uflg[a]==0){
nm[12]=a; uflg[a]=1;
stp12();
uflg[a]=0;}}
}
}
/* Set n8=LSM-n1-n12-n13 */
void stp12(){
short a;
a=LSM-nm[1]-nm[12]-nm[13];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[8]=a; uflg[a]=1;
stp13();
uflg[a]=0;}}
}
}
/* Set N6 */
void stp13(){
short a;
for(a=1;a<17;a++){
if(uflg[a]==0){
nm[6]=a; uflg[a]=1;
stp14();
uflg[a]=0;}}
}
}
/* Set n7=LSM-n12-n6-n9 */
void stp14(){
short a;
a=LSM-nm[12]-nm[6]-nm[9];
if((0<a)&&(a<17)){
if(uflg[a]==0){
nm[7]=a; uflg[a]=1;
stp15();
uflg[a]=0;}}
}
}
/* Set n10=LSM-n15-n6-n3 */
void stp15(){
short a,b;
a=LSM-nm[15]-nm[6]-nm[3];
b=LSM-nm[4]-nm[7]-nm[13];
if((0<a)&&(a<17)){
if((a==b)&&(uflg[a]==0)){
nm[10]=a; uflg[a]=1;
stp16();
uflg[a]=0;}}
}
}
/* Set n11=LSM-n8-n10-n5 */
void stp16(){
short a,b,c;
a=LSM-nm[8]-nm[10]-nm[5];
b=LSM-nm[14]-nm[7]-nm[2];
c=LSM-nm[1]-nm[6]-nm[16];
if((0<a)&&(a<17)){
if((a==b)&&(a==c)){
if(uflg[a]==0){
nm[11]=a; uflg[a]=1;
ansprint();
uflg[a]=0;}}}}
}
}
/**/
/* Print the Solutions */
void ansprint(){
short cn,n;
cn=cnt3*2;
for(n=1;n<17;n++){dt[cn][n]=nm[n];}
cnt1++; dt[cn][0]=cnt1;
damt();
for(n=1;n<17;n++){dt[cn+1][n]=dnm[n];}
n=findnmb();
dt[cn+1][0]=n; lnm[n]++;
dt[cn+1][17]=st[n][17];
cnt3++;
if(cnt3==3){pr6ans(); cnt3=0;
for(n=0;n<6;n++){dt[n][0]=0;}}
}
}
/**/

```

Compare those styles of Programming again between making the Reference List (PList-3) and the next one of Prototype solutions (PList-4) to see how the 'Inverse Function' of DAMT is solved. They are intentionally dictated in such a similar style.

**[Prototype Squares-2 and the Standard Magic Objects Recomposed by DAMT-2:**  
 Prototype/P; Object: S/Self-Complementary; C/Complete; \_/Standard Type]

1/P				S/1				2/P				S/2				3/P				S/3			
1	2	3	4	1	15	14	4	1	2	3	4	1	15	14	4	1	3	2	4	1	14	15	4
5	6	7	8	12	6	7	9	9	10	11	12	8	10	11	5	5	7	6	8	12	7	6	9
9	10	11	12	8	10	11	5	5	6	7	8	12	6	7	9	9	11	10	12	8	11	10	5
13	14	15	16	13	3	2	16	13	14	15	16	13	3	2	16	13	15	14	16	13	2	3	16
4/P				S/4				5/P				S/5				6/P				S/6			
1	3	2	4	1	14	15	4	1	2	5	6	1	15	12	6	1	2	5	6	1	15	12	6
9	11	10	12	8	11	10	5	3	4	7	8	14	4	7	9	9	10	13	14	8	10	13	3
5	7	6	8	12	7	6	9	9	10	13	14	8	10	13	3	3	4	7	8	14	4	7	9
13	15	14	16	13	2	3	16	11	12	15	16	11	5	2	16	11	12	15	16	11	5	2	16

7/P	S/7	8/P	S/8	9/P	S/9
1 5 2 6	1 12 15 6	1 5 2 6	1 12 15 6	1 3 5 7	1 14 12 7
3 7 4 8	14 7 4 9	9 13 10 14	8 13 10 3	2 4 6 8	15 4 6 9
9 13 10 14	8 13 10 3	3 7 4 8	14 7 4 9	9 11 13 15	8 11 13 2
11 15 12 16	11 2 5 16	11 15 12 16	11 2 5 16	10 12 14 16	10 5 3 16
10/P	S/10	11/P	S/11	12/P	S/12
1 3 5 7	1 14 12 7	1 5 3 7	1 12 14 7	1 5 3 7	1 12 14 7
9 11 13 15	8 11 13 2	2 6 4 8	15 6 4 9	9 13 11 15	8 13 11 2
2 4 6 8	15 4 6 9	9 13 11 15	8 13 11 2	2 6 4 8	15 6 4 9
10 12 14 16	10 5 3 16	10 14 12 16	10 3 5 16	10 14 12 16	10 3 5 16
13/P	_/13	14/P	_/14	15/P	_/15
1 2 3 4	1 16 13 4	1 2 3 4	1 16 13 4	1 3 2 4	1 13 16 4
5 6 7 8	11 6 7 10	9 10 11 12	7 10 11 6	6 8 5 7	12 8 5 9
10 9 12 11	8 9 12 5	6 5 8 7	12 5 8 9	9 11 10 12	7 11 10 6
14 13 16 15	14 3 2 15	14 13 16 15	14 3 2 15	14 16 13 15	14 2 3 15
16/P	_/16	17/P	_/17	18/P	_/18
1 3 2 4	1 13 16 4	1 2 5 6	1 16 11 6	1 2 5 6	1 16 11 6
10 12 9 11	8 12 9 5	3 4 7 8	13 4 7 10	9 10 13 14	7 10 13 4
5 7 6 8	11 7 6 10	10 9 14 13	8 9 14 3	4 3 8 7	14 3 8 9
14 16 13 15	14 2 3 15	12 11 16 15	12 5 2 15	12 11 16 15	12 5 2 15
19/P	_/19	20/P	_/20	21/P	_/24
1 5 2 6	1 11 16 6	1 5 2 6	1 11 16 6	1 3 6 8	1 13 12 8
4 8 3 7	14 8 3 9	10 14 9 13	8 14 9 3	2 4 5 7	16 4 5 9
9 13 10 14	7 13 10 4	3 7 4 8	13 7 4 10	9 11 14 16	7 11 14 2
12 16 11 15	12 2 5 15	12 16 11 15	12 2 5 15	10 12 13 15	10 6 3 15
22/P	_/26	23/P	_/27	24/P	_/21
1 3 6 8	1 11 14 8	1 3 6 8	1 11 14 8	1 4 5 8	1 14 11 8
2 5 4 7	16 5 4 9	9 13 12 16	7 13 12 2	9 12 13 16	7 12 13 2
9 12 13 16	7 12 13 2	2 4 5 7	16 4 5 9	2 3 6 7	16 3 6 9
10 14 11 15	10 6 3 15	10 14 11 15	10 6 3 15	10 11 14 15	10 5 4 15
25/P	_/28	26/P	_/22	27/P	_/23
1 5 4 8	1 11 14 8	1 6 3 8	1 14 11 8	1 6 3 8	1 14 11 8
2 6 3 7	16 6 3 9	2 5 4 7	16 5 4 9	9 13 12 16	7 13 12 2
9 13 12 16	7 13 12 2	9 12 13 16	7 12 13 2	2 4 5 7	16 4 5 9
10 14 11 15	10 4 5 15	10 11 14 15	10 3 6 15	10 11 14 15	10 3 6 15
28/P	_/25	29/P	_/36	30/P	_/33
1 6 3 8	1 12 13 8	1 2 3 4	1 13 16 4	1 2 3 4	1 13 16 4
9 14 11 16	7 14 11 2	5 10 7 12	6 10 7 11	7 8 5 6	12 8 5 9
2 5 4 7	16 5 4 9	11 8 9 6	12 8 9 5	9 10 11 12	6 10 11 7
10 13 12 15	10 3 6 15	15 16 13 14	15 3 2 14	15 16 13 14	15 3 2 14
31/P	_/34	32/P	_/35	33/P	_/30
1 2 3 4	1 13 16 4	1 2 3 4	1 13 16 4	1 3 2 4	1 16 13 4
11 10 7 6	12 10 7 5	11 12 9 10	8 12 9 5	5 7 6 8	10 7 6 11
5 8 9 12	6 8 9 11	5 6 7 8	10 6 7 11	11 9 12 10	8 9 12 5
15 16 13 14	15 3 2 14	15 16 13 14	15 3 2 14	15 13 16 14	15 2 3 14
34/P	_/31	35/P	_/32	36/P	_/29
1 3 2 4	1 16 13 4	1 3 2 4	1 16 13 4	1 3 2 4	1 16 13 4
5 9 8 12	6 9 8 11	9 11 10 12	6 11 10 7	11 9 8 6	12 9 8 5
11 7 10 6	12 7 10 5	7 5 8 6	12 5 8 9	5 7 10 12	6 7 10 11
15 13 16 14	15 2 3 14	15 13 16 14	15 2 3 14	15 13 16 14	15 2 3 14
37/P	_/37	38/P	_/38	39/P	_/39
1 3 5 7	1 16 10 7	1 3 5 7	1 16 10 7	1 5 3 7	1 10 16 7
2 4 6 8	13 4 6 11	9 11 13 15	6 11 13 4	4 8 2 6	15 8 2 9
11 9 15 13	8 9 15 2	4 2 8 6	15 2 8 9	9 13 11 15	6 13 11 4
12 10 16 14	12 5 3 14	12 10 16 14	12 5 3 14	12 16 10 14	12 3 5 14

40/P	_/40	41/P	_/42	42/P	_/41
1 5 3 7	1 10 16 7	1 2 7 8	1 13 12 8	1 4 5 8	1 15 10 8
11 15 9 13	8 15 9 2	3 4 5 6	16 4 5 9	9 12 13 16	6 12 13 3
2 6 4 8	13 6 4 11	9 10 15 16	6 10 15 3	3 2 7 6	16 2 7 9
12 16 10 14	12 3 5 14	11 12 13 14	11 7 2 14	11 10 15 14	11 5 4 14
43/P	_/44	44/P	_/43	45/P	_/57
1 5 4 8	1 10 15 8	1 7 2 8	1 12 13 8	1 2 3 4	1 14 15 4
3 7 2 6	16 7 2 9	9 15 10 16	6 15 10 3	5 9 6 10	7 9 6 12
9 13 12 16	6 13 12 3	3 5 4 6	16 5 4 9	12 8 11 7	10 8 11 5
11 15 10 14	11 4 5 14	11 13 12 14	11 2 7 14	16 15 14 13	16 3 2 13
46/P	_/55	47/P	_/54	48/P	_/60
1 2 3 4	1 14 15 4	1 2 3 4	1 14 15 4	1 2 3 4	1 14 15 4
6 8 5 7	10 8 5 11	7 8 5 6	11 8 5 10	7 11 8 12	5 11 8 10
11 9 12 10	7 9 12 6	10 9 12 11	6 9 12 7	10 6 9 5	12 6 9 7
16 15 14 13	16 3 2 13	16 15 14 13	16 3 2 13	16 15 14 13	16 3 2 13
49/P	_/53	50/P	_/59	51/P	_/58
1 2 3 4	1 14 15 4	1 2 3 4	1 14 15 4	1 2 3 4	1 14 15 4
10 9 6 5	12 9 6 7	10 12 9 11	6 12 9 7	11 12 9 10	7 12 9 6
7 8 11 12	5 8 11 10	7 5 8 6	11 5 8 10	6 5 8 7	10 5 8 11
16 15 14 13	16 3 2 13	16 15 14 13	16 3 2 13	16 15 14 13	16 3 2 13
52/P	_/56	53/P	_/49	54/P	_/47
1 2 3 4	1 14 15 4	1 3 2 4	1 15 14 4	1 3 2 4	1 15 14 4
12 11 8 7	10 11 8 5	5 9 6 10	7 9 6 12	6 8 5 7	10 8 5 11
5 6 9 10	7 6 9 12	12 8 11 7	10 8 11 5	11 9 12 10	7 9 12 6
16 15 14 13	16 3 2 13	16 14 15 13	16 2 3 13	16 14 15 13	16 2 3 13
55/P	_/46	56/P	_/52	57/P	_/45
1 3 2 4	1 15 14 4	1 3 2 4	1 15 14 4	1 3 2 4	1 15 14 4
7 8 5 6	11 8 5 10	7 11 8 12	5 11 8 10	10 9 6 5	12 9 6 7
10 9 12 11	6 9 12 7	10 6 9 5	12 6 9 7	7 8 11 12	5 8 11 10
16 14 15 13	16 2 3 13	16 14 15 13	16 2 3 13	16 14 15 13	16 2 3 13
58/P	_/51	59/P	_/50	60/P	_/48
1 3 2 4	1 15 14 4	1 3 2 4	1 15 14 4	1 3 2 4	1 15 14 4
10 12 9 11	6 12 9 7	11 12 9 10	7 12 9 6	12 11 8 7	10 11 8 5
7 5 8 6	11 5 8 10	6 5 8 7	10 5 8 11	5 6 9 10	7 6 9 12
16 14 15 13	16 2 3 13	16 14 15 13	16 2 3 13	16 14 15 13	16 2 3 13
61/P	C/65	62/P	_/67	63/P	_/68
1 2 7 8	1 14 11 8	1 2 7 8	1 10 15 8	1 2 7 8	1 10 15 8
3 4 5 6	15 4 5 10	4 6 3 5	16 6 3 9	9 14 11 16	5 14 11 4
10 9 16 15	6 9 16 3	9 11 14 16	5 11 14 4	4 3 6 5	16 3 6 9
12 11 14 13	12 7 2 13	12 15 10 13	12 7 2 13	12 15 10 13	12 7 2 13
64/P	C/62	65/P	_/70	66/P	_/61
1 3 6 8	1 15 10 8	1 3 6 8	1 9 16 8	1 6 3 8	1 16 9 8
2 4 5 7	14 4 5 11	11 15 10 14	7 15 10 2	2 5 4 7	14 5 4 11
11 9 16 14	7 9 16 2	2 4 5 7	14 4 5 11	11 10 15 14	7 10 15 2
12 10 15 13	12 6 3 13	12 16 9 13	12 6 3 13	12 9 16 13	12 3 6 13
67/P	_/69	68/P	_/63	69/P	_/64
1 6 3 8	1 10 15 8	1 7 2 8	1 15 10 8	1 7 2 8	1 15 10 8
11 16 9 14	7 16 9 2	4 6 3 5	16 6 3 9	9 14 11 16	5 14 11 4
2 5 4 7	14 5 4 11	9 11 14 16	5 11 14 4	4 3 6 5	16 3 6 9
12 15 10 13	12 3 6 13	12 10 15 13	12 2 7 13	12 10 15 13	12 2 7 13
70/P	_/66	71/P	_/73	72/P	_/74
1 7 2 8	1 11 14 8	1 2 5 6	1 11 16 6	1 2 5 6	1 11 16 6
10 16 9 15	6 16 9 3	7 8 3 4	14 8 3 9	13 14 9 10	8 14 9 3
3 5 4 6	15 5 4 10	9 10 13 14	4 10 13 7	3 4 7 8	10 4 7 13
12 14 11 13	12 2 7 13	15 16 11 12	15 5 2 12	15 16 11 12	15 5 2 12

73/P	_/71	74/P	_/72	75/P	_/77
1 5 2 6	1 16 11 6	1 5 2 6	1 16 11 6	1 3 5 7	1 10 16 7
3 7 4 8	10 7 4 13	9 13 10 14	4 13 10 7	6 8 2 4	15 8 2 9
13 9 14 10	8 9 14 3	7 3 8 4	14 3 8 9	9 11 13 15	4 11 13 6
15 11 16 12	15 2 5 12	15 11 16 12	15 2 5 12	14 16 10 12	14 5 3 12
76/P	_/78	77/P	_/75	78/P	_/76
1 3 5 7	1 10 16 7	1 5 3 7	1 16 10 7	1 5 3 7	1 16 10 7
13 15 9 11	8 15 9 2	2 6 4 8	11 6 4 13	9 13 11 15	4 13 11 6
2 4 6 8	11 4 6 13	13 9 15 11	8 9 15 2	6 2 8 4	15 2 8 9
14 16 10 12	14 5 3 12	14 10 16 12	14 3 5 12	14 10 16 12	14 3 5 12
79/P	_/81	80/P	_/82	81/P	_/79
1 2 7 8	1 11 14 8	1 3 6 8	1 10 15 8	1 6 3 8	1 15 10 8
5 6 3 4	16 6 3 9	5 7 2 4	16 7 2 9	9 14 11 16	4 14 11 5
9 10 15 16	4 10 15 5	9 11 14 16	4 11 14 5	5 2 7 4	16 2 7 9
13 14 11 12	13 7 2 12	13 15 10 12	13 6 3 12	13 10 15 12	13 3 6 12
82/P	_/80	83/P	_/95	84/P	_/93
1 7 2 8	1 14 11 8	1 2 5 6	1 12 15 6	1 2 5 6	1 12 15 6
9 15 10 16	4 15 10 5	3 9 4 10	7 9 4 14	4 8 3 7	10 8 3 13
5 3 6 4	16 3 6 9	14 8 13 7	10 8 13 3	13 9 14 10	7 9 14 4
13 11 14 12	13 2 7 12	16 15 12 11	16 5 2 11	16 15 12 11	16 5 2 11
85/P	_/92	86/P	_/98	87/P	_/91
1 2 5 6	1 12 15 6	1 2 5 6	1 12 15 6	1 2 5 6	1 12 15 6
7 8 3 4	13 8 3 10	7 13 8 14	3 13 8 10	10 9 4 3	14 9 4 7
10 9 14 13	4 9 14 7	10 4 9 3	14 4 9 7	7 8 13 14	3 8 13 10
16 15 12 11	16 5 2 11	16 15 12 11	16 5 2 11	16 15 12 11	16 5 2 11
88/P	_/97	89/P	_/96	90/P	_/94
1 2 5 6	1 12 15 6	1 2 5 6	1 12 15 6	1 2 5 6	1 12 15 6
10 14 9 13	4 14 9 7	13 14 9 10	7 14 9 4	14 13 8 7	10 13 8 3
7 3 8 4	13 3 8 10	4 3 8 7	10 3 8 13	3 4 9 10	7 4 9 14
16 15 12 11	16 5 2 11	16 15 12 11	16 5 2 11	16 15 12 11	16 5 2 11
91/P	_/87	92/P	_/85	93/P	_/84
1 5 2 6	1 15 12 6	1 5 2 6	1 15 12 6	1 5 2 6	1 15 12 6
3 9 4 10	7 9 4 14	4 8 3 7	10 8 3 13	7 8 3 4	13 8 3 10
14 8 13 7	10 8 13 3	13 9 14 10	7 9 14 4	10 9 14 13	4 9 14 7
16 12 15 11	16 2 5 11	16 12 15 11	16 2 5 11	16 12 15 11	16 2 5 11
94/P	_/90	95/P	_/83	96/P	_/89
1 5 2 6	1 15 12 6	1 5 2 6	1 15 12 6	1 5 2 6	1 15 12 6
7 13 8 14	3 13 8 10	10 9 4 3	14 9 4 7	10 14 9 13	4 14 9 7
10 4 9 3	14 4 9 7	7 8 13 14	3 8 13 10	7 3 8 4	13 3 8 10
16 12 15 11	16 2 5 11	16 12 15 11	16 2 5 11	16 12 15 11	16 2 5 11
97/P	_/88	98/P	_/86	99/P	C/105
1 5 2 6	1 15 12 6	1 5 2 6	1 15 12 6	1 2 7 8	1 12 13 8
13 14 9 10	7 14 9 4	14 13 8 7	10 13 8 3	5 6 3 4	15 6 3 10
4 3 8 7	10 3 8 13	3 4 9 10	7 4 9 14	10 9 16 15	4 9 16 5
16 12 15 11	16 2 5 11	16 12 15 11	16 2 5 11	14 13 12 11	14 7 2 11
100/P	_/110	101/P	_/109	102/P	_/106
1 3 6 8	1 9 16 8	1 3 6 8	1 9 16 8	1 4 5 8	1 12 13 8
2 12 5 15	4 12 5 13	13 12 5 4	15 12 5 2	6 7 2 3	16 7 2 9
13 7 10 4	15 7 10 2	2 7 10 15	4 7 10 13	9 10 15 16	3 10 15 6
14 16 9 11	14 6 3 11	14 16 9 11	14 6 3 11	14 13 12 11	14 5 4 11
103/P	_/107	104/P	_/108	105/P	C/101
1 4 5 8	1 12 13 8	1 4 5 8	1 10 15 8	1 5 4 8	1 15 10 8
9 15 10 16	3 15 10 6	13 16 9 12	7 16 9 2	2 6 3 7	12 6 3 13
6 2 7 3	16 2 7 9	2 3 6 7	12 3 6 13	13 9 16 12	7 9 16 2
14 13 12 11	14 5 4 11	14 15 10 11	14 5 4 11	14 10 15 11	14 4 5 11

106/P	_/102	107/P	_/103	108/P	_/100
1 5 4 8	1 13 12 8	1 5 4 8	1 13 12 8	1 6 3 8	1 16 9 8
6 7 2 3	16 7 2 9	9 15 10 16	3 15 10 6	2 10 7 15	4 10 7 13
9 10 15 16	3 10 15 6	6 2 7 3	16 2 7 9	13 5 12 4	15 5 12 2
14 12 13 11	14 4 5 11	14 12 13 11	14 4 5 11	14 9 16 11	14 3 6 11
109/P	_/99	110/P	_/104	111/P	_/116
1 6 3 8	1 16 9 8	1 7 2 8	1 13 12 8	1 3 5 7	1 12 14 7
13 10 7 4	15 10 7 2	10 16 9 15	4 16 9 5	4 8 2 6	11 8 2 13
2 5 12 15	4 5 12 13	5 3 6 4	15 3 6 10	13 9 15 11	6 9 15 4
14 9 16 11	14 3 6 11	14 12 13 11	14 2 7 11	16 14 12 10	16 5 3 10
112/P	_/115	113/P	_/118	114/P	_/117
1 3 5 7	1 12 14 7	1 3 5 7	1 12 14 7	1 3 5 7	1 12 14 7
6 8 2 4	13 8 2 11	11 15 9 13	4 15 9 6	13 15 9 11	6 15 9 4
11 9 15 13	4 9 15 6	6 2 8 4	13 2 8 11	4 2 8 6	11 2 8 13
16 14 12 10	16 5 3 10	16 14 12 10	16 5 3 10	16 14 12 10	16 5 3 10
115/P	_/112	116/P	_/111	117/P	_/114
1 5 3 7	1 14 12 7	1 5 3 7	1 14 12 7	1 5 3 7	1 14 12 7
4 8 2 6	11 8 2 13	6 8 2 4	13 8 2 11	11 15 9 13	4 15 9 6
13 9 15 11	6 9 15 4	11 9 15 13	4 9 15 6	6 2 8 4	13 2 8 11
16 12 14 10	16 3 5 10	16 12 14 10	16 3 5 10	16 12 14 10	16 3 5 10
118/P	_/113	119/P	_/128	120/P	_/127
1 5 3 7	1 14 12 7	1 2 7 8	1 9 16 8	1 2 7 8	1 9 16 8
13 15 9 11	6 15 9 4	3 12 5 14	4 12 5 13	13 12 5 4	14 12 5 3
4 2 8 6	11 2 8 13	13 6 11 4	14 6 11 3	3 6 11 14	4 6 11 13
16 12 14 10	16 3 5 10	15 16 9 10	15 7 2 10	15 16 9 10	15 7 2 10
121/P	C/125	122/P	_/124	123/P	_/126
1 3 6 8	1 12 13 8	1 3 6 8	1 12 13 8	1 4 5 8	1 11 14 8
5 7 2 4	14 7 2 11	11 9 4 2	16 9 4 5	13 16 9 12	6 16 9 3
11 9 16 14	4 9 16 5	5 7 14 16	2 7 14 11	3 2 7 6	12 2 7 13
15 13 12 10	15 6 3 10	15 13 12 10	15 6 3 10	15 14 11 10	15 5 4 10
124/P	C/121	125/P	_/123	126/P	_/122
1 5 4 8	1 14 11 8	1 6 3 8	1 13 12 8	1 6 3 8	1 13 12 8
3 7 2 6	12 7 2 13	5 14 7 16	2 14 7 11	11 16 9 14	4 16 9 5
13 9 16 12	6 9 16 3	11 4 9 2	16 4 9 5	5 2 7 4	14 2 7 11
15 11 14 10	15 4 5 10	15 12 13 10	15 3 6 10	15 12 13 10	15 3 6 10
127/P	_/120	128/P	_/119	129/P	_/143
1 7 2 8	1 16 9 8	1 7 2 8	1 16 9 8	1 2 7 8	1 10 15 8
3 11 6 14	4 11 6 13	13 11 6 4	14 11 6 3	3 11 4 12	5 11 4 14
13 5 12 4	14 5 12 3	3 5 12 14	4 5 12 13	14 6 13 5	12 6 13 3
15 9 16 10	15 2 7 10	15 9 16 10	15 2 7 10	16 15 10 9	16 7 2 9
130/P	_/144	131/P	_/141	132/P	_/142
1 2 7 8	1 10 15 8	1 2 7 8	1 10 15 8	1 2 7 8	1 10 15 8
5 13 6 14	3 13 6 12	12 11 4 3	14 11 4 5	14 13 6 5	12 13 6 3
12 4 11 3	14 4 11 5	5 6 13 14	3 6 13 12	3 4 11 12	5 4 11 14
16 15 10 9	16 7 2 9	16 15 10 9	16 7 2 9	16 15 10 9	16 7 2 9
133/P	_/139	134/P	_/140	135/P	_/137
1 4 5 8	1 12 13 8	1 4 5 8	1 12 13 8	1 4 5 8	1 12 13 8
2 10 3 11	6 10 3 15	6 14 7 15	2 14 7 11	11 10 3 2	15 10 3 6
15 7 14 6	11 7 14 2	11 3 10 2	15 3 10 6	6 7 14 15	2 7 14 11
16 13 12 9	16 5 4 9	16 13 12 9	16 5 4 9	16 13 12 9	16 5 4 9
136/P	_/138	137/P	_/135	138/P	_/136
1 4 5 8	1 12 13 8	1 5 4 8	1 13 12 8	1 5 4 8	1 13 12 8
15 14 7 6	11 14 7 2	2 10 3 11	6 10 3 15	6 14 7 15	2 14 7 11
2 3 10 11	6 3 10 15	15 7 14 6	11 7 14 2	11 3 10 2	15 3 10 6
16 13 12 9	16 5 4 9	16 12 13 9	16 4 5 9	16 12 13 9	16 4 5 9



139/P	_/133	140/P	_/134	141/P	_/131
1 5 4 8	1 13 12 8	1 5 4 8	1 13 12 8	1 7 2 8	1 15 10 8
11 10 3 2	15 10 3 6	15 14 7 6	11 14 7 2	3 11 4 12	5 11 4 14
6 7 14 15	2 7 14 11	2 3 10 11	6 3 10 15	14 6 13 5	12 6 13 3
16 12 13 9	16 4 5 9	16 12 13 9	16 4 5 9	16 10 15 9	16 2 7 9
142/P	_/132	143/P	_/129	144/P	_/130
1 7 2 8	1 15 10 8	1 7 2 8	1 15 10 8	1 7 2 8	1 15 10 8
5 13 6 14	3 13 6 12	12 11 4 3	14 11 4 5	14 13 6 5	12 13 6 3
12 4 11 3	14 4 11 5	5 6 13 14	3 6 13 12	3 4 11 12	5 4 11 14
16 10 15 9	16 2 7 9	16 10 15 9	16 2 7 9	16 10 15 9	16 2 7 9
145/P	_/147	146/P	_/148	147/P	_/145
1 2 9 10	1 7 16 10	1 2 9 10	1 7 16 10	1 9 2 10	1 16 7 10
11 12 3 4	14 12 3 5	13 14 5 6	12 14 5 3	3 11 4 12	6 11 4 13
5 6 13 14	4 6 13 11	3 4 11 12	6 4 11 13	13 5 14 6	12 5 14 3
15 16 7 8	15 9 2 8	15 16 7 8	15 9 2 8	15 7 16 8	15 2 9 8
148/P	_/146	149/P	_/151	150/P	_/152
1 9 2 10	1 16 7 10	1 3 9 11	1 6 16 11	1 3 9 11	1 6 16 11
5 13 6 14	4 13 6 11	10 12 2 4	15 12 2 5	13 15 5 7	12 15 5 2
11 3 12 4	14 3 12 5	5 7 13 15	4 7 13 10	2 4 10 12	7 4 10 13
15 7 16 8	15 2 9 8	14 16 6 8	14 9 3 8	14 16 6 8	14 9 3 8
151/P	_/149	152/P	_/150	153/P	_/155
1 9 3 11	1 16 6 11	1 9 3 11	1 16 6 11	1 2 11 12	1 7 14 12
2 10 4 12	7 10 4 13	5 13 7 15	4 13 7 10	9 10 3 4	16 10 3 5
13 5 15 7	12 5 15 2	10 2 12 4	15 2 12 5	5 6 15 16	4 6 15 9
14 6 16 8	14 3 9 8	14 6 16 8	14 3 9 8	13 14 7 8	13 11 2 8
154/P	_/156	155/P	_/153	156/P	_/154
1 3 10 12	1 6 15 12	1 10 3 12	1 15 6 12	1 11 2 12	1 14 7 12
9 11 2 4	16 11 2 5	5 14 7 16	4 14 7 9	5 15 6 16	4 15 6 9
5 7 14 16	4 7 14 9	9 2 11 4	16 2 11 5	9 3 10 4	16 3 10 5
13 15 6 8	13 10 3 8	13 6 15 8	13 3 10 8	13 7 14 8	13 2 11 8
157/P	_/163	158/P	_/164	159/P	_/161
1 2 9 10	1 8 15 10	1 2 9 10	1 8 15 10	1 2 9 10	1 8 15 10
4 12 3 11	6 12 3 13	6 14 5 13	4 14 5 11	11 12 3 4	13 12 3 6
13 5 14 6	11 5 14 4	11 3 12 4	13 3 12 6	6 5 14 13	4 5 14 11
16 15 8 7	16 9 2 7	16 15 8 7	16 9 2 7	16 15 8 7	16 9 2 7
160/P	_/162	161/P	_/159	162/P	_/160
1 2 9 10	1 8 15 10	1 9 2 10	1 15 8 10	1 9 2 10	1 15 8 10
13 14 5 6	11 14 5 4	4 12 3 11	6 12 3 13	6 14 5 13	4 14 5 11
4 3 12 11	6 3 12 13	13 5 14 6	11 5 14 4	11 3 12 4	13 3 12 6
16 15 8 7	16 9 2 7	16 8 15 7	16 2 9 7	16 8 15 7	16 2 9 7
163/P	_/157	164/P	_/158	165/P	C/169
1 9 2 10	1 15 8 10	1 9 2 10	1 15 8 10	1 2 11 12	1 8 13 12
11 12 3 4	13 12 3 6	13 14 5 6	11 14 5 4	9 10 3 4	15 10 3 6
6 5 14 13	4 5 14 11	4 3 12 11	6 3 12 13	6 5 16 15	4 5 16 9
16 8 15 7	16 2 9 7	16 8 15 7	16 2 9 7	14 13 8 7	14 11 2 7
166/P	_/171	167/P	_/170	168/P	_/172
1 4 9 12	1 8 13 12	1 4 9 12	1 8 13 12	1 4 9 12	1 6 15 12
5 15 6 16	3 15 6 10	10 11 2 3	16 11 2 5	13 16 5 8	11 16 5 2
10 2 11 3	16 2 11 5	5 6 15 16	3 6 15 10	2 3 10 11	8 3 10 13
14 13 8 7	14 9 4 7	14 13 8 7	14 9 4 7	14 15 6 7	14 9 4 7
169/P	C/165	170/P	_/167	171/P	_/166
1 9 4 12	1 15 6 12	1 9 4 12	1 13 8 12	1 9 4 12	1 13 8 12
2 10 3 11	8 10 3 13	5 15 6 16	3 15 6 10	10 11 2 3	16 11 2 5
13 5 16 8	11 5 16 2	10 2 11 3	16 2 11 5	5 6 15 16	3 6 15 10
14 6 15 7	14 4 9 7	14 8 13 7	14 4 9 7	14 8 13 7	14 4 9 7

172/P	_/168	173/P	_/179	174/P	_/180
1 11 2 12	1 13 8 12	1 3 9 11	1 8 14 11	1 3 9 11	1 8 14 11
6 16 5 15	4 16 5 9	4 12 2 10	7 12 2 13	7 15 5 13	4 15 5 10
9 3 10 4	15 3 10 6	13 5 15 7	10 5 15 4	10 2 12 4	13 2 12 7
14 8 13 7	14 2 11 7	16 14 8 6	16 9 3 6	16 14 8 6	16 9 3 6
175/P	_/177	176/P	_/178	177/P	_/175
1 3 9 11	1 8 14 11	1 3 9 11	1 8 14 11	1 9 3 11	1 14 8 11
10 12 2 4	13 12 2 7	13 15 5 7	10 15 5 4	4 12 2 10	7 12 2 13
7 5 15 13	4 5 15 10	4 2 12 10	7 2 12 13	13 5 15 7	10 5 15 4
16 14 8 6	16 9 3 6	16 14 8 6	16 9 3 6	16 8 14 6	16 3 9 6
178/P	_/176	179/P	_/173	180/P	_/174
1 9 3 11	1 14 8 11	1 9 3 11	1 14 8 11	1 9 3 11	1 14 8 11
7 15 5 13	4 15 5 10	10 12 2 4	13 12 2 7	13 15 5 7	10 15 5 4
10 2 12 4	13 2 12 7	7 5 15 13	4 5 15 10	4 2 12 10	7 2 12 13
16 8 14 6	16 3 9 6	16 8 14 6	16 3 9 6	16 8 14 6	16 3 9 6
181/P	_/188	182/P	_/187	183/P	C/185
1 2 11 12	1 5 16 12	1 2 11 12	1 5 16 12	1 3 10 12	1 8 13 12
7 14 3 10	8 14 3 9	9 14 3 8	10 14 3 7	9 11 2 4	14 11 2 7
9 4 13 8	10 4 13 7	7 4 13 10	8 4 13 9	7 5 16 14	4 5 16 9
15 16 5 6	15 11 2 6	15 16 5 6	15 11 2 6	15 13 8 6	15 10 3 6
184/P	_/186	185/P	C/183	186/P	_/184
1 4 9 12	1 7 14 12	1 9 4 12	1 14 7 12	1 10 3 12	1 13 8 12
13 16 5 8	10 16 5 3	3 11 2 10	8 11 2 13	7 16 5 14	4 16 5 9
3 2 11 10	8 2 11 13	13 5 16 8	10 5 16 3	9 2 11 4	14 2 11 7
15 14 7 6	15 9 4 6	15 7 14 6	15 4 9 6	15 8 13 6	15 3 10 6
187/P	_/182	188/P	_/181	189/P	_/195
1 11 2 12	1 16 5 12	1 11 2 12	1 16 5 12	1 3 10 12	1 7 14 12
7 13 4 10	8 13 4 9	9 13 4 8	10 13 4 7	6 13 2 9	8 13 2 11
9 3 14 8	10 3 14 7	7 3 14 10	8 3 14 9	11 4 15 8	9 4 15 6
15 5 16 6	15 2 11 6	15 5 16 6	15 2 11 6	16 14 7 5	16 10 3 5
190/P	_/196	191/P	_/193	192/P	_/194
1 3 10 12	1 7 14 12	1 3 10 12	1 7 14 12	1 3 10 12	1 7 14 12
8 15 4 11	6 15 4 9	9 13 2 6	11 13 2 8	11 15 4 8	9 15 4 6
9 2 13 6	11 2 13 8	8 4 15 11	6 4 15 9	6 2 13 9	8 2 13 11
16 14 7 5	16 10 3 5	16 14 7 5	16 10 3 5	16 14 7 5	16 10 3 5
193/P	_/191	194/P	_/192	195/P	_/189
1 10 3 12	1 14 7 12	1 10 3 12	1 14 7 12	1 10 3 12	1 14 7 12
6 13 2 9	8 13 2 11	8 15 4 11	6 15 4 9	9 13 2 6	11 13 2 8
11 4 15 8	9 4 15 6	9 2 13 6	11 2 13 8	8 4 15 11	6 4 15 9
16 7 14 5	16 3 10 5	16 7 14 5	16 3 10 5	16 7 14 5	16 3 10 5
196/P	_/190	197/P	_/203	198/P	_/204
1 10 3 12	1 14 7 12	1 5 9 13	1 8 12 13	1 5 9 13	1 8 12 13
11 15 4 8	9 15 4 6	6 14 2 10	7 14 2 11	7 15 3 11	6 15 3 10
6 2 13 9	8 2 13 11	11 3 15 7	10 3 15 6	10 2 14 6	11 2 14 7
16 7 14 5	16 3 10 5	16 12 8 4	16 9 5 4	16 12 8 4	16 9 5 4
199/P	_/201	200/P	_/202	201/P	_/199
1 5 9 13	1 8 12 13	1 5 9 13	1 8 12 13	1 9 5 13	1 12 8 13
10 14 2 6	11 14 2 7	11 15 3 7	10 15 3 6	6 14 2 10	7 14 2 11
7 3 15 11	6 3 15 10	6 2 14 10	7 2 14 11	11 3 15 7	10 3 15 6
16 12 8 4	16 9 5 4	16 12 8 4	16 9 5 4	16 8 12 4	16 5 9 4
202/P	_/200	203/P	_/197	204/P	_/198
1 9 5 13	1 12 8 13	1 9 5 13	1 12 8 13	1 9 5 13	1 12 8 13
7 15 3 11	6 15 3 10	10 14 2 6	11 14 2 7	11 15 3 7	10 15 3 6
10 2 14 6	11 2 14 7	7 3 15 11	6 3 15 10	6 2 14 10	7 2 14 11
16 8 12 4	16 5 9 4	16 8 12 4	16 5 9 4	16 8 12 4	16 5 9 4



by the Model itself. We can make those Prototypes after the Model anytime. It means only the Model is always necessary for us to have at first and nothing else more.

This implies the Model always knows everything, doesn't it?

#### #4. Compare those two sets of Prototype Squares we have composed

Our case studies of Magic Squares of Order 4 about Pan-diagonal types and Self-complementary one, tell us that all the Prototype Squares are totally common and the same with each other among them, whichever solution we may take for the Model.

How about the case of our Standard Magic type? Are the Prototype solutions always common and the same with each other in our experiments, too?

No, they are not. Comparing the actual two cases above, we should have the different sets of Prototype solutions from each other. They are quite different! Only 10 solutions are found common and the same among 880 couples.

And I must also report, when we take another Model and DAMT and if we keep using the same set of Prototypes with the one we used before, denying to change the Prototypes, then we can never succeed in reconstructing all the objects with them.

Prototype Squares seem to be subordinate to the actual Model and dependent on it. What does it mean, then?

It seems to mean that our object Standard Magic Squares of Order 4 has the 'low symmetry' among their solutions. When we observe the Prototype solutions carefully and consider them as the set of 'Basic Forms', we should know we need to have too many transformation rules to make all into several groups beautifully classified.

Standard Magic Squares of Order 4 has long been so puzzling that we could hardly divide them into small consistent groups by any regular classifications.

On the contrary, all Pan-diagonal types and Self-complementary one of Order 4 do always have the 'high symmetry' among their solutions, and can be classified into small groups of solutions by any regular systems of transformation.

All Prototype solutions for those types are common and the same with each other. That means the very Prototype Squares are really independent from the actual Model and exist as 'objective' and 'substantial', expressing the design of 'Original Concept'.

---

(Written by Kanji Setsuda on October 8, 2010 with MacOSX & Xcode 3.1.2)

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[Appendix] Program List dictated by Kanji Setsuda in 'Standard C'

```
/** 'Prototype' Squares of Order 4 for the Standard Magic Type **/  
/** 'ProtoT44Std.c' dictated by Kanji Setsuda **/  
/** on Mar.8, 2003; Oct.14, 2006; Sep.20, 2010 **/  
/** Working with MacOSX & Xcode 3.1.2 **/  
**/  
#include <stdio.h>  
**/  
short cnt, cnt1, cnt3;  
short LSM, PSM;  
short nm[17], uflg[17];  
short dnm[17], lnm[881];  
short dt[7][18];  
short st[881][18];  
**/  
/* Sub-Routines */  
**/  
void deep01(void), deep02(void), deep03(void), deep04(void);  
void deep05(void), deep06(void), deep07(void), deep08(void);
```

```

void deep09(void), deep10(void), deep11(void), deep12(void);
void deep13(void), deep14(void), deep15(void), deep16(void);
void ansrecord(void);
void printsol(short x, short y);
short chktyp(void);
/**/
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 ansprint(void), pr6ans(void);
void damt(void);
short findnmb(void);
void prlnm(void), damt(void);
/**/
/* Main Program */
int main(){
  short n;
  printf("\n [List of Standard Solutions of Standard Magic Squares of Order 4]\n");
  for(n=0;n<17;n++){nm[n]=0; uflg[n]=0; st[0][n]=0;}
  LSM=34; PSM=17; cnt=0;
  deep01(); // Make the Solution List of Standard MS44
  printsol(1,210);
  printf(" . . . . \n");
  printf(" [Count = %d]\n",cnt);
  printf("\n['Prototype Squares' and the Standard Magic Objects Recomposed by 'DAMT':\n");
  printf(" Prototype/P; Object:S/Self-Complementary; C/Complete; _/Standard Type]\n");
  for(n=0;n<17;n++){nm[n]=0; uflg[n]=0;}
  cnt1=0; cnt3=0;
  stp01(); // Make 'Prototype Squares' and Apply 'DAMT'
  if(cnt3>0){pr6ans();}
  printf(" [Count = %d/%d]\n",cnt,cnt1);
  printf(" [Listed by Kanji Setsuda on Sep.20, 2010 with MacOSX & Xcode3.1.2]\n");
  prlnm();
  printf("\n OK!\n");
  return 0;
}
/**/
/* Make the Solution List of Standard MS44 */

/* Set N1 */
void deep01(){
  short a;
  for(a=1;a<10;a++){
    if(uflg[a]==0){
      nm[1]=a; uflg[a]=1;
      deep02();
      uflg[a]=0;}
  }
}
/* Set N16(>N1) */
void deep02(){
  short a;
  for(a=16;a>nm[1];a--){
    if(uflg[a]==0){
      nm[16]=a; uflg[a]=1;
      deep03();
      uflg[a]=0;}
  }
}
/* Set N4(>N1) */
void deep03(){
  short a;
  for(a=nm[1]+1;a<17;a++){
    if(uflg[a]==0){
      nm[4]=a; uflg[a]=1;
      deep04();
      uflg[a]=0;}
  }
}
/* Set N13(>N4) */
void deep04(){
  short a;
  for(a=16;a>nm[4];a--){
    if(uflg[a]==0){
      nm[13]=a; uflg[a]=1;
      deep05();
      uflg[a]=0;}
  }
}
/* Set N2 */
void deep05(){
  short a;
  for(a=16;a>0;a--){
    if(uflg[a]==0){
      nm[2]=a; uflg[a]=1;
      deep06();
      uflg[a]=0;}
  }
}

```

```

/* Set n3=LSM-n1-n2-n4 */
void deep06(){
    short a;
    a=LSM-nm[1]-nm[2]-nm[4];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[3]=a; uflg[a]=1;
            deep07();
            uflg[a]=0;}}
}
/* Set N15 */
void deep07(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[15]=a; uflg[a]=1;
            deep08();
            uflg[a]=0;}}
}
/* Set n14=LSM-n16-n15-n13 */
void deep08(){
    short a;
    a=LSM-nm[16]-nm[15]-nm[13];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[14]=a; uflg[a]=1;
            deep09();
            uflg[a]=0;}}
}
/* Level 2: */
/* Set N5 */
void deep09(){
    short a;
    for(a=16;a>0;a--){
        if(uflg[a]==0){
            nm[5]=a; uflg[a]=1;
            deep10();
            uflg[a]=0;}}
}
/* Set n9=LSM-n1-n5-n13 */
void deep10(){
    short a;
    a=LSM-nm[1]-nm[5]-nm[13];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[9]=a; uflg[a]=1;
            deep11();
            uflg[a]=0;}}
}
/* Set N12 */
void deep11(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[12]=a; uflg[a]=1;
            deep12();
            uflg[a]=0;}}
}
/* Set n8=LSM-n4-n12-n16 */
void deep12(){
    ↗short a;
    a=LSM-nm[4]-nm[12]-nm[16];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[8]=a; uflg[a]=1;
            deep13();
            uflg[a]=0;}}
}
/* Set N6 */
void deep13(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[6]=a; uflg[a]=1;
            deep14();
            uflg[a]=0;}}
}
/* Set n7=LSM-n5-n6-n8 */
void deep14(){
    short a;
    a=LSM-nm[5]-nm[6]-nm[8];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[7]=a; uflg[a]=1;
            deep15();
            uflg[a]=0;}}
}
/* Set n10=LSM-n2-n6-n14 */
void deep15(){
    short a,b;
    a=LSM-nm[2]-nm[6]-nm[14];
    b=LSM-nm[4]-nm[7]-nm[13];
    if((0<a)&&(a<17)){
        if((a==b)&&(uflg[a]==0)){
            nm[10]=a; uflg[a]=1;
            deep16();
            uflg[a]=0;}}
}
/* Set n11=LSM-n9-n10-n12 */
void deep16(){
    short a,b,c;
    a=LSM-nm[1]-nm[6]-nm[16];
    b=LSM-nm[3]-nm[7]-nm[15];
    c=LSM-nm[9]-nm[10]-nm[12];
    if((0<a)&&(a<17)){
        if((a==b)&&(a==c)){
            if(uflg[a]==0){
                nm[11]=a; uflg[a]=1;
                ansrecord();
                uflg[a]=0;}}}}
}
/**/
/* Record the Answers */
void ansrecord(){
    short n;
    cnt++;
    st[cnt][0]=cnt;
    for(n=1;n<17;n++){st[cnt][n]=nm[n];}
    st[cnt][17]=chktyp();
}
/**/
/* Print the PMS44 */

```

```

void printsol(short x, short y){
short s,sy,l,l4,m,n,p;
for(s=x;s<=y;s=s+6){sy=y+1-s; if(sy>6){sy=6;}}
for(m=0;m<sy;m++){n=st[s+m][17]; p=st[s+m][0];
printf(" %c/%d ",n,p);
if(p<10){printf(" ");}
else if(p<100){printf(" ");}
}
printf("\n");
for(l=0;l<4;l++){l4=l*4;
for(m=0;m<sy;m++){
printf(" ");
for(n=1;n<5;n++){printf("%3d",st[s+m][l4+n]);}
}
printf("\n");
}
}
}
}
/**/
/* Check Types */
short chktyp(void){
short c,t;
t='_'; c=0;
if(nm[1]+nm[16]==17){c++;}
if(nm[2]+nm[15]==17){c++;}
if(nm[3]+nm[14]==17){c++;}
if(nm[4]+nm[13]==17){c++;}
if(nm[5]+nm[12]==17){c++;}
if(nm[6]+nm[11]==17){c++;}
if(nm[7]+nm[10]==17){c++;}
if(nm[8]+nm[9]==17){c++;}
if(c==8){t='S';}
c=0;
if(nm[1]+nm[11]==17){c++;}
if(nm[2]+nm[12]==17){c++;}
if(nm[3]+nm[9]==17){c++;}
if(nm[4]+nm[10]==17){c++;}
if(nm[5]+nm[15]==17){c++;}
if(nm[6]+nm[16]==17){c++;}
if(nm[7]+nm[13]==17){c++;}
if(nm[8]+nm[14]==17){c++;}
if(c==8){t='C';}
return t;
}
/**/

```

```

/* Make Prototype Squares and Apply DAMT */
/* Set N1 */
void stp01(){
short a;
for(a=1;a<10;a++){
if(uflg[a]==0){
nm[1]=a; uflg[a]=1;
stp02();
uflg[a]=0;}
}
}
/* Set N16(>N1) */
void stp02(){
short a;
for(a=16;a>nm[1];a--){
if(uflg[a]==0){
nm[16]=a; uflg[a]=1;
stp03();
uflg[a]=0;}
}
}

```

```

}
}
/* Set N4(>N1) */
void stp03(){
short a;
for(a=nm[1]+1;a<17;a++){
if(uflg[a]==0){
nm[4]=a; uflg[a]=1;
stp04();
uflg[a]=0;}
}
}
/* Set N13(>N4) */
void stp04(){
short a;
for(a=16;a>nm[4];a--){
if(uflg[a]==0){
nm[13]=a; uflg[a]=1;
stp05();
}
}
}

```

```

        uflg[a]=0;}
    }
}
/* Set N2 */
void stp05(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[2]=a; uflg[a]=1;
            stp06();
            uflg[a]=0;}
    }
}
/* Set n3=LSM-n13-n2-n16 */
void stp06(){
    short a;
    a=LSM-nm[13]-nm[2]-nm[16];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[3]=a; uflg[a]=1;
            stp07();
            uflg[a]=0;}}
}
/* Set N15 */
void stp07(){
    short a;
    for(a=16;a>0;a--){
        if(uflg[a]==0){
            nm[15]=a; uflg[a]=1;
            stp08();
            uflg[a]=0;}
    }
}
/* Set n14=LSM-n1-n15-n4 */
void stp08(){
    short a;
    a=LSM-nm[1]-nm[15]-nm[4];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[14]=a; uflg[a]=1;
            stp09();
            uflg[a]=0;}}
}
/* Level 2: */
/* Set N5 */
void stp09(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[5]=a; uflg[a]=1;
            stp10();
            uflg[a]=0;}
    }
}
/* Set n9=LSM-n4-n5-n16 */
void stp10(){
    short a;
    a=LSM-nm[4]-nm[5]-nm[16];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[9]=a; uflg[a]=1;
            stp11();
            uflg[a]=0;}}
}
/* Set N12 */

```

```

void stp11(){
    short a;
    for(a=16;a>0;a--){
        if(uflg[a]==0){
            nm[12]=a; uflg[a]=1;
            stp12();
            uflg[a]=0;}
    }
}
/* Set n8=LSM-n1-n12-n13 */
void stp12(){
    short a;
    a=LSM-nm[1]-nm[12]-nm[13];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[8]=a; uflg[a]=1;
            stp13();
            uflg[a]=0;}}
}
/* Set N6 */
void stp13(){
    short a;
    for(a=1;a<17;a++){
        if(uflg[a]==0){
            nm[6]=a; uflg[a]=1;
            stp14();
            uflg[a]=0;}
    }
}
/* Set n7=LSM-n12-n6-n9 */
void stp14(){
    short a;
    a=LSM-nm[12]-nm[6]-nm[9];
    if((0<a)&&(a<17)){
        if(uflg[a]==0){
            nm[7]=a; uflg[a]=1;
            stp15();
            uflg[a]=0;}}
}
/* Set n10=LSM-n15-n6-n3 */
void stp15(){
    short a,b;
    a=LSM-nm[15]-nm[6]-nm[3];
    b=LSM-nm[4]-nm[7]-nm[13];
    if((0<a)&&(a<17)){
        if((a==b)&&(uflg[a]==0)){
            nm[10]=a; uflg[a]=1;
            stp16();
            uflg[a]=0;}}
}
/* Set n11=LSM-n8-n10-n5 */
void stp16(){
    short a,b,c;
    a=LSM-nm[8]-nm[10]-nm[5];
    b=LSM-nm[14]-nm[7]-nm[2];
    c=LSM-nm[1]-nm[6]-nm[16];
    if((0<a)&&(a<17)){
        if((a==b)&&(a==c)){
            if(uflg[a]==0){
                nm[11]=a; uflg[a]=1;
                ansprint();
                uflg[a]=0;}}}
}
/**/
/* Print the Solutions */

```



```

void ansprint(){
short cn,n;
cn=cnt3*2;
for(n=1;n<17;n++){dt[cn][n]=nm[n];}
cnt1++; dt[cn][0]=cnt1;
damt();
for(n=1;n<17;n++){dt[cn+1][n]=dnm[n];}
n=findnmb();
}
dt[cn+1][0]=n; lnm[n]++;
dt[cn+1][17]=st[n][17];
cnt3++;
if(cnt3==3){pr6ans(); cnt3=0;
for(n=0;n<6;n++){dt[n][0]=0;}}
}
/**/

/* Print 3 Pairs of Solutions */
void pr6ans(){
short l,l4,m,n;
if(dt[1][0]<10){printf("%10d/P %c/%d%20d/P %c/%d%20d/P %c/%d\n",
dt[0][0],dt[1][17],dt[1][0],dt[2][0],dt[3][17],dt[3][0],dt[4][0],dt[5][17],dt[5][0]);}
else if(dt[1][0]<100){printf("%10d/P %c/%d%19d/P %c/%d%19d/P %c/%d\n",
dt[0][0],dt[1][17],dt[1][0],dt[2][0],dt[3][17],dt[3][0],dt[4][0],dt[5][17],dt[5][0]);}
else{printf("%10d/P %c/%d%18d/P %c/%d%18d/P %c/%d\n",
dt[0][0],dt[1][17],dt[1][0],dt[2][0],dt[3][17],dt[3][0],dt[4][0],dt[5][17],dt[5][0]);}
for(l=0;l<4;l++){l4=l*4;
for(m=0;m<6;m++){
for(n=1;n<5;n++){printf("%3d",dt[m][l4+n]);}
if(m<5){
if(m%2==1){printf(" ");}else{printf(" ");}}
}
printf("\n");
}
}
/**/
/* 'Do-it-After-the-Model Transformation *
/* Transform Prototype into 'Pandiagonal' Object */
void damt(void){
dnm[1]=nm[1]; dnm[2]=nm[15]; dnm[3]=nm[14]; dnm[4]=nm[4];
dnm[5]=nm[12]; dnm[6]=nm[6]; dnm[7]=nm[7]; dnm[8]=nm[9];
dnm[9]=nm[8]; dnm[10]=nm[10]; dnm[11]=nm[11]; dnm[12]=nm[5];
dnm[13]=nm[13]; dnm[14]=nm[3]; dnm[15]=nm[2]; dnm[16]=nm[16];
}
/**/
/* Find the Original Number */
short findnmb(){
short mflg,cn,m,n;
cn=0;
for(m=1;m<=cnt;m++){
mflg=0;
for(n=1;n<17;n++){if(st[m][n]==dnm[n]){mflg++;}}
if(mflg==16){cn=st[m][0]; break;}
}
return cn;
}
/**/
/* Print the Correspondence Monitor */
void prlnm(){
short n;
printf("\n [Monitor List of Correspondence between Old and New] \n");
printf(" ??:%2d",lnm[0]);
for(n=1;n<=cnt1;n++){
if(n%36==1){printf("\n%4d:",n);}
printf("%2d",lnm[n]);
}
printf("\n");
}
/**/

```