

Striped and Semi-Striped Double Digits Bordered Magic Squares: Orders 7 to 50

The work is also available at the following link:
<https://numbers-magic.com/?p=15002>

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Abstract

*This work brings three types of double digits bordered magic squares. The first type is already known and is presented from orders 7 to 108 by author [82]. The second types are **striped** double digits magic squares. The third types are **semi-striped** double digits magic squares. We called these magic squares **semi-striped** as inner blocks are either magic squares of order 3 or order 5. The total work is for the orders 7 to 50. The excel files of whole work are available at the link given above*

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Contents

1	Introduction	3
1.1	Classification of Bordered Magic Squares	3
1.1.1	Odd Numbers Multiples	3
1.1.2	Even Numbers Multiples	3
1.2	Double Digits Bordered Magic Squares	4
1.3	Striped Magic Squares	5
2	Double Digits Bordered Magic Squares	5
2.1	Order 7	6
2.2	Order 8	7
2.3	Order 9	8
2.4	Order 10	9
2.5	Order 11	10
2.6	Order 12	11
2.7	Order 13	12
2.8	Order 14	13
2.9	Order 15	14
2.10	Order 16	16
2.11	Order 17	18
2.12	Order 18	20
3	Author’s Contribution to Magic Squares and Recreation Numbers	22

1 Introduction

Below are details of **classifications of bordered magic squares**.

1.1 Classification of Bordered Magic Squares

1.1.1 Odd Numbers Multiples

- **Single Digit:** Bordered magic squares based on single digit [10, 11, 1].
- **Three Digits:** Bordered magic squares based on magic squares of order 3 [33].
- **Five Digits:** Bordered magic squares multiples of magic squares of order 5 [34].
- **Seven Digits:** Bordered magic squares multiples of magic squares of order 7 [35].
- **Nine Digits:** Bordered magic squares multiples of magic squares of order 9 [36]
- **Eleven Digits:** Bordered magic squares multiples of magic squares of order 11 [37]
- **Thirteen Digits:** Bordered magic squares multiples of magic squares of order 13 [38]
- **Fifteen Digits:** Bordered magic squares multiples of magic squares of order 15 [39]
- **Seventeen Digits:** Bordered magic squares multiples of magic squares of order 17 [40]
- **Nineteen Digits:** Bordered magic squares multiples of magic squares of order 19 [41]

1.1.2 Even Numbers Multiples

- **Two Digits:** Bordered magic squares based on magic rectangles multiples of 2 [92, 93, 70, 71, 71, 72].
- **Four Digits:** Bordered and Pandiagonal magic squares multiples of magic squares of order 4 [24].
- **Six Digits:** Bordered magic squares multiples of magic squares of order 6 [25]
- **Eight Digits:** Bordered and Pandiagonal magic squares multiples of magic squares of order 8 [26]
- **Ten Digits:** Bordered magic squares multiples of magic squares of order 10 [27]
- **Twelve Digits:** Bordered and Pandiagonal magic squares multiples of magic squares of order 12 [28]
- **Fourteen Digits:** Bordered magic squares multiples of magic squares of order 14 [29]
- **Sixteen Digits:** Bordered and Pandiagonal magic squares multiples of magic squares of order 16 [30]
- **Eighteen Digits:** Bordered magic squares multiples of magic squares of order 18 [31]
- **Twenty Digits:** Bordered and Pandiagonal magic squares multiples of magic squares of order 20 [32]

1.2 Double Digits Bordered Magic Squares

The author worked on **even order double digits bordered** magic squares. This works starts from order 8 and goes up to order 40:

The work for order of type $4k, k = 2, 3, \dots$, i.e., for orders 8, 12, 16, 20, 24, 28, 32, 36 and 40:

1. Two Digits Bordered Magic Squares Multiples of 4: Orders 8 to 24 [92].
2. Two Digits Bordered Magic Squares of Orders 28 and 32 [93].
3. Two digits Bordered Magic Squares of Orders 36 and 40[72].

The work is for the order of type $4k + 2, k = 2, 3, \dots$, i.e., for the orders 10, 14, 18, 22, 26, 30, 34 and 38:

1. Two digits Bordered Magic Squares of Orders 10, 14, 18 and 22 [70].
2. Two digits Bordered Magic Squares of Orders 26 and 30 [71].
3. Two digits Bordered Magic Squares of Order 34 and 38 [73].

Also, the author worked on **odd order double digits bordered** magic squares. This works starts from order 7 and goes up to order 31:

1. Odd Order Magic Squares: Orders 3 to 15 [74].
2. Magic Squares of Orders 17 and 19 [75].
3. Magic Squares of Orders 21 and 23 [76].
4. Magic Squares of Order 25 [77].
5. Magic Squares of Order 27 [78].
6. Magic Squares of Order 29 [79].
7. Magic Squares of Order 31 [80].

Above the work is only up to order 31 for odd order case, and up to order 40 for even order case. The above study is extended up to order 108 [82].

1.3 Striped Magic Squares

The author worked on **striped** magic squares in different situations.

1. Striped Magic Squares of Even Orders 6, 8, 10, 12 and 14 [89].
2. Striped Magic Squares of 12 [90].
3. 5600+ Striped Magic Squares of Order 16 [91].
4. Striped Magic Squares of 18 [86].
5. Striped Magic Squares of 20 [87].

In this work we have three types of magic squares based on two digits borders. The one is normal double digits bordered magic squares studied already in previous work [82]. The second type is **semi-striped** magic squares and the third type is **striped** magic squares. Here the examples are only up to order 18. The higher orders magic squares up to order 50 are available in **excel files** attached with this work. This work is first time given in the literature, and is different in its own way.

2 Double Digits Bordered Magic Squares

This work brings three types of double digits bordered magic squares. The first type is already known and is presented by author [82]. The second types are **striped** double digits magic squares. The third types are **semi-striped** double digits magic squares. We called these magic squares **semi-striped** as inner blocks are either magic squares of order 3 or order 5.

2.2 Order 8

[illegible]

The first magic square is **general double digits bordered** magic square. The second one is **striped** magic square, as it is constructed with **equal width striped magic rectangles**. The third magic square is also **striped** magic square as it is also constructed with **equal width magic rectangles**. Summarizing the first magic square is **general double digits bordered** magic square. The last two are **striped double digits bordered** magic squares.

2.5 Order 11

11x11	mgc	622	651	662	698	669	675	644	680	691	718	671
462	112	92	9	21	14	29	34	121	117	105	17	671
969	10	30	113	101	108	93	88	1	5	20	102	671
432	100	22	85	79	42	55	44	50	72	94	28	671
727	8	114	37	43	80	67	78	40	82	31	91	671
644	107	15	49	73	62	63	58	76	46	24	98	671
636	96	26	38	84	57	61	65	70	52	111	11	671
783	35	87	66	56	64	59	60	69	53	25	97	671
669	104	18	71	51	83	75	45	48	54	19	103	671
458	6	116	81	41	39	47	77	74	68	120	2	671
930	4	118	95	99	3	12	7	109	32	86	106	671
	89	33	27	23	119	110	115	13	90	36	16	671
©IJT	671	671	671	671	671	671	671	671	671	671	671	671

11x11	mgc	467	796	741	591	621	756	645	759	440	894	671
811	21	23	113	106	5	115	1	102	2	94	89	671
678	101	99	9	16	117	7	121	20	120	28	33	671
643	87	35	37	56	83	77	44	79	51	14	108	671
719	4	118	85	66	39	45	78	43	71	112	10	671
373	86	36	50	72	60	59	64	46	76	110	12	671
904	11	111	81	41	65	61	57	84	38	27	95	671
627	105	17	52	70	58	63	62	53	69	26	96	671
736	100	22	40	68	75	80	49	67	48	119	3	671
813	34	88	82	54	47	42	73	55	74	19	103	671
406	109	114	25	6	24	91	104	29	107	32	30	671
	13	8	97	116	98	31	18	93	15	90	92	671
©IJT	671	671	671	671	671	671	671	671	671	671	671	671

11x11	mgc	544	868	603	685	845	455	582	739	579	810	671
619	6	107	117	36	96	109	31	24	23	16	106	671
620	116	15	5	86	26	13	91	98	99	121	1	671
816	94	28	82	48	45	49	81	46	76	30	92	671
547	102	20	40	74	77	73	41	80	42	95	27	671
704	89	33	52	70	60	59	64	55	67	18	104	671
772	11	111	78	44	65	61	57	56	66	114	8	671
630	110	12	39	83	58	63	62	68	54	108	14	671
605	3	119	85	37	75	43	53	50	84	22	100	671
841	21	101	51	71	47	79	69	72	38	25	97	671
556	112	10	29	90	34	35	113	105	4	120	19	671
	7	115	93	32	88	87	9	17	118	2	103	671
©IJT	671	671	671	671	671	671	671	671	671	671	671	671

The first magic square is **general double digits bordered** magic square. The second one is **semi-striped** magic squares, as it is constructed with **equal width striped magic rectangles** except the inner block of order 3. It is **magic square of order 3**. The third magic square is also **semi-striped magic square** as it is constructed with four **equal sum equal width magic rectangles**. It is **semi-striped** as the inner block is a **magic square of order 3**. Summarizing, there are three magic squares, the first one is **general double digits bordered** magic square. The other two are **semi-striped** magic squares. The inner block is a **magic squares of order 3**.

[illegible]

The first magic square is **general double digits bordered** magic square. The second one is **striped** magic square, as it is constructed with **equal width striped magic rectangles**. The third magic square is also **striped** magic square as it is also constructed with **equal width magic rectangles**. Summarizing the first magic square is **general double digits bordered** magic square. The last two are **striped double digits bordered** magic squares.

2.7 Order 13

13x13	mgc	1076	939	1370	1069	1097	1100	719	1201	1419	1012	1135	1123	1105
1335	21	26	164	132	12	160	3	9	134	143	131	19	151	1105
752	149	144	6	38	158	10	167	161	36	27	39	136	34	1105
1080	44	126	115	119	69	47	54	121	70	108	62	140	30	1105
1156	153	17	55	51	101	123	116	49	100	104	66	127	43	1105
1410	166	4	45	125	76	92	87	84	86	53	117	139	31	1105
1041	146	24	57	113	94	78	83	97	73	46	124	29	141	1105
1071	13	157	112	58	88	82	85	74	96	99	71	33	137	1105
1267	2	168	109	61	90	80	81	95	79	65	105	5	165	1105
813	25	145	56	114	77	93	89	75	91	120	50	18	152	1105
1055	16	154	106	64	98	63	67	59	68	122	118	142	28	1105
1241	169	1	110	60	72	107	103	111	102	48	52	147	23	1105
1039	159	11	155	14	129	162	163	35	20	40	148	37	32	1105
	42	128	15	156	41	8	7	135	150	130	22	133	138	1105
©IJT	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105

13x13	mgc	1028	895	1333	1093	1197	764	981	1285	1143	930	1437	1174	1105
1211	166	41	168	133	131	16	25	23	28	43	7	169	155	1105
976	4	129	2	37	39	154	145	147	142	127	163	1	15	1105
766	8	162	122	70	52	124	120	64	101	53	59	150	20	1105
1557	144	26	48	100	118	46	50	106	69	117	111	42	128	1105
899	141	29	61	109	84	75	93	91	82	102	68	161	9	1105
924	44	126	72	98	74	97	81	90	83	65	105	157	13	1105
1512	34	136	121	49	92	94	85	76	78	99	71	38	132	1105
1070	165	5	58	112	87	80	89	73	96	45	125	22	148	1105
1004	33	137	113	57	88	79	77	95	86	114	56	30	140	1105
1395	36	134	116	110	67	51	47	108	104	55	107	19	151	1105
864	160	10	54	60	103	119	123	62	66	115	63	146	24	1105
1082	153	167	27	130	138	21	135	152	11	12	6	14	139	1105
	17	3	143	40	32	149	35	18	159	158	164	156	31	1105
©IJT	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105

13x13	mgc	1065	1263	1118	888	1096	1232	1064	1118	1256	795	1270	1095	1105
1165	126	12	167	1	24	127	27	31	128	15	166	152	129	1105
1112	44	158	3	169	146	43	143	139	42	155	4	18	41	1105
1135	8	162	72	115	62	110	100	120	64	59	63	9	161	1105
846	151	19	98	55	108	60	70	50	106	111	107	150	20	1105
1149	136	34	109	61	93	75	88	91	78	45	125	131	39	1105
989	40	130	47	123	76	84	96	80	89	105	65	134	36	1105
1406	133	37	119	51	83	97	85	73	87	117	53	10	160	1105
1198	142	28	104	66	81	90	74	86	94	56	114	138	32	1105
1058	137	33	46	124	92	79	82	95	77	102	68	22	148	1105
963	2	168	103	99	54	118	49	48	113	112	69	26	144	1105
1035	16	154	67	71	116	52	121	122	57	58	101	145	25	1105
1204	7	30	157	164	156	29	38	5	159	153	23	35	149	1105
	163	140	13	6	14	141	132	165	11	17	147	135	21	1105
©IJT	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105	1105

The first magic square is **general double digits bordered** magic square. The second one is **semi-striped** magic squares, as it is constructed with **equal width striped magic rectangles** except the inner block of order 5. It is **magic square of order 5**. The third magic square is also **semi-striped** magic square as it is constructed with four **equal sum equal width magic rectangles**. It is also **semi-striped** as the inner block is a **magic square of order 5**. Summarizing, we have one magic square as **general double digits bordered** magic square. The other two as **semi-striped** magic squares.

2.8 Order 14

14x14	mgc	1370	1369	1337	1655	1028	1236	1473	1463	1135	1470	1540	1556	1295	1379
1246	153	31	168	177	19	33	169	160	22	196	48	7	186	10	1379
1324	166	44	29	20	178	164	28	37	175	1	149	190	187	11	1379
1562	183	14	139	134	69	144	56	78	65	126	124	50	43	154	1379
1521	185	12	63	58	128	53	141	119	132	71	147	73	17	180	1379
1224	23	174	57	140	89	102	106	83	96	115	75	122	41	156	1379
1181	36	161	68	129	116	95	109	98	88	85	80	117	171	26	1379
1802	165	32	54	143	114	113	82	101	91	90	59	138	179	18	1379
1304	172	25	60	137	81	84	108	110	97	111	125	72	34	163	1379
1501	4	193	135	62	105	93	94	100	112	87	49	148	21	176	1379
1091	27	170	146	51	86	104	92	99	107	103	120	77	35	162	1379
1545	13	184	133	67	121	145	123	55	79	131	70	61	188	9	1379
1378	167	30	130	64	76	52	74	142	118	66	136	127	46	151	1379
1248	40	152	189	191	42	182	150	2	38	24	16	3	192	158	1379
	45	157	8	6	155	15	47	195	159	173	181	194	39	5	1379
©IJT	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379

14x14	mgc	1268	1569	1148	1414	1349	1175	1404	1528	1364	1148	1714	1225	1621	1379
1290	185	169	196	192	3	10	34	6	193	16	36	30	157	152	1379
1242	12	28	1	5	194	187	163	191	4	181	161	167	40	45	1379
1179	18	179	147	61	75	52	58	130	65	128	123	146	151	46	1379
1605	183	14	50	136	122	145	139	67	132	69	74	51	158	39	1379
1461	155	42	118	79	90	107	83	114	109	88	77	120	15	182	1379
1466	20	177	78	119	91	106	82	115	112	85	143	54	43	154	1379
948	38	159	76	121	105	92	113	84	86	111	117	80	160	37	1379
1601	171	26	135	62	108	89	116	81	87	110	124	73	166	31	1379
1410	184	13	131	66	101	95	100	93	103	99	60	137	41	156	1379
1144	23	174	53	144	96	102	97	104	94	98	70	127	195	2	1379
1910	172	25	72	49	133	129	71	59	134	140	56	142	48	149	1379
1431	21	176	125	148	64	68	126	138	63	57	141	55	8	189	1379
1240	175	180	7	150	178	33	44	32	162	29	9	24	170	186	1379
	22	17	190	47	19	164	153	165	35	168	188	173	27	11	1379
©IJT	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379

14x14	mgc	1354	1583	1321	1624	1064	1422	1222	1584	1030	1667	1343	1467	1246	1379
1506	1	3	195	193	192	191	7	8	9	187	11	185	13	184	1379
1209	196	194	2	4	5	6	190	189	188	10	186	12	15	182	1379
1526	37	160	51	49	147	145	144	54	142	56	57	140	183	14	1379
986	159	38	146	148	50	52	53	143	55	141	59	138	181	16	1379
1797	39	158	73	124	90	107	83	114	109	88	139	58	180	17	1379
1138	157	40	123	74	91	106	82	115	112	85	137	60	179	18	1379
1600	156	41	75	122	105	92	113	84	86	111	136	61	19	178	1379
1324	155	42	121	76	108	89	116	81	87	110	62	135	20	177	1379
1587	43	154	120	77	101	95	100	93	103	99	134	63	21	176	1379
1239	44	153	118	79	96	102	97	104	94	98	64	133	175	22	1379
1472	45	152	80	117	65	131	67	129	72	70	126	128	23	174	1379
1305	47	150	78	119	132	66	130	68	125	127	71	69	173	24	1379
1238	151	46	25	171	27	169	168	167	31	32	33	35	163	161	1379
	149	48	172	26	170	28	29	30	166	165	164	162	34	36	1379
©IJT	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379	1379

The first magic square is **general double digits bordered** magic square. The second one is **striped** magic square, as it is constructed with **equal width striped magic rectangles**. The third magic square is also **striped** magic square as it is also constructed with four **equal sum equal width magic rectangles**. Summarizing the first magic square is **general double digits bordered** magic square. The last two are **striped double digits bordered** magic square.

2.9 Order 15

15x15	mgc	1870	1574	1581	1584	1945	1529	2190	1162	1593	1682	1750	2245	1194	1831	1695
1340	205	212	49	46	200	196	188	36	32	7	50	213	35	34	192	1695
1816	21	14	177	180	26	30	38	190	194	219	176	13	191	44	182	1695
1612	201	25	62	85	168	66	80	162	159	163	72	69	157	220	6	1695
2005	216	10	164	141	58	160	146	64	67	63	154	153	73	45	181	1695
1540	11	215	152	74	121	98	108	101	137	120	106	144	82	48	178	1695
1383	41	185	169	57	105	128	118	125	89	93	133	70	156	23	203	1695
2037	193	33	79	147	102	124	116	109	114	90	136	170	56	175	51	1695
1508	197	29	59	167	127	99	111	113	115	130	96	150	76	208	18	1695
1820	17	209	68	158	95	131	112	117	110	132	94	53	173	222	4	1695
1922	3	223	143	83	107	119	91	122	129	100	123	60	166	1	225	1695
1560	8	218	87	139	134	92	135	104	97	126	103	148	78	211	15	1695
1518	195	31	172	54	171	77	86	75	155	81	65	165	142	28	198	1695
1546	19	207	88	138	55	149	140	151	71	145	161	61	84	210	16	1695
2123	189	37	52	199	39	20	214	43	186	42	5	204	24	224	217	1695
	179	47	174	27	187	206	12	183	40	184	221	22	202	2	9	1695
©IJT	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695

15x15	mgc	1897	1478	2078	1339	1859	1508	1481	1849	1747	1690	1763	1848	1794	1399	1695
1529	208	193	206	29	209	1	3	181	201	38	8	205	195	16	2	1695
1429	18	33	20	197	17	225	223	45	25	188	218	21	31	210	224	1695
1979	22	204	83	73	82	150	81	151	56	165	87	158	157	186	40	1695
1546	213	13	143	153	144	76	145	75	170	61	139	68	69	35	191	1695
1475	32	194	66	160	97	131	132	137	93	103	98	77	149	212	14	1695
2162	182	44	138	88	129	95	94	89	133	123	128	78	148	216	10	1695
1570	185	41	57	169	124	102	114	115	110	136	90	168	58	220	6	1695
1889	15	211	166	60	107	119	109	113	117	99	127	72	154	26	200	1695
1311	174	52	155	71	108	118	116	111	112	104	122	140	86	46	180	1695
1896	12	214	63	163	100	105	134	130	106	125	91	85	141	28	198	1695
1621	183	43	146	80	126	121	92	96	120	101	135	171	55	27	199	1695
1764	47	179	64	65	147	156	173	67	54	164	59	142	152	196	30	1695
1836	178	48	162	161	79	70	53	159	172	62	167	84	74	51	175	1695
1723	176	190	42	23	219	19	189	187	5	4	34	11	177	202	217	1695
	50	36	184	203	7	207	37	39	221	222	192	215	49	24	9	1695
©IJT	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695

15x15	mgc	1714	1461	2033	1772	1345	1940	1753	1751	1559	1488	1656	1679	1873	1706	1695
1497	35	32	19	223	11	52	186	176	28	41	222	220	224	202	24	1695
1960	191	194	207	3	215	174	40	50	198	185	4	6	2	209	17	1695
2086	214	12	58	159	169	88	148	161	83	76	75	68	158	196	30	1695
1599	26	200	168	67	57	138	78	65	143	150	151	173	53	29	197	1695
1459	15	211	146	80	134	100	97	101	133	98	128	82	144	221	5	1695
1625	195	31	154	72	92	126	129	125	93	132	94	147	79	210	16	1695
1475	206	20	141	85	104	122	112	111	116	107	119	70	156	187	39	1695
2020	180	46	63	163	130	96	117	113	109	108	118	166	60	44	182	1695
2093	201	25	162	64	91	135	110	115	114	120	106	160	66	38	188	1695
1310	199	27	55	171	137	89	127	95	105	102	136	74	152	37	189	1695
1685	36	190	73	153	103	123	99	131	121	124	90	77	149	42	184	1695
1994	13	213	164	62	81	142	86	87	165	157	56	172	71	45	181	1695
1599	175	51	59	167	145	84	140	139	61	69	170	54	155	9	217	1695
1328	8	218	183	23	192	177	22	205	179	193	212	48	18	7	10	1695
	1	225	43	203	34	49	204	21	47	33	14	178	208	219	216	1695
©IJT	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695

The first magic square is **general double digits bordered** magic square. The second one is **semi-striped** magic squares, as it is constructed with **equal width striped magic rectangles** except the inner block of order 3. It is **magic square of order 3**. The third magic square is also **semi-striped magic square** as it is constructed with four **equal sum equal width magic rectangles**. It is **semi-striped** as the inner block is a **magic square of order 3**. Summarizing, there are three magic squares, the first one is **general double digits bordered** magic square. The other two are **semi-striped** magic squares. The inner block is a **magic squares of order 3**.

2.10 Order 16

16x16	mgc	2122	2403	1562	2150	2014	2211	2220	1916	1839	2229	2127	1738	2605	1817	1887	2056
1908	254	255	1	4	5	251	250	8	9	247	246	12	242	243	13	16	2056
1833	3	2	256	253	252	6	7	249	248	10	11	245	15	14	244	241	2056
2281	53	204	60	57	199	198	61	195	194	64	65	68	190	191	17	240	2056
2320	203	54	197	200	58	59	196	62	63	193	192	189	67	66	239	18	2056
1965	202	55	93	164	99	97	159	157	156	154	104	102	69	188	238	19	2056
1985	56	201	163	94	158	160	98	100	101	103	153	155	187	70	20	237	2056
1986	49	208	162	95	113	144	127	132	121	134	117	140	186	71	21	236	2056
1892	207	50	96	161	116	141	122	133	128	131	120	137	72	185	235	22	2056
2083	206	51	89	168	143	114	136	123	130	125	139	118	73	184	234	23	2056
2407	52	205	167	90	142	115	129	126	135	124	138	119	183	74	24	233	2056
2254	45	212	166	91	149	151	105	107	112	110	146	148	182	75	25	232	2056
1520	211	46	92	165	108	106	152	150	145	147	111	109	76	181	231	26	2056
1928	210	47	171	170	88	85	81	175	174	84	178	179	77	80	230	27	2056
2363	48	209	86	87	169	172	176	82	83	173	79	78	180	177	28	229	2056
2115	44	41	214	215	37	219	218	40	33	223	222	36	29	32	227	226	2056
	213	216	43	42	220	38	39	217	224	34	35	221	228	225	30	31	2056
©IJT	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056

16x16	mgc	2417	1515	2198	1840	1859	2051	2510	1689	2082	2257	1874	2409	2090	2275	1774	2056
2069	252	226	244	17	16	214	7	216	204	18	48	36	254	210	45	49	2056
1761	5	31	13	240	241	43	250	41	53	239	209	221	3	47	212	208	2056
2359	10	247	89	85	199	69	66	161	83	173	62	200	184	171	253	4	2056
1995	235	22	168	172	58	188	191	96	174	84	195	57	73	86	222	35	2056
1614	39	218	187	70	101	153	108	157	112	98	160	139	170	87	256	1	2056
2598	33	224	60	197	156	104	149	100	145	159	97	118	61	196	24	233	2056
1784	242	15	88	169	107	150	135	128	121	130	117	140	194	63	201	56	2056
2328	14	243	79	178	142	115	122	129	136	127	105	152	181	76	26	231	2056
1849	11	246	177	80	146	111	134	125	124	131	148	109	91	166	54	203	2056
1816	37	220	183	74	119	138	123	132	133	126	144	113	92	165	20	237	2056
2200	238	19	64	193	120	141	147	114	151	99	154	102	77	180	206	51	2056
1971	236	21	190	67	137	116	110	143	106	158	103	155	162	95	225	32	2056
2344	213	44	163	176	192	78	93	182	71	82	167	198	68	72	28	229	2056
2279	234	23	94	81	65	179	164	75	186	175	90	59	189	185	27	230	2056
1873	215	211	248	25	8	6	30	52	207	34	55	255	29	217	219	245	2056
	42	46	9	232	249	251	227	205	50	223	202	2	228	40	38	12	2056
©IJT	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056

16x16	mgc	2114	2288	1890	2275	1991	1529	2224	2344	2389	1848	1650	2483	2078	2033	1704	2056
1991	227	225	29	238	41	9	34	16	240	247	20	37	222	214	3	254	2056
1893	30	32	228	19	216	248	223	241	17	10	237	220	35	43	33	224	2056
2526	205	52	168	75	95	72	173	85	93	165	161	198	77	180	24	233	2056
2022	208	49	89	182	162	185	84	172	164	92	96	59	81	176	217	40	2056
1765	201	56	186	71	100	110	149	153	154	105	107	150	183	74	212	45	2056
1564	38	219	76	181	157	147	108	104	103	152	111	146	194	63	226	31	2056
2436	46	211	60	197	139	118	135	122	134	123	116	141	169	88	1	256	2056
2162	249	8	80	177	115	142	128	129	125	132	137	120	67	190	55	202	2056
1687	231	26	91	166	113	144	121	136	124	133	140	117	170	87	232	25	2056
2086	218	39	58	199	98	159	130	127	131	126	160	97	70	187	54	203	2056
1969	47	210	175	82	155	102	143	156	145	99	119	109	83	174	255	2	2056
2510	221	36	163	94	151	106	114	101	112	158	138	148	191	66	27	230	2056
2043	15	242	200	57	73	69	68	167	192	195	79	193	78	171	215	42	2056
1747	44	213	196	61	184	188	189	90	65	62	178	64	179	86	245	12	2056
2439	53	204	18	11	6	28	236	50	14	206	253	244	22	209	250	252	2056
	23	234	239	246	251	229	21	207	243	51	4	13	235	48	7	5	2056
©IJT	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056	2056

The first magic square is **general double digits bordered** magic square. The second one is **striped** magic square, as it is constructed with **equal width striped magic rectangles**. The third magic square is also **striped** magic square as it is also constructed with **equal width magic rectangles**. Summarizing the first magic square is **general double digits bordered** magic square. The last two are **striped double digits bordered** magic squares.

2.11 Order 17

17x17	mgc	2669	1644	3050	2734	2074	2782	2570	2067	2093	2453	3248	2336	2535	1910	2644	2631	2465
2230	272	3	31	260	249	244	40	232	39	19	237	252	238	257	12	24	56	2465
2271	18	287	259	30	41	46	250	58	251	271	53	38	52	33	278	266	234	2465
2699	277	13	194	65	208	78	88	92	205	227	192	75	76	186	199	27	263	2465
2797	255	35	96	225	82	212	202	198	85	63	98	215	214	104	91	50	240	2465
2241	248	42	219	71	170	181	178	164	110	161	114	122	105	187	103	55	235	2465
2264	32	258	72	218	120	109	112	126	180	129	176	168	185	90	200	281	9	2465
3010	246	44	188	102	121	169	153	141	156	133	142	127	163	193	97	29	261	2465
2109	268	22	207	83	124	166	139	147	138	146	155	116	174	201	89	288	2	2465
2024	11	279	73	217	173	117	150	136	145	154	140	167	123	94	196	245	45	2465
2780	14	276	68	222	128	162	135	144	152	143	151	184	106	74	216	269	21	2465
2840	262	28	190	100	179	111	148	157	134	149	137	131	159	197	93	49	241	2465
2511	243	47	84	206	108	125	158	113	171	115	160	183	172	66	224	48	242	2465
2479	1	289	204	86	182	165	132	177	119	175	130	107	118	203	87	60	230	2465
2288	8	282	223	210	209	70	229	101	69	211	64	77	95	99	228	253	37	2465
2357	20	270	67	80	81	220	61	189	221	79	226	213	195	191	62	231	59	2465
2540	286	254	280	15	54	57	34	283	239	25	17	43	267	26	284	16	285	2465
	4	36	10	275	236	233	256	7	51	265	273	247	23	264	6	274	5	2465
©IJT	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465

17x17	mgc	2669	1644	3050	2734	2074	2782	2570	2067	2093	2453	3248	2336	2535	1910	2644	2631	2465
2230	272	3	31	260	249	244	40	232	39	19	237	252	238	257	12	24	56	2465
2271	18	287	259	30	41	46	250	58	251	271	53	38	52	33	278	266	234	2465
2699	277	13	194	65	208	78	88	92	205	227	192	75	76	186	199	27	263	2465
2797	255	35	96	225	82	212	202	198	85	63	98	215	214	104	91	50	240	2465
2241	248	42	219	71	170	181	178	164	110	161	114	122	105	187	103	55	235	2465
2264	32	258	72	218	120	109	112	126	180	129	176	168	185	90	200	281	9	2465
3010	246	44	188	102	121	169	153	141	156	133	142	127	163	193	97	29	261	2465
2109	268	22	207	83	124	166	139	147	138	146	155	116	174	201	89	288	2	2465
2024	11	279	73	217	173	117	150	136	145	154	140	167	123	94	196	245	45	2465
2780	14	276	68	222	128	162	135	144	152	143	151	184	106	74	216	269	21	2465
2840	262	28	190	100	179	111	148	157	134	149	137	131	159	197	93	49	241	2465
2511	243	47	84	206	108	125	158	113	171	115	160	183	172	66	224	48	242	2465
2479	1	289	204	86	182	165	132	177	119	175	130	107	118	203	87	60	230	2465
2288	8	282	223	210	209	70	229	101	69	211	64	77	95	99	228	253	37	2465
2357	20	270	67	80	81	220	61	189	221	79	226	213	195	191	62	231	59	2465
2540	286	254	280	15	54	57	34	283	239	25	17	43	267	26	284	16	285	2465
	4	36	10	275	236	233	256	7	51	265	273	247	23	264	6	274	5	2465
©IJT	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465

17x17	mgc	2305	2748	2521	2506	2208	2448	2287	2480	3154	2048	2239	2203	2848	2743	2297	2405	2465
2546	60	54	253	261	9	55	57	259	265	275	17	22	43	245	13	288	289	2465
2474	230	236	37	29	281	235	233	31	25	15	273	268	247	45	277	2	1	2465
1801	58	232	186	72	227	61	84	187	87	91	188	75	226	212	189	250	40	2465
3185	51	239	104	218	63	229	206	103	203	199	102	215	64	78	101	56	234	2465
2501	266	24	68	222	132	175	122	170	160	180	124	119	123	69	221	41	249	2465
1946	251	39	211	79	158	115	168	120	130	110	166	171	167	210	80	276	14	2465
2443	12	278	196	94	169	121	153	135	148	151	138	105	185	191	99	284	6	2465
3239	48	242	100	190	107	183	136	144	156	140	149	165	125	194	96	36	254	2465
2089	256	34	193	97	179	111	143	157	145	133	147	177	113	70	220	260	30	2465
2668	59	231	202	88	164	126	141	150	134	146	154	116	174	198	92	19	271	2465
1939	53	237	197	93	106	184	152	139	142	155	137	162	128	82	208	272	18	2465
2720	50	240	62	228	163	159	114	178	109	108	173	172	129	86	204	46	244	2465
1969	264	26	76	214	127	131	176	112	181	182	117	118	161	205	85	252	38	2465
3051	255	35	67	90	217	224	216	89	98	65	219	213	83	95	209	44	246	2465
2406	262	28	223	200	73	66	74	201	192	225	71	77	207	195	81	49	241	2465
2463	8	7	52	263	287	286	21	258	20	47	285	279	33	42	23	274	280	2465
	282	283	238	27	3	4	269	32	270	243	5	11	257	248	267	16	10	2465
©IJT	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465	2465

The first magic square is **general double digits bordered** magic square. The second one is **semi-striped** magic

squares, as it is constructed with **equal width striped magic rectangles** except the inner block of order 5. It is **magic square of order 5**. The third magic square is also **semi-striped** magic square as it is constructed with four **equal sum equal width magic rectangles**. It is also **semi-striped** as the inner block is a **magic square of order 5**. Summarizing, we have one magic square as **general double digits bordered** magic square. The other two as **semi-striped** magic squares.

2.12 Order 18

18x18	mgc	3189	2685	2702	3211	3332	2341	3322	2867	2159	3663	2754	2953	2124	3403	3111	2890	3019	2925
3073	304	9	261	262	32	52	312	47	323	271	285	277	17	57	53	18	320	25	2925
2715	316	21	64	63	293	273	13	278	2	54	40	48	308	268	272	307	300	5	2925
3102	4	321	241	111	216	227	89	88	258	217	96	76	74	72	250	260	274	51	2925
2723	46	279	214	84	109	98	236	237	67	108	229	249	251	253	65	75	29	296	2925
3382	292	33	68	257	184	114	185	127	183	197	131	190	123	191	252	73	16	309	2925
2395	27	298	103	222	211	141	140	198	142	128	194	135	134	202	215	110	280	45	2925
3197	58	267	66	259	120	205	152	159	145	177	175	167	124	201	245	80	303	22	2925
2792	319	6	246	79	119	206	162	180	179	148	160	146	133	192	90	235	263	62	2925
3322	50	275	231	94	121	204	164	154	153	165	161	178	210	115	225	100	313	12	2925
2922	286	39	102	223	199	126	171	168	151	166	147	172	125	200	85	240	59	266	2925
2881	3	322	91	234	181	144	150	156	173	170	169	157	193	132	213	112	55	270	2925
2820	310	15	238	87	122	203	176	158	174	149	163	155	187	138	247	78	24	301	2925
2204	31	294	70	255	182	139	195	209	118	212	129	136	188	117	104	221	290	35	2925
3439	269	56	256	69	186	143	130	116	207	113	196	189	208	137	71	254	7	318	2925
3238	276	49	101	77	226	228	232	86	244	95	105	242	82	233	106	218	23	302	2925
2981	61	264	248	224	99	97	93	239	81	230	220	83	243	92	107	219	28	297	2925
2539	8	60	44	42	11	287	306	295	305	288	1	289	43	284	34	14	315	299	2925
	265	317	281	283	314	38	19	30	20	37	324	36	282	41	291	311	26	10	2925
	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925

18x18	mgc	2828	3101	2949	3006	3184	3338	2598	3065	2543	2092	3383	2966	3505	2978	3034	2715	2440	2925
2904	31	47	319	43	310	295	268	287	26	41	62	267	42	271	320	273	9	14	2925
2565	294	278	6	282	15	30	57	38	299	284	263	58	283	54	5	52	316	311	2925
3503	35	290	67	232	225	260	256	95	92	91	237	226	96	94	66	238	56	269	2925
2910	264	61	258	93	100	65	69	230	233	234	88	99	229	231	259	87	279	46	2925
3104	292	33	257	68	121	117	184	130	209	211	186	202	134	131	79	246	27	298	2925
2506	280	45	228	97	204	208	141	195	116	114	139	123	191	194	218	107	37	288	2925
3226	34	291	245	80	129	196	154	171	147	178	173	152	187	138	110	215	275	50	2925
2371	276	49	73	252	201	124	155	170	146	179	176	149	142	183	254	71	309	16	2925
3272	51	274	82	243	197	128	169	156	177	148	150	175	122	203	108	217	261	64	2925
3048	44	281	74	251	190	135	172	153	180	145	151	174	126	199	219	106	1	324	2925
2674	39	286	227	98	125	200	165	159	164	157	167	163	193	132	239	86	315	10	2925
3565	21	304	109	216	133	192	160	166	161	168	158	162	205	120	72	253	59	266	2925
2375	296	29	241	84	207	210	188	144	113	127	143	119	185	189	214	111	22	303	2925
3263	20	305	89	236	118	115	137	181	212	198	182	206	140	136	112	213	2	323	2925
2234	321	4	248	76	223	81	105	101	240	78	250	242	222	104	235	70	314	11	2925
3311	302	23	77	249	102	244	220	224	85	247	75	83	103	221	90	255	318	7	2925
2894	24	19	28	63	308	272	18	322	13	317	40	12	270	300	60	289	293	277	2925
	301	306	297	262	17	53	307	3	312	8	285	313	55	25	265	36	32	48	2925
	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925

18x18	mgc	3095	3385	2686	3246	2735	2235	3571	2702	2522	3796	2322	3455	2748	2705	3031	2717	2774	2925
3617	1	3	323	321	320	6	318	8	9	315	11	313	312	14	310	16	17	308	2925
2531	324	322	2	4	5	319	7	317	316	10	314	12	13	311	15	309	19	306	2925
2944	49	276	65	67	259	257	256	255	71	72	73	251	75	249	77	248	307	18	2925
2540	275	50	260	258	66	68	69	70	254	253	252	74	250	76	79	246	305	20	2925
3156	51	274	101	224	115	113	211	209	208	118	206	120	121	204	247	78	304	21	2925
3417	273	52	223	102	210	212	114	116	117	207	119	205	123	202	245	80	22	303	2925
2532	272	53	103	222	137	188	154	171	147	178	173	152	203	122	244	81	302	23	2925
3048	54	271	221	104	187	138	155	170	146	179	176	149	201	124	243	82	24	301	2925
3320	270	55	220	105	139	186	169	156	177	148	150	175	200	125	83	242	25	300	2925
2058	56	269	219	106	185	140	172	153	180	145	151	174	126	199	84	241	299	26	2925
3411	57	268	107	218	184	141	165	159	164	157	167	163	198	127	85	240	27	298	2925
2593	267	58	108	217	182	143	160	166	161	168	158	162	128	197	239	86	297	28	2925
3007	59	266	109	216	144	181	129	195	131	193	136	134	190	192	87	238	296	29	2925
3257	265	60	111	214	142	183	196	130	194	132	189	191	135	133	237	88	30	295	2925
3113	264	61	215	110	89	235	91	233	232	231	95	96	97	99	227	225	294	31	2925
3115	262	63	213	112	236	90	234	92	93	94	230	229	228	226	98	100	32	293	2925
2066	64	261	33	291	35	289	288	38	286	40	41	283	43	281	280	278	48	46	2925
	62	263	292	34	290	36	37	287	39	285	284	42	282	44	45	47	277	279	2925
	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925	2925

The first magic square is **general double digits bordered** magic square. The second one is **striped** magic square,

as it is constructed with **equal width striped magic rectangles**. The third magic square is also **striped** magic square as it is also constructed with four **equal sum equal width magic rectangles**. Summarizing the first magic square is **general double digits bordered** magic square. The last two are **striped double digits bordered** magic square.

We observe that in case of **even order** magic squares, the last two types of magic squares are striped magic squares. In case of **odd order** magic squares, the last two types of magic squares are **semi-striped** magic squares, since there are magic squares of orders 3 or 5 as **inner blocks**.

Moreover these are divided in four groups of orders as follows:

- (i) 7, 11, 15,...
- (ii) 8, 12, 16,...
- (iii) 9, 13, 17,...
- (iv) 10, 14, 18,...

For higher orders from 19 to 50 see the excel file given at the link "<https://numbers-magic.com/?p=15002>".

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Most of the results are done manually. Few case of lower order done by a software by H. White [1]. The author is thankful to H. White for providing script.

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-magic-squares/>
- **Inder J. Taneja**, Recreation of Numbers, <https://inderjtaneja.com/2019/06/27/publications-recreation-of-numbers/>

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