# **Striped Magic Squares of Order 12 - Revised**

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The whole work as pdf file is available at author's site: https://numbers-magic.com/?p=12447

## Abstract

This work brings magic squares of Order 12 based on **equal width magic rectangles**. These are magic rectangles of of type  $2 \times 4$ ,  $2 \times 6$ ,  $2 \times 8$ , etc. Alternatively, we can write it as  $2 \times n$ , where n is the length of magic rectangle. Magic squares constructed based on **equal width magic rectangles**, we call as **striped magic squares**. For the **striped** magic squares of orders 4, 6, 8, 10, 12, 14, 18 refer the author's work [94, 96, 97]. The previous work was only with 72 **striped magic squares** of order 12, while this version is with 220 **striped magic squares**. The whole work with 220 **striped magic squares** is available as **pdf file** at author's web-site. The link is as given above.

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# **1** Introduction

Let's understand first about **striped magic rectangles**, i.e., **equal width magic rectangles**. These are of orders  $2 \times 4$ ,  $2 \times 4$ ,  $2 \times 4$ , etc. It is based on following two ideas recently, developed by the author:

- (i) Striped Bordered Double Digits Magic Rectangles.
- (ii) Striped Cornered Magic Rectangles.

The above two items are not known in the literature of magic squares. Let's understand one by one.

### **1.1 Bordered Double Digits Magic Rectangles**

Here we shall bring double digits bordered magic rectangles. See below few examples.

**Example 1.1.** Below is an example of **double digit bordered magic rectangle** of order 6×14:

11	8	7	71	5	70	69	73	84	23	26	63	13	72	595
74	77	78	14	80	15	16	12	1	62	59	22	76	9	595
66	19	52	42	50	40	41	47	34	37	36	46	24	61	595
65	20	33	43	35	45	44	38	51	48	49	39	57	28	595
10	75	81	27	68	67	21	53	30	3	25	2	79	54	595
29	56	4	58	17	18	64	32	55	82	60	83	6	31	595
255	255	255	255	255	255	255	255	255	255	255	255	255	255	

The magic rectangle of width 2 are of equal sums. See below:

11	8	7	71	5	70	69	73	84	23	26	63	510
74	77	78	14	80	15	16	12	1	62	59	22	510
85	85	85	85	85	85	85	85	85	85	85	85	
81	27	68	67	21	53	30	3	25	2	79	54	510
4	58	17	18	64	32	55	82	60	83	6	31	510
85	85	85	85	85	85	85	85	85	85	85	85	
			13	72	85		66	19	85			
			76	9	85		65	20	85			
			24	61	85		10	75	85			
			57	28	85		29	56	85			
			170	170			170	170				

**Example 1.2.** Below is an another example of **double digit bordered magic rectangle** of order  $10 \times 12$ :

108	4	10	106	19	96	100	103	36	23	109	12	726
13	117	111	15	102	25	21	18	85	<mark>98</mark>	116	5	726
20	101	43	81	70	42	82	45	50	71	120	1	726
91	30	78	40	51	79	39	76	37	84	31	90	726
89	32	54	67	57	60	63	62	75	46	9	112	726
104	17	55	66	64	61	58	59	80	41	86	35	726
34	87	65	56	83	48	72	47	44	69	11	110	726
114	7	<b>68</b>	53	38	73	49	74	77	52	2	119	726
3	118	6	14	93	22	97	95	27	113	105	33	726
29	92	115	107	28	99	24	26	94	8	16	88	726
605	605	605	605	605	605	605	605	605	605	605	605	

The magic rectangle of width 2 are of equal sums. See below:

											20	101	121	109	12	121								54	67	121		50	71	121
108	4	10	106	19	96	100	103	36	23	605	91	30	121	116	5	121	43	81	70	42	82	45	363	55	66	121		37	84	121
13	117	111	15	102	25	21	18	85	98	605	89	32	121	120	1	121	78	40	51	79	39	76	363	65	56	121		75	46	121
121	121	121	121	121	121	121	121	121	121		104	17	121	31	90	121	121	121	121	121	121	121		68	53	121		80	41	121
											34	87	121	9	112	121								242	242			242	242	
6	14	93	22	97	95	27	113	105	33	605	114	7	121	86	35	121	83	48	72	47	44	69	363							
115	107	28	99	24	26	94	8	16	88	605	3	118	121	11	110	121	38	73	49	74	77	52	363		57	60	63	62	242	
121	121	121	121	121	121	121	121	121	121		29	92	121	2	119	121	121	121	121	121	121	121			64	61	58	59	242	
											484	484		484	484										121	121	121	121		

We observe that in all the above examples, the width of magic rectangles is always 2. The differences are only in the length.

### **1.2 Striped Cornered Magic Rectangles**

We observe from **double digits magic rectangles** that magic rectangles are with width 2, i.e., these are of magic rectangles of type  $2 \times 4$ ,  $2 \times 6$ ,  $2 \times 8$ , etc. But this property is not true for the cornered magic rectangles [83]. Below are few examples where we have **cornered magic rectangles** with the property every magic rectangle is with width 2.

**Example 1.3.** Below is an example of a striped cornered magic rectangle of order  $6 \times 14$ :

5	52	47	40	37	42	36	41	50	34	46	58	27	12	73	595
3	33	38	45	48	43	49	44	35	51	39	60	25	74	11	595
2	26	66	32	64	65	31	22	28	61	30	29	56	4	81	595
5	59	19	53	21	20	54	63	57	24	55	23	62	78	7	595
7	71	69	72	5	6	67	70	3	68	2	1	76	77	8	595
1	4	16	13	80	79	18	15	82	17	83	84	9	10	75	595
2	55	255	255	255	255	255	255	255	255	255	255	255	255	255	

The sums are as follows:

71	69	72	5	6	67	70	3	68	2	1	76	510	12	73	85	58	27	85
14	16	13	80	79	18	15	82	17	83	84	9	510	74	11	85	60	25	85
85	85	85	85	85	85	85	85	85	85	85	85		4	81	85	29	56	85
													78	7	85	23	62	85
26	66	32	64	65	31	22	28	61	30	425			77	8	85	170	170	
59	19	53	21	20	54	63	57	24	55	425			10	75	85			
85	85	85	85	85	85	85	85	85	85				255	255				
52	47	40	37	42	36	41	50	34	46	425								
33	38	45	48	43	49	44	35	51	39	425								
85	85	85	85	85	85	85	85	85	85									

**Example 1.4.** Below is an example of another **striped cornered magic rectangle** of order  $10 \times 12$ :

59	61	64	58	68	53	73	48	86	35	18	103	726
62	60	57	63	50	71	76	45	24	97	108	13	726
72	65	54	51	69	52	46	75	22	99	8	113	726
49	56	67	70	55	66	41	80	98	23	104	17	726
74	84	81	39	42	43	44	77	29	92	102	19	726
47	37	40	82	79	78	83	38	34	87	15	106	726
90	26	33	96	94	32	85	28	91	30	115	6	726
31	95	88	25	27	89	36	93	100	21	114	7	726
109	116	2	118	1	4	112	16	107	20	11	110	726
12	5	119	3	120	117	9	105	14	101	10	111	726
605	605	605	605	605	605	605	605	605	<b>605</b>	605	605	

The sums are as follows:

_									_													
109	116	2	118	1	4	112	16	107	20	605	18	103	121	86	35	121	73	48	121	68	53	121
12	5	119	3	120	117	9	105	14	101	605	108	13	121	24	97	121	76	45	121	50	71	121
121	121	121	121	121	121	121	121	121	121		8	113	121	22	99	121	46	75	121	69	52	121
											104	17	121	98	23	121	41	80	121	55	66	121
90	26	33	96	94	32	85	28	484			102	19	121	29	92	121	44	77	121	242	242	
31	95	88	25	27	89	36	93	484			15	106	121	34	87	121	83	38	121			
121	121	121	121	121	121	121	121				115	6	121	91	30	121	363	363				
											114	7	121	100	21	121						
74	84	81	39	42	43	363					11	110	121	484	484							
47	37	40	82	79	78	363					10	111	121									
121	121	121	121	121	121						605	605										
72	65	54	51	242		59	61	64	58	242												
49	56	67	70	242		62	60	57	63	242												
121	121	121	121			121	121	121	121													

## **1.3 Stripes of Equal Width**

Whole the work is based on equal width magic rectangles of order  $2 \times n$ , where n = 4, 6, ... 12. These are as follows:

4	1	143	142	5	139	138	8	9	12	134	135	87
141	144	2	3	140	6	7	137	136	133	11	10	87
145	145	145	145	145	145	145	145	145	145	145	145	ſ
117	16	3	32	128	12	36	130	137	114	725		
28	129	142	113	17	133	109	15	8	31	725		
145	145	145	145	145	145	145	145	145	145			
48	41	103	101	100	98	46	43	580				
97	104	42	44	45	47	99	102	580				
145	145	145	145	145	145	145	145					
52	97	96	44	42	104	435						
93	48	49	101	103	41	435						
145	145	145	145	145	145							
142	5	4	139	290								
3	140	141	6	290								
145	145	145	145									

From the above example, we observe that in the all the case, the width is always 145. The length changes according to the order of magic rectangle.

# 2 Striped Magic Squares of Order 12

In this work there are total 220 **striped magic squares** of Order 12. The whole work is divided in 6 parts as subsections.

## 2.1 Part 1: General, Cornered and Double Digits Striped Magic Squares of Order 12

This part brings some **striped magic squares** of order 12 made in a general way. Some them include striped cornered, striped double digits bordered, etc. Below are few examples:

1	mgc	Inde	er J. Ta	aneja	http	s://nu	mber	s-mag	ic.con	n/ @	IJTAN	IEJA	870
	28	118	119	25	5	139	138	8	24	123	122	21	870
	117	27	26	120	140	6	7	137	121	22	23	124	870
	13	131	130	16	9	135	134	12	20	126	127	17	870
	132	14	15	129	136	10	11	133	125	19	18	128	870
	1	143	142	4	29	115	114	32	33	111	110	36	870
	144	2	3	141	116	30	31	113	112	34	35	109	870
	49	95	94	52	41	103	102	44	45	99	98	48	870
	96	50	51	93	104	42	43	101	100	46	47	97	870
	69	74	75	72	37	107	106	40	57	87	86	60	870
	76	71	70	73	108	38	39	105	88	58	59	85	870
	64	82	83	61	65	79	78	68	53	91	90	56	870
	81	63	62	84	80	66	67	77	92	54	55	89	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

3	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	ic.con	n/ @	IJTAN	IEJA	870
	117	16	3	32	128	12	36	130	137	114	37	108	870
	28	129	142	113	17	133	109	15	8	31	39	106	870
	110	35	52	97	96	44	42	104	86	59	141	4	870
	126	19	93	48	49	101	103	41	99	46	23	122	870
	29	116	54	91	79	66	74	71	87	58	25	120	870
	131	14	90	55	65	80	72	73	45	100	26	119	870
	143	2	88	57	78	67	69	76	56	89	127	18	870
	33	112	102	43	68	77	75	70	62	83	144	1	870
	124	21	51	94	85	92	64	63	84	47	38	107	870
	5	140	50	95	60	53	81	82	61	<b>98</b>	125	20	870
	13	132	22	136	138	40	139	30	24	27	34	135	870
	11	134	123	9	7	105	6	115	121	118	111	10	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

4	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	4	1	143	142	5	139	138	8	9	12	134	135	870
	141	144	2	3	140	6	7	137	136	133	11	10	870
	37	108	48	41	103	101	100	98	46	43	13	132	870
	107	38	97	104	42	44	45	47	99	102	131	14	870
	106	39	57	88	65	80	69	76	61	84	130	15	870
	40	105	60	85	79	66	75	70	64	81	16	129	870
	33	112	87	58	78	67	74	71	83	62	17	128	870
	111	34	86	59	68	77	72	73	82	63	127	18	870
	110	35	49	56	51	92	93	54	95	90	126	19	870
	36	109	96	89	94	53	52	91	50	55	20	125	870
	115	114	32	29	25	119	118	28	122	123	21	24	870
	30	31	113	116	120	26	27	117	23	22	124	121	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

15	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	62	84	63	81	60	85	52	93	40	105	17	128	870
	83	61	82	64	86	59	94	51	106	39	126	19	870
	53	91	90	56	87	58	95	50	111	34	127	18	870
	92	54	55	89	57	88	49	96	33	112	20	125	870
	43	41	103	101	100	98	46	48	36	109	16	129	870
	102	104	42	44	45	47	99	97	110	35	130	15	870
	77	67	76	65	74	70	72	79	107	38	131	14	870
	68	78	69	80	71	75	73	66	37	108	13	132	870
	4	1	135	8	142	139	143	5	9	12	138	134	870
	141	144	10	137	3	6	2	140	136	133	7	11	870
	24	122	25	29	119	32	115	28	21	123	114	118	870
	121	23	120	116	26	113	30	117	124	22	31	27	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

23	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	100	85	93	58	43	56	47	98	40	105	17	128	870
	45	60	52	87	102	89	90	55	106	39	126	19	870
	99	46	84	63	81	62	103	42	111	34	127	18	870
	54	91	61	82	64	83	50	95	33	112	20	125	870
	96	49	101	48	51	86	57	92	36	109	16	129	870
	41	104	44	97	94	59	88	53	110	35	130	15	870
	77	67	76	70	79	65	72	74	107	38	131	14	870
	68	78	69	75	66	80	73	71	37	108	13	132	870
	4	8	143	1	142	139	135	5	9	12	138	134	870
	141	137	2	144	3	6	10	140	136	133	7	11	870
	24	114	25	29	119	32	115	28	21	123	122	118	870
	121	31	120	116	26	113	30	117	124	22	23	27	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

## 2.2 Part 2: General Type Striped Magic Squares of Order 12

This part brings some general type **striped magic squares** of order 12 little different from the Part 1. Below are few examples:

42	mgc	Inde	er J. Ta	aneja	http	s://nu	mber	s-mag	ic.con	n/ @	IJTAN	IEJA	870
	1	12	138	143	5	139	135	8	9	4	142	134	870
	144	133	7	2	140	6	10	137	136	141	3	11	870
	36	111	110	33	128	17	51	94	57	60	87	86	870
	109	34	35	112	131	14	93	52	88	85	58	59	870
	37	107	106	40	15	130	49	96	61	83	82	64	870
	108	38	39	105	129	16	95	50	84	62	63	81	870
	41	104	45	100	13	132	90	55	65	80	69	76	870
	103	42	99	46	18	127	56	89	79	66	75	70	870
	102	43	98	47	126	19	92	53	78	67	74	71	870
	44	101	48	97	20	125	54	91	68	77	72	73	870
	114	118	122	29	25	115	32	28	21	24	123	119	870
	31	27	23	116	120	30	113	117	124	121	22	26	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

65	mgc	Inde	er J. Ta	aneja	http	s://nu	mber	s-mag	lic.con	n/ @	IJTAN	IEJA	870
	18	110	21	136	115	19	139	134	5	28	34	111	870
	127	35	124	9	30	126	6	11	140	117	135	10	870
	17	128	41	107	50	97	103	37	102	43	1	144	870
	14	131	104	38	95	48	42	108	39	106	25	120	870
	12	133	51	94	86	60	57	87	53	92	116	29	870
	113	32	45	100	59	85	88	58	96	49	142	3	870
	114	31	93	52	55	89	99	98	54	40	112	33	870
	26	119	101	44	90	56	46	47	91	105	15	130	870
	141	4	109	16	123	23	27	24	125	8	138	132	870
	143	2	36	129	22	122	118	121	20	137	7	13	870
	74	65	79	64	72	82	78	68	69	83	75	61	870
	71	80	66	81	73	63	67	77	76	62	70	84	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

72	mgc	Inde	er J. Ta	aneja	http	s://nu	mber	s-mag	ic.con	n/ @	IJTAN	IEJA	870
	8	19	130	127	139	12	9	136	49	96	57	88	870
	137	126	15	18	6	133	16	129	95	50	60	85	870
	10	135	123	24	122	21	125	20	94	51	86	59	870
	17	128	22	121	23	124	140	5	52	93	87	58	870
	132	13	3	7	4	143	134	144	53	91	90	56	870
	131	14	142	138	141	2	11	1	92	54	55	89	870
	65	79	78	68	103	106	36	115	32	43	33	112	870
	80	66	67	77	42	39	109	30	113	102	40	105	870
	72	73	61	84	34	111	98	45	99	48	101	44	870
	75	70	82	63	41	104	47	100	46	97	116	29	870
	69	76	83	62	108	37	27	120	28	119	110	31	870
	74	71	64	81	107	38	118	25	117	26	35	114	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

74	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	24	122	21	123	17	128	9	136	49	96	60	85	870
	121	23	124	22	127	18	135	10	52	93	86	59	870
	130	16	131	13	126	19	134	11	94	51	57	88	870
	15	129	14	132	20	125	12	133	95	50	87	58	870
	8	143	3	138	140	6	141	1	53	91	90	56	870
	137	2	142	7	5	139	4	144	92	54	55	89	870
	65	79	78	68	25	119	27	114	116	30	117	32	870
	80	66	67	77	120	26	118	31	29	115	28	113	870
	69	76	61	84	33	112	41	104	40	106	37	107	870
	74	71	83	62	111	34	103	42	105	39	108	38	870
	75	70	82	63	110	35	102	43	45	48	98	99	870
	72	73	64	81	36	109	44	101	100	97	47	46	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

### 2.3 Part 3: Striped Magic Squares of Order 12 Divided in Two Parts

This part brings some striped magic squares of order 12 made in a such a way that there are two magic rectangles of order  $6 \times 12$  resulting in striped magic squares of order 12. Below are few examples:

77	mgc	Inde	er J. Ta	aneja	http	s://nu	mber	s-mag	ic.con	n/ @	IJTAN	IEJA	870
	17	128	27	140	119	4	53	92	63	104	83	40	870
	20	125	118	5	26	141	106	39	82	41	62	105	870
	123	22	34	111	12	133	87	58	65	80	48	97	870
	8	137	112	33	7	138	44	101	76	69	43	102	870
	142	3	35	110	131	14	56	89	70	75	91	54	870
	13	132	114	31	21	124	49	96	78	67	57	88	870
	122	23	32	113	19	126	52	93	68	77	55	90	870
	134	11	115	30	120	25	98	47	79	66	95	50	870
	130	15	109	36	9	136	94	51	73	72	45	100	870
	16	129	29	116	144	1	86	59	71	74	108	37	870
	121	139	28	2	135	10	85	103	64	38	99	46	870
	24	6	117	143	127	18	60	42	81	107	84	61	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

88	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	11	134	123	22	29	116	49	95	94	52	37	108	870
	133	12	121	24	115	30	96	50	51	93	103	42	870
	139	6	26	119	31	114	53	91	90	56	39	106	870
	141	4	21	124	112	33	92	54	55	89	105	40	870
	140	5	120	25	113	32	67	78	57	88	104	41	870
	1	144	23	122	36	109	77	68	59	86	107	38	870
	7	138	118	27	110	35	79	66	87	58	97	48	870
	8	137	28	117	34	111	65	80	85	60	44	101	870
	9	136	126	20	17	127	76	69	84	61	45	100	870
	135	10	19	125	128	18	70	75	62	83	99	46	870
	3	142	13	131	130	16	74	71	82	63	47	98	870
	143	2	132	14	15	129	72	73	64	81	43	102	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

## 2.4 Part 4: Magic Squares of Order 8 in the Middle of Upper Part of Striped Magic Square of Order 12

This part brings some **striped magic squares** of order 12 in a such a way that magic square of order 8 is in the middle of upper part resulting in striped magic squares of order 12. Below are few examples:

92	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	37	108	48	97	57	60	87	86	49	96	131	14	870
	40	105	41	104	88	85	58	59	56	89	13	132	870
	107	38	103	42	65	80	69	76	51	94	130	15	870
	106	39	101	44	79	66	75	70	92	53	16	129	870
	33	112	100	45	78	67	74	71	93	52	17	128	870
	111	34	98	47	68	77	72	73	54	91	127	18	870
	110	35	46	99	61	64	83	82	95	50	126	19	870
	36	109	43	102	84	81	62	63	90	55	20	125	870
	1	9	143	134	12	139	138	8	5	4	142	135	870
	144	136	2	11	133	6	7	137	140	141	3	10	870
	29	114	24	115	25	119	118	28	122	123	21	32	870
	116	31	121	30	120	26	27	117	23	22	124	113	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

105	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	33	112	62	84	63	81	60	85	52	93	20	125	870
	107	38	83	61	82	64	86	59	94	51	126	19	870
	36	109	53	91	90	56	87	58	95	50	130	15	870
	37	108	92	54	55	89	57	88	49	96	17	128	870
	106	39	43	41	103	101	100	98	46	48	13	132	870
	111	34	102	104	42	44	45	47	99	97	16	129	870
	110	35	77	67	74	76	72	70	65	79	131	14	870
	40	105	68	78	71	69	73	75	80	66	127	18	870
	4	134	143	1	9	139	138	8	12	5	142	135	870
	141	11	2	144	136	6	7	137	133	140	3	10	870
	32	114	24	119	25	29	118	28	123	115	122	21	870
	113	31	121	26	120	116	27	117	22	30	23	124	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

## 2.5 Part 5: Centered With Striped Magic Square of Order 4

This part brings some striped magic squares of Order 12 constructed in such a way that there are four striped magic square of order 8. Below are few examples: See below few examples.

5	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	1	143	3	141	140	6	138	8	17	128	25	120	870
	144	2	142	4	5	139	7	137	127	18	119	26	870
	9	135	133	11	132	14	130	16	125	20	27	118	870
	136	10	12	134	13	131	15	129	19	126	117	28	870
	49	96	57	88	79	66	78	67	124	21	116	29	870
	95	50	87	58	72	73	69	76	22	123	30	115	870
	51	94	59	86	65	80	68	77	122	23	114	31	870
	93	52	85	60	74	71	75	70	24	121	32	113	870
	92	53	84	61	33	111	35	109	108	38	106	40	870
	54	91	62	83	112	34	110	36	37	107	39	105	870
	56	89	82	63	41	103	43	101	100	46	48	98	870
	90	55	64	81	104	42	102	44	45	99	97	47	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

6	mgc	Inde	er J. Ta	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	111	34	110	35	143	8	1	138	103	42	102	43	870
	40	105	37	108	2	137	144	7	48	97	45	100	870
	33	112	36	109	142	5	4	139	41	104	44	101	870
	106	39	107	38	3	140	141	6	98	47	99	46	870
	119	32	25	114	79	66	78	67	135	16	9	130	870
	26	113	120	31	72	73	69	76	10	129	136	15	870
	118	29	28	115	65	80	68	77	134	13	12	131	870
	27	116	117	30	74	71	75	70	11	132	133	14	870
	87	58	86	59	127	24	17	122	95	50	94	51	870
	64	81	61	84	18	121	128	23	56	89	53	92	870
	57	88	60	85	126	21	20	123	49	96	52	<mark>9</mark> 3	870
	82	63	83	62	19	124	125	22	90	55	91	54	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

## 2.6 Part 6: Centered With Striped Magic Square of Order 8

This part brings some **striped magic squares** of Order 12 constructed in a such a way that there is a striped magic square of order 4 at the middle of magic squares of Order 12. Below are few examples.

117	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	117	16	3	32	128	12	36	130	137	114	37	108	870
	28	129	142	113	17	133	109	15	8	31	39	106	870
	110	35	99	48	87	52	90	59	85	60	141	4	870
	126	19	46	97	58	93	55	86	49	96	23	122	870
	29	116	50	95	83	64	82	61	56	89	25	120	870
	131	14	57	88	62	81	63	84	100	45	26	119	870
	143	2	92	53	43	104	47	103	94	44	127	18	870
	33	112	91	54	102	41	98	42	51	101	144	1	870
	124	21	76	72	67	77	74	70	65	79	38	107	870
	5	140	69	73	78	68	71	75	80	66	125	20	870
	13	132	22	136	138	40	139	30	24	27	34	135	870
	11	134	123	9	7	105	6	115	121	118	111	10	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

124	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	4	1	143	142	5	139	135	8	9	12	138	134	870
	141	144	2	3	140	6	10	137	136	133	7	11	870
	37	108	93	51	50	96	48	97	79	66	13	132	870
	107	38	52	94	95	49	46	99	65	80	131	14	870
	106	39	85	59	58	88	98	47	70	75	130	15	870
	40	105	60	86	87	57	100	45	74	71	16	129	870
	33	112	92	54	55	89	101	44	76	69	17	128	870
	111	34	53	91	90	56	103	42	72	73	127	18	870
	110	35	83	61	82	64	41	104	67	78	126	19	870
	36	109	62	84	63	81	43	102	77	68	20	125	870
	115	119	32	29	25	114	118	28	122	123	21	24	870
	30	26	113	116	120	31	27	117	23	22	124	121	870
	870	870	870	870	870	870	870	870	870	870	870	870	870

## **2.7** Part 7: $(a + b)^2$ - Type Striped Magic Squares

This part brings some **striped magic squares** of Order 12. These are made by using the algebraic formula  $(a + b)^2 = a^2 + b^2 + 2ab$ ,  $a = 8, b = 4, ab = 8 \times 4$  and *colorblueba* =  $4 \times 8$ . See below few examples.

134	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.cor	n/ @	IJTAN	IEJA	870
	32	114	115	29	28	117	33	112	53	92	138	7	870
	113	31	30	116	118	27	111	34	55	90	18	127	870
	21	123	122	24	119	26	110	35	91	54	8	137	870
	124	22	23	121	25	120	36	109	89	56	128	17	870
	45	100	40	105	44	102	103	41	88	57	126	19	870
	99	46	106	39	101	43	42	104	58	87	15	130	870
	98	47	107	38	49	95	94	52	86	59	139	6	870
	48	97	37	108	96	50	51	93	60	85	10	135	870
	133	140	1	136	2	4	142	131	20	16	11	134	870
	12	5	144	9	143	141	3	14	125	129	132	13	870
	79	82	83	61	65	72	78	74	69	75	64	68	870
	66	63	62	84	80	73	67	71	76	70	81	77	870
	870	870	870	870	870	870	870	870	870	870	870	870	870
157	mac	Inde	er J. Ta	aneia	http	s://nu	mber	s-mag	ic.con	n/ @	IJTAN	EJA	870
157	mgc 52		er J. Ta 96		· ·			s-mag 59		-	<mark>IJTAN</mark> 135		870 870
157	<mark>mgc</mark> 52 93	97	96	44	42	104	<mark>mbers</mark> 86 99	59	1	<mark>n/@</mark> 144 2	<mark>IJTAN</mark> 135 14	10	870
157	52				· ·		86			144	135		
157	52 93	97 48	96 49	44 101	42 103	104 41	86 99	59 46	1 143	144 2	135 14	10 131	870 870
157	52 93 54	97 48 91	96 49 79	44 101 65	42 103 78	104 41 68	86 99 87	59 46 58	1 143 140	144 2 5	135 14 11	10 131 134	870 870 870
157	52 93 54 90	97 48 91 55	96 49 79 66	44 101 65 80	42 103 78 67	104 41 68 77	86 99 87 62	59 46 58 83	1 143 140 138	144 2 5 7	135 14 11 133	10 131 134 12	870 870 870 870 870
157	52 93 54 90 88	97 48 91 55 57	96 49 79 66 74	44 101 65 80 72	42 103 78 67 69	104 41 68 77 75	86 99 87 62 45	59 46 58 83 100	1 143 140 138 3	144 2 5 7 142	135 14 11 133 132	10 131 134 12 13	870 870 870 870 870 870
157	52 93 54 90 88 102	97 48 91 55 57 43	96 49 79 66 74 71	44 101 65 80 72 73	42 103 78 67 69 76	104 41 68 77 75 70	86 99 87 62 45 56	59 46 58 83 100 89	1 143 140 138 3 6	144 2 5 7 142 139	135 14 11 133 132 9	10 131 134 12 13 136	870 870 870 870 870 870 870
157	52 93 54 90 88 102 51	97 48 91 55 57 43 94	96 49 79 66 74 71 85	44 101 65 80 72 73 92	42 103 78 67 69 76 64	104 41 68 77 75 70 63	86 99 87 62 45 56 84	59 46 58 83 100 89 47	1 143 140 138 3 6 141	144 2 5 7 142 139 4	135 14 11 133 132 9 130	10 131 134 12 13 136 15	870 870 870 870 870 870 870 870
157	52 93 54 90 88 102 51 50	97 48 91 55 57 43 94 95	96 49 79 66 74 71 85 60	44 101 65 80 72 73 92 53	42 103 78 67 69 76 64 81	104 41 68 77 75 70 63 82	86 99 87 62 45 56 84 61	59 46 58 83 100 89 47 98	1 143 140 138 3 6 141 8	144 2 5 7 142 139 4 137	135 14 11 133 132 9 130 16	10 131 134 12 13 136 15 129	870 870 870 870 870 870 870 870
157	52 93 54 90 88 102 51 50 17	97 48 91 55 57 43 94 95 127	96 49 79 66 74 71 85 60 19	44 101 65 80 72 73 92 53 125	42 103 78 67 69 76 64 81 124	104 41 68 77 75 70 63 82 123	86 99 87 62 45 56 84 61 23	59 46 58 83 100 89 47 98 24	1 143 140 138 3 6 141 8 117	144 2 5 7 142 139 4 137 119	135 14 11 133 132 9 130 16 25	10 131 134 12 13 136 15 129 27	870 870 870 870 870 870 870 870 870
157	52 93 54 90 88 102 51 50 17 128	97 48 91 55 57 43 94 95 127 18	96 49 79 66 74 71 85 60 19 126	44 101 65 80 72 73 92 53 125 20	42 103 78 67 69 76 64 81 124 21	104 41 68 77 75 70 63 82 123 22	86 99 87 62 45 56 84 61 23 122	59 46 58 83 100 89 47 98 24 24 121	1 143 140 138 3 6 141 8 117 28	144 2 5 7 142 139 4 137 119 26	135 14 11 133 132 9 130 16 25 120	10 131 134 12 13 136 15 129 27 118	870 870 870 870 870 870 870 870 870 870

183	mgc	Inde	er J. T	aneja	http	s://nu	mber	s-mag	jic.con	n/ @	IJTAN	IEJA	870
	99	48	87	52	90	59	85	60	119	26	33	112	870
	46	97	58	93	55	86	49	96	25	120	36	109	870
	50	95	83	64	82	61	56	89	118	27	111	34	870
	57	88	62	81	63	84	100	45	28	117	110	35	870
	92	53	44	104	47	103	94	43	29	115	114	32	870
	91	54	101	41	98	42	51	102	116	30	31	113	870
	76	72	67	77	74	70	65	79	17	127	126	20	870
	69	73	78	68	71	75	80	66	128	18	19	125	870
	4	143	1	142	5	140	37	108	130	15	21	124	870
	141	2	144	3	8	137	40	105	131	14	24	121	870
	134	135	9	12	138	7	106	39	13	132	123	22	870
	11	10	136	133	139	6	107	38	16	129	122	23	870
	870	870	870	870	870	870	870	870	870	870	870	870	870
217	mac	Inde	er J. Ta	aneia	http	s://nu	mber	s-mao	lic.con	n/ @	IJTAN	IEJA	870
217	<mark>mgc</mark> 93		er J. Ta 85		•		mber 79				IJTAN 29		870 870
217	<mark>mgc</mark> 93 51	Inde 52 94	<mark>er J. T</mark> . 85 59	<mark>aneja</mark> 60 86	http 48 46	<mark>s://nu</mark> 97 99	mber 79 76	s-mag 66 69	<mark>ic.con</mark> 115 30	n/@ 114 31	UJTAN 29 116	IEJA 32 113	870 870 870
217	93	52	85	60	48	97	79	66	115	114	29	32	870
217	93 51	52 94	85 59	60 86	48 46	97 99	79 76	66 69	115 30	114 31	29 116	32 113	870 870
217	93 51 50	52 94 95	85 59 58	60 86 87	48 46 98	97 99 47	79 76 70	66 69 75	115 30 138	114 31 5	29 116 8	32 113 139	870 870 870
217	93 51 50 96	52 94 95 49	85 59 58 88	60 86 87 57	48 46 98 100	97 99 47 45	79 76 70 74	66 69 75 71	115 30 138 7	114 31 5 140	29 116 8 137	32 113 139 6	870 870 870 870 870
217	93 51 50 96 92	52 94 95 49 54	85 59 58 88 55	60 86 87 57 89	48 46 98 100 101	97 99 47 45 44	79 76 70 74 65	66 69 75 71 80	115 30 138 7 1	114 31 5 140 143	29 116 8 137 142	32 113 139 6 4	870 870 870 870 870 870
217	93 51 50 96 92 53	52 94 95 49 54 91	85 59 58 88 55 90	60 86 87 57 89 56	48 46 98 100 101 103	97 99 47 45 44 42	79 76 70 74 65 72	66 69 75 71 80 73	115 30 138 7 1 144	114 31 5 140 143 2	29 116 8 137 142 3	32 113 139 6 4 141	870 870 870 870 870 870 870
217	93 51 50 96 92 53 83	52 94 95 49 54 91 61	85 59 58 88 55 90 82	60 86 87 57 89 56 64	48 46 98 100 101 103 41	97 99 47 45 44 42 104	79 76 70 74 65 72 67	66 69 75 71 80 73 78	115 30 138 7 1 144 9	114 31 5 140 143 2 135	29 116 8 137 142 3 134	32 113 139 6 4 141 12	870 870 870 870 870 870 870
217	93 51 50 96 92 53 83 62	52 94 95 49 54 91 61 84	85 59 58 88 55 90 82 63	60 86 87 57 89 56 64 81	48 46 98 100 101 103 41 43	97 99 47 45 44 42 104 102	79 76 70 74 65 72 67 77	66 69 75 71 80 73 78 68	115 30 138 7 1 144 9 136	114 31 5 140 143 2 135 10	29 116 8 137 142 3 134 11	32 113 139 6 4 141 12 133	870 870 870 870 870 870 870 870
217	93 51 50 96 92 53 83 62 16	52 94 95 49 54 91 61 84 129	85 59 58 88 55 90 82 63 63 21	60 86 87 57 89 56 64 81 81 124	48 46 98 100 101 103 41 43 17	97 99 47 45 44 42 104 102 128	79 76 70 74 65 72 67 77 25	66 69 75 71 80 73 73 78 68 120	115 30 138 7 1 144 9 136 110	114 31 5 140 143 2 135 10 35	29 116 8 137 142 3 134 11 37	32 113 139 6 4 141 12 133 108	870 870 870 870 870 870 870 870 870
217	93 51 50 96 92 53 83 62 16 130	52 94 95 49 54 91 61 84 129 15	85 59 58 88 55 90 82 63 63 21 24	60 86 87 57 89 56 64 81 124 121	48 46 98 100 101 103 41 43 17 127	97 99 47 45 44 42 104 102 128 18	79 76 70 74 65 72 67 77 25 119	66 69 75 71 80 73 73 78 68 120 26	115 30 138 7 1 144 9 136 110 111	114 31 5 140 143 2 135 10 35 34	29 116 8 137 142 3 134 11 37 40	32 113 139 6 4 141 12 133 108 105	870 870 870 870 870 870 870 870 870 870

**Remark 1.** The whole work with 220 striped magic squares of order 12 as **pdf file** is given in author's site. See the following link: https://numbers-magic.com/?p=12447.

# 3 Author's Contribution to Magic Squares and Recreation Numbers

For author's contribution to **magic squares** and **recreation numbers** please see the links below:

- Inder J. Taneja, Magic Squares, https://inderjtaneja.com/2019/06/27/publications-magicsquares/
- **Inder J. Taneja**, Recreation of Numbers, *https://inderjtaneja.com/2019/06/27/publications-recreation-of-numbers/*

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### • Block-Bordered Magic Squares

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