Bordered Magic Squares Multiples of 9, **Zenodo**,
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Bordered Magic Squares Multiples of 9

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Abstract

*During past years author worked with **borderedmagic squares** of even number blocks. These are based on equal sums magic squares of orders 4, 6, 8, 10, etc. This type of work is an extension of classical bordered magic squares. In case of multiples of 4, the extension is made for **pandiagonal** magic squares [23]. For multiples of order 6 refer Taneja [24]. For the first time, we are presenting here bordered magic squares of odd number blocks. Recently, author worked on multiples of 3, 5 and 7. These are based on different sums of magic squares of order 3, 5 and 7 [29, 30, 31]. This work is for multiples of 9. This we have done with two different types of magic squares of order 9. Higher order examples can be seen in **Excel file** attached with the work. The total work is up to order 144.*

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Contents

1 Introduction

During past years author [2, 3, 4, 5, 6, 7, 8] worked with **block-wise** magic squares from orders 12 to 47. Author [9, 10, 11, 12, 13, 14] also worked with **bordered** magic squares. The study on **bordered** magic squares is extended to **block-bordered** magic squares [15, 16, 17]. This is specially done for the magic squares of orders p and $2p$, where p is a prime number. This study is still extended to **block-wise bordered** magic squares [18, 19, 20, 21]. Some conection with Pythagorean triples and area-representations are also made [23, 24, 25, 26, 27]. The main property of **bordered** magic squares is that if we remove external borders, still we get **sub-bordered** magic squares, i.e., each layer in itself lead us to magic squares. In many cases, the properties of **bordered** magic square are seperated by **even** and **odd** orders magic squares. In many cases, we get good properties for the **even** order **bordered** magic squares. In some cases, we have to use fractional numbers to reach minimum perfect square sum of entries. For more study on **bordered** magic squares refer H. White's web-site [1].

The idea of bordered magic squares is already discussed by H. White's web-site [1] where the borders are of **single digits**. Borders multiples of even numbers starting from order 4 are done extensively by author [23, 24, 25, 26, 27, 28].

1.1 Summary of Bordered Magic Squares

1.1.1 Odd Numbers Multiples

- **Single Digit:** Bordered magic squares based on single digit [9, 10, 1].
- **Two Digits:** Bordered magic squares based on magic rectangles multiples of 2 [59, 60, 61, 62, 62, 63].
- **Three Digits:** Bordered magic squares based on magic squares of order 3 [29].
- **Five Digits:** Bordered magic squares based on magic squares of order 5 [30].
- **Seven Digits:** Bordered magic squares based on magic squares of order 7 [31].
- **Nine Digits:** Bordered magic squares based on magic squares of order 9 [32] (This work).

1.1.2 Even Numbers Multiples

- **Four Digits:** Bordered magic squares based on magic squares of order 4 [23].
- **Six Digits:** Bordered magic squares based on magic squares of order 6 [24].
- **Eight Digits:** Bordered magic squares based on magic squares of order 8 [25].
- **Ten Digits:** Bordered magic squares based on magic squares of order 10 [26].
- **Twelve Digits:** Bordered magic squares based on magic squares of order 12 [27].
- **Fourteen Digits:** Bordered magic squares based on magic squares of order 14 [28].

The advantage in working with even number multiples is that we can work equal sums blocks of magic squares.

It is revised version of author's previous work. In the previous work we worked only with two magic squares of order 9. Here are working with 11 types of magic square of order 9. The procedure, how to these bordered magic squares are obtained is also given. Higher orders examples can be seen in **Excel file** is attached with this work.

2 Bordered Magic Squares Multiples of 9

Let's consider following eleven of magic squares of order 9.

1	mgc	360	378	369	387	351	369	360	378	369
	1	18	23	35	40	48	60	65	79	369
	33	38	52	55	72	77	8	13	21	369
	62	67	75	6	11	25	28	45	50	369
	27	5	10	49	30	44	74	61	69	369
	47	34	42	81	59	64	22	3	17	369
	76	57	71	20	7	15	54	32	37	369
	14	19	9	39	53	31	70	78	56	369
	43	51	29	68	73	63	12	26	4	369
	66	80	58	16	24	2	41	46	36	369
	369	369	369	369	369	369	369	369	369	369

2	mgc	345	395	389	287	445	351	345	395	369
	8	80	78	76	75	12	14	16	10	369
	1	58	54	56	21	20	18	60	81	369
	3	17	50	53	33	35	34	65	79	369
	5	19	30	40	45	38	52	63	77	369
	73	59	31	39	41	43	51	23	9	369
	71	57	46	44	37	42	36	25	11	369
	69	55	48	29	49	47	32	27	13	369
	67	22	28	26	61	62	64	24	15	369
	72	2	4	6	7	70	68	66	74	369
	369	369	369	369	369	369	369	369	369	369

3	mgc	413	328	449	283	391	330	389	369	369
	69	16	80	12	72	17	21	56	26	369
	13	66	2	70	10	65	61	58	24	369
	73	9	38	34	51	32	50	6	76	369
	68	14	44	48	31	39	43	79	3	369
	11	71	46	36	41	52	30	7	75	369
	78	4	42	40	53	33	37	59	23	369
	19	63	35	47	29	49	45	22	60	369
	20	62	55	25	77	8	67	1	54	369
	18	64	27	57	5	74	15	81	28	369
	369	369	369	369	369	369	369	369	369	369

4	mgc	379	361	463	270	403	335	365	376	369
	69	16	80	12	72	17	21	56	26	369
	13	66	2	70	10	65	61	58	24	369
	73	9	50	53	35	33	34	6	76	369
	68	14	30	40	45	38	52	79	3	369
	11	71	46	39	41	43	36	7	75	369
	78	4	31	44	37	42	51	59	23	369
	19	63	48	29	47	49	32	22	60	369
	20	62	55	25	77	8	67	1	54	369
	18	64	27	57	5	74	15	81	28	369
	369	369	369	369	369	369	369	369	369	369

5	mgc	380	351	445	284	397	328	367	400	369
	69	16	80	12	72	17	21	56	26	369
	13	66	2	70	10	65	61	58	24	369
	73	9	44	39	40	51	31	6	76	369
	68	14	37	41	45	53	29	79	3	369
	11	71	42	43	38	35	47	7	75	369
	78	4	33	34	50	36	52	59	23	369
	19	63	49	48	32	30	46	22	60	369
	20	62	55	25	77	8	67	1	54	369
	18	64	27	57	5	74	15	81	28	369
	369	369	369	369	369	369	369	369	369	369

6	mgc	377	283	439	445	309	353	369	377	369
	38	43	42	50	32	27	55	15	67	369
	45	41	37	46	36	62	20	8	74	369
	40	39	44	49	33	26	56	80	2	369
	34	35	52	31	53	65	17	10	72	369
	48	47	30	29	51	23	59	14	68	369
	60	54	57	18	58	21	19	77	5	369
	22	28	25	64	24	63	61	81	1	369
	78	75	16	13	79	76	12	11	9	369
	4	7	66	69	3	6	70	73	71	369
	369	369	369	369	369	369	369	369	369	369

7	mgc	343	324	426	390	330	343	369	427	369
	17	25	33	41	49	57	65	8	74	369
	56	64	23	24	32	40	48	10	72	369
	39	47	55	63	22	30	31	80	2	369
	29	37	38	46	54	62	21	15	67	369
	61	20	28	36	44	45	53	14	68	369
	51	52	60	19	27	35	43	77	5	369
	34	42	50	58	59	18	26	81	1	369
	78	75	16	13	79	76	12	11	9	369
	4	7	66	69	3	6	70	73	71	369
	369	369	369	369	369	369	369	369	369	369

8	mgc	417	281	449	412	300	305	369	419	369
	58	54	56	21	20	18	60	15	67	369
	17	50	53	33	35	34	65	8	74	369
	19	30	40	45	38	52	63	80	2	369
	59	46	39	41	43	36	23	10	72	369
	57	31	44	37	42	51	25	14	68	369
	55	48	29	49	47	32	27	77	5	369
	22	28	26	61	62	64	24	81	1	369
	79	75	16	13	78	76	12	11	9	369
	3	7	66	69	4	6	70	73	71	369
	369	369	369	369	369	369	369	369	369	369

9	mgc	360	276	447	453	310	345	399	362	369
	29	35	41	47	53	27	55	8	74	369
	46	52	33	34	40	62	20	15	67	369
	38	39	45	51	32	26	56	80	2	369
	50	31	37	43	44	65	17	10	72	369
	42	48	49	30	36	23	59	14	68	369
	60	54	57	18	58	21	19	77	5	369
	22	28	25	64	24	63	61	81	1	369
	78	76	16	13	79	75	12	11	9	369
	4	6	66	69	3	7	70	73	71	369
	369	369	369	369	369	369	369	369	369	369

10	mgc	379	278	437	432	310	330	400	386	369
	50	53	35	33	34	27	55	8	74	369
	30	40	45	38	52	62	20	15	67	369
	46	39	41	43	36	26	56	80	2	369
	31	44	37	42	51	65	17	10	72	369
	48	29	47	49	32	23	59	14	68	369
	60	54	57	18	58	21	19	77	5	369
	22	28	25	64	24	63	61	81	1	369
	76	78	16	13	79	75	12	11	9	369
	6	4	66	69	3	7	70	73	71	369
	369	369	369	369	369	369	369	369	369	369

11	mgc	350	323	438	439	295	282	369	456	369
	20	46	60	48	31	29	53	10	72	369
	62	36	22	34	51	25	57	15	67	369
	50	32	42	37	44	33	49	80	2	369
	58	24	43	41	39	63	19	8	74	369
	59	23	38	45	40	55	27	14	68	369
	17	65	64	28	35	52	26	77	5	369
	21	61	18	54	47	30	56	81	1	369
	76	78	16	13	79	75	12	11	9	369
	6	4	66	69	3	7	70	73	71	369
	369	369	369	369	369	369	369	369	369	369

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2.1 Bordered Magic Squares of Orders 144 and 135

Let's consider **bordered** magic square of orders 15 and 16 given by

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

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

The entries of above two magic squares are sequential numbers starting from 1:

$$D_{15\times 15} := \{1, 2, \ldots, 224, 225\}$$
$$D_{16\times 16} := \{1, 2, \ldots, 255, 256\}$$

The property of **bordered** magic squares is that removing the upper borders still we are left with magic squares of sequential values.

Multiplying each entry of above two magic squares of orders 15 and 16 by 81, we get

15x15																137295
	17010	16119	16281	16443	16605	16767	16929	17091	891	729	567	405	243	81	1134	137295
	162	14904	14175	14337	14499	14661	14823	14985	2997	2835	2673	2511	2349	3240	18144	137295
	324	2430	5184	5832	5670	5508	5346	13365	13446	13608	13770	13932	5022	15876	17982	137295
	486	2592	14013	6480	12312	12150	11988	11907	6804	6966	7128	6642	4293	15714	17820	137295
	648	2754	13851	5913	10530	10206	10368	7533	7452	7290	10692	12393	4455	15552	17658	137295
	810	2916	13689	6075	7209	9882	10125	8505	8667	8586	11097	12231	4617	15390	17496	137295
	972	3078	13527	6237	7371	8262	9072	9477	8910	10044	10935	12069	4779	15228	17334	137295
	1053	3159	5103	11745	10611	8343	8991	9153	9315	9963	7695	6561	13203	15147	17253	137295
	16848	14742	5265	11583	10449	9558	9396	8829	9234	8748	7857	6723	13041	3564	1458	137295
	16686	14580	5427	11421	10287	9720	8181	9801	9639	8424	8019	6885	12879	3726	1620	137295
	16524	14418	5589	11259	7614	8100	7938	10773	10854	11016	7776	7047	12717	3888	1782	137295
	16362	14256	5751	11664	5994	6156	6318	6399	11502	11340	11178	11826	12555	4050	1944	137295
	16200	14094	13284	12474	12636	12798	12960	4941	4860	4698	4536	4374	13122	4212	2106	137295
	16038	15066	4131	3969	3807	3645	3483	3321	15309	15471	15633	15795	15957	3402	2268	137295
	17172	2187	2025	1863	1701	1539	1377	1215	17415	17577	17739	17901	18063	18225	1296	137295
	137295	137295	137295	137295	137295	137295	137295	137295	137295	137295	137295	137295	137295	137295	137295	137295

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16x16																	166536
	19521	18468	18630	18792	20331	20493	20655	2430	2268	2106	1944	567	405	243	81	19602	166536
	1863	17253	16362	16524	16686	17982	18144	4536	4374	4212	4050	2916	2754	2592	17334	18954	166536
	1701	3969	15309	14580	14742	15957	16119	6318	6156	5994	4941	4779	4617	15390	16848	19116	166536
	1458	3807	5913	13689	13122	13284	14256	7776	7614	7452	6642	6480	13770	14904	17010	19359	166536
	1377	3645	5670	7371	12393	11988	12879	8910	8748	8019	7857	12474	13446	15147	17172	19440	166536
	972	3321	5589	7209	8586	11421	11178	9720	9558	9072	11502	12231	13608	15228	17496	19845	166536
	810	3159	5184	6885	8505	9477	11016	10773	10044	9801	11340	12312	13932	15633	17658	20007	166536
	648	2511	5022	6399	8100	8991	9882	9963	10854	10935	11826	12717	14418	15795	18306	20169	166536
	19035	16929	14985	13527	12150	11583	10125	10368	10449	10692	9234	8667	7290	5832	3888	1782	166536
	19197	17091	15066	13851	12555	11664	10611	10530	10287	10206	9153	8262	6966	5751	3726	1620	166536
	19278	17415	15471	14013	12636	9315	9639	11097	11259	11745	9396	8181	6804	5346	3402	1539	166536
	19683	17577	15552	14094	8343	8829	7938	11907	12069	12798	12960	8424	6723	5265	3240	1134	166536
	19764	17739	15714	7047	7695	7533	6561	13041	13203	13365	14175	14337	7128	5103	3078	1053	166536
	19926	17820	5427	6237	6075	4860	4698	14499	14661	14823	15876	16038	16200	5508	2997	891	166536
	20088	3483	4455	4293	4131	2835	2673	16281	16443	16605	16767	17901	18063	18225	3564	729	166536
	1215	2349	2187	2025	486	324	162	18387	18549	18711	18873	20250	20412	20574	20736	1296	166536
	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536	166536

In this case, the entries distributions of these two magic squares are given by

$$D1_{15\times 15} := \{81, 162, \ldots, 18144, 18225\}$$
$$D1_{16\times 16} := \{81, 162 \ldots, 20655, 20736\}.$$

Let's replace each entry in above two magic squares of orders 15 and 16 by above two magic squares of order 9. The entries chosen in these magic squares is as given below:

$$
\begin{aligned}
81 &\rightarrow 1, 2, \ldots, 81 \\
162 &\rightarrow 82, 83, \ldots, 162 \\
249 &\rightarrow 163, 164, \ldots, 249 \\
\ldots &\rightarrow \ldots \quad \ldots \\
20655 &\rightarrow 20575, 20576, \ldots, 20655 \\
20736 &\rightarrow 20656, 20657 \ldots, 20736
\end{aligned}
$$

This lead us to two big **block-bordered** magic squares of orders 135 and 144. Since these two magic squares are very big, these are given in **excel file** attached with this work.

2.2 Magic Squares of Order 45

Below are three magic squares of order 45 obtained from magic squares of order 135. It is obtained by the application of the formula ormula $\frac{a^2-b^2}{2}, a > b$, i.e., subtract $\frac{135^2-45^2}{2} := 8100$ from each entry of magic squares order 135, are left with magic squares of order 45:

2	mgc	45951	46687	47143	47119	48395	48411	48867	49603	49959	50973	52357	53461	54085	56009	56673	57777	59161	60165	56967	54139	51031	47443	45155	41607	38499	35671	32463	33153	34213	34993	35293	36893	37233	38013	39073	39753	40281	41179	41797	41935	43373	43551	44169	45067	45585
	1709	1781	1779	1777	1776	1713	1715	1717	1711	1952	2024	2022	2020	2019	1956	1958	1960	1954	332	404	402	400	399	336	338	340	334	494	566	564	562	561	498	500	502	496	413	485	483	481	480	417	419	421	415	45585
	1702	1759	1755	1757	1722	1721	1719	1761	1782	1945	2002	1998	2000	1965	1964	1962	2004	2025	325	382	378	380	345	344	342	384	405	487	544	540	542	507	506	504	546	567	406	463	459	461	426	425	423	465	486	45585
	1704	1718	1751	1754	1734	1736	1735	1766	1780	1947	1961	1994	1997	1977	1979	1978	2009	2023	327	341	374	377	357	359	358	389	403	489	503	536	539	519	521	520	551	565	408	422	455	458	438	440	439	470	484	45585
	1706	1720	1731	1741	1746	1739	1753	1764	1778	1949	1963	1974	1984	1989	1982	1996	2007	2021	329	343	354	364	369	362	376	387	401	491	505	516	526	531	524	538	549	563	410	424	435	445	450	443	457	468	482	45585
	1774	1760	1732	1740	1742	1744	1752	1724	1710	2017	2003	1975	1983	1985	1987	1995	1967	1953	397	383	355	363	365	367	375	347	333	559	545	517	525	527	529	537	509	495	478	464	436	444	446	448	456	428	414	45585
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	1599	1593	1596	1557	1597	1558	1560	1540	1620	60	54	57	18	58	19	21	1	81	1680	1674	1677	1638	1678	1639	1641	1621	1701	1518	1512	1515	1476	1516	1477	1479	1459	1539	303	297	300	261	301	262	264	244	324	45585
	1543	1545	1605	1608	1542	1546	1609	1610	1612	4	6	66	69	3	7	70	71	73	1624	1626	1686	1689	1623	1627	1690	1691	1693	1462	1464	1524	1527	1461	1465	1528	1529	1531	247	249	309	312	246	250	313	314	316	45585
	1617	1615	1555	1552	1618	1614	1551	1548	1550	78	76	16	13	79	75	12	9	11	1698	1696	1636	1633	1699	1695	1632	1629	1631	1536	1534	1474	1471	1537	1533	1470	1467	1469	321	319	259	256	322	318	255	252	254	45585
	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585	45585

Above there are only three examples of magic squares of order 45. The other 8 examples are given in **excel file** attached with the work.

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July 23, 2023, pp. 1-28, *https://doi.org/110.5281/zenodo.8176357*

2.3 Magic Squares of Order 36

Below are two magic squares of order 36 obtained from magic squares of order 144. It is obtained by the application of the formula ormula $\frac{a^2-b^2}{2}, a > b$, i.e., subtract $\frac{144^2-36^2}{2} := 9720$ from each entry of magic squares order 144, are left with magic squares of order 36:

3	mgc	24466	26102	26914	28874	29738	31278	32338	33714	35010	33538	32582	30802	30170	28442	27390	25858	24642	23346	21874	20918	19138	18506	16778	15726	14194	12978	11682	12802	14438	15250	17210	18074	19614	20674	22050	23346
	1228	1281	1217	1285	1225	1280	1276	1241	1271	985	1038	974	1042	982	1037	1033	998	1028	256	309	245	313	253	308	304	269	299	13	66	2	70	10	65	61	26	56	23346
	1284	1231	1295	1227	1287	1232	1236	1239	1273	1041	988	1052	984	1044	989	993	996	1030	312	259	323	255	315	260	264	267	301	69	16	80	12	72	17	21	24	58	23346
	1224	1288	1259	1263	1246	1265	1247	1291	1221	981	1045	1016	1020	1003	1022	1004	1048	978	252	316	287	291	274	293	275	319	249	9	73	44	48	31	50	32	76	6	23346
	1229	1283	1253	1249	1266	1258	1254	1218	1294	986	1040	1010	1006	1023	1015	1011	975	1051	257	311	281	277	294	286	282	246	322	14	68	38	34	51	43	39	3	79	23346
	1286	1226	1251	1261	1256	1245	1267	1290	1222	1043	983	1008	1018	1013	1002	1024	1047	979	314	254	279	289	284	273	295	318	250	71	11	36	46	41	30	52	75	7	23346
	1219	1293	1255	1257	1244	1264	1260	1238	1274	976	1050	1012	1014	1001	1021	1017	995	1031	247	321	283	285	272	292	288	266	302	4	78	40	42	29	49	45	23	59	23346
	1278	1234	1262	1250	1268	1248	1252	1275	1237	1035	991	1019	1007	1025	1005	1009	1032	994	306	262	290	278	296	276	280	303	265	63	19	47	35	53	33	37	60	22	23346
	1277	1235	1242	1272	1220	1289	1230	1296	1243	1034	992	999	1029	977	1046	987	1053	1000	305	263	270	300	248	317	258	324	271	62	20	27	57	5	74	15	81	28	23346
	1279	1233	1270	1240	1292	1223	1282	1216	1269	1036	990	1027	997	1049	980	1039	973	1026	307	261	298	268	320	251	310	244	297	64	18	55	25	77	8	67	1	54	23346
	94	147	83	151	91	146	142	107	137	175	228	164	232	172	227	223	188	218	1066	1119	1055	1123	1063	1118	1114	1079	1109	1147	1200	1136	1204	1144	1199	1195	1160	1190	23346
	150	97	161	93	153	98	102	105	139	231	178	242	174	234	179	183	186	220	1122	1069	1133	1065	1125	1070	1074	1077	1111	1203	1150	1214	1146	1206	1151	1155	1158	1192	23346
	90	154	125	129	112	131	113	157	87	171	235	206	210	193	212	194	238	168	1062	1126	1097	1101	1084	1103	1085	1129	1059	1143	1207	1178	1182	1165	1184	1166	1210	1140	23346
	95	149	119	115	132	124	120	84	160	176	230	200	196	213	205	201	165	241	1067	1121	1091	1087	1104	1096	1092	1056	1132	1148	1202	1172	1168	1185	1177	1173	1137	1213	23346
	152	92	117	127	122	111	133	156	88	233	173	198	208	203	192	214	237	169	1124	1064	1089	1099	1094	1083	1105	1128	1060	1205	1145	1170	1180	1175	1164	1186	1209	1141	23346
	85	159	121	123	110	130	126	104	140	166	240	202	204	191	211	207	185	221	1057	1131	1093	1095	1082	1102	1098	1076	1112	1138	1212	1174	1176	1163	1183	1179	1157	1193	23346
	144	100	128	116	134	114	118	141	103	225	181	209	197	215	195	199	222	184	1116	1072	1100	1088	1106	1086	1090	1113	1075	1197	1153	1181	1169	1187	1167	1171	1194	1156	23346
	143	101	108	138	86	155	96	162	109	224	182	189	219	167	236	177	243	190	1115	1073	1080	1110	1058	1127	1068	1134	1081	1196	1154	1161	1191	1139	1208	1149	1215	1162	23346
	145	99	136	106	158	89	148	82	135	226	180	217	187	239	170	229	163	216	1117	1071	1108	1078	1130	1061	1120	1054	1107	1198	1152	1189	1159	1211	1142	1201	1135	1188	23346
	337	390	326	394	334	389	385	350	380	580	633	569	637	577	632	628	593	623	661	714	650	718	658	713	709	674	704	904	957	893	961	901	956	952	917	947	23346
	393	340	404	336	396	341	345	348	382	636	583	647	579	639	584	588	591	625	717	664	728	660	720	665	669	672	706	960	907	971	903	963	908	912	915	949	23346
	333	397	368	372	355	374	356	400	330	576	640	611	615	598	617	599	643	573	657	721	692	696	679	698	680	724	654	900	964	935	939	922	941	923	967	897	23346
	338	392	362	358	375	367	363	327	403	581	635	605	601	618	610	606	570	646	662	716	686	682	699	691	687	651	727	905	959	929	925	942	934	930	894	970	23346
	395	335	360	370	365	354	376	399	331	638	578	603	613	608	597	619	642	574	719	659	684	694	689	678	700	723	655	962	902	927	937	932	921	943	966	898	23346
	328	402	364	366	353	373	369	347	383	571	645	607	609	596	616	612	590	626	652	726	688	690	677	697	693	671	707	895	969	931	933	920	940	936	914	950	23346
	387	343	371	359	377	357	361	384	346	630	586	614	602	620	600	604	627	589	711	667	695	683	701	681	685	708	670	954	910	938	926	944	924	928	951	913	23346
	386	344	351	381	329	398	339	405	352	629	587	594	624	572	641	582	648	595	710	668	675	705	653	722	663	729	676	953	911	918	948	896	965	906	972	919	23346
	388	342	379	349	401	332	391	325	378	631	585	622	592	644	575	634	568	621	712	666	703	673	725	656	715	649	702	955	909	946	916	968	899	958	892	945	23346
	823	876	812	880	820	875	871	836	866	742	795	731	799	739	794	790	755	785	499	552	488	556	496	551	547	512	542	418	471	407	475	415	470	466	431	461	23346
	879	826	890	822	882	827	831	834	868	798	745	809	741	801	746	750	753	787	555	502	566	498	558	503	507	510	544	474	421	485	417	477	422	426	429	463	23346
	819	883	854	858	841	860	842	886	816	738	802	773	777	760	779	761	805	735	495	559	530	534	517	536	518	562	492	414	478	449	453	436	455	437	481	411	23346
	824	878	848	844	861	853	849	813	889	743	797	767	763	780	772	768	732	808	500	554	524	520	537	529	525	489	565	419	473	443	439	456	448	444	408	484	23346
	881	821	846	856	851	840	862	885	817	800	740	765	775	770	759	781	804	736	557	497	522	532	527	516	538	561	493	476	416	441	451	446	435	457	480	412	23346
	814	888	850	852	839	859	855	833	869	733	807	769	771	758	778	774	752	788	490	564	526	528	515	535	531	509	545	409	483	445	447	434	454	450	428	464	23346
	873	829	857	845	863	843	847	870	832	792	748	776	764	782	762	766	789	751	549	505	533	521	539	519	523	546	508	468	424	452	440	458	438	442	465	427	23346
	872	830	837	867	815	884	825	891	838	791	749	756	786	734	803	744	810	757	548	506	513	543	491	560	501	567	514	467	425	432	462	410	479	420	486	433	23346
	874	828	865	835	887	818	877	811	864	793	747	784	754	806	737	796	730	783	550	504	541	511	563	494	553	487	540	469	423	460	430	482	413	472	406	459	23346
	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346

4	mgc	24602	25970	26858	28926	29690	31258	32434	33686	35010	33674	32450	30746	30222	28394	27370	25954	24614	23346	22010	20786	19082	18558	16730	15706	14290	12950	11682	12938	14306	15194	17262	18026	19594	20770	22022	23346
	1228	1281	1217	1285	1225	1280	1276	1241	1271	985	1038	974	1042	982	1037	1033	998	1028	256	309	245	313	253	308	304	269	299	13	66	2	70	10	65	61	26	56	23346
	1284	1231	1295	1227	1287	1232	1236	1239	1273	1041	988	1052	984	1044	989	993	996	1030	312	259	323	255	315	260	264	267	301	69	16	80	12	72	17	21	24	58	23346
	1224	1288	1247	1244	1262	1264	1263	1291	1221	981	1045	1004	1001	1019	1021	1020	1048	978	252	316	275	272	290	292	291	319	249	9	73	32	29	47	49	48	76	6	23346
	1229	1283	1267	1257	1252	1259	1245	1218	1294	986	1040	1024	1014	1009	1016	1002	975	1051	257	311	295	285	280	287	273	246	322	14	68	52	42	37	44	30	3	79	23346
	1286	1226	1251	1258	1256	1254	1261	1290	1222	1043	983	1008	1015	1013	1011	1018	1047	979	314	254	279	286	284	282	289	318	250	71	11	36	43	41	39	46	75	7	23346
	1219	1293	1266	1253	1260	1255	1246	1238	1274	976	1050	1023	1010	1017	1012	1003	995	1031	247	321	294	281	288	283	274	266	302	4	78	51	38	45	40	31	23	59	23346
	1278	1234	1249	1268	1250	1248	1265	1275	1237	1035	991	1006	1025	1007	1005	1022	1032	994	306	262	277	296	278	276	293	303	265	63	19	34	53	35	33	50	60	22	23346
	1277	1235	1242	1272	1220	1289	1230	1296	1243	1034	992	999	1029	977	1046	987	1053	1000	305	263	270	300	248	317	258	324	271	62	20	27	57	5	74	15	81	28	23346
	1279	1233	1270	1240	1292	1223	1282	1216	1269	1036	990	1027	997	1049	980	1039	973	1026	307	261	298	268	320	251	310	244	297	64	18	55	25	77	8	67	1	54	23346
	94	147	83	151	91	146	142	107	137	175	228	164	232	172	227	223	188	218	1066	1119	1055	1123	1063	1118	1114	1079	1109	1147	1200	1136	1204	1144	1199	1195	1160	1190	23346
	150	97	161	93	153	98	102	105	139	231	178	242	174	234	179	183	186	220	1122	1069	1133	1065	1125	1070	1074	1077	1111	1203	1150	1214	1146	1206	1151	1155	1158	1192	23346
	90	154	113	110	128	130	129	157	87	171	235	194	191	209	211	210	238	168	1062	1126	1085	1082	1100	1102	1101	1129	1059	1143	1207	1166	1163	1181	1183	1182	1210	1140	23346
	95	149	133	123	118	125	111	84	160	176	230	214	204	199	206	192	165	241	1067	1121	1105	1095	1090	1097	1083	1056	1132	1148	1202	1186	1176	1171	1178	1164	1137	1213	23346
	152	92	117	124	122	120	127	156	88	233	173	198	205	203	201	208	237	169	1124	1064	1089	1096	1094	1092	1099	1128	1060	1205	1145	1170	1177	1175	1173	1180	1209	1141	23346
	85	159	132	119	126	121	112	104	140	166	240	213	200	207	202	193	185	221	1057	1131	1104	1091	1098	1093	1084	1076	1112	1138	1212	1185	1172	1179	1174	1165	1157	1193	23346
	144	100	115	134	116	114	131	141	103	225	181	196	215	197	195	212	222	184	1116	1072	1087	1106	1088	1086	1103	1113	1075	1197	1153	1168	1187	1169	1167	1184	1194	1156	23346
	143	101	108	138	86	155	96	162	109	224	182	189	219	167	236	177	243	190	1115	1073	1080	1110	1058	1127	1068	1134	1081	1196	1154	1161	1191	1139	1208	1149	1215	1162	23346
	145	99	136	106	158	89	148	82	135	226	180	217	187	239	170	229	163	216	1117	1071	1108	1078	1130	1061	1120	1054	1107	1198	1152	1189	1159	1211	1142	1201	1135	1188	23346
	337	390	326	394	334	389	385	350	380	580	633	569	637	577	632	628	593	623	661	714	650	718	658	713	709	674	704	904	957	893	961	901	956	952	917	947	23346
	393	340	404	336	396	341	345	348	382	636	583	647	579	639	584	588	591	625	717	664	728	660	720	665	669	672	706	960	907	971	903	963	908	912	915	949	23346
	333	397	356	353	371	373	372	400	330	576	640	599	596	614	616	615	643	573	657	721	680	677	695	697	696	724	654	900	964	923	920	938	940	939	967	897	23346
	338	392	376	366	361	368	354	327	403	581	635	619	609	604	611	597	570	646	662	716	700	690	685	692	678	651	727	905	959	943	933	928	935	921	894	970	23346
	395	335	360	367	365	363	370	399	331	638	578	603	610	608	606	613	642	574	719	659	684	691	689	687	694	723	655	962	902	927	934	932	930	937	966	898	23346
	328	402	375	362	369	364	355	347	383	571	645	618	605	612	607	598	590	626	652	726	699	686	693	688	679	671	707	895	969	942	929	936	931	922	914	950	23346
	387	343	358	377	359	357	374	384	346	630	586	601	620	602	600	617	627	589	711	667	682	701	683	681	698	708	670	954	910	925	944	926	924	941	951	913	23346
	386	344	351	381	329	398	339	405	352	629	587	594	624	572	641	582	648	595	710	668	675	705	653	722	663	729	676	953	911	918	948	896	965	906	972	919	23346
	388	342	379	349	401	332	391	325	378	631	585	622	592	644	575	634	568	621	712	666	703	673	725	656	715	649	702	955	909	946	916	968	899	958	892	945	23346
	823	876	812	880	820	875	871	836	866	742	795	731	799	739	794	790	755	785	499	552	488	556	496	551	547	512	542	418	471	407	475	415	470	466	431	461	23346
	879	826	890	822	882	827	831	834	868	798	745	809	741	801	746	750	753	787	555	502	566	498	558	503	507	510	544	474	421	485	417	477	422	426	429	463	23346
	819	883	842	839	857	859	858	886	816	738	802	761	758	776	778	777	805	735	495	559	518	515	533	535	534	562	492	414	478	437	434	452	454	453	481	411	23346
	824	878	862	852	847	854	840	813	889	743	797	781	771	766	773	759	732	808	500	554	538	528	523	530	516	489	565	419	473	457	447	442	449	435	408	484	23346
	881	821	846	853	851	849	856	885	817	800	740	765	772	770	768	775	804	736	557	497	522	529	527	525	532	561	493	476	416	441	448	446	444	451	480	412	23346
	814	888	861	848	855	850	841	833	869	733	807	780	767	774	769	760	752	788	490	564	537	524	531	526	517	509	545	409	483	456	443	450	445	436	428	464	23346
	873	829	844	863	845	843	860	870	832	792	748	763	782	764	762	779	789	751	549	505	520	539	521	519	536	546	508	468	424	439	458	440	438	455	465	427	23346
	872	830	837	867	815	884	825	891	838	791	749	756	786	734	803	744	810	757	548	506	513	543	491	560	501	567	514	467	425	432	462	410	479	420	486	433	23346
	874	828	865	835	887	818	877	811	864	793	747	784	754	806	737	796	730	783	550	504	541	511	563	494	553	487	540	469	423	460	430	482	413	472	406	459	23346
	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346

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11	mgc	24718	26122	26958	28250	30122	31470	32418	33366	35010	33790	32602	30846	29546	28826	27582	25938	24294	23346	22126	20938	19182	17882	17162	15918	14274	12630	11682	13054	14458	15294	16586	18458	19806	20754	21702	23346
	1277	1251	1237	1249	1266	1268	1244	1287	1225	1034	1008	994	1006	1023	1025	1001	1044	982	305	279	265	277	294	296	272	315	253	62	36	22	34	51	53	29	72	10	23346
	1235	1261	1275	1263	1246	1272	1240	1282	1230	992	1018	1032	1020	1003	1029	997	1039	987	263	289	303	291	274	300	268	310	258	20	46	60	48	31	57	25	67	15	23346
	1247	1265	1255	1260	1253	1264	1248	1217	1295	1004	1022	1012	1017	1010	1021	1005	974	1052	275	293	283	288	281	292	276	245	323	32	50	40	45	38	49	33	2	80	23346
	1239	1273	1254	1256	1258	1234	1278	1289	1223	996	1030	1011	1013	1015	991	1035	1046	980	267	301	282	284	286	262	306	317	251	24	58	39	41	43	19	63	74	8	23346
	1238	1274	1259	1252	1257	1242	1270	1283	1229	995	1031	1016	1009	1014	999	1027	1040	986	266	302	287	280	285	270	298	311	257	23	59	44	37	42	27	55	68	14	23346
	1280	1232	1233	1269	1262	1245	1271	1220	1292	1037	989	990	1026	1019	1002	1028	977	1049	308	260	261	297	290	273	299	248	320	65	17	18	54	47	30	56	5	77	23346
	1276	1236	1279	1243	1250	1267	1241	1216	1296	1033	993	1036	1000	1007	1024	998	973	1053	304	264	307	271	278	295	269	244	324	61	21	64	28	35	52	26	1	81	23346
	1221	1219	1281	1284	1218	1222	1285	1286	1288	978	976	1038	1041	975	979	1042	1043	1045	249	247	309	312	246	250	313	314	316	6	4	66	69	3	7	70	71	73	23346
	1291	1293	1231	1228	1294	1290	1227	1224	1226	1048	1050	988	985	1051	1047	984	981	983	319	321	259	256	322	318	255	252	254	76	78	16	13	79	75	12	9	11	23346
	143	117	103	115	132	134	110	153	91	224	198	184	196	213	215	191	234	172	1115	1089	1075	1087	1104	1106	1082	1125	1063	1196	1170	1156	1168	1185	1187	1163	1206	1144	23346
	101	127	141	129	112	138	106	148	96	182	208	222	210	193	219	187	229	177	1073	1099	1113	1101	1084	1110	1078	1120	1068	1154	1180	1194	1182	1165	1191	1159	1201	1149	23346
	113	131	121	126	119	130	114	83	161	194	212	202	207	200	211	195	164	242	1085	1103	1093	1098	1091	1102	1086	1055	1133	1166	1184	1174	1179	1172	1183	1167	1136	1214	23346
	105	139	120	122	124	100	144	155	89	186	220	201	203	205	181	225	236	170	1077	1111	1092	1094	1096	1072	1116	1127	1061	1158	1192	1173	1175	1177	1153	1197	1208	1142	23346
	104	140	125	118	123	108	136	149	95	185	221	206	199	204	189	217	230	176	1076	1112	1097	1090	1095	1080	1108	1121	1067	1157	1193	1178	1171	1176	1161	1189	1202	1148	23346
	146	98	99	135	128	111	137	86	158	227	179	180	216	209	192	218	167	239	1118	1070	1071	1107	1100	1083	1109	1058	1130	1199	1151	1152	1188	1181	1164	1190	1139	1211	23346
	142	102	145	109	116	133	107	82	162	223	183	226	190	197	214	188	163	243	1114	1074	1117	1081	1088	1105	1079	1054	1134	1195	1155	1198	1162	1169	1186	1160	1135	1215	23346
	87	85	147	150	84	88	151	152	154	168	166	228	231	165	169	232	233	235	1059	1057	1119	1122	1056	1060	1123	1124	1126	1140	1138	1200	1203	1137	1141	1204	1205	1207	23346
	157	159	97	94	160	156	93	90	92	238	240	178	175	241	237	174	171	173	1129	1131	1069	1066	1132	1128	1065	1062	1064	1210	1212	1150	1147	1213	1209	1146	1143	1145	23346
	386	360	346	358	375	377	353	396	334	629	603	589	601	618	620	596	639	577	710	684	670	682	699	701	677	720	658	953	927	913	925	942	944	920	963	901	23346
	344	370	384	372	355	381	349	391	339	587	613	627	615	598	624	592	634	582	668	694	708	696	679	705	673	715	663	911	937	951	939	922	948	916	958	906	23346
	356	374	364	369	362	373	357	326	404	599	617	607	612	605	616	600	569	647	680	698	688	693	686	697	681	650	728	923	941	931	936	929	940	924	893	971	23346
	348	382	363	365	367	343	387	398	332	591	625	606	608	610	586	630	641	575	672	706	687	689	691	667	711	722	656	915	949	930	932	934	910	954	965	899	23346
	347	383	368	361	366	351	379	392	338	590	626	611	604	609	594	622	635	581	671	707	692	685	690	675	703	716	662	914	950	935	928	933	918	946	959	905	23346
	389	341	342	378	371	354	380	329	401	632	584	585	621	614	597	623	572	644	713	665	666	702	695	678	704	653	725	956	908	909	945	938	921	947	896	968	23346
	385	345	388	352	359	376	350	325	405	628	588	631	595	602	619	593	568	648	709	669	712	676	683	700	674	649	729	952	912	955	919	926	943	917	892	972	23346
	330	328	390	393	327	331	394	395	397	573	571	633	636	570	574	637	638	640	654	652	714	717	651	655	718	719	721	897	895	957	960	894	898	961	962	964	23346
	400	402	340	337	403	399	336	333	335	643	645	583	580	646	642	579	576	578	724	726	664	661	727	723	660	657	659	967	969	907	904	970	966	903	900	902	23346
	872	846	832	844	861	863	839	882	820	791	765	751	763	780	782	758	801	739	548	522	508	520	537	539	515	558	496	467	441	427	439	456	458	434	477	415	23346
	830	856	870	858	841	867	835	877	825	749	775	789	777	760	786	754	796	744	506	532	546	534	517	543	511	553	501	425	451	465	453	436	462	430	472	420	23346
	842	860	850	855	848	859	843	812	890	761	779	769	774	767	778	762	731	809	518	536	526	531	524	535	519	488	566	437	455	445	450	443	454	438	407	485	23346
	834	868	849	851	853	829	873	884	818	753	787	768	770	772	748	792	803	737	510	544	525	527	529	505	549	560	494	429	463	444	446	448	424	468	479	413	23346
	833	869	854	847	852	837	865	878	824	752	788	773	766	771	756	784	797	743	509	545	530	523	528	513	541	554	500	428	464	449	442	447	432	460	473	419	23346
	875	827	828	864	857	840	866	815	887	794	746	747	783	776	759	785	734	806	551	503	504	540	533	516	542	491	563	470	422	423	459	452	435	461	410	482	23346
	871	831	874	838	845	862	836	811	891	790	750	793	757	764	781	755	730	810	547	507	550	514	521	538	512	487	567	466	426	469	433	440	457	431	406	486	23346
	816	814	876	879	813	817	880	881	883	735	733	795	798	732	736	799	800	802	492	490	552	555	489	493	556	557	559	411	409	471	474	408	412	475	476	478	23346
	886	888	826	823	889	885	822	819	821	805	807	745	742	808	804	741	738	740	562	564	502	499	565	561	498	495	497	481	483	421	418	484	480	417	414	416	23346
	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346	23346

Above there are only three examples of magic squares of order 36 The other 8 examples are given in **excel file** attached with the work.

2.4 Magic Squares of Order 27

Below are two magic squares of order 27 obtained from magic squares of order 144. It is obtained by the application of the formula ormula $\frac{a^2-b^2}{2}, a > b$, i.e., subtract $\frac{45^2-27^2}{2} := 648$ from each entry of magic squares order 45, we get the following three magic squares of order 27:

3	mgc	9480	9492	8886	9141	8574	8514	8094	7911	7668	8022	8763	8886	9870	10032	10701	11010	11556	12042	11667	11679	11073	11328	10761	10701	10281	10098	9855
	256	309	245	313	253	308	304	269	299	661	714	650	718	658	713	709	674	704	94	147	83	151	91	146	142	107	137	9855
	312	259	323	255	315	260	264	267	301	717	664	728	660	720	665	669	672	706	150	97	161	93	153	98	102	105	139	9855
	252	316	287	291	274	293	275	319	249	657	721	692	696	679	698	680	724	654	90	154	125	129	112	131	113	157	87	9855
	257	311	281	277	294	286	282	246	322	662	716	686	682	699	691	687	651	727	95	149	119	115	132	124	120	84	160	9855
	314	254	279	289	284	273	295	318	250	719	659	684	694	689	678	700	723	655	152	92	117	127	122	111	133	156	88	9855
	247	321	283	285	272	292	288	266	302	652	726	688	690	677	697	693	671	707	85	159	121	123	110	130	126	104	140	9855
	306	262	290	278	296	276	280	303	265	711	667	695	683	701	681	685	708	670	144	100	128	116	134	114	118	141	103	9855
	305	263	270	300	248	317	258	324	271	710	668	675	705	653	722	663	729	676	143	101	108	138	86	155	96	162	109	9855
	307	261	298	268	320	251	310	244	297	712	666	703	673	725	656	715	649	702	145	99	136	106	158	89	148	82	135	9855
	175	228	164	232	172	227	223	188	218	337	390	326	394	334	389	385	350	380	499	552	488	556	496	551	547	512	542	9855
	231	178	242	174	234	179	183	186	220	393	340	404	336	396	341	345	348	382	555	502	566	498	558	503	507	510	544	9855
	171	235	206	210	193	212	194	238	168	333	397	368	372	355	374	356	400	330	495	559	530	534	517	536	518	562	492	9855
	176	230	200	196	213	205	201	165	241	338	392	362	358	375	367	363	327	403	500	554	524	520	537	529	525	489	565	9855
	233	173	198	208	203	192	214	237	169	395	335	360	370	365	354	376	399	331	557	497	522	532	527	516	538	561	493	9855
	166	240	202	204	191	211	207	185	221	328	402	364	366	353	373	369	347	383	490	564	526	528	515	535	531	509	545	9855
	225	181	209	197	215	195	199	222	184	387	343	371	359	377	357	361	384	346	549	505	533	521	539	519	523	546	508	9855
	224	182	189	219	167	236	177	243	190	386	344	351	381	329	398	339	405	352	548	506	513	543	491	560	501	567	514	9855
	226	180	217	187	239	170	229	163	216	388	342	379	349	401	332	391	325	378	550	504	541	511	563	494	553	487	540	9855
	580	633	569	637	577	632	628	593	623	13	66	2	70	10	65	61	26	56	418	471	407	475	415	470	466	431	461	9855
	636	583	647	579	639	584	588	591	625	69	16	80	12	72	17	21	24	58	474	421	485	417	477	422	426	429	463	9855
	576	640	611	615	598	617	599	643	573	9	73	44	48	31	50	32	76	6	414	478	449	453	436	455	437	481	411	9855
	581	635	605	601	618	610	606	570	646	14	68	38	34	51	43	39	3	79	419	473	443	439	456	448	444	408	484	9855
	638	578	603	613	608	597	619	642	574	71	11	36	46	41	30	52	75	7	476	416	441	451	446	435	457	480	412	9855
	571	645	607	609	596	616	612	590	626	4	78	40	42	29	49	45	23	59	409	483	445	447	434	454	450	428	464	9855
	630	586	614	602	620	600	604	627	589	63	19	47	35	53	33	37	60	22	468	424	452	440	458	438	442	465	427	9855
	629	587	594	624	572	641	582	648	595	62	20	27	57	5	74	15	81	28	467	425	432	462	410	479	420	486	433	9855
	631	585	622	592	644	575	634	568	621	64	18	55	25	77	8	67	1	54	469	423	460	430	482	413	472	406	459	9855
	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855

5	mgc	9579	9423	8898	9138	8556	8520	8160	7818	7668	8121	8694	8898	9867	10014	10707	11076	11463	12042	11766	11610	11085	11325	10743	10707	10347	10005	9855
	256	309	245	313	253	308	304	269	299	661	714	650	718	658	713	709	674	704	94	147	83	151	91	146	142	107	137	9855
	312	259	323	255	315	260	264	267	301	717	664	728	660	720	665	669	672	706	150	97	161	93	153	98	102	105	139	9855
	252	316	281	286	285	274	294	319	249	657	721	686	691	690	679	699	724	654	90	154	119	124	123	112	132	157	87	9855
	257	311	288	284	280	272	296	246	322	662	716	693	689	685	677	701	651	727	95	149	126	122	118	110	134	84	160	9855
	314	254	283	282	287	290	278	318	250	719	659	688	687	692	695	683	723	655	152	92	121	120	125	128	116	156	88	9855
	247	321	292	291	275	289	273	266	302	652	726	697	696	680	694	678	671	707	85	159	130	129	113	127	111	104	140	9855
	306	262	276	277	293	295	279	303	265	711	667	681	682	698	700	684	708	670	144	100	114	115	131	133	117	141	103	9855
	305	263	270	300	248	317	258	324	271	710	668	675	705	653	722	663	729	676	143	101	108	138	86	155	96	162	109	9855
	307	261	298	268	320	251	310	244	297	712	666	703	673	725	656	715	649	702	145	99	136	106	158	89	148	82	135	9855
	175	228	164	232	172	227	223	188	218	337	390	326	394	334	389	385	350	380	499	552	488	556	496	551	547	512	542	9855
	231	178	242	174	234	179	183	186	220	393	340	404	336	396	341	345	348	382	555	502	566	498	558	503	507	510	544	9855
	171	235	200	205	204	193	213	238	168	333	397	362	367	366	355	375	400	330	495	559	524	529	528	517	537	562	492	9855
	176	230	207	203	199	191	215	165	241	338	392	369	365	361	353	377	327	403	500	554	531	527	523	515	539	489	565	9855
	233	173	202	201	206	209	197	237	169	395	335	364	363	368	371	359	399	331	557	497	526	525	530	533	521	561	493	9855
	166	240	211	210	194	208	192	185	221	328	402	373	372	356	370	354	347	383	490	564	535	534	518	532	516	509	545	9855
	225	181	195	196	212	214	198	222	184	387	343	357	358	374	376	360	384	346	549	505	519	520	536	538	522	546	508	9855
	224	182	189	219	167	236	177	243	190	386	344	351	381	329	398	339	405	352	548	506	513	543	491	560	501	567	514	9855
	226	180	217	187	239	170	229	163	216	388	342	379	349	401	332	391	325	378	550	504	541	511	563	494	553	487	540	9855
	580	633	569	637	577	632	628	593	623	13	66	2	70	10	65	61	26	56	418	471	407	475	415	470	466	431	461	9855
	636	583	647	579	639	584	588	591	625	69	16	80	12	72	17	21	24	58	474	421	485	417	477	422	426	429	463	9855
	576	640	605	610	609	598	618	643	573	9	73	38	43	42	31	51	76	6	414	478	443	448	447	436	456	481	411	9855
	581	635	612	608	604	596	620	570	646	14	68	45	41	37	29	53	3	79	419	473	450	446	442	434	458	408	484	9855
	638	578	607	606	611	614	602	642	574	71	11	40	39	44	47	35	75	7	476	416	445	444	449	452	440	480	412	9855
	571	645	616	615	599	613	597	590	626	4	78	49	48	32	46	30	23	59	409	483	454	453	437	451	435	428	464	9855
	630	586	600	601	617	619	603	627	589	63	19	33	34	50	52	36	60	22	468	424	438	439	455	457	441	465	427	9855
	629	587	594	624	572	641	582	648	595	62	20	27	57	5	74	15	81	28	467	425	432	462	410	479	420	486	433	9855
	631	585	622	592	644	575	634	568	621	64	18	55	25	77	8	67	1	54	469	423	460	430	482	413	472	406	459	9855
	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855

8	mgc	9468	9633	8886	8754	8847	8589	8154	7761	7668	8010	8904	8886	9483	10305	10776	11070	11406	12042	11655	11820	11073	10941	11034	10776	10341	9948	9855
	267	271	269	304	305	307	265	310	258	672	676	674	709	710	712	670	715	663	105	109	107	142	143	145	103	148	96	9855
	308	275	272	292	290	291	260	317	251	713	680	677	697	695	696	665	722	656	146	113	110	130	128	129	98	155	89	9855
	306	295	285	280	287	273	262	245	323	711	700	690	685	692	678	667	650	728	144	133	123	118	125	111	100	83	161	9855
	266	279	286	284	282	289	302	315	253	671	684	691	689	687	694	707	720	658	104	117	124	122	120	127	140	153	91	9855
	268	294	281	288	283	274	300	311	257	673	699	686	693	688	679	705	716	662	106	132	119	126	121	112	138	149	95	9855
	270	277	296	276	278	293	298	248	320	675	682	701	681	683	698	703	653	725	108	115	134	114	116	131	136	86	158	9855
	303	297	299	264	263	261	301	244	324	708	702	704	669	668	666	706	649	729	141	135	137	102	101	99	139	82	162	9855
	246	250	309	312	247	249	313	314	316	651	655	714	717	652	654	718	719	721	84	88	147	150	85	87	151	152	154	9855
	322	318	259	256	321	319	255	252	254	727	723	664	661	726	724	660	657	659	160	156	97	94	159	157	93	90	92	9855
	186	190	188	223	224	226	184	229	177	348	352	350	385	386	388	346	391	339	510	514	512	547	548	550	508	553	501	9855
	227	194	191	211	209	210	179	236	170	389	356	353	373	371	372	341	398	332	551	518	515	535	533	534	503	560	494	9855
	225	214	204	199	206	192	181	164	242	387	376	366	361	368	354	343	326	404	549	538	528	523	530	516	505	488	566	9855
	185	198	205	203	201	208	221	234	172	347	360	367	365	363	370	383	396	334	509	522	529	527	525	532	545	558	496	9855
	187	213	200	207	202	193	219	230	176	349	375	362	369	364	355	381	392	338	511	537	524	531	526	517	543	554	500	9855
	189	196	215	195	197	212	217	167	239	351	358	377	357	359	374	379	329	401	513	520	539	519	521	536	541	491	563	9855
	222	216	218	183	182	180	220	163	243	384	378	380	345	344	342	382	325	405	546	540	542	507	506	504	544	487	567	9855
	165	169	228	231	166	168	232	233	235	327	331	390	393	328	330	394	395	397	489	493	552	555	490	492	556	557	559	9855
	241	237	178	175	240	238	174	171	173	403	399	340	337	402	400	336	333	335	565	561	502	499	564	562	498	495	497	9855
	591	595	593	628	629	631	589	634	582	24	28	26	61	62	64	22	67	15	429	433	431	466	467	469	427	472	420	9855
	632	599	596	616	614	615	584	641	575	65	32	29	49	47	48	17	74	8	470	437	434	454	452	453	422	479	413	9855
	630	619	609	604	611	597	586	569	647	63	52	42	37	44	30	19	2	80	468	457	447	442	449	435	424	407	485	9855
	590	603	610	608	606	613	626	639	577	23	36	43	41	39	46	59	72	10	428	441	448	446	444	451	464	477	415	9855
	592	618	605	612	607	598	624	635	581	25	51	38	45	40	31	57	68	14	430	456	443	450	445	436	462	473	419	9855
	594	601	620	600	602	617	622	572	644	27	34	53	33	35	50	55	5	77	432	439	458	438	440	455	460	410	482	9855
	627	621	623	588	587	585	625	568	648	60	54	56	21	20	18	58	1	81	465	459	461	426	425	423	463	406	486	9855
	570	574	633	636	571	573	637	638	640	3	7	66	69	4	6	70	71	73	408	412	471	474	409	411	475	476	478	9855
	646	642	583	580	645	643	579	576	578	79	75	16	13	78	76	12	9	11	484	480	421	418	483	481	417	414	416	9855
	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855	9855

Above there are only three examples of magic squares of order 27. The other 8 examples are given in **excel file** attached with the work.

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

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