

Block-Wise Bordered Magic Squares Multiples of 9

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Abstract

*During past years author worked with **block-wise bordered magic 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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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 connection 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 separated 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].

Recently, for the first time, we presented bordered magic squares of odd number blocks. In case of multiples of 3, we worked with different sums magic squares of order 3. In case of multiples of 5 and 7, we worked with **pandiagonal** and **bordered** magic squares of order 5 and 7. This work is for multiples of 9. Here also we work with two types of magic squares of order 9. One **pandiagonal** and another is **bordered** magic squares of order 9. The procedure, how to get these **block-wise bordered** magic squares is also explained. **Pandiagonal** magic squares multiples of 9 are also given. This work is up to order

54. Higher orders examples can be seen in **Excel file** attached with this work. Before proceeding further, let's summarize, the idea of **block-wise bordered** magic squares:

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.

Let's see below the some examples of **block-wise bordered** magic squares multiples 9, where magic squares of order 9 are considered in two different ways.

															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

																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

$$D_{1_{7 \times 7}} := \{81, 162, \dots, 18144, 18225\}$$

$$D_{1_{8 \times 8}} := \{81, 162, \dots, 20655, 20736\}.$$

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

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

										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	369

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:

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

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.

The multiples blocks are two different kinds of magic squares of order 9. Based on these two big magic squares we get the following magic squares.

2.2 Magic Squares of Order 54

Below are two magic squares of order 54 obtained from magic squares of order 144. It is obtained by the application of the formula $\frac{a^2 - b^2}{2}$, $a > b$, i.e., subtract $\frac{144^2 - 54^2}{2} := 8910$ from each entry of magic squares order 144, we get the following two magic squares of order 54:

2452	2501	2460	2457	2494	2462	2450	2499	2464	2209	2258	2217	2214	2251	2219	2207	2256	2221	751	800	759	756	793	761	749	798	763	589	638	597	594	631	599	587	636	601	103	152	111	108	145	113	101	150	115	2533	2582	2541	2538	2575	2543	2531	2580	2545	78759
2465	2451	2497	2458	2453	2502	2463	2455	2495	2222	2208	2254	2215	2210	2259	2220	2212	2252	764	750	796	757	752	801	762	754	794	602	588	634	595	590	639	600	592	632	116	102	148	109	104	153	114	106	146	2546	2532	2578	2539	2534	2583	2544	2536	2576	78759
2496	2461	2456	2498	2466	2449	2500	2459	2454	2253	2218	2213	2255	2223	2206	2257	2216	2211	795	760	755	797	765	748	799	758	753	633	598	593	635	603	586	637	596	591	147	112	107	149	117	100	151	110	105	2577	2542	2537	2579	2547	2530	2581	2540	2535	78759
2470	2438	2505	2475	2431	2507	2468	2436	2509	2227	2195	2262	2232	2188	2264	2225	2193	2266	769	737	804	774	730	806	767	735	808	607	575	642	612	568	644	605	573	646	121	89	156	126	82	158	119	87	160	2551	2519	2586	2556	2512	2588	2549	2517	2590	78759
2510	2469	2434	2503	2471	2439	2508	2473	2432	2267	2226	2191	2260	2228	2196	2265	2230	2189	809	768	733	802	770	738	807	772	731	647	606	571	640	608	576	645	610	569	161	120	85	154	122	90	159	124	83	2591	2550	2515	2584	2552	2520	2589	2554	2513	78759
2433	2506	2474	2435	2511	2467	2437	2504	2472	2190	2263	2231	2192	2268	2224	2194	2261	2229	732	805	773	734	810	766	736	803	771	570	643	611	572	648	604	574	641	609	84	157	125	86	162	118	88	155	123	2514	2587	2555	2516	2592	2548	2518	2585	2553	78759
2488	2483	2442	2493	2476	2444	2486	2481	2446	2245	2240	2199	2250	2233	2201	2243	2238	2203	787	782	741	792	775	743	785	780	745	625	620	579	630	613	581	623	618	583	139	134	93	144	127	95	137	132	97	2569	2564	2523	2574	2557	2525	2567	2562	2527	78759
2447	2487	2479	2440	2489	2484	2445	2491	2477	2204	2244	2236	2197	2246	2241	2202	2248	2234	746	786	778	739	788	783	744	790	776	584	624	616	577	626	621	582	628	614	98	138	130	91	140	135	96	142	128	2528	2568	2560	2521	2570	2565	2526	2572	2558	78759
2478	2443	2492	2480	2448	2485	2482	2441	2490	2235	2200	2249	2237	2205	2242	2239	2198	2247	777	742	791	779	747	784	781	740	789	615	580	629	617	585	622	619	578	627	129	94	143	133	92	141	2559	2524	2573	2561	2529	2566	2563	2522	2571	78759			
508	557	516	513	550	518	506	555	520	2047	2096	2055	2052	2089	2057	2045	2094	2059	1804	1853	1812	1809	1846	1814	1802	1851	1816	1075	1124	1083	1080	1117	1085	1073	1122	1087	832	881	840	837	874	842	830	879	844	2371	2420	2379	2376	2413	2381	2369	2418	2383	78759
521	507	553	514	509	558	519	511	551	2060	2046	2092	2053	2048	2097	2058	2050	2090	1817	1803	1849	1810	1805	1854	1815	1807	1847	1088	1074	1120	1081	1076	1125	1086	1078	1118	845	831	877	838	833	882	843	835	875	2384	2370	2416	2377	2372	2421	2382	2374	2414	78759
552	517	512	554	522	505	556	515	510	2091	2056	2051	2093	2061	2044	2095	2054	2049	1848	1813	1808	1850	1818	1801	1852	1811	1806	1119	1084	1079	1121	1089	1072	1123	1082	1077	876	841	836	878	846	829	880	839	834	2415	2380	2375	2417	2385	2368	2419	2378	2373	78759
526	494	561	531	487	563	524	492	565	2065	2033	2100	2070	2026	2102	2063	2031	2104	1822	1790	1857	1827	1783	1859	1820	1788	1861	1093	1061	1128	1098	1054	1130	1091	1059	1132	850	818	885	855	811	887	848	816	889	2389	2357	2424	2394	2350	2426	2387	2355	2428	78759
566	525	490	559	527	495	564	529	488	2105	2064	2029	2098	2066	2034	2103	2068	2027	1862	1821	1786	1855	1823	1791	1860	1825	1784	1133	1092	1057	1126	1094	1062	1131	1096	1055	890	849	814	883	851	819	888	853	812	2429	2388	2353	2422	2390	2358	2427	2392	2351	78759
489	562	530	491	567	523	493	560	528	2028	2101	2069	2030	2106	2062	2032	2099	2067	1785	1858	1826	1787	1863	1819	1789	1856	1824	1056	1129	1097	1058	1134	1090	1060	1127	1095	813	886	854	815	891	847	817	884	852	2352	2425	2393	2354	2430	2386	2356	2423	2391	78759
544	539	498	549	532	500	542	537	502	2083	2078	2037	2088	2071	2039	2081	2076	2041	1840	1835	1794	1845	1828	1796	1838	1833	1798	1111	1106	1065	1116	1099	1067	1109	1104	1069	868	863	822	873	856	824	866	861	826	2407	2402	2361	2412	2395	2363	2405	2400	2365	78759
503	543	535	496	545	540	501	547	533	2042	2082	2074	2035	2084	2079	2040	2086	2072	1799	1839	1831	1792	1841	1836	1797	1843	1829	1070	1110	1102	1063	1112	1107	1068	1114	1100	827	867	859	820	869	864	825	871	857	2366	2406	2398	2359	2408	2403	2364	2410	2396	78759
534	499	548	536	504	541	538	497	546	2073	2038	2087	2075	2043	2080	2077	2036	2085	1830	1795	1844	1832	1800	1837	1834	1793	1842	1101	1066	1115	1103	1071	1108	1105	1064	1113	858	823	872	860	828	865	862	821	870	2397	2362	2411	2399	2367	2404	2401	2360	2409	78759
22	71	30	27	64	32	20	69	34	913	962	921	918	955	923	911	960	925	994	1043	1002	999	1036	1004	992	1041	1006	1885	1934	1893	1890	1927	1895	1883	1932	1897	1966	2015	1974	1971	2008	1976	1964	2013	1978	2857	2906	2865	2862	2899	2867	2855	2904	2869	78759
35	21	67	28	23	72	33	25	65	926	912	958	919	914	963	924	916	956	1007	993	1039	1000	995	1044	1005	997	1037	1898	1884	1930	1891	1886	1935	1896	1888	1928	1979	1965	2011	1972	1967	2016	1977	1969	2009	2870	2856	2902	2863	2858	2907	2868	2860	2900	78759
66	31	26	68	36	19	70	29	24	957	922	917	959	927	910	961	920	915	1038	1003	998	1040	1008	991	1042	1001	996	1929	1894	1889	1931	1899	1882	1933	1892	1887	2010	1975	1970	2012	1980	1963	2014	1973	1968	2901	2866	2861	2903	2871	2854	2905	2864	2859	78759
40	8	75	45	1	77	38	6	79	931	899	966	936	892	968	929	897	970	1012	980	1047	1017	973	1049	1010	978	1051	1903	1871	1938	1908	1864	1940	1901	1869	1942	1984	1952	2019	1989	1945	2021	1982	1950	2023	2875	2843	2910	2880	2836	2912	2873	2841	2914	78759
80	39	4	73	41	9	78	43	2	971	930	895	964	932	900	969	934	893	1052	1011	976	1045	1013	981	1050	1015	974	1943	1902	1867	1936	1904	1872	1941	1906	1865	2024	1983	1948	2017	1985	1953	2022	1987	1946	2915	2874	2839	2908	2876	2844	2913	2878	2837	78759
3	76	44	5	81	37	7	74	42	894	967	935	896	972	928	898	965	933	975	1048	1016	977	1053	1009	979	1046	1014	1866	1939	1907	1868	1944	1900	1870	1937	1905	1947	2020	1988	1949	2025	1981	1951	2018	1986	2838	2911	2879	2840	2916	2872	2842	2909	2877	78759
58	53	12	63	46	14	56	51	16	949	944	903	954	937	905	947	942	907	1030	1025	984	1035	1018	986	1028	1023	988	1921	1916	1875	1926	1909	1877	1919	1914	1879	2002	1997	1956	2007	1990	1958	2000	1995	1960	2893	2888	2847	2898	2881	2849	2891	2886	2851	78759
17	57	49	10	59	54	15	61	47	908	948	940	901	950	945	906	952	938	989	1029	1021	982	1031	1026	987	1033	1019	1880	1920	1912	1873	1922	1917																						

2438	2510	2508	2506	2505	2442	2444	2446	2440	2195	2267	2265	2263	2262	2199	2201	2203	2197	737	809	807	805	804	741	743	745	739	575	647	645	643	642	579	581	583	577	89	161	159	157	156	93	95	97	91	2519	2591	2589	2587	2586	2523	2525	2527	2521	78759	
2431	2488	2484	2486	2451	2450	2448	2490	2511	2188	2245	2241	2243	2208	2207	2205	2247	2268	730	787	783	785	750	749	747	789	810	568	625	621	623	588	587	585	627	648	82	139	135	137	102	101	99	141	162	2512	2569	2565	2567	2532	2531	2529	2571	2592	78759	
2433	2447	2480	2483	2463	2465	2464	2495	2509	2190	2204	2237	2240	2220	2222	2221	2252	2266	732	746	779	782	762	764	763	794	808	570	584	617	620	600	602	601	632	646	84	98	131	134	114	116	115	146	160	2514	2528	2561	2564	2544	2546	2545	2576	2590	78759	
2435	2449	2460	2470	2475	2468	2482	2493	2507	2192	2206	2217	2227	2232	2225	2239	2250	2264	734	748	759	769	774	767	781	792	806	572	586	597	607	612	605	619	630	644	86	100	111	121	126	119	133	144	158	2516	2530	2541	2551	2556	2549	2563	2574	2588	78759	
2503	2489	2461	2469	2471	2473	2481	2453	2439	2260	2246	2218	2226	2228	2230	2238	2210	2196	802	788	760	768	770	772	780	752	738	640	626	598	606	608	610	618	590	576	154	140	112	120	122	124	132	104	90	2584	2570	2542	2550	2552	2554	2562	2534	2520	78759	
2501	2487	2476	2474	2467	2472	2466	2455	2441	2258	2244	2233	2231	2224	2229	2223	2212	2198	800	786	775	773	766	771	765	754	740	638	624	613	611	604	609	603	592	578	152	138	127	125	118	123	117	106	92	2582	2568	2557	2555	2548	2553	2547	2536	2522	78759	
2499	2485	2478	2459	2479	2477	2462	2457	2443	2256	2242	2235	2216	2236	2234	2219	2214	2200	798	784	777	758	778	776	761	756	742	636	622	615	596	616	614	599	594	580	150	136	129	110	130	128	113	108	94	2580	2566	2559	2540	2560	2558	2543	2538	2524	78759	
2497	2452	2458	2456	2491	2492	2494	2454	2445	2254	2209	2215	2213	2248	2249	2251	2211	2202	796	751	757	755	790	791	793	753	744	634	589	595	593	628	629	631	591	582	148	103	109	107	142	143	145	105	96	2578	2533	2539	2537	2572	2573	2575	2535	2526	78759	
2502	2432	2434	2436	2437	2500	2498	2496	2504	2259	2189	2191	2193	2194	2257	2255	2253	2261	801	731	733	735	736	799	797	795	803	639	569	571	573	574	637	635	633	641	153	83	85	87	88	151	149	147	155	2583	2513	2515	2517	2518	2581	2579	2577	2585	78759	
494	566	564	562	561	498	500	502	496	2033	2105	2103	2101	2100	2037	2039	2041	2035	1790	1862	1860	1858	1857	1794	1796	1798	1792	1061	1133	1131	1129	1128	1065	1067	1069	1063	818	890	888	886	885	822	824	826	820	2357	2429	2427	2425	2424	2361	2363	2365	2359	78759	
487	544	540	542	507	506	504	546	567	2026	2083	2079	2081	2046	2045	2043	2085	2106	1783	1840	1836	1838	1803	1802	1800	1842	1863	1054	1111	1107	1109	1074	1073	1071	1113	1134	811	868	864	866	831	830	828	870	891	2350	2407	2403	2405	2370	2369	2367	2409	2430	78759	
489	503	536	539	519	521	520	551	565	2028	2042	2075	2078	2058	2060	2059	2090	2104	1785	1799	1832	1835	1815	1817	1816	1847	1861	1056	1070	1103	1106	1086	1088	1087	1118	1132	813	827	860	863	843	845	844	875	889	2352	2366	2399	2402	2382	2384	2383	2414	2428	78759	
491	505	516	526	531	524	538	549	563	2030	2044	2055	2065	2070	2063	2077	2088	2102	1787	1801	1812	1822	1827	1820	1834	1845	1859	1058	1072	1083	1093	1098	1091	1105	1116	1130	815	829	840	850	855	848	862	873	887	2354	2368	2379	2389	2394	2387	2401	2412	2426	78759	
559	545	517	525	527	529	537	509	495	2098	2084	2056	2064	2066	2068	2076	2048	2034	1855	1841	1813	1821	1823	1825	1833	1805	1791	1126	1112	1084	1092	1094	1096	1104	1076	1062	883	869	841	849	851	853	861	833	819	2422	2408	2380	2388	2390	2392	2400	2372	2358	78759	
557	543	532	530	523	528	522	511	497	2096	2082	2071	2069	2062	2067	2061	2050	2036	1853	1839	1828	1826	1819	1824	1818	1807	1793	1124	1110	1099	1097	1090	1095	1089	1078	1064	881	867	856	854	847	852	846	835	821	2420	2406	2395	2393	2386	2391	2385	2374	2360	78759	
555	541	534	515	535	533	518	513	499	2094	2080	2073	2054	2074	2072	2057	2052	2038	1851	1837	1830	1811	1831	1829	1814	1809	1795	1122	1108	1101	1082	1102	1100	1085	1080	1066	879	865	858	839	859	857	842	837	823	2418	2404	2397	2378	2398	2396	2381	2376	2362	78759	
553	508	514	512	547	548	550	510	501	2092	2047	2053	2051	2086	2087	2089	2049	2040	1849	1804	1810	1808	1843	1844	1846	1806	1797	1120	1075	1081	1079	1114	1115	1117	1077	1068	877	832	838	836	871	872	874	834	825	2416	2371	2377	2375	2410	2411	2413	2373	2364	78759	
558	488	490	492	493	556	554	552	560	2097	2027	2029	2031	2032	2095	2093	2091	2099	1854	1784	1786	1788	1789	1852	1850	1848	1856	1125	1055	1057	1059	1060	1123	1121	1119	1127	882	812	814	816	817	880	878	876	884	2421	2351	2353	2355	2356	2419	2417	2415	2423	2363	78759
8	80	78	76	75	12	14	16	10	899	971	969	967	966	903	905	907	901	980	1052	1050	1048	1047	984	986	988	982	1871	1943	1941	1939	1938	1875	1877	1879	1873	1952	2024	2022	2020	2019	1956	1958	1960	1954	2843	2915	2913	2911	2910	2847	2849	2851	2845	78759	
1	58	54	56	21	20	18	60	81	892	949	945	947	912	911	909	951	972	973	1030	1026	1028	993	992	990	1032	1053	1864	1921	1917	1919	1884	1883	1881	1923	1944	1945	2002	1998	2000	1965	1964	1962	2004	2025	2836	2893	2889	2891	2856	2855	2853	2895	2916	78759	
3	17	50	53	33	35	34	65	79	894	908	941	944	924	926	925	956	970	975	989	1022	1025	1005	1007	1006	1037	1051	1866	1880	1913	1916	1896	1898	1897	1928	1942	1947	1961	1994	1997	1977	1979	1978	2009	2023	2838	2852	2885	2888	2868	2870	2869	2900	2914	78759	
5	19	30	40	45	38	52	63	77	896	910	921	931	936	929	943	954	968	977	991	1002	1012	1017	1010	1024	1035	1049	1868	1882	1893	1903	1908	1901	1915	1926	1940	1949	1963	1974	1984	1989	1982	1996	2007	2021	2840	2854	2865	2875	2880	2873	2887	2898	2912	78759	
73	59	31	39	41	43	51	23	9	964	950	922	930	932	934	942	914	900	1045	1031	1003	1011	1013	1015	1023	995	981	1936	1922	1894	1902	1904	1906	1914	1886	1872	2017	2003	1975	1983	1985	1987	1995	1967	1953	2908	2894	2866	2874	2876	2878	2886	2858	2844	78759	
71	57	46	44	37	42	36	25	11	962	948	937	935	928	933	927	916	902	1043	1029	1018	1016	1009	1014	1008	997	983	1934	1920	1909	1907	1900	1905	1899	1888	1874	2015	2001	1990	1988	1981	1986	1980	1969	1955	2906	2892	2881	2879	2872	2877	2871	2860	2846	78759	
69	55	48	29	49	47	32	27	13	960	946	939	920	940	938	923	918	904	1041	1027	1020	1001	1021	1019	1004	999	985	1932	1918	1911	1892	1912	1910	1895	1890	1876	2013	1999	1992	1973	1993	1991	1976	1971	1957	2904	2890	2883	2864	2884	2882	2867	2862	2848	78759	
67	22	28	26	61	62	64	24	15	958	913	919	917	952	953	955	915	906	1039	994																																				

2.3 Magic Squares of Order 45

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

																																	45585												
1723	1772	1731	1728	1765	1733	1721	1770	1735	1966	2015	1974	1971	2008	1976	1964	2013	1978	346	395	354	351	388	356	344	393	358	508	557	516	513	550	518	506	555	520	427	476	435	432	469	437	425	474	439	45585
1736	1722	1768	1729	1724	1773	1734	1726	1766	1979	1965	2011	1972	1967	2016	1977	1969	2009	359	345	391	352	347	396	357	349	389	521	507	553	514	509	558	519	511	551	440	426	472	433	428	477	438	430	470	45585
1767	1732	1727	1769	1737	1720	1771	1730	1725	2010	1975	1970	2012	1980	1963	2014	1973	1968	390	355	350	392	360	343	394	353	348	552	517	512	554	522	505	556	515	510	471	436	431	473	441	424	475	434	429	45585
1741	1709	1776	1746	1702	1778	1739	1707	1780	1984	1952	2019	1989	1945	2021	1982	1950	2023	364	332	399	369	325	401	362	330	403	526	494	561	531	487	563	524	492	565	445	413	480	450	406	482	443	411	484	45585
1781	1740	1705	1774	1742	1710	1779	1744	1703	2024	1983	1948	2017	1985	1953	2022	1987	1946	404	363	328	397	365	333	402	367	326	566	525	490	559	527	495	564	529	488	485	444	409	478	446	414	483	448	407	45585
1704	1777	1745	1706	1782	1738	1708	1775	1743	1947	2020	1988	1949	2025	1981	1951	2018	1986	327	400	368	329	405	361	331	398	366	489	562	530	491	567	523	493	560	528	408	481	449	410	486	442	412	479	447	45585
1759	1754	1713	1764	1747	1715	1757	1752	1717	2002	1997	1956	2007	1990	1958	2000	1995	1960	382	377	336	387	370	338	380	375	340	544	539	498	549	532	500	542	537	502	463	458	417	468	451	419	461	456	421	45585
1718	1758	1750	1711	1760	1755	1716	1762	1748	1961	2001	1993	1954	2003	1998	1959	2005	1991	341	381	373	334	383	378	339	385	371	503	543	535	496	545	540	501	547	533	422	462	454	415	464	459	420	466	452	45585
1749	1714	1763	1751	1719	1756	1753	1712	1761	1992	1957	2006	1994	1962	1999	1996	1955	2004	372	337	386	374	342	379	376	335	384	534	499	548	536	504	541	538	497	546	453	418	467	455	423	460	457	416	465	45585
103	152	111	108	145	113	101	150	115	913	962	921	918	955	923	911	960	925	1318	1367	1326	1323	1360	1328	1316	1365	1330	751	800	759	756	793	761	749	798	763	1885	1934	1893	1890	1927	1895	1883	1932	1897	45585
116	102	148	109	104	153	114	106	146	926	912	958	919	914	963	924	916	956	1331	1317	1363	1324	1319	1368	1329	1321	1361	764	750	796	757	752	801	762	754	794	1898	1884	1930	1891	1886	1935	1896	1888	1928	45585
147	112	107	149	117	100	151	110	105	957	922	917	959	927	910	961	920	915	1362	1327	1322	1364	1332	1315	1366	1325	1320	795	760	755	797	765	748	799	758	753	1929	1894	1889	1931	1899	1882	1933	1892	1887	45585
121	89	156	126	82	158	119	87	160	931	899	966	936	892	968	929	897	970	1336	1304	1371	1341	1297	1373	1334	1302	1375	769	737	804	774	730	806	767	735	808	1903	1871	1938	1908	1864	1940	1901	1869	1942	45585
161	120	85	154	122	90	159	124	83	971	930	895	964	932	900	969	934	893	1376	1335	1300	1369	1337	1305	1374	1339	1298	809	768	733	802	770	738	807	772	731	1943	1902	1867	1936	1904	1872	1941	1906	1865	45585
84	157	125	86	162	118	88	155	123	894	967	935	896	972	928	898	965	933	1299	1372	1340	1301	1377	1333	1303	1370	1338	732	805	773	734	810	766	736	803	771	1866	1939	1907	1868	1944	1900	1870	1937	1905	45585
139	134	93	144	127	95	137	132	97	949	944	903	954	937	905	947	942	907	1354	1349	1308	1359	1342	1310	1352	1347	1312	787	782	741	792	775	743	785	780	745	1921	1916	1875	1926	1909	1877	1919	1914	1879	45585
98	138	130	91	140	135	96	142	128	908	948	940	901	950	945	906	952	938	1313	1353	1345	1306	1355	1350	1311	1357	1343	746	786	778	739	788	783	744	790	776	1880	1920	1912	1873	1922	1917	1878	1924	1910	45585
129	94	143	131	99	136	133	92	141	939	904	953	941	909	946	943	902	951	1344	1309	1358	1346	1314	1351	1348	1307	1356	777	742	791	779	747	784	781	740	789	1911	1876	1925	1913	1881	1918	1915	1874	1923	45585
184	233	192	189	226	194	182	231	196	832	881	840	837	874	842	830	879	844	994	1043	1002	999	1036	1004	992	1041	1006	1156	1205	1164	1161	1198	1166	1154	1203	1168	1804	1853	1812	1809	1846	1814	1802	1851	1816	45585
197	183	229	190	185	234	195	187	227	845	831	877	838	833	882	843	835	875	1007	993	1039	1000	995	1044	1005	997	1037	1169	1155	1201	1162	1157	1206	1167	1159	1199	1817	1803	1849	1810	1805	1854	1815	1807	1847	45585
228	193	188	230	198	181	232	191	186	876	841	836	878	846	829	880	839	834	1038	1003	998	1040	1008	991	1042	1001	996	1200	1165	1160	1202	1170	1153	1204	1163	1158	1848	1813	1808	1850	1818	1801	1852	1811	1806	45585
202	170	237	207	163	239	200	168	241	850	818	885	855	811	887	848	816	889	1012	980	1047	1017	973	1049	1010	978	1051	1174	1142	1209	1179	1135	1211	1172	1140	1213	1822	1790	1857	1827	1783	1859	1820	1788	1861	45585
242	201	166	235	203	171	240	205	164	890	849	814	883	851	819	888	853	812	1052	1011	976	1045	1013	981	1050	1015	974	1214	1173	1138	1207	1175	1143	1212	1177	1136	1862	1821	1786	1855	1823	1791	1860	1825	1784	45585
165	238	206	167	243	199	169	236	204	813	886	854	815	891	847	817	884	852	975	1048	1016	977	1053	1009	979	1046	1014	1137	1210	1178	1139	1215	1171	1141	1208	1176	1785	1858	1826	1787	1863	1819	1789	1856	1824	45585
220	215	174	225	208	176	218	213	178	868	863	822	873	856	824	866	861	826	1030	1025	984	1035	1018	986	1028	1023	988	1192	1187	1146	1197	1180	1148	1190	1185	1150	1840	1835	1794	1845	1828	1796	1838	1833	1798	45585
179	219	211	172	221	216	177	223	209	827	867	859	820	869	864	825	871	857	989	1029	1021	982	1031	1026	987	1033	1019	1151	1191	1183	1144	1193	1188	1149	1195	1181	1799	1839	1831	1792	1841	1836	1797	1843	1829	45585
210	175	224	212	180	217	214	173	222	858	823	872	860	828	865	862	821	870	1020	985	1034	1022	990	1027	1024	983	1032	1182	1147	1196	1184	1152	1189	1186	1145	1194	1830	1795	1844	1832	1800	1837	1834	1793	1842	45585
1399	1448	1407	1404	1441	1409	1397	1446	1411	1237	1286	1245	1242	1279	1247	1235	1284	1249	670	719	678	675	712	680	668	717	682	1075	1124	1083	1080	1117	1085	1073	1122	1087	589	638	597	594	631	599	587	636	601	45585
1412	1398	1444	1405	1400	1449	1410	1402	1442	1250	1236	1282	1243	1238	1287	1248	1240	1280	683	669	715	676	671	720	681	673	713	1088	1074	1120	1081	1076	1125	1086	1078	1118	602	588	634	595	590	639	600	592	632	45585
1443	1408	1403	1445	1413	1396	1447	1406	1401	1281	1246	1241	1283	1251	1234	1285	1244	1239	714	679	674	716	684	667	718	677	672	1119	1084	1079	1121	1089	1072	1123	1082	1077	633	598	593	635	603	586	637	596	591	45585
1417	1385	1452	1422	1378	1454	1415	1383	1456	1255	1223	1290	1260	1216	1292	1253	1221	1294	688	656	723	693	649	725	686	654	727	1093	106																	

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
1772	1758	1747	1745	1738	1743	1737	1726	1712	2015	2001	1990	1988	1981	1986	1980	1969	1955	395	381	370	368	361	366	360	349	335	557	543	532	530	523	528	522	511	497	476	462	451	449	442	447	441	430	416	45585
1770	1756	1749	1730	1750	1748	1733	1728	1714	2013	1999	1992	1973	1993	1991	1976	1971	1957	393	379	372	353	373	371	356	351	337	555	541	534	515	535	533	518	513	499	474	460	453	434	454	452	437	432	418	45585
1768	1723	1729	1727	1762	1763	1765	1725	1716	2011	1966	1972	1970	2005	2006	2008	1968	1959	391	346	352	350	385	386	388	348	339	553	508	514	512	547	548	550	510	501	472	427	433	431	466	467	469	429	420	45585
1773	1703	1705	1707	1708	1771	1769	1767	1775	2016	1946	1948	1950	1951	2014	2012	2010	2018	396	326	328	330	331	394	392	390	398	558	488	490	492	493	556	554	552	560	477	407	409	411	412	475	473	471	479	45585
89	161	159	157	156	93	95	97	91	899	971	969	967	966	903	905	907	901	1304	1376	1374	1372	1371	1308	1310	1312	1306	737	809	807	805	804	741	743	745	739	1871	1943	1941	1939	1938	1875	1877	1879	1873	45585
82	139	135	137	102	101	99	141	162	892	949	945	947	912	911	909	951	972	1297	1354	1350	1352	1317	1316	1314	1356	1377	730	787	783	785	750	749	747	789	810	1864	1921	1917	1919	1884	1883	1881	1923	1944	45585
84	98	131	134	114	116	115	146	160	894	908	941	944	924	926	925	956	970	1299	1313	1346	1349	1329	1331	1330	1361	1375	732	746	779	782	762	764	763	794	808	1866	1880	1913	1916	1896	1898	1897	1928	1942	45585
86	100	111	121	126	119	133	144	158	896	910	921	931	936	929	943	954	968	1301	1315	1326	1336	1341	1334	1348	1359	1373	734	748	759	769	774	767	781	792	806	1868	1882	1893	1903	1908	1901	1915	1926	1940	45585
154	140	112	120	122	124	132	104	90	964	950	922	930	932	934	942	914	900	1369	1355	1327	1335	1337	1339	1347	1319	1305	802	788	760	768	770	772	780	752	738	1936	1922	1894	1902	1904	1906	1914	1886	1872	45585
152	138	127	125	118	123	117	106	92	962	948	937	935	928	933	927	916	902	1367	1353	1342	1340	1333	1338	1332	1321	1307	800	786	775	773	766	771	765	754	740	1934	1920	1909	1907	1900	1905	1899	1888	1874	45585
150	136	129	110	130	128	113	108	94	960	946	939	920	940	938	923	918	904	1365	1351	1344	1325	1345	1343	1328	1323	1309	798	784	777	758	778	776	761	756	742	1932	1918	1911	1892	1912	1910	1895	1890	1876	45585
148	103	109	107	142	143	145	105	96	958	913	919	917	952	953	955	915	906	1363	1318	1324	1322	1357	1358	1360	1320	1311	796	751	757	755	790	791	793	753	744	1930	1885	1891	1889	1924	1925	1927	1887	1878	45585
153	83	85	87	88	151	149	147	155	963	893	895	897	898	961	959	957	965	1368	1298	1300	1302	1303	1366	1364	1362	1370	801	731	733	735	736	799	797	795	803	1935	1865	1867	1869	1870	1933	1931	1929	1937	45585
170	242	240	238	237	174	176	178	172	818	890	888	886	885	822	824	826	820	980	1052	1050	1048	1047	984	986	988	982	1142	1214	1212	1210	1209	1146	1148	1150	1144	1790	1862	1860	1858	1857	1794	1796	1798	1792	45585
163	220	216	218	183	182	180	222	243	811	868	864	866	831	830	828	870	891	973	1030	1026	1028	993	992	990	1032	1053	1135	1192	1188	1190	1155	1154	1152	1194	1215	1783	1840	1836	1838	1803	1802	1800	1842	1863	45585
165	179	212	215	195	197	196	227	241	813	827	860	863	843	845	844	875	889	975	989	1022	1025	1005	1007	1006	1037	1051	1137	1151	1184	1187	1167	1169	1168	1199	1213	1785	1799	1832	1835	1815	1817	1816	1847	1861	45585
167	181	192	202	207	200	214	225	239	815	829	840	850	855	848	862	873	887	977	991	1002	1012	1017	1010	1024	1035	1049	1139	1153	1164	1174	1179	1172	1186	1197	1211	1787	1801	1812	1822	1827	1820	1834	1845	1859	45585
235	221	193	201	203	205	213	185	171	883	869	841	849	851	853	861	833	819	1045	1031	1003	1011	1013	1015	1023	995	981	1207	1193	1165	1173	1175	1177	1185	1157	1143	1855	1841	1813	1821	1823	1825	1833	1805	1791	45585
233	219	208	206	199	204	198	187	173	881	867	856	854	847	852	846	835	821	1043	1029	1018	1016	1009	1014	1008	997	983	1205	1191	1180	1178	1171	1176	1170	1159	1145	1853	1839	1828	1826	1819	1824	1818	1807	1793	45585
231	217	210	191	211	209	194	189	175	879	865	858	839	859	857	842	837	823	1041	1027	1020	1001	1021	1019	1004	999	985	1203	1189	1182	1163	1183	1181	1166	1161	1147	1851	1837	1830	1811	1831	1829	1814	1809	1795	45585
229	184	190	188	223	224	226	186	177	877	832	838	836	871	872	874	834	825	1039	994	1000	998	1033	1034	1036	996	987	1201	1156	1162	1160	1195	1196	1198	1158	1149	1849	1804	1810	1808	1843	1844	1846	1806	1797	45585
234	164	166	168	169	232	230	228	236	882	812	814	816	817	880	878	876	884	1044	974	976	978	979	1042	1040	1038	1046	1206	1136	1138	1140	1141	1204	1202	1200	1208	1854	1784	1786	1788	1789	1852	1850	1848	1856	45585
1385	1457	1455	1453	1452	1389	1391	1393	1387	1223	1295	1293	1291	1290	1227	1229	1231	1225	656	728	726	724	723	660	662	664	658	1061	1133	1131	1129	1128	1065	1067	1069	1063	575	647	645	643	642	579	581	583	577	45585
1378	1435	1431	1433	1398	1397	1395	1437	1458	1216	1273	1269	1271	1236	1235	1233	1275	1296	649	706	702	704	669	668	666	708	729	1054	1111	1107	1109	1074	1073	1071	1113	1134	568	625	621	623	588	587	585	627	648	45585
1380	1394	1427	1430	1410	1412	1411	1442	1456	1218	1232	1265	1268	1248	1250	1249	1280	1294	651	665	698	701	681	683	682	713	727	1056	1070	1103	1106	1086	1088	1087	1118	1132	570	584	617	620	600	602	601	632	646	45585
1382	1396	1407	1417	1422	1415	1429	1440	1454	1220	1234	1245	1255	1260	1253	1267	1278	1292	653	667	678	688	693	686	700	711	725	1058	1072	1083	1093															

2.4 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 $\frac{a^2 - b^2}{2}$, $a > b$, i.e., subtract $\frac{144^2 - 36^2}{2} := 9720$ from each entry of magic squares order 144, we get the following two magic squares of order 36:

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

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

2.5 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 $\frac{a^2 - b^2}{2}$, $a > b$, i.e., subtract $\frac{45^2 - 27^2}{2} := 648$ from each entry of magic squares order 45, we get the following two magic squares of order 27:

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

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

More examples of higher order can also be obtained in a similar way. See the attached excel file giving block-bordered magic squares from orders 9 to 144.

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

- Inder J. Taneja, Recreation of Numbers - <https://numbers-magic.com/?p=671>.
- Inder J. Taneja, Magic Squares - <https://numbers-magic.com/?cat=3>.

References

• Block-Wise Magic Squares

- [1] **H. White**, Bordered Magic Squares - <http://budshaw.ca/BorderedMagicSquares.html>
- [2] **Inder J. Taneja**, Block-Wise Constructions of Magic and Bimagic Squares of Orders 8 to 108, May 15, 2019, pp. 1-43, **Zenodo**, <http://doi.org/10.5281/zenodo.2843326>.
- [3] **Inder J. Taneja**, Block-Wise Equal Sums Pandiagonal Magic Squares of Order $4k$, **Zenodo**, January 31, 2019, pp. 1-17, <http://doi.org/10.5281/zenodo.2554288>.
- [4] **Inder J. Taneja**, Magic Rectangles in Construction of Block-Wise Pandiagonal Magic Squares, **Zenodo**, January 31, 2019, pp. 1-49, <http://doi.org/10.5281/zenodo.2554520>.
- [5] **Inder J. Taneja**, Block-Wise Equal Sums Magic Squares of Orders $3k$ and $6k$, **Zenodo**, February 1, 2019, pp. 1-55, <http://doi.org/10.5281/zenodo.2554895>.
- [6] **Inder J. Taneja**, Block-Wise Unequal Sums Magic Squares, **Zenodo**, February 1, 2019, pp. 1-52, <http://doi.org/10.5281/zenodo.2555260>.
- [7] **Inder J. Taneja**, Block-Wise Magic and Bimagic Squares of Orders 12 to 36, **Zenodo**, February 1, 2019, pp. 1-53, <http://doi.org/10.5281/zenodo.2555343>.
- [8] **Inder J. Taneja**, Block-Wise Magic and Bimagic Squares of Orders 39 to 45, **Zenodo**, February 2, 2019, pp. 1-73, <http://doi.org/10.5281/zenodo.2555889>.

• Bordered Magic Squares

- [9] **Inder J. Taneja**, Nested Magic Squares With Perfect Square Sums, Pythagorean Triples, and Borders Differences, **Zenodo**, June 14, 2019, pp. 1-59, <http://doi.org/10.5281/zenodo.3246586>.
- [10] **Inder J. Taneja**, Symmetric Properties of Nested Magic Squares, **Zenodo**, June 29, 2019, pp. 1-55, <http://doi.org/10.5281/zenodo.3262170>.
- [11] **Inder J. Taneja**, General Sum Symmetric and Positive Entries Nested Magic Squares, **Zenodo**, July 04, 2019, pp. 1-55, <http://doi.org/10.5281/zenodo.3268877>.
- [12] **Inder J. Taneja**, Bordered Magic Squares With Order Square Magic Sums, **Zenodo**, January 20, 2020, pp. 1-26, <http://doi.org/10.5281/zenodo.3613690>.

- [13] **Inder J. Taneja**, Fractional and Decimal Type Bordered Magic Squares With Magic Sum 2020. **Zenodo**, January 20, 2020, pp.1-25.
<http://doi.org/10.5281/zenodo.3613698>.
- [14] **Inder J. Taneja**, Fractional and Decimal Type Bordered Magic Squares With Magic Sum 2021, **Zenodo**, December 16, 2020, pp. 1-33,
<http://doi.org/10.5281/zenodo.4327333>.
- [15] **Inder J. Taneja**, Inder J. Taneja, Block-Wise and Block-Bordered Magic Squares With Magic Sum 2022, **Zenodo**, December 28, 2021, pp. 1-38,
<https://doi.org/10.5281/zenodo.5807789>

• Block-Bordered Magic Squares

- [16] **Inder J. Taneja**, Block-Bordered Magic Squares of Prime and Double Prime Numbers - I, **Zenodo**, August 18, 2020, pp. 1-81,
<http://doi.org/10.5281/zenodo.3990291>.
- [17] **Inder J. Taneja**, Block-Bordered Magic Squares of Prime and Double Prime Numbers - II, **Zenodo**, August 18, 2020, pp. 1-90,
<http://doi.org/10.5281/zenodo.3990293>.
- [18] **Inder J. Taneja**, Block-Bordered Magic Squares of Prime and Double Prime Numbers - III, **Zenodo**, September 01, 2020, pp. 1-93,
<http://doi.org/10.5281/zenodo.4011213>.

• Block-Wise and Block-Bordered Magic Squares

- [19] **Inder J. Taneja**, Block-Wise and Block-Bordered Magic and Bimagic Squares With Magic Sums 21, 21^2 and 2021. **Zenodo**, December 16, 2020, pp. 1-118, <http://doi.org/10.5281/zenodo.4380343>.
- [20] **Inder J. Taneja**, Block-Wise and Block-Bordered Magic and Bimagic Squares of Orders 10 to 47. **Zenodo**, January 14, 2021, pp. 1-185,
<http://doi.org/10.5281/zenodo.4437783>.
- [21] **Inder J. Taneja**, Bordered and Block-Wise Bordered Magic Squares: Odd Order Multiples, **Zenodo**, February 10, 2021, pp. 1-75,
<http://doi.org/10.5281/zenodo.4527739>
- [22] **Inder J. Taneja**, Bordered and Block-Wise Bordered Magic Squares: Even Order Multiples, **Zenodo**, February 10, 2021, pp. 1-96,
<http://doi.org/10.5281/zenodo.4527746>

• Block-Wise Bordered Magic Squares

- [23] **Inder J. Taneja**, Block-Wise Bordered and Pandiagonal Magic Squares Multiples of 4, **Zenodo**, August 31, 2021, pp. 1-148, <https://doi.org/10.5281/zenodo.5347897>.
- [24] **Inder J. Taneja**, Block-Wise Bordered Magic Squares Multiples of Magic and Bordered Magic Squares of Order 6, **Zenodo**, September 10, pp. 1-99 <https://doi.org/10.5281/zenodo.5500134>.
- [25] **Inder J. Taneja**, Block-Wise Bordered Magic Squares Multiples of 8, **Zenodo**, September 17, pp. 1-80, <https://doi.org/10.5281/zenodo.5514396>.
- [26] **Inder J. Taneja**, Block-Wise Bordered Magic Squares Multiples of 10, **Zenodo**, September 17, pp. 1-170, <https://doi.org/10.5281/zenodo.5514398>.
- [27] **Inder J. Taneja**, Block-Wise Bordered and Pandiagonal Magic Squares Multiples of 12, **Zenodo**, September 23, pp. 1-170, <https://doi.org/10.5281/zenodo.5523608>.
- [28] **Inder J. Taneja**, Block-Wise Bordered Magic Squares Multiples of 14, **Zenodo**, September 26, pp. 1-198, <https://doi.org/10.5281/zenodo.5528867>.
- [29] **Inder J. Taneja**, Block-Wise Bordered and Pandiagonal Magic Squares Multiples of 3, **Zenodo**, May 05, pp. 1-29, 2023, <https://doi.org/10.5281/zenodo.7898383>.
- [30] **Inder J. Taneja**, Block-Wise Bordered and Pandiagonal Magic Squares Multiples of 5, **Zenodo**, May 06, pp. 1-31, 2023, <https://doi.org/10.5281/zenodo.7903412>.
- [31] **Inder J. Taneja**, Block-Wise Bordered and Pandiagonal Magic Squares Multiples of 7, **Zenodo**, May 06, pp. 1-28, 2023, <https://doi.org/10.5281/zenodo.7903420>.
- [32] **Inder J. Taneja**, Block-Wise Bordered Magic Squares Multiples of 9, **Zenodo**, May 24, pp. 1-21, 2023, <https://doi.org/10.5281/zenodo.7966756>.

• Magic Squares With Bordered Magic Rectangles

- [33] **Inder J. Taneja**, Different Styles of Magic Squares of Orders 6, 8, 10 and 12 Using Bordered Magic Rectangles, **Zenodo**, November 14, 2022, pp. 1-26, <https://doi.org/10.5281/zenodo.7319985>.
- [34] **Inder J. Taneja**, Different Styles of Magic Squares of Order 14 Using Bordered Magic Rectangles, **Zenodo**, November 14, 2022, pp. 1-40, <https://doi.org/10.5281/zenodo.7319787>.

- [35] **Inder J. Taneja**, Different Styles of Magic Squares of Order 16 Using Bordered Magic Rectangles, **Zenodo**, November 14, 2022, pp. 1-63, <https://doi.org/10.5281/zenodo.7320116>.
- [36] **Inder J. Taneja**, Different Styles of Magic Squares of Order 18 Using Bordered Magic Rectangles, **Zenodo**, November 14, 2022, pp. 1-85, <https://doi.org/10.5281/zenodo.7320131>.
- [37] **Inder J. Taneja**, Different Styles of Magic Squares of Order 20 Using Bordered Magic Rectangles, **Zenodo**, November 14, 2022, pp. 1-88, <https://doi.org/10.5281/zenodo.7320877>.
- [38] **Inder J. Taneja**, Few Examples of Magic Squares of Even Orders 6 to 18 Using Bordered Magic Rectangles, **Zenodo**, October 19, 2022, pp. 1-30, <https://doi.org/10.5281/zenodo.7225854>.
- [39] **Inder J. Taneja**, Few Examples of Magic Squares of Even Orders 20 to 30 Using Bordered Magic Rectangles, **Zenodo**, October 19, 2022, pp. 1-100, <https://doi.org/10.5281/zenodo.7225886>.
- [40] **Inder J. Taneja**, Single Crossed Bordered Magic Rectangles and Magic Squares of Order 40, **Zenodo**, January 24, 2023, pp. 1-76, <https://doi.org/10.5281/zenodo.7565946>
- [41] **Inder J. Taneja**, Double Crossed Bordered Magic Rectangles and Magic Squares of Order 40, **Zenodo**, January 30, 2023, pp. 1-102, <https://doi.org/10.5281/zenodo.7585787>
- [42] **Inder J. Taneja**, Magic Squares of Order 42 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, March 03, 2023, pp. 1-92, <https://doi.org/10.5281/zenodo.7695834>.
- [43] **Inder J. Taneja**, Single-Cross Bordered Magic Rectangles and Magic Squares of Order 42, **Zenodo**, March 03, 2023, pp. 1-69, <https://doi.org/10.5281/zenodo.7695939>
- [44] **Inder J. Taneja**, Double-Cross Bordered Magic Rectangles and Magic Squares of Order 42, **Zenodo**, March 03, 2023, pp. 1-59, <https://doi.org/10.5281/zenodo.7696070>.
- [45] **Inder J. Taneja**, Closed Double-Cross Bordered Magic Rectangles and Magic Squares of Order 42, **Zenodo**, March 03, 2023, pp. 1-28, <https://doi.org/10.5281/zenodo.7696181>.
- [46] **Inder J. Taneja**, 8000+ Magic Squares of Order 22 in Different Styles, Models and Designs, **Zenodo**, April 08, pp. 1-135, <https://doi.org/10.5281/zenodo.7809478>.

• Figured Magic Squares and Bordered Magic Rectangles

- [47] **Inder J. Taneja**, Figured Magic Squares of Orders 6, 10, 12, 14 and 16 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, November 29, 2022, pp. 1-31, <https://doi.org/10.5281/zenodo.7377674>.
- [48] **Inder J. Taneja**, Figured Magic Squares of Orders 18 and 20 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, November 29, 2022, pp. 1-87, <https://doi.org/10.5281/zenodo.7377689>.
- [49] **Inder J. Taneja**, Figured Magic Squares of Order 22 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, November 29, 2022, pp. 1-61, <https://doi.org/10.5281/zenodo.7377706>.
- [50] **Inder J. Taneja**, Figured Magic Squares of Order 24 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, November 29, 2022, pp. 1-104, <https://doi.org/10.5281/zenodo.7377779>.
- [51] **Inder J. Taneja**, Figured Magic Squares of Order 26 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, November 29, 2022, pp. 1-88, <https://doi.org/10.5281/zenodo.7377794>.
- [52] **Inder J. Taneja**, Figured Magic Squares of Order 28 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, December 02, 2022, pp. 1-179, <https://doi.org/10.5281/zenodo.7390666>.
- [53] **Inder J. Taneja**, Figured Magic Squares of Order 30 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, December 02, 2022, pp. 1-179, <https://doi.org/10.5281/zenodo.7390705>.
- [54] **Inder J. Taneja**, Figured Magic Squares of Order 32 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, December 22, 2022, pp. 1-310, <https://doi.org/10.5281/zenodo.7472891>.
- [55] **Inder J. Taneja**, Figured Magic Squares of Order 34 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, December 27, 2022, pp. 1-193, <https://doi.org/10.5281/zenodo.7486540>.
- [56] **Inder J. Taneja**, Figured Magic Squares of Order 36 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, December 27, 2022, pp. 1-140, <https://doi.org/10.5281/zenodo.7486548>.
- [57] **Inder J. Taneja**, Figured Magic Squares of Order 38 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, January 03, 2023, pp. 1-133, <https://doi.org/110.5281/zenodo.7500188>.
- [58] **Inder J. Taneja**, Figured Magic Squares of Order 40 Using Bordered Magic Rectangles: A Systematic Procedure, **Zenodo**, January 03, 2023, pp. 1-157, <https://doi.org/10.5281/zenodo.7500192>.

• Two Digits Bordered Magic Squares

- [59] **Inder J. Taneja**, Two Digits Bordered Magic Squares Multiples of 4: Orders 8 to 24, **Zenodo**, April, 26, 2023, pp. 1-43, <https://doi.org/10.5281/zenodo.7866956>.
- [60] **Inder J. Taneja**, Two Digits Bordered Magic Squares of Orders 28 and 32, **Zenodo**, April, 26, 2023, pp. 1-36, <https://doi.org/10.5281/zenodo.7866981>.
- [61] **Inder J. Taneja**, Two Digits Bordered Magic Squares of Orders 10, 14, 18 and 22, **Zenodo**, April, 30, 2023, pp. 1-43, <https://doi.org/10.5281/zenodo.7880931>.
- [62] **Inder J. Taneja**, Two Digits Bordered Magic Squares of Orders 26 and 30, **Zenodo**, April, 30, 2023, pp. 1-45, <https://doi.org/10.5281/zenodo.7880937>.
- [63] **Inder J. Taneja**, Two Digits Bordered Magic Squares of Orders 36 and 40, **Zenodo**, May, 04, 2023, pp. 1-41, <https://doi.org/10.5281/zenodo.7896709>.

• Cornered Magic Squares of Order 6

- [64] **Inder J. Taneja**, Cornered Magic Squares of Order 6, **Zenodo**, May 23, 2023, pp. 1-23, <https://doi.org/10.5281/zenodo.7960679>

• Creative Magic Squares

- [65] **Inder J. Taneja**, Creative Magic Squares: Area Representations, **Zenodo**, June 22, pp. 1-45, 2021, <http://doi.org/10.5281/zenodo.5009224>.
