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Bordered and Pentagonal Magic Squares Multiples of 5

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Abstract

*During past years author worked with **block-wise borderedmagic squares** of even order blocks. It includes blocks of orders 4, 6, 8, 10, etc. Most of the cases are with equal sums magic squares. This type of work is an extension of classical bordered magic squares. In case of multiples of 4, the extension is made for **pentagonal** 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, based on different sums magic squares of order 3 [29]. This work is for bordered of magic squares multiples of magic squares of order 5. It is done with three types of magic squares of order 5. One type is pandiagonal magic square, second type is bordered magic square, and third type is cornered magic square. This work is up to order 35. Higher orders examples can be seen in **Excel file** attached with the work. The total work is up to order 150. Pandiagonal magic squares based on equal sums pandiagonal magic squares of order 5 are also included in the **Excel file**.*

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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 p, 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 many cases, we have to use fractional numbers entries, specially to reach minimum perfect square sum of entries. For more study on **bordered** magic squares refer H. White's web-site [1].

The aim of this work is to combine the study of **block-wise** and **bordered** magic squares. This kind of study still not seen by author. In this case we considers blocks of magic squares such as magic squares of order 4 and then put them in such a way that every time removing external borders, still we are left with magic squares. Based on this idea, we wrote with **block-wise bordered** magic squares of orders 108 and 104. Every time when we remove the external, we are left with **block-wise bordered** magic squares with minus order 8. For example, in case of order 108, removing external orders we are left with orders 100, 92, 84, etc. and in case of orders 104, removing external orders we are left with orders 96, 88, 80, etc. Thus alternatively we complete all order magic squares multiples of 4. The first two orders 4 and 8 are not **block-wise bordered** magic squares. From order 12 onwards, we always get **block-wise bordered** magic squares multiples of 4, i.e., of orders 12, 16, 20, etc. In all the situations the constructions of magic squares of order 4 are **pentagonal** and of equal sums, while the **block-wise bordered** magic squares are not **pentagonal**. In each case, if we redistribute the blocks of order 4 already constructed we reach to **pentagonal** magic squares of orders 12, 16, 20, etc. but unfortunately they are no more **block-wise bordered** magic squares. Before proceeding further, let's classify the idea of bordered magic squares:

1.1 Classification of Bordered Magic Squares

- **Single Digit:** Bordered magic squares based on single digit [9, 10, 1].
- **Two Digits:** Bordered magic squares based on magic rectangles multiples of 2 [57, 58, 59, 60, 60].
- **Three Digits:** Bordered magic squares based on magic squares of order 3 [29].
- **Four Digits:** Bordered magic squares based on magic squares of order 4 [23].
- **Five Digits:** Bordered magic squares based on magic squares of order 5 (This work).
- **Six Digits:** Bordered magic squares based on magic squares of order 6 [24], etc.

For the first time, we are presenting here bordered magic squares of odd number blocks. Specially in this work, we give bordered with different sum magic squares of order 5. It is done in two ways. One with pandiagonal magic squares of order 5. Secondly, with bordered magic squares of order 5. The procedure, how to these bordered magic squares is also given. Pentagonal magic squares multiples of 5 are also given. Here, the work is up to order 40. Higher orders examples can be seen in **Excel file** is attached with this work.

2 Bordered Magic Squares Multiples of Magic Squares of Order 5

Below are three magic squares of order 5. Based these, we shall write bordered magic squares multiples of order 5. The total work is up to order 150.

	pan	65	65	65	65	65
65	1	7	13	19	25	65
65	18	24	5	6	12	65
65	10	11	17	23	4	65
65	22	3	9	15	16	65
	14	20	21	2	8	65
1	65	65	65	65	65	65

2	mgc	71	85	47	57	65
	22	25	5	7	6	65
	2	12	17	10	24	65
	3	11	13	15	23	65
	18	16	9	14	8	65
	20	1	21	19	4	65
	65	65	65	65	65	65

3	mgc	66	51	65	78	65
	16	11	12	23	3	65
	9	13	17	25	1	65
	14	15	10	7	19	65
	5	6	22	8	24	65
	21	20	4	2	18	65
	65	65	65	65	65	65

The first magic square is pandiagonal. The second one is bordered and the third one is cornered magic square.

2.1 Magic Squares of Orders 145 and 150

Let's consider bordered magic square of orders 19 and 20 given by

29x29																														12209
	814	786	788	790	792	794	796	798	800	802	804	806	808	810	27	26	24	22	20	18	16	14	12	10	8	6	4	2	812	12209
	55	760	107	105	103	101	99	97	95	93	91	89	87	85	83	763	765	767	769	771	773	775	777	779	781	783	785	84	787	12209
	53	734	710	686	688	690	692	694	696	698	700	702	704	706	131	130	128	126	124	122	120	118	116	114	112	110	708	108	789	12209
	51	736	155	180	200	198	196	194	192	190	188	186	184	182	665	666	668	670	672	674	676	678	680	682	684	178	687	106	791	12209
	49	738	153	685	620	202	204	206	208	210	212	214	216	218	219	618	616	614	612	610	608	606	604	602	622	157	689	104	793	12209
	47	740	151	683	603	584	566	568	570	572	574	576	578	580	257	256	254	252	250	248	246	244	242	582	239	159	691	102	795	12209
	45	742	149	681	605	275	292	564	562	560	558	556	554	552	551	296	298	300	302	304	306	308	294	567	237	161	693	100	797	12209
	43	744	147	679	607	273	277	322	532	530	528	526	524	522	521	326	328	330	332	334	336	324	565	569	235	163	695	98	799	12209
	41	746	145	677	609	271	279	309	350	360	358	356	354	352	495	496	498	500	502	504	348	533	563	571	233	165	697	96	801	12209
	39	748	143	675	611	269	281	311	505	472	379	377	375	373	371	475	477	479	481	372	337	531	561	573	231	167	699	94	803	12209
	37	750	141	673	613	267	283	313	503	462	452	382	384	386	387	450	448	446	454	380	339	529	559	575	229	169	701	92	805	12209
	35	752	139	671	615	265	285	315	501	464	447	404	408	406	441	442	444	402	395	378	341	527	557	577	227	171	703	90	807	12209
	33	754	137	669	617	263	287	317	499	466	449	445	428	427	429	409	412	397	393	376	343	525	555	579	225	173	705	88	809	12209
	31	756	135	667	619	261	289	319	497	468	451	443	410	422	417	424	432	399	391	374	345	523	553	581	223	175	707	86	811	12209
	29	81	133	179	621	259	549	519	349	369	453	403	411	423	421	419	431	439	389	473	493	323	293	583	221	663	709	761	813	12209
	817	80	713	181	217	587	547	517	351	368	385	405	426	418	425	420	416	437	457	474	491	325	295	255	625	661	129	762	25	12209
	819	78	715	183	215	589	545	515	353	366	383	407	430	415	413	433	414	435	459	476	489	327	297	253	627	659	127	764	23	12209
	821	76	717	185	213	591	543	513	355	364	381	440	434	436	401	400	398	438	461	478	487	329	299	251	629	657	125	766	21	12209
	823	74	719	187	211	593	541	511	357	362	388	460	458	456	455	392	394	396	390	480	485	331	301	249	631	655	123	768	19	12209
	825	72	721	189	209	595	539	509	359	470	463	465	467	469	471	367	365	363	361	370	483	333	303	247	633	653	121	770	17	12209
	827	70	723	191	207	597	537	507	494	482	484	486	488	490	347	346	344	342	340	338	492	335	305	245	635	651	119	772	15	12209
	829	68	725	193	205	599	535	518	310	312	314	316	318	320	321	516	514	512	510	508	506	520	307	243	637	649	117	774	13	12209
	831	66	727	195	203	601	548	278	280	282	284	286	288	290	291	546	544	542	540	538	536	534	550	241	639	647	115	776	11	12209
	833	64	729	197	201	260	276	274	272	270	268	266	264	262	585	586	588	590	592	594	596	598	600	258	641	645	113	778	9	12209
	835	62	731	199	220	640	638	636	634	632	630	628	626	624	623	224	226	228	230	232	234	236	238	240	222	643	111	780	7	12209
	837	60	733	664	642	644	646	648	650	652	654	656	658	660	177	176	174	172	170	168	166	164	162	160	158	662	109	782	5	12209
	839	58	134	156	154	152	150	148	146	144	142	140	138	136	711	712	714	716	718	720	722	724	726	728	730	732	132	784	3	12209
	841	758	735	737	739	741	743	745	747	749	751	753	755	757	759	79	77	75	73	71	69	67	65	63	61	59	57	82	1	12209
	30	56	54	52	50	48	46	44	42	40	38	36	34	32	815	816	818	820	822	824	826	828	830	832	834	836	838	840	28	12209
	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209	12209

30x30																															13515
	871	844	846	848	850	852	854	856	888	890	892	894	896	898	58	56	54	52	50	48	46	44	14	12	10	8	6	4	2	872	13515
	43	815	790	792	794	796	798	800	831	833	835	837	839	841	112	110	108	106	104	102	100	71	69	67	65	63	61	59	816	858	13515
	41	99	763	740	742	744	746	748	750	778	780	782	784	786	162	160	158	156	154	152	150	124	122	120	118	116	114	764	802	860	13515
	39	97	149	715	694	696	698	700	702	729	731	733	735	737	208	206	204	202	200	198	173	171	169	167	165	163	716	752	804	862	13515
	37	95	147	197	671	652	654	656	658	660	684	686	688	690	250	248	246	244	242	240	218	216	214	212	210	672	704	754	806	864	13515
	35	93	145	195	239	631	614	616	618	620	643	645	647	649	288	286	284	282	280	259	257	255	253	251	632	662	706	756	808	866	13515
	33	91	143	193	237	279	595	580	582	584	586	606	608	610	322	320	318	316	314	296	294	292	290	596	622	664	708	758	810	868	13515
	31	88	141	191	235	277	313	563	550	552	554	573	575	577	352	350	348	346	329	327	325	323	564	588	624	666	710	760	813	870	13515
	27	87	139	188	233	275	311	345	535	524	526	528	544	546	378	376	374	372	358	356	354	536	556	590	626	668	713	762	814	874	13515
	25	82	135	187	231	272	309	343	371	511	502	504	519	521	400	398	396	383	381	379	512	530	558	592	629	670	714	766	819	876	13515
	23	80	133	182	227	271	307	340	369	395	491	484	486	498	418	416	414	404	402	492	506	532	561	594	630	674	719	768	821	878	13515
	21	78	131	180	225	266	303	339	367	392	413	475	470	481	432	430	421	419	476	488	509	534	562	598	635	676	721	770	823	880	13515
	19	76	129	178	223	264	301	334	363	391	411	428	463	460	442	440	434	464	473	490	510	538	567	600	637	678	723	772	825	882	13515
	17	74	127	176	221	262	299	332	361	386	407	427	439	449	454	443	456	462	474	494	515	540	569	602	639	680	725	774	827	884	13515
	1	72	113	174	209	260	289	330	353	384	401	422	433	444	455	450	453	468	479	500	517	548	571	612	641	692	727	788	829	900	13515
	859	803	753	705	663	623	589	557	531	507	489	472	465	458	445	452	447	436	429	412	394	370	344	312	278	238	196	148	98	42	13515
	861	805	755	707	665	625	591	559	533	508	493	477	466	451	448	457	446	435	424	408	393	368	342	310	276	236	194	146	96	40	13515
	863	807	757	709	667	627	593	560	537	513	495	478	437	441	459	461	467	438	423	406	388	364	341	308	274	234	192	144	94	38	13515
	865	809	759	711	669	628	597	565	539	514	496	425	431	420	469	471	480	482	426	405	387	362	336	304	273	232	190	142	92	36	13515
	867	811	761	712	673	633	599	566	541	516	409	417	415	403	483	485	487	497	499	410	385	360	335	302	268	228	189	140	90	34	13515
	869	812	765	717	675	634	601	568	542	389	399	397	382	380	501	503	505	518	520	522	390	359	333	300	267	226	184	136	89	32	13515
	873	817	767	718	677	636	603	570	365	377	375	373	357	355	523	525	527	529	543	545	547	366	331	298	265	224	183	134	84	28	13515
	875	818	769	720	679	638	604	337	351	349	347	328	326	324	549	551	553	555	572	574	576	578	338	297	263	222	181	132	83	26	13515
	877	820	771	722	681	640	305	321	319	317	315	295	293	291	579	581	583	585	587	605	607	609	611	306	261	220	179	130	81	24	13515
	879	822	773	724	682	269	287	285	283	281	258	256	254	252	613	615	617	619	621	642	644	646	648	650	270	219	177	128	79	22	13515
	881	824	775	726	229	249	247	245	243	241	217	215	213	211	651	653	655	657	659	661	683	685	687	689	691	230	175	126	77	20	13515
	883	826	776	185	207	205	203	201	199	172	170	168	166	164	693	695	697	699	701	703	728	730	732	734	736	738	186	125	75	18	13515
	885	828	137	161	159	157	155	153	151	123	121	119	117	115	739	741	743	745	747	749	751	777	779	781	783	785	787	138	73	16	13515
	886	85	111	109	107	105	103	101	70	68	66	64	62	60	789	791	793	795	797	799	801	830	832	834	836	838	840	842	86	15	13515
	29	57	55	53	51	49	47	45	13	11	9	7	5	3	843	845	847	849	851	853	855	857	887	889	891	893	895	897	899	30	13515
	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515

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

$$D_{29\times 29} := \{1, 2, \ldots, 360, 361\}$$

$$D_{30\times 30} := \{1, 2, \ldots, 399, 400\}$$

These two magic squares are such that replacing the upper border still we are left with magic squares of lower oders in sequential vales. Sometimes, these are called as **nested** or **embedded** magic squares.

Multiplying each entry by 25, we get

29x29																														305225
	20350	19650	19700	19750	19800	19850	19900	19950	20000	20050	20100	20150	20200	20250	675	650	600	550	500	450	400	350	300	250	200	150	100	50	20300	305225
	1375	19000	2675	2625	2575	2525	2475	2425	2375	2325	2275	2225	2175	2125	2075	19075	19125	19175	19225	19275	19325	19375	19425	19475	19525	19575	19625	2100	19675	305225
	1325	18350	17750	17150	17200	17250	17300	17350	17400	17450	17500	17550	17600	17650	3275	3250	3200	3150	3100	3050	3000	2950	2900	2850	2800	2750	17700	2700	19725	305225
	1275	18400	3875	4500	5000	4950	4900	4850	4800	4750	4700	4650	4600	4550	16625	16650	16700	16750	16800	16850	16900	16950	17000	17050	17100	4450	17175	2650	19775	305225
	1225	18450	3825	17125	15500	5050	5100	5150	5200	5250	5300	5350	5400	5450	5475	15450	15400	15350	15300	15250	15200	15150	15100	15050	15550	3925	17225	2600	19825	305225
	1175	18500	3775	17075	15075	14600	14150	14200	14250	14300	14350	14400	14450	14500	6425	6400	6350	6300	6250	6200	6150	6100	6050	14550	5975	3975	17275	2550	19875	305225
	1125	18550	3725	17025	15125	6875	7300	14100	14050	14000	13950	13900	13850	13800	13775	7400	7450	7500	7550	7600	7650	7700	7350	14175	5925	4025	17325	2500	19925	305225
	1075	18600	3675	16975	15175	6825	6925	8050	13300	13250	13200	13150	13100	13050	13025	8150	8200	8250	8300	8350	8400	8100	14125	14225	5875	4075	17375	2450	19975	305225
	1025	18650	3625	16925	15225	6775	6975	7725	8750	9000	8950	8900	8850	8800	12375	12400	12450	12500	12550	12600	8700	13325	14075	14275	5825	4125	17425	2400	20025	305225
	975	18700	3575	16875	15275	6725	7025	7775	12625	11800	9475	9425	9375	9325	9275	11875	11925	11975	12025	9300	8425	13275	14025	14325	5775	4175	17475	2350	20075	305225
	925	18750	3525	16825	15325	6675	7075	7825	12575	11550	11300	9550	9600	9650	9675	11250	11200	11150	11350	9500	8475	13225	13975	14375	5725	4225	17525	2300	20125	305225
	875	18800	3475	16775	15375	6625	7125	7875	12525	11600	11175	10100	10200	10150	11025	11050	11100	10050	9875	9450	8525	13175	13925	14425	5675	4275	17575	2250	20175	305225
	825	18850	3425	16725	15425	6575	7175	7925	12475	11650	11225	11125	10700	10675	10725	10225	10300	9925	9825	9400	8575	13125	13875	14475	5625	4325	17625	2200	20225	305225
	775	18900	3375	16675	15475	6525	7225	7975	12425	11700	11275	11075	10250	10550	10425	10600	10800	9975	9775	9350	8625	13075	13825	14525	5575	4375	17675	2150	20275	305225
	725	2025	3325	4475	15525	6475	13725	12975	8725	9225	11325	10075	10275	10575	10525	10475	10775	10975	9725	11825	12325	8075	7325	14575	5525	16575	17725	19025	20325	305225
	20425	2000	17825	4525	5425	14675	13675	12925	8775	9200	9625	10125	10650	10450	10625	10500	10400	10925	11425	11850	12275	8125	7375	6375	15625	16525	3225	19050	625	305225
	20475	1950	17875	4575	5375	14725	13625	12875	8825	9150	9575	10175	10750	10375	10325	10825	10350	10875	11475	11900	12225	8175	7425	6325	15675	16475	3175	19100	575	305225
	20525	1900	17925	4625	5325	14775	13575	12825	8875	9100	9525	11000	10850	10900	10025	10000	9950	10950	11525	11950	12175	8225	7475	6275	15725	16425	3125	19150	525	305225
	20575	1850	17975	4675	5275	14825	13525	12775	8925	9050	9700	11500	11450	11400	11375	9800	9850	9900	9750	12000	12125	8275	7525	6225	15775	16375	3075	19200	475	305225
	20625	1800	18025	4725	5225	14875	13475	12725	8975	11750	11575	11625	11675	11725	11775	9175	9125	9075	9025	9250	12075	8325	7575	6175	15825	16325	3025	19250	425	305225
	20675	1750	18075	4775	5175	14925	13425	12675	12350	12050	12100	12150	12200	12250	8675	8650	8600	8550	8500	8450	12300	8375	7625	6125	15875	16275	2975	19300	375	305225
	20725	1700	18125	4825	5125	14975	13375	12950	7750	7800	7850	7900	7950	8000	8025	12900	12850	12800	12750	12700	12650	13000	7675	6075	15925	16225	2925	19350	325	305225
	20775	1650	18175	4875	5075	15025	13700	6950	7000	7050	7100	7150	7200	7250	7275	13650	13600	13550	13500	13450	13400	13350	13750	6025	15975	16175	2875	19400	275	305225
	20825	1600	18225	4925	5025	6500	6900	6850	6800	6750	6700	6650	6600	6550	14625	14650	14700	14750	14800	14850	14900	14950	15000	6450	16025	16125	2825	19450	225	305225
	20875	1550	18275	4975	5500	16000	15950	15900	15850	15800	15750	15700	15650	15600	15575	5600	5650	5700	5750	5800	5850	5900	5950	6000	5550	16075	2775	19500	175	305225
	20925	1500	18325	16600	16050	16100	16150	16200	16250	16300	16350	16400	16450	16500	4425	4400	4350	4300	4250	4200	4150	4100	4050	4000	3950	16550	2725	19550	125	305225
	20975	1450	3350	3900	3850	3800	3750	3700	3650	3600	3550	3500	3450	3400	17775	17800	17850	17900	17950	18000	18050	18100	18150	18200	18250	18300	3300	19600	75	305225
	21025	18950	18375	18425	18475	18525	18575	18625	18675	18725	18775	18825	18875	18925	18975	1975	1925	1875	1825	1775	1725	1675	1625	1575	1525	1475	1425	2050	25	305225
	750	1400	1350	1300	1250	1200	1150	1100	1050	1000	950	900	850	800	20375	20400	20450	20500	20550	20600	20650	20700	20750	20800	20850	20900	20950	21000	700	305225
	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225	305225

30x30																															337875
	21775	21100	21150	21200	21250	21300	21350	21400	22200	22250	22300	22350	22400	22450	1450	1400	1350	1300	1250	1200	1150	1100	350	300	250	200	150	100	50	21800	337875
	1075	20375	19750	19800	19850	19900	19950	20000	20775	20825	20875	20925	20975	21025	2800	2750	2700	2650	2600	2550	2500	1775	1725	1675	1625	1575	1525	1475	20400	21450	337875
	1025	2475	19075	18500	18550	18600	18650	18700	18750	19450	19500	19550	19600	19650	4050	4000	3950	3900	3850	3800	3750	3100	3050	3000	2950	2900	2850	19100	20050	21500	337875
	975	2425	3725	17875	17350	17400	17450	17500	17550	18225	18275	18325	18375	18425	5200	5150	5100	5050	5000	4950	4325	4275	4225	4175	4125	4075	17900	18800	20100	21550	337875
	925	2375	3675	4925	16775	16300	16350	16400	16450	16500	17100	17150	17200	17250	6250	6200	6150	6100	6050	6000	5450	5400	5350	5300	5250	16800	17600	18850	20150	21600	337875
	875	2325	3625	4875	5975	15775	15350	15400	15450	15500	16075	16125	16175	16225	7200	7150	7100	7050	7000	6475	6425	6375	6325	6275	15800	16550	17650	18900	20200	21650	337875
	825	2275	3575	4825	5925	6975	14875	14500	14550	14600	14650	15150	15200	15250	8050	8000	7950	7900	7850	7400	7350	7300	7250	14900	15550	16600	17700	18950	20250	21700	337875
	775	2200	3525	4775	5875	6925	7825	14075	13750	13800	13850	14325	14375	14425	8800	8750	8700	8650	8225	8175	8125	8075	14100	14700	15600	16650	17750	19000	20325	21750	337875
	675	2175	3475	4700	5825	6875	7775	8625	13375	13100	13150	13200	13600	13650	9450	9400	9350	9300	8950	8900	8850	13400	13900	14750	15650	16700	17825	19050	20350	21850	337875
	625	2050	3375	4675	5775	6800	7725	8575	9275	12775	12550	12600	12975	13025	10000	9950	9900	9575	9525	9475	12800	13250	13950	14800	15725	16750	17850	19150	20475	21900	337875
	575	2000	3325	4550	5675	6775	7675	8500	9225	9875	12275	12100	12150	12450	10450	10400	10350	10100	10050	12300	12650	13300	14025	14850	15750	16850	17975	19200	20525	21950	337875
	525	1950	3275	4500	5625	6650	7575	8475	9175	9800	10325	11875	11750	12025	10800	10750	10525	10475	11900	12200	12725	13350	14050	14950	15875	16900	18025	19250	20575	22000	337875
	475	1900	3225	4450	5575	6600	7525	8350	9075	9775	10275	10700	11575	11500	11050	11000	10850	11600	11825	12250	12750	13450	14175	15000	15925	16950	18075	19300	20625	22050	337875
	425	1850	3175	4400	5525	6550	7475	8300	9025	9650	10175	10675	10975	11225	11350	11075	11400	11550	11850	12350	12875	13500	14225	15050	15975	17000	18125	19350	20675	22100	337875
	25	1800	2825	4350	5225	6500	7225	8250	8825	9600	10025	10550	10825	11100	11375	11250	11325	11700	11975	12500	12925	13700	14275	15300	16025	17300	18175	19700	20725	22500	337875
	21475	20075	18825	17625	16575	15575	14725	13925	13275	12675	12225	11800	11625	11450	11125	11300	11175	10900	10725	10300	9850	9250	8600	7800	6950	5950	4900	3700	2450	1050	337875
	21525	20125	18875	17675	16625	15625	14775	13975	13325	12700	12325	11925	11650	11275	11200	11425	11150	10875	10600	10200	9825	9200	8550	7750	6900	5900	4850	3650	2400	1000	337875
	21575	20175	18925	17725	16675	15675	14825	14000	13425	12825	12375	11950	10925	11025	11475	11525	11675	10950	10575	10150	9700	9100	8525	7700	6850	5850	4800	3600	2350	950	337875
	21625	20225	18975	17775	16725	15700	14925	14125	13475	12850	12400	10625	10775	10500	11725	11775	12000	12050	10650	10125	9675	9050	8400	7600	6825	5800	4750	3550	2300	900	337875
	21675	20275	19025	17800	16825	15825	14975	14150	13525	12900	10225	10425	10375	10075	12075	12125	12175	12425	12475	10250	9625	9000	8375	7550	6700	5700	4725	3500	2250	850	337875
	21725	20300	19125	17925	16875	15850	15025	14200	13550	9725	9975	9925	9550	9500	12525	12575	12625	12950	13000	13050	9750	8975	8325	7500	6675	5650	4600	3400	2225	800	337875
	21825	20425	19175	17950	16925	15900	15075	14250	9125	9425	9375	9325	8925	8875	13075	13125	13175	13225	13575	13625	13675	9150	8275	7450	6625	5600	4575	3350	2100	700	337875
	21875	20450	19225	18000	16975	15950	15100	8425	8775	8725	8675	8200	8150	8100	13725	13775	13825	13875	14300	14350	14400	14450	8450	7425	6575	5550	4525	3300	2075	650	337875
	21925	20500	19275	18050	17025	16000	7625	8025	7975	7925	7875	7375	7325	7275	14475	14525	14575	14625	14675	15125	15175	15225	15275	7650	6525	5500	4475	3250	2025	600	337875
	21975	20550	19325	18100	17050	6725	7175	7125	7075	7025	6450	6400	6350	6300	15325	15375	15425	15475	15525	16050	16100	16150	16200	16250	6750	5475	4425	3200	1975	550	337875
	22025	20600	19375	18150	5725	6225	6175	6125	6075	6025	5425	5375	5325	5275	16275	16325	16375	16425	16475	16525	17075	17125	17175	17225	17275	5750	4375	3150	1925	500	337875
	22075	20650	19400	4625	5175	5125	5075	5025	4975	4300	4250	4200	4150	4100	17325	17375	17425	17475	17525	17575	18200	18250	18300	18350	18400	18450	4650	3125	1875	450	337875
	22125	20700	3425	4025	3975	3925	3875	3825	3775	3075	3025	2975	2925	2875	18475	18525	18575	18625	18675	18725	18775	19425	19475	19525	19575	19625	19675	3450	1825	400	337875
	22150	2125	2775	2725	2675	2625	2575	2525	1750	1700	1650	1600	1550	1500	19725	19775	19825	19875	19925	19975	20025	20750	20800	20850	20900	20950	21000	21050	2150	375	337875
	725	1425	1375	1325	1275	1225	1175	1125	325	275	225	175	125	75	21075	21125	21175	21225	21275	21325	21375	21425	22175	22225	22275	22325	22375	22425	22475	750	337875
																															337875

The distributions of these two magic squares are given by

$$D_{29\times29} := \{1, 2, \ldots, 9000, 9025\}$$

$$D_{30\times30} := \{1, 2, \ldots, 9975, 100025\}$$

In both the cases the difference between entries is 25. Now in each case replace the entries by magic squares of order 5 formed by the entries as given below:

$$\begin{aligned} 25 &\rightarrow 1, 2, \ldots, 25 \\ 50 &\rightarrow 26, 27, \ldots, 50 \\ 75 &\rightarrow 51, 52, \ldots, 75 \\ \ldots &\rightarrow \ldots \quad \ldots \\ \ldots &\rightarrow \ldots \quad \ldots \end{aligned}$$

This lead us to two magic squares of orders 145 and 150. Since these magic squares are very big to put in this work, these can be seen in an **excel file** attached in with the work. Below are few examples of magic squares obtained from above two magic squares. These are of orders 35, 30, 25, 20 and 5.

2.2 Magic Squares of Order 35

These magic squares are obtained from the magic squares of order 145 by using the formula $\frac{a^2-b^2}{2}$, $a > b$. Removing the external borders of order 5 and then subtracting $\frac{145^2-35^2}{2} := 9900$ from each entry, we get magic squares of orders 35 given by

Bordered and Pentagonal Magic Squares Multiples of 5, **Zenodo**,
May 06, 2023, pp. 1-36, https://doi.org/10.5281/zenodo.8175759

35																																			21455
1100	1094	1088	1082	1076	950	944	938	932	926	1000	994	988	982	976	125	119	113	107	101	100	94	88	82	76	50	44	38	32	26	1050	1044	1038	1032	1026	21455
1083	1077	1096	1095	1089	933	927	946	945	939	983	977	996	995	989	108	102	121	120	114	83	77	96	95	89	33	27	46	45	39	1033	1027	1046	1045	1039	21455
1091	1090	1084	1078	1097	941	940	934	928	947	991	990	984	978	997	116	115	109	103	122	91	90	84	78	97	41	40	34	28	47	1041	1040	1034	1028	1047	21455
1079	1098	1092	1086	1085	929	948	942	936	935	979	998	992	986	985	104	123	117	111	110	79	98	92	86	85	29	48	42	36	35	1029	1048	1042	1036	1035	21455
1087	1081	1080	1099	1093	937	931	930	949	943	987	981	980	999	993	112	106	105	124	118	87	81	80	99	93	37	31	30	49	43	1037	1031	1030	1049	1043	21455
275	269	263	257	251	850	844	838	832	826	750	744	738	732	726	375	369	363	357	351	350	344	338	332	326	800	794	788	782	776	975	969	963	957	951	21455
258	252	271	270	264	833	827	846	845	839	733	727	746	745	739	358	352	371	370	364	333	327	346	345	339	783	777	796	795	789	958	952	971	970	964	21455
266	265	259	253	272	841	840	834	828	847	741	740	734	728	747	366	365	359	353	372	341	340	334	328	347	791	790	784	778	797	966	965	959	953	972	21455
254	273	267	261	260	829	848	842	836	835	729	748	742	736	735	354	373	367	361	360	329	348	342	336	335	779	798	792	786	785	954	973	967	961	960	21455
262	256	255	274	268	837	831	830	849	843	737	731	730	749	743	362	356	355	374	368	337	331	330	349	343	787	781	780	799	793	962	956	955	974	968	21455
225	219	213	207	201	475	469	463	457	451	700	694	688	682	676	525	519	513	507	501	650	644	638	632	626	775	769	763	757	751	1025	1019	1013	1007	1001	21455
208	202	221	220	214	458	452	471	470	464	683	677	696	695	689	508	502	521	520	514	633	627	646	645	639	758	752	771	770	764	1008	1002	1021	1020	1014	21455
216	215	209	203	222	466	465	459	453	472	691	690	684	678	697	516	515	509	503	522	641	640	634	628	647	766	765	759	753	772	1016	1015	1009	1003	1022	21455
204	223	217	211	210	454	473	467	461	460	679	698	692	686	685	504	523	517	511	510	629	648	642	636	635	754	773	767	761	760	1004	1023	1017	1011	1010	21455
212	206	205	224	218	462	456	455	474	468	687	681	680	699	693	512	506	505	524	518	637	631	630	649	643	762	756	755	774	768	1012	1006	1005	1024	1018	21455
175	169	163	157	151	425	419	413	407	401	575	569	563	557	551	625	619	613	607	601	675	669	663	657	651	825	819	813	807	801	1075	1069	1063	1057	1051	21455
158	152	171	170	164	408	402	421	420	414	558	552	571	570	564	608	602	621	620	614	658	652	671	670	664	808	802	821	820	814	1058	1052	1071	1070	1064	21455
166	165	159	153	172	416	415	409	403	422	566	565	559	553	572	616	615	609	603	622	666	665	659	653	672	816	815	809	803	822	1066	1065	1059	1053	1072	21455
154	173	167	161	160	404	423	417	411	410	554	573	567	561	560	604	623	617	611	610	654	673	667	661	660	804	823	817	811	810	1054	1073	1067	1061	1060	21455
162	156	155	174	168	412	406	405	424	418	562	556	555	574	568	612	606	605	624	618	662	656	655	674	668	812	806	805	824	818	1062	1056	1055	1074	1068	21455
1175	1169	1163	1157	1151	925	919	913	907	901	600	594	588	582	576	725	719	713	707	701	550	544	538	532	526	325	319	313	307	301	75	69	63	57	51	21455
1158	1152	1171	1170	1164	908	902	921	920	914	583	577	596	595	589	708	702	721	720	714	533	527	546	545	539	308	302	321	320	314	58	52	71	70	64	21455
1166	1165	1159	1153	1172	916	915	909	903	922	591	590	584	578	597	716	715	709	703	722	541	540	534	528	547	316	315	309	303	322	66	65	59	53	72	21455
1154	1173	1167	1161	1160	904	923	917	911	910	579	598	592	586	585	704	723	717	711	710	529	548	542	536	535	304	323	317	311	310	54	73	67	61	60	21455
1162	1156	1155	1174	1168	912	906	905	924	918	587	581	580	599	593	712	706	705	724	718	537	531	530	549	543	312	306	305	324	318	62	56	55	74	68	21455
1225	1219	1213	1207	1201	450	444	438	432	426	500	494	488	482	476	875	869	863	857	851	900	894	888	882	876	400	394	388	382	376	25	19	13	7	1	21455
1208	1202	1221	1220	1214	433	427	446	445	439	483	477	496	495	489	858	852	871	870	864	883	877	896	895	889	383	377	396	395	389	8	2	21	20	14	21455
1216	1215	1209	1203	1222	441	440	434	428	447	491	490	484	478	497	866	865	859	853	872	891	890	884	878	897	391	390	384	378	397	16	15	9	3	22	21455
1204	1223	1217	1211	1210	429	448	442	436	435	479	498	492	486	485	854	873	867	861	860	879	898	892	886	885	379	398	392	386	385	4	23	17	11	10	21455
1212	1206	1205	1224	1218	437	431	430	449	443	487	481	480	499	493	862	856	855	874	868	887	881	880	899	893	387	381	380	399	393	12	6	5	24	18	21455
200	194	188	182	176	300	294	288	282	276	250	244	238	232	226	1125	1119	1113	1107	1101	1150	1144	1138	1132	1126	1200	1194	1188	1182	1176	150	144	138	132	126	21455
183	177	196	195	189	283	277	296	295	289	233	227	246	245	239	1108	1102	1121	1120	1114	1133	1127	1146	1145	1139	1183	1177	1196	1195	1189	133	127	146	145	139	21455
191	190	184	178	197	291	290	284	278	297	241	240	234	228	247	1116	1115	1109	1103	1122	1141	1140	1134	1128	1147	1191	1190	1184	1178	1197	141	140	134	128	147	21455
179	198	192	186	185	279	298	292	286	285	229	248	242	236	235	1104	1123	1117	1111	1110	1129	1148	1142	1136	1135	1179	1198	1192	1186	1185	129	148	142	136	135	21455
187	181	180	199	193	287	281	280	299	293	237	231	230	249	243	1112	1106	1105	1124	1118	1137	1131	1130	1149	1143	1187	1181	1180	1199	1193	137	131	130	149	143	21455
21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455

35																																				21455
	1079	1076	1096	1094	1095	929	926	946	944	945	979	976	996	994	995	104	101	121	119	120	79	76	96	94	95	29	26	46	44	45	1029	1026	1046	1044	1045	21455
	1099	1089	1084	1091	1077	949	939	934	941	927	999	989	984	991	977	124	114	109	116	102	99	89	84	91	77	49	39	34	41	27	1049	1039	1034	1041	1027	21455
	1098	1090	1088	1086	1078	948	940	938	936	928	998	990	988	986	978	123	115	113	111	103	98	90	88	86	78	48	40	38	36	28	1048	1040	1038	1036	1028	21455
	1083	1085	1092	1087	1093	933	935	942	937	943	983	985	992	987	993	108	110	117	112	118	83	85	92	87	93	33	35	42	37	43	1033	1035	1042	1037	1043	21455
	1081	1100	1080	1082	1097	931	950	930	932	947	981	1000	980	982	997	106	125	105	107	122	81	100	80	82	97	31	50	30	32	47	1031	1050	1030	1032	1047	21455
	254	251	271	269	270	829	826	846	844	845	729	726	746	744	745	354	351	371	369	370	329	326	346	344	345	779	776	796	794	795	954	951	971	969	970	21455
	274	264	259	266	252	849	839	834	841	827	749	739	734	741	727	374	364	359	366	352	349	339	334	341	327	799	789	784	791	777	974	964	959	966	952	21455
	273	265	263	261	253	848	840	838	836	828	748	740	738	736	728	373	365	363	361	353	348	340	338	336	328	798	790	788	786	778	973	965	963	961	953	21455
	258	260	267	262	268	833	835	842	837	843	733	735	742	737	743	358	360	367	362	368	333	335	342	337	343	783	785	792	787	793	958	960	967	962	968	21455
	256	275	255	257	272	831	850	830	832	847	731	750	730	732	747	356	375	355	357	372	331	350	330	332	347	781	800	780	782	797	956	975	955	957	972	21455
	204	201	221	219	220	454	451	471	469	470	679	676	696	694	695	504	501	521	519	520	629	626	646	644	645	754	751	771	769	770	1004	1001	1021	1019	1020	21455
	224	214	209	216	202	474	464	459	466	452	699	689	684	691	677	524	514	509	516	502	649	639	634	641	627	774	764	759	766	752	1024	1014	1009	1016	1002	21455
	223	215	213	211	203	473	465	463	461	453	698	690	688	686	678	523	515	513	511	503	648	640	638	636	628	773	765	763	761	753	1023	1015	1013	1011	1003	21455
	208	210	217	212	218	458	460	467	462	468	683	685	692	687	693	508	510	517	512	518	633	635	642	637	643	758	760	767	762	768	1008	1010	1017	1012	1018	21455
	206	225	205	207	222	456	475	455	457	472	681	700	680	682	697	506	525	505	507	522	631	650	630	632	647	756	775	755	757	772	1006	1025	1005	1007	1022	21455
	154	151	171	169	170	404	401	421	419	420	554	551	571	569	570	604	601	621	619	620	654	651	671	669	670	804	801	821	819	820	1054	1051	1071	1069	1070	21455
	174	164	159	166	152	424	414	409	416	402	574	564	559	566	552	624	614	609	616	602	674	664	659	666	652	824	814	809	816	802	1074	1064	1059	1066	1052	21455
	173	165	163	161	153	423	415	413	411	403	573	565	563	561	553	623	615	613	611	603	673	665	663	661	653	823	815	813	811	803	1073	1065	1063	1061	1053	21455
	158	160	167	162	168	408	410	417	412	418	558	560	567	562	568	608	610	617	612	618	658	660	667	662	668	808	810	817	812	818	1058	1060	1067	1062	1068	21455
	156	175	155	157	172	406	425	405	407	422	556	575	555	557	572	606	625	605	607	622	656	675	655	657	672	806	825	805	807	822	1056	1075	1055	1057	1072	21455
	1154	1151	1171	1169	1170	904	901	921	919	920	579	576	596	594	595	704	701	721	719	720	529	526	546	544	545	304	301	321	319	320	54	51	71	69	70	21455
	1174	1164	1159	1166	1152	924	914	909	916	902	599	589	584	591	577	724	714	709	716	702	549	539	534	541	527	324	314	309	316	302	74	64	59	66	52	21455
	1173	1165	1163	1161	1153	923	915	913	911	903	598	590	588	586	578	723	715	713	711	703	548	540	538	536	528	323	315	313	311	303	73	65	63	61	53	21455
	1158	1160	1167	1162	1168	908	910	917	912	918	583	585	592	587	593	708	710	717	712	718	533	535	542	537	543	308	310	317	312	318	58	60	67	62	68	21455
	1156	1175	1155	1157	1172	906	925	905	907	922	581	600	580	582	597	706	725	705	707	722	531	550	530	532	547	306	325	305	307	322	56	75	55	57	72	21455
	1204	1201	1221	1219	1220	429	426	446	444	445	479	476	496	494	495	854	851	871	869	870	879	876	896	894	895	379	376	396	394	395	4	1	21	19	20	21455
	1224	1214	1209	1216	1202	449	439	434	441	427	499	489	484	491	477	874	864	859	866	852	899	889	884	891	877	399	389	384	391	377	24	14	9	16	2	21455
	1223	1215	1213	1211	1203	448	440	438	436	428	498	490	488	486	478	873	865	863	861	853	898	890	888	886	878	398	390	388	386	378	23	15	13	11	3	21455
	1208	1210	1217	1212	1218	433	435	442	437	443	483	485	492	487	493	858	860	867	862	868	883	885	892	887	893	383	385	392	387	393	8	10	17	12	18	21455
	1206	1225	1205	1207	1222	431	450	430	432	447	481	500	480	482	497	856	875	855	857	872	881	900	880	882	897	381	400	380	382	397	6	25	5	7	22	21455
	179	176	196	194	195	279	276	296	294	295	229	226	246	244	245	1104	1101	1121	1119	1120	1129	1126	1146	1144	1145	1179	1176	1196	1194	1195	129	126	146	144	145	21455
	199	189	184	191	177	299	289	284	291	277	249	239	234	241	227	1124	1114	1109	1116	1102	1149	1139	1134	1141	1127	1199	1189	1184	1191	1177	149	139	134	141	127	21455
	198	190	188	186	178	298	290	288	286	278	248	240	238	236	228	1123	1115	1113	1111	1103	1148	1140	1138	1136	1128	1198	1190	1188	1186	1178	148	140	138	136	128	21455
	183	185	192	187	193	283	285	292	287	293	233	235	242	237	243	1108	1110	1117	1112	1118	1133	1135	1142	1137	1143	1183	1185	1192	1187	1193	133	135	142	137	143	21455
	181	200	180	182	197	281	300	280	282	297	231	250	230	232	247	1106	1125	1105	1107	1122	1131	1150	1130	1132	1147	1181	1200	1180	1182	1197	131	150	130	132	147	21455
	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455

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mgc	20923	20503	19880	19264	18830	19473	20228	20780	21339	22080	22423	22878	23130	23389	23830	22973	22228	21280	20339	19580	19823	20178	20330	20489	20830	21373	22028	22480	22939	23580	23148	22828	22305	21789	21455
185	190	189	178	198	285	290	289	278	298	235	240	239	228	248	1110	1115	1114	1103	1123	1135	1140	1139	1128	1148	1185	1190	1189	1178	1198	135	140	139	128	148	21455
192	188	184	176	200	292	288	284	276	300	242	238	234	226	250	1117	1113	1109	1101	1125	1142	1138	1134	1126	1150	1192	1188	1184	1176	1200	142	138	134	126	150	21455
187	186	191	194	182	287	286	291	294	282	237	236	241	244	232	1112	1111	1116	1119	1107	1137	1136	1141	1144	1132	1187	1186	1191	1194	1182	137	136	141	144	132	21455
196	195	179	193	177	296	295	279	293	277	246	245	229	243	227	1121	1120	1104	1118	1102	1146	1145	1129	1143	1127	1196	1195	1179	1193	1177	146	145	129	143	127	21455
180	181	197	199	183	280	281	297	299	283	230	231	247	249	233	1105	1106	1122	1124	1108	1130	1131	1147	1149	1133	1180	1181	1197	1199	1183	130	131	147	149	133	21455
1210	1215	1214	1203	1223	785	790	789	778	798	760	765	764	753	773	810	815	814	803	823	310	315	314	303	323	385	390	389	378	398	10	15	14	3	23	21455
1217	1213	1209	1201	1225	792	788	784	776	800	767	763	759	751	775	817	813	809	801	825	317	313	309	301	325	392	388	384	376	400	17	13	9	1	25	21455
1212	1211	1216	1219	1207	787	786	791	794	782	762	761	766	769	757	812	811	816	819	807	312	311	316	319	307	387	386	391	394	382	12	11	16	19	7	21455
1221	1220	1204	1218	1202	796	795	779	793	777	771	770	754	768	752	821	820	804	818	802	321	320	304	318	302	396	395	379	393	377	21	20	4	18	2	21455
1205	1206	1222	1224	1208	780	781	797	799	783	755	756	772	774	758	805	806	822	824	808	305	306	322	324	308	380	381	397	399	383	5	6	22	24	8	21455
1160	1165	1164	1153	1173	335	340	339	328	348	635	640	639	628	648	510	515	514	503	523	685	690	689	678	698	885	890	889	878	898	60	65	64	53	73	21455
1167	1163	1159	1151	1175	342	338	334	326	350	642	638	634	626	650	517	513	509	501	525	692	688	684	676	700	892	888	884	876	900	67	63	59	51	75	21455
1162	1161	1166	1169	1157	337	336	341	344	332	637	636	641	644	632	512	511	516	519	507	687	686	691	694	682	887	886	891	894	882	62	61	66	69	57	21455
1171	1170	1154	1168	1152	346	345	329	343	327	646	645	629	643	627	521	520	504	518	502	696	695	679	693	677	896	895	879	893	877	71	70	54	68	52	21455
1155	1156	1172	1174	1158	330	331	347	349	333	630	631	647	649	633	505	506	522	524	508	680	681	697	699	683	880	881	897	899	883	55	56	72	74	58	21455
160	165	164	153	173	360	365	364	353	373	660	665	664	653	673	610	615	614	603	623	560	565	564	553	573	860	865	864	853	873	1060	1065	1064	1053	1073	21455
167	163	159	151	175	367	363	359	351	375	667	663	659	651	675	617	613	609	601	625	567	563	559	551	575	867	863	859	851	875	1067	1063	1059	1051	1075	21455
162	161	166	169	157	362	361	366	369	357	662	661	666	669	657	612	611	616	619	607	562	561	566	569	557	862	861	866	869	857	1062	1061	1066	1069	1057	21455
171	170	154	168	152	371	370	354	368	352	671	670	654	668	652	621	620	604	618	602	571	570	554	568	552	871	870	854	868	852	1071	1070	1054	1068	1052	21455
155	156	172	174	158	355	356	372	374	358	655	656	672	674	658	605	606	622	624	608	555	556	572	574	558	855	856	872	874	858	1055	1056	1072	1074	1058	21455
210	215	214	203	223	735	740	739	728	748	535	540	539	528	548	710	715	714	703	723	585	590	589	578	598	485	490	489	478	498	1010	1015	1014	1003	1023	21455
217	213	209	201	225	742	738	734	726	750	542	538	534	526	550	717	713	709	701	725	592	588	584	576	600	492	488	484	476	500	1017	1013	1009	1001	1025	21455
212	211	216	219	207	737	736	741	744	732	537	536	541	544	532	712	711	716	719	707	587	586	591	594	582	487	486	491	494	482	1012	1011	1016	1019	1007	21455
221	220	204	218	202	746	745	729	743	727	546	545	529	543	527	721	720	704	718	702	596	595	579	593	577	496	495	479	493	477	1021	1020	1004	1018	1002	21455
205	206	222	224	208	730	731	747	749	733	530	531	547	549	533	705	706	722	724	708	580	581	597	599	583	480	481	497	499	483	1005	1006	1022	1024	1008	21455
260	265	264	253	273	835	840	839	828	848	460	465	464	453	473	410	415	414	403	423	910	915	914	903	923	435	440	439	428	448	960	965	964	953	973	21455
267	263	259	251	275	842	838	834	826	850	467	463	459	451	475	417	413	409	401	425	917	913	909	901	925	442	438	434	426	450	967	963	959	951	975	21455
262	261	266	269	257	837	836	841	844	832	462	461	466	469	457	412	411	416	419	407	912	911	916	919	907	437	436	441	444	432	962	961	966	969	957	21455
271	270	254	268	252	846	845	829	843	827	471	470	454	468	452	421	420	404	418	402	921	920	904	918	902	446	445	429	443	427	971	970	954	968	952	21455
255	256	272	274	258	830	831	847	849	833	455	456	472	474	458	405	406	422	424	408	905	906	922	924	908	430	431	447	449	433	955	956	972	974	958	21455
1085	1090	1089	1078	1098	935	940	939	928	948	985	990	989	978	998	110	115	114	103	123	85	90	89	78	98	35	40	39	28	48	1035	1040	1039	1028	1048	21455
1092	1088	1084	1076	1100	942	938	934	926	950	992	988	984	976	1000	117	113	109	101	125	92	88	84	76	100	42	38	34	26	50	1042	1038	1034	1026	1050	21455
1087	1086	1091	1094	1082	937	936	941	944	932	987	986	991	994	982	112	111	116	119	107	87	86	91	94	82	37	36	41	44	32	1037	1036	1041	1044	1032	21455
1096	1095	1079	1093	1077	946	945	929	943	927	996	995	979	993	977	121	120	104	118	102	96	95	79	93	77	46	45	29	43	27	1046	1045	1029	1043	1027	21455
1080	1081	1097	1099	1083	930	931	947	949	933	980	981	997	999	983	105	106	122	124	108	80	81	97	99	83	30	31	47	49	33	1030	1031	1047	1049	1033	21455
21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455

Above three magic squares of order 35 formed by multiples blocks of magic squares of order 5 are with entries

$$D_{35\times 35} := \{1, 2, \ldots, 1224, 1225\}.$$

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2.3 Magic Squares of Order 30

These magic squares are obtained from the magic squares of order 150 by using the formula $\frac{a^2-b^2}{2}$, $a > b$. Removing the external borders of order 5 and then subtracting $\frac{150^2-30^2}{2} := 10800$ from each entry, we get magic squares of orders 30 given by

1	mgc	14090	14665	15240	15815	16390	16465	16540	16615	16690	16765	15490	14215	12940	11665	10390	11090	11790	12490	13190	13890	13140	12390	11640	10890	10140	10815	11490	12165	12840	13515
	751	757	763	769	775	676	682	688	694	700	226	232	238	244	250	176	182	188	194	200	26	32	38	44	50	776	782	788	794	800	13515
	768	774	755	756	762	693	699	680	681	687	243	249	230	231	237	193	199	180	181	187	43	49	30	31	37	793	799	780	781	787	13515
	760	761	767	773	754	685	686	692	698	679	235	236	242	248	229	185	186	192	198	179	35	36	42	48	29	785	786	792	798	779	13515
	772	753	759	765	766	697	678	684	690	691	247	228	234	240	241	197	178	184	190	191	47	28	34	40	41	797	778	784	790	791	13515
	764	770	771	752	758	689	695	696	677	683	239	245	246	227	233	189	195	196	177	183	39	45	46	27	33	789	795	796	777	783	13515
	151	157	163	169	175	626	632	638	644	650	551	557	563	569	575	326	332	338	344	350	251	257	263	269	275	726	732	738	744	750	13515
	168	174	155	156	162	643	649	630	631	637	568	574	555	556	562	343	349	330	331	337	268	274	255	256	262	743	749	730	731	737	13515
	160	161	167	173	154	635	636	642	648	629	560	561	567	573	554	335	336	342	348	329	260	261	267	273	254	735	736	742	748	729	13515
	172	153	159	165	166	647	628	634	640	641	572	553	559	565	566	347	328	334	340	341	272	253	259	265	266	747	728	734	740	741	13515
	164	170	171	152	158	639	645	646	627	633	564	570	571	552	558	339	345	346	327	333	264	270	271	252	258	739	745	746	727	733	13515
	1	7	13	19	25	276	282	288	294	300	301	307	313	319	325	576	582	588	594	600	601	607	613	619	625	876	882	888	894	900	13515
	18	24	5	6	12	293	299	280	281	287	318	324	305	306	312	593	599	580	581	587	618	624	605	606	612	893	899	880	881	887	13515
	10	11	17	23	4	285	286	292	298	279	310	311	317	323	304	585	586	592	598	579	610	611	617	623	604	885	886	892	898	879	13515
	22	3	9	15	16	297	278	284	290	291	322	303	309	315	316	597	578	584	590	591	622	603	609	615	616	897	878	884	890	891	13515
	14	20	21	2	8	289	295	296	277	283	314	320	321	302	308	589	595	596	577	583	614	620	621	602	608	889	895	896	877	883	13515
	801	807	813	819	825	351	357	363	369	375	426	432	438	444	450	451	457	463	469	475	526	532	538	544	550	76	82	88	94	100	13515
	818	824	805	806	812	368	374	355	356	362	443	449	430	431	437	468	474	455	456	462	543	549	530	531	537	93	99	80	81	87	13515
	810	811	817	823	804	360	361	367	373	354	435	436	442	448	429	460	461	467	473	454	535	536	542	548	529	85	86	92	98	79	13515
	822	803	809	815	816	372	353	359	365	366	447	428	434	440	441	472	453	459	465	466	547	528	534	540	541	97	78	84	90	91	13515
	814	820	821	802	808	364	370	371	352	358	439	445	446	427	433	464	470	471	452	458	539	545	546	527	533	89	95	96	77	83	13515
	826	832	838	844	850	501	507	513	519	525	476	482	488	494	500	401	407	413	419	425	376	382	388	394	400	51	57	63	69	75	13515
	843	849	830	831	837	518	524	505	506	512	493	499	480	481	487	418	424	405	406	412	393	399	380	381	387	68	74	55	56	62	13515
	835	836	842	848	829	510	511	517	523	504	485	486	492	498	479	410	411	417	423	404	385	386	392	398	379	60	61	67	73	54	13515
	847	828	834	840	841	522	503	509	515	516	497	478	484	490	491	422	403	409	415	416	397	378	384	390	391	72	53	59	65	66	13515
	839	845	846	827	833	514	520	521	502	508	489	495	496	477	483	414	420	421	402	408	389	395	396	377	383	64	70	71	52	58	13515
	101	107	113	119	125	201	207	213	219	225	651	657	663	669	675	701	707	713	719	725	851	857	863	869	875	126	132	138	144	150	13515
	118	124	105	106	112	218	224	205	206	212	668	674	655	656	662	718	724	705	706	712	868	874	855	856	862	143	149	130	131	137	13515
	110	111	117	123	104	210	211	217	223	204	660	661	667	673	654	710	711	717	723	704	860	861	867	873	854	135	136	142	148	129	13515
	122	103	109	115	116	222	203	209	215	216	672	653	659	665	666	722	703	709	715	716	872	853	859	865	866	147	128	134	140	141	13515
	114	120	121	102	108	214	220	221	202	208	664	670	671	652	658	714	720	721	702	708	864	870	871	852	858	139	145	146	127	133	13515
	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515

2	mgc	14126	14785	15132	15767	16390	16501	16660	16507	16642	16765	15526	14335	12832	11617	10390	11126	11910	12382	13142	13890	13176	12510	11532	10842	10140	10851	11610	12057	12792	13515
	772	775	755	757	756	697	700	680	682	681	247	250	230	232	231	197	200	180	182	181	47	50	30	32	31	797	800	780	782	781	13515
	752	762	767	760	774	677	687	692	685	699	227	237	242	235	249	177	187	192	185	199	27	37	42	35	49	777	787	792	785	799	13515
	753	761	763	765	773	678	686	688	690	698	228	236	238	240	248	178	186	188	190	198	28	36	38	40	48	778	786	788	790	798	13515
	768	766	759	764	758	693	691	684	689	683	243	241	234	239	233	193	191	184	189	183	43	41	34	39	33	793	791	784	789	783	13515
	770	751	771	769	754	695	676	696	694	679	245	226	246	244	229	195	176	196	194	179	45	26	46	44	29	795	776	796	794	779	13515
	172	175	155	157	156	647	650	630	632	631	572	575	555	557	556	347	350	330	332	331	272	275	255	257	256	747	750	730	732	731	13515
	152	162	167	160	174	627	637	642	635	649	552	562	567	560	574	327	337	342	335	349	252	262	267	260	274	727	737	742	735	749	13515
	153	161	163	165	173	628	636	638	640	648	553	561	563	565	573	328	336	338	340	348	253	261	263	265	273	728	736	738	740	748	13515
	168	166	159	164	158	643	641	634	639	633	568	566	559	564	558	343	341	334	339	333	268	266	259	264	258	743	741	734	739	733	13515
	170	151	171	169	154	645	626	646	644	629	570	551	571	569	554	345	326	346	344	329	270	251	271	269	254	745	726	746	744	729	13515
	22	25	5	7	6	297	300	280	282	281	322	325	305	307	306	597	600	580	582	581	622	625	605	607	606	897	900	880	882	881	13515
	2	12	17	10	24	277	287	292	285	299	302	312	317	310	324	577	587	592	585	599	602	612	617	610	624	877	887	892	885	899	13515
	3	11	13	15	23	278	286	288	290	298	303	311	313	315	323	578	586	588	590	598	603	611	613	615	623	878	886	888	890	898	13515
	18	16	9	14	8	293	291	284	289	283	318	316	309	314	308	593	591	584	589	583	618	616	609	614	608	893	891	884	889	883	13515
	20	1	21	19	4	295	276	296	294	279	320	301	321	319	304	595	576	596	594	579	620	601	621	619	604	895	876	896	894	879	13515
	822	825	805	807	806	372	375	355	357	356	447	450	430	432	431	472	475	455	457	456	547	550	530	532	531	97	100	80	82	81	13515
	802	812	817	810	824	352	362	367	360	374	427	437	442	435	449	452	462	467	460	474	527	537	542	535	549	77	87	92	85	99	13515
	803	811	813	815	823	353	361	363	365	373	428	436	438	440	448	453	461	463	465	473	528	536	538	540	548	78	86	88	90	98	13515
	818	816	809	814	808	368	366	359	364	358	443	441	434	439	433	468	466	459	464	458	543	541	534	539	533	93	91	84	89	83	13515
	820	801	821	819	804	370	351	371	369	354	445	426	446	444	429	470	451	471	469	454	545	526	546	544	529	95	76	96	94	79	13515
	847	850	830	832	831	522	525	505	507	506	497	500	480	482	481	422	425	405	407	406	397	400	380	382	381	72	75	55	57	56	13515
	827	837	842	835	849	502	512	517	510	524	477	487	492	485	499	402	412	417	410	424	377	387	392	385	399	52	62	67	60	74	13515
	828	836	838	840	848	503	511	513	515	523	478	486	488	490	498	403	411	413	415	423	378	386	388	390	398	53	61	63	65	73	13515
	843	841	834	839	833	518	516	509	514	508	493	491	484	489	483	418	416	409	414	408	393	391	384	389	383	68	66	59	64	58	13515
	845	826	846	844	829	520	501	521	519	504	495	476	496	494	479	420	401	421	419	404	395	376	396	394	379	70	51	71	69	54	13515
	122	125	105	107	106	222	225	205	207	206	672	675	655	657	656	722	725	705	707	706	872	875	855	857	856	147	150	130	132	131	13515
	102	112	117	110	124	202	212	217	210	224	652	662	667	660	674	702	712	717	710	724	852	862	867	860	874	127	137	142	135	149	13515
	103	111	113	115	123	203	211	213	215	223	653	661	663	665	673	703	711	713	715	723	853	861	863	865	873	128	136	138	140	148	13515
	118	116	109	114	108	218	216	209	214	208	668	666	659	664	658	718	716	709	714	708	868	866	859	864	858	143	141	134	139	133	13515
	120	101	121	119	104	220	201	221	219	204	670	651	671	669	654	720	701	721	719	704	870	851	871	869	854	145	126	146	144	129	13515
	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515

Bordered and Pentagonal Magic Squares Multiples of 5, **Zenodo**,
May 06, 2023, pp. 1-36, https://doi.org/10.5281/zenodo.8175759

3	mgc	13909	14399	14715	15037	15515	15784	16149	16340	16537	16890	15309	13824	12165	10512	9015	9959	10999	11865	12737	13765	13484	13299	12940	12587	12390	12609	12924	13065	13212	13515
	760	765	764	753	773	685	690	689	678	698	235	240	239	228	248	185	190	189	178	198	35	40	39	28	48	785	790	789	778	798	13515
	767	763	759	751	775	692	688	684	676	700	242	238	234	226	250	192	188	184	176	200	42	38	34	26	50	792	788	784	776	800	13515
	762	761	766	769	757	687	686	691	694	682	237	236	241	244	232	187	186	191	194	182	37	36	41	44	32	787	786	791	794	782	13515
	771	770	754	768	752	696	695	679	693	677	246	245	229	243	227	196	195	179	193	177	46	45	29	43	27	796	795	779	793	777	13515
	755	756	772	774	758	680	681	697	699	683	230	231	247	249	233	180	181	197	199	183	30	31	47	49	33	780	781	797	799	783	13515
	160	165	164	153	173	410	415	414	403	423	535	540	539	528	548	260	265	264	253	273	585	590	589	578	598	735	740	739	728	748	13515
	167	163	159	151	175	417	413	409	401	425	542	538	534	526	550	267	263	259	251	275	592	588	584	576	600	742	738	734	726	750	13515
	162	161	166	169	157	412	411	416	419	407	537	536	541	544	532	262	261	266	269	257	587	586	591	594	582	737	736	741	744	732	13515
	171	170	154	168	152	421	420	404	418	402	546	545	529	543	527	271	270	254	268	252	596	595	579	593	577	746	745	729	743	727	13515
	155	156	172	174	158	405	406	422	424	408	530	531	547	549	533	255	256	272	274	258	580	581	597	599	583	730	731	747	749	733	13515
	10	15	14	3	23	285	290	289	278	298	560	565	564	553	573	435	440	439	428	448	510	515	514	503	523	885	890	889	878	898	13515
	17	13	9	1	25	292	288	284	276	300	567	563	559	551	575	442	438	434	426	450	517	513	509	501	525	892	888	884	876	900	13515
	12	11	16	19	7	287	286	291	294	282	562	561	566	569	557	437	436	441	444	432	512	511	516	519	507	887	886	891	894	882	13515
	21	20	4	18	2	296	295	279	293	277	571	570	554	568	552	446	445	429	443	427	521	520	504	518	502	896	895	879	893	877	13515
	5	6	22	24	8	280	281	297	299	283	555	556	572	574	558	430	431	447	449	433	505	506	522	524	508	880	881	897	899	883	13515
	810	815	814	803	823	635	640	639	628	648	310	315	314	303	323	485	490	489	478	498	360	365	364	353	373	85	90	89	78	98	13515
	817	813	809	801	825	642	638	634	626	650	317	313	309	301	325	492	488	484	476	500	367	363	359	351	375	92	88	84	76	100	13515
	812	811	816	819	807	637	636	641	644	632	312	311	316	319	307	487	486	491	494	482	362	361	366	369	357	87	86	91	94	82	13515
	821	820	804	818	802	646	645	629	643	627	321	320	304	318	302	496	495	479	493	477	371	370	354	368	352	96	95	79	93	77	13515
	805	806	822	824	808	630	631	647	649	633	305	306	322	324	308	480	481	497	499	483	355	356	372	374	358	80	81	97	99	83	13515
	835	840	839	828	848	460	465	464	453	473	385	390	389	378	398	610	615	614	603	623	335	340	339	328	348	60	65	64	53	73	13515
	842	838	834	826	850	467	463	459	451	475	392	388	384	376	400	617	613	609	601	625	342	338	334	326	350	67	63	59	51	75	13515
	837	836	841	844	832	462	461	466	469	457	387	386	391	394	382	612	611	616	619	607	337	336	341	344	332	62	61	66	69	57	13515
	846	845	829	843	827	471	470	454	468	452	396	395	379	393	377	621	620	604	618	602	346	345	329	343	327	71	70	54	68	52	13515
	830	831	847	849	833	455	456	472	474	458	380	381	397	399	383	605	606	622	624	608	330	331	347	349	333	55	56	72	74	58	13515
	110	115	114	103	123	210	215	214	203	223	660	665	664	653	673	710	715	714	703	723	860	865	864	853	873	135	140	139	128	148	13515
	117	113	109	101	125	217	213	209	201	225	667	663	659	651	675	717	713	709	701	725	867	863	859	851	875	142	138	134	126	150	13515
	112	111	116	119	107	212	211	216	219	207	662	661	666	669	657	712	711	716	719	707	862	861	866	869	857	137	136	141	144	132	13515
	121	120	104	118	102	221	220	204	218	202	671	670	654	668	652	721	720	704	718	702	871	870	854	868	852	146	145	129	143	127	13515
	105	106	122	124	108	205	206	222	224	208	655	656	672	674	658	705	706	722	724	708	855	856	872	874	858	130	131	147	149	133	13515
	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515	13515

Above three magic squares of order 30 formed by multiples blocks of magic squares of order 5 are with entries

$$D_{30\times 30} := \{1, 2, \ldots, 899, 900\}.$$

2.4 Magic Squares of Order 25

These magic squares are obtained from the magic squares of order 35 by using the formula $\frac{a^2-b^2}{2}$, $a > b$. Removing the external border of order 5 and then subtracting $\frac{35^2-25^2}{2} := 300$ from each entry, we get magic squares of orders 25 given by

1	mgc	8175	8525	8875	9225	9575	9125	8675	8225	7775	7325	7575	7825	8075	8325	8575	8025	7475	6925	6375	5825	6225	6625	7025	7425	7825
	476	482	488	494	500	451	457	463	469	475	501	507	513	519	525	1	7	13	19	25	76	82	88	94	100	7825
	493	499	480	481	487	468	474	455	456	462	518	524	505	506	512	18	24	5	6	12	93	99	80	81	87	7825
	485	486	492	498	479	460	461	467	473	454	510	511	517	523	504	10	11	17	23	4	85	86	92	98	79	7825
	497	478	484	490	491	472	453	459	465	466	522	503	509	515	516	22	3	9	15	16	97	78	84	90	91	7825
	489	495	496	477	483	464	470	471	452	458	514	520	521	502	508	14	20	21	2	8	89	95	96	77	83	7825
	26	32	38	44	50	326	332	338	344	350	201	207	213	219	225	376	382	388	394	400	576	582	588	594	600	7825
	43	49	30	31	37	343	349	330	331	337	218	224	205	206	212	393	399	380	381	387	593	599	580	581	587	7825
	35	36	42	48	29	335	336	342	348	329	210	211	217	223	204	385	386	392	398	379	585	586	592	598	579	7825
	47	28	34	40	41	347	328	334	340	341	222	203	209	215	216	397	378	384	390	391	597	578	584	590	591	7825
	39	45	46	27	33	339	345	346	327	333	214	220	221	202	208	389	395	396	377	383	589	595	596	577	583	7825
	51	57	63	69	75	351	357	363	369	375	301	307	313	319	325	251	257	263	269	275	551	557	563	569	575	7825
	68	74	55	56	62	368	374	355	356	362	318	324	305	306	312	268	274	255	256	262	568	574	555	556	562	7825
	60	61	67	73	54	360	361	367	373	354	310	311	317	323	304	260	261	267	273	254	560	561	567	573	554	7825
	72	53	59	65	66	372	353	359	365	366	322	303	309	315	316	272	253	259	265	266	572	553	559	565	566	7825
	64	70	71	52	58	364	370	371	352	358	314	320	321	302	308	264	270	271	252	258	564	570	571	552	558	7825
	426	432	438	444	450	226	232	238	244	250	401	407	413	419	425	276	282	288	294	300	176	182	188	194	200	7825
	443	449	430	431	437	243	249	230	231	237	418	424	405	406	412	293	299	280	281	287	193	199	180	181	187	7825
	435	436	442	448	429	235	236	242	248	229	410	411	417	423	404	285	286	292	298	279	185	186	192	198	179	7825
	447	428	434	440	441	247	228	234	240	241	422	403	409	415	416	297	278	284	290	291	197	178	184	190	191	7825
	439	445	446	427	433	239	245	246	227	233	414	420	421	402	408	289	295	296	277	283	189	195	196	177	183	7825
	526	532	538	544	550	151	157	163	169	175	101	107	113	119	125	601	607	613	619	625	126	132	138	144	150	7825
	543	549	530	531	537	168	174	155	156	162	118	124	105	106	112	618	624	605	606	612	143	149	130	131	137	7825
	535	536	542	548	529	160	161	167	173	154	110	111	117	123	104	610	611	617	623	604	135	136	142	148	129	7825
	547	528	534	540	541	172	153	159	165	166	122	103	109	115	116	622	603	609	615	616	147	128	134	140	141	7825
	539	545	546	527	533	164	170	171	152	158	114	120	121	102	108	614	620	621	602	608	139	145	146	127	133	7825
	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825

2	mgc	8205	8625	8785	9185	9575	9155	8775	8135	7735	7325	7605	7925	7985	8285	8575	8055	7575	6835	6335	5825	6255	6725	6935	7385	7825
	497	500	480	482	481	472	475	455	457	456	522	525	505	507	506	22	25	5	7	6	97	100	80	82	81	7825
	477	487	492	485	499	452	462	467	460	474	502	512	517	510	524	2	12	17	10	24	77	87	92	85	99	7825
	478	486	488	490	498	453	461	463	465	473	503	511	513	515	523	3	11	13	15	23	78	86	88	90	98	7825
	493	491	484	489	483	468	466	459	464	458	518	516	509	514	508	18	16	9	14	8	93	91	84	89	83	7825
	495	476	496	494	479	470	451	471	469	454	520	501	521	519	504	20	1	21	19	4	95	76	96	94	79	7825
	47	50	30	32	31	347	350	330	332	331	222	225	205	207	206	397	400	380	382	381	597	600	580	582	581	7825
	27	37	42	35	49	327	337	342	335	349	202	212	217	210	224	377	387	392	385	399	577	587	592	585	599	7825
	28	36	38	40	48	328	336	338	340	348	203	211	213	215	223	378	386	388	390	398	578	586	588	590	598	7825
	43	41	34	39	33	343	341	334	339	333	218	216	209	214	208	393	391	384	389	383	593	591	584	589	583	7825
	45	26	46	44	29	345	326	346	344	329	220	201	221	219	204	395	376	396	394	379	595	576	596	594	579	7825
	72	75	55	57	56	372	375	355	357	356	322	325	305	307	306	272	275	255	257	256	572	575	555	557	556	7825
	52	62	67	60	74	352	362	367	360	374	302	312	317	310	324	252	262	267	260	274	552	562	567	560	574	7825
	53	61	63	65	73	353	361	363	365	373	303	311	313	315	323	253	261	263	265	273	553	561	563	565	573	7825
	68	66	59	64	58	368	366	359	364	358	318	316	309	314	308	268	266	259	264	258	568	566	559	564	558	7825
	70	51	71	69	54	370	351	371	369	354	320	301	321	319	304	270	251	271	269	254	570	551	571	569	554	7825
	447	450	430	432	431	247	250	230	232	231	422	425	405	407	406	297	300	280	282	281	197	200	180	182	181	7825
	427	437	442	435	449	227	237	242	235	249	402	412	417	410	424	277	287	292	285	299	177	187	192	185	199	7825
	428	436	438	440	448	228	236	238	240	248	403	411	413	415	423	278	286	288	290	298	178	186	188	190	198	7825
	443	441	434	439	433	243	241	234	239	233	418	416	409	414	408	293	291	284	289	283	193	191	184	189	183	7825
	445	426	446	444	429	245	226	246	244	229	420	401	421	419	404	295	276	296	294	279	195	176	196	194	179	7825
	547	550	530	532	531	172	175	155	157	156	122	125	105	107	106	622	625	605	607	606	147	150	130	132	131	7825
	527	537	542	535	549	152	162	167	160	174	102	112	117	110	124	602	612	617	610	624	127	137	142	135	149	7825
	528	536	538	540	548	153	161	163	165	173	103	111	113	115	123	603	611	613	615	623	128	136	138	140	148	7825
	543	541	534	539	533	168	166	159	164	158	118	116	109	114	108	618	616	609	614	608	143	141	134	139	133	7825
	545	526	546	544	529	170	151	171	169	154	120	101	121	119	104	620	601	621	619	604	145	126	146	144	129	7825
	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825

3	mgc	8170	8595	8875	9160	9575	9120	8745	8225	7710	7325	7570	7895	8075	8260	8575	8020	7545	6925	6310	5825	6220	6695	7025	7360	7825
	485	490	489	478	498	460	465	464	453	473	510	515	514	503	523	10	15	14	3	23	85	90	89	78	98	7825
	492	488	484	476	500	467	463	459	451	475	517	513	509	501	525	17	13	9	1	25	92	88	84	76	100	7825
	487	486	491	494	482	462	461	466	469	457	512	511	516	519	507	12	11	16	19	7	87	86	91	94	82	7825
	496	495	479	493	477	471	470	454	468	452	521	520	504	518	502	21	20	4	18	2	96	95	79	93	77	7825
	480	481	497	499	483	455	456	472	474	458	505	506	522	524	508	5	6	22	24	8	80	81	97	99	83	7825
	35	40	39	28	48	335	340	339	328	348	210	215	214	203	223	385	390	389	378	398	585	590	589	578	598	7825
	42	38	34	26	50	342	338	334	326	350	217	213	209	201	225	392	388	384	376	400	592	588	584	576	600	7825
	37	36	41	44	32	337	336	341	344	332	212	211	216	219	207	387	386	391	394	382	587	586	591	594	582	7825
	46	45	29	43	27	346	345	329	343	327	221	220	204	218	202	396	395	379	393	377	596	595	579	593	577	7825
	30	31	47	49	33	330	331	347	349	333	205	206	222	224	208	380	381	397	399	383	580	581	597	599	583	7825
	60	65	64	53	73	360	365	364	353	373	310	315	314	303	323	260	265	264	253	273	560	565	564	553	573	7825
	67	63	59	51	75	367	363	359	351	375	317	313	309	301	325	267	263	259	251	275	567	563	559	551	575	7825
	62	61	66	69	57	362	361	366	369	357	312	311	316	319	307	262	261	266	269	257	562	561	566	569	557	7825
	71	70	54	68	52	371	370	354	368	352	321	320	304	318	302	271	270	254	268	252	571	570	554	568	552	7825
	55	56	72	74	58	355	356	372	374	358	305	306	322	324	308	255	256	272	274	258	555	556	572	574	558	7825
	435	440	439	428	448	235	240	239	228	248	410	415	414	403	423	285	290	289	278	298	185	190	189	178	198	7825
	442	438	434	426	450	242	238	234	226	250	417	413	409	401	425	292	288	284	276	300	192	188	184	176	200	7825
	437	436	441	444	432	237	236	241	244	232	412	411	416	419	407	287	286	291	294	282	187	186	191	194	182	7825
	446	445	429	443	427	246	245	229	243	227	421	420	404	418	402	296	295	279	293	277	196	195	179	193	177	7825
	430	431	447	449	433	230	231	247	249	233	405	406	422	424	408	280	281	297	299	283	180	181	197	199	183	7825
	535	540	539	528	548	160	165	164	153	173	110	115	114	103	123	610	615	614	603	623	135	140	139	128	148	7825
	542	538	534	526	550	167	163	159	151	175	117	113	109	101	125	617	613	609	601	625	142	138	134	126	150	7825
	537	536	541	544	532	162	161	166	169	157	112	111	116	119	107	612	611	616	619	607	137	136	141	144	132	7825
	546	545	529	543	527	171	170	154	168	152	121	120	104	118	102	621	620	604	618	602	146	145	129	143	127	7825
	530	531	547	549	533	155	156	172	174	158	105	106	122	124	108	605	606	622	624	608	130	131	147	149	133	7825
	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825

Above three magic squares of order 25 formed by multiples blocks of magic squares of order 5 are with entries

$$D_{30\times 30} := \{1, 2, \ldots, 624, 625\}.$$

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2.5 Magic Squares of Order 20

These magic squares are obtained from the magic squares of order 30 by using the formula $\frac{a^2-b^2}{2}$, $a>b$. Removing the external border of order 5 and then subtracting $\frac{30^2-20^2}{2}:=250$ from each entry, we get magic squares of orders 20 given by

1	mgc	4410	4810	5210	5610	6010	5610	5210	4810	4410	4010	3610	3210	2810	2410	2010	2410	2810	3210	3610	4010
	376	382	388	394	400	301	307	313	319	325	76	82	88	94	100	1	7	13	19	25	4010
	393	399	380	381	387	318	324	305	306	312	93	99	80	81	87	18	24	5	6	12	4010
	385	386	392	398	379	310	311	317	323	304	85	86	92	98	79	10	11	17	23	4	4010
	397	378	384	390	391	322	303	309	315	316	97	78	84	90	91	22	3	9	15	16	4010
	389	395	396	377	383	314	320	321	302	308	89	95	96	77	83	14	20	21	2	8	4010
	26	32	38	44	50	51	57	63	69	75	326	332	338	344	350	351	357	363	369	375	4010
	43	49	30	31	37	68	74	55	56	62	343	349	330	331	337	368	374	355	356	362	4010
	35	36	42	48	29	60	61	67	73	54	335	336	342	348	329	360	361	367	373	354	4010
	47	28	34	40	41	72	53	59	65	66	347	328	334	340	341	372	353	359	365	366	4010
	39	45	46	27	33	64	70	71	52	58	339	345	346	327	333	364	370	371	352	358	4010
	101	107	113	119	125	176	182	188	194	200	201	207	213	219	225	276	282	288	294	300	4010
	118	124	105	106	112	193	199	180	181	187	218	224	205	206	212	293	299	280	281	287	4010
	110	111	117	123	104	185	186	192	198	179	210	211	217	223	204	285	286	292	298	279	4010
	122	103	109	115	116	197	178	184	190	191	222	203	209	215	216	297	278	284	290	291	4010
	114	120	121	102	108	189	195	196	177	183	214	220	221	202	208	289	295	296	277	283	4010
	251	257	263	269	275	226	232	238	244	250	151	157	163	169	175	126	132	138	144	150	4010
	268	274	255	256	262	243	249	230	231	237	168	174	155	156	162	143	149	130	131	137	4010
	260	261	267	273	254	235	236	242	248	229	160	161	167	173	154	135	136	142	148	129	4010
	272	253	259	265	266	247	228	234	240	241	172	153	159	165	166	147	128	134	140	141	4010
	264	270	271	252	258	239	245	246	227	233	164	170	171	152	158	139	145	146	127	133	4010
	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010

2	mgc	4434	4890	5138	5578	6010	5634	5290	4738	4378	4010	3634	3290	2738	2378	2010	2434	2890	3138	3578	4010
	397	400	380	382	381	322	325	305	307	306	97	100	80	82	81	22	25	5	7	6	4010
	377	387	392	385	399	302	312	317	310	324	77	87	92	85	99	2	12	17	10	24	4010
	378	386	388	390	398	303	311	313	315	323	78	86	88	90	98	3	11	13	15	23	4010
	393	391	384	389	383	318	316	309	314	308	93	91	84	89	83	18	16	9	14	8	4010
	395	376	396	394	379	320	301	321	319	304	95	76	96	94	79	20	1	21	19	4	4010
	47	50	30	32	31	72	75	55	57	56	347	350	330	332	331	372	375	355	357	356	4010
	27	37	42	35	49	52	62	67	60	74	327	337	342	335	349	352	362	367	360	374	4010
	28	36	38	40	48	53	61	63	65	73	328	336	338	340	348	353	361	363	365	373	4010
	43	41	34	39	33	68	66	59	64	58	343	341	334	339	333	368	366	359	364	358	4010
	45	26	46	44	29	70	51	71	69	54	345	326	346	344	329	370	351	371	369	354	4010
	122	125	105	107	106	197	200	180	182	181	222	225	205	207	206	297	300	280	282	281	4010
	102	112	117	110	124	177	187	192	185	199	202	212	217	210	224	277	287	292	285	299	4010
	103	111	113	115	123	178	186	188	190	198	203	211	213	215	223	278	286	288	290	298	4010
	118	116	109	114	108	193	191	184	189	183	218	216	209	214	208	293	291	284	289	283	4010
	120	101	121	119	104	195	176	196	194	179	220	201	221	219	204	295	276	296	294	279	4010
	272	275	255	257	256	247	250	230	232	231	172	175	155	157	156	147	150	130	132	131	4010
	252	262	267	260	274	227	237	242	235	249	152	162	167	160	174	127	137	142	135	149	4010
	253	261	263	265	273	228	236	238	240	248	153	161	163	165	173	128	136	138	140	148	4010
	268	266	259	264	258	243	241	234	239	233	168	166	159	164	158	143	141	134	139	133	4010
	270	251	271	269	254	245	226	246	244	229	170	151	171	169	154	145	126	146	144	129	4010
	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010

3	mgc	4006	4066	4010	3958	4010	4006	4066	4010	3958	4010	4006	4066	4010	3958	4010	4006	4066	4010	3958	4010
	160	165	164	153	173	285	290	289	278	298	10	15	14	3	23	335	340	339	328	348	4010
	167	163	159	151	175	292	288	284	276	300	17	13	9	1	25	342	338	334	326	350	4010
	162	161	166	169	157	287	286	291	294	282	12	11	16	19	7	337	336	341	344	332	4010
	171	170	154	168	152	296	295	279	293	277	21	20	4	18	2	346	345	329	343	327	4010
	155	156	172	174	158	280	281	297	299	283	5	6	22	24	8	330	331	347	349	333	4010
	35	40	39	28	48	310	315	314	303	323	185	190	189	178	198	260	265	264	253	273	4010
	42	38	34	26	50	317	313	309	301	325	192	188	184	176	200	267	263	259	251	275	4010
	37	36	41	44	32	312	311	316	319	307	187	186	191	194	182	262	261	266	269	257	4010
	46	45	29	43	27	321	320	304	318	302	196	195	179	193	177	271	270	254	268	252	4010
	30	31	47	49	33	305	306	322	324	308	180	181	197	199	183	255	256	272	274	258	4010
	385	390	389	378	398	60	65	64	53	73	235	240	239	228	248	110	115	114	103	123	4010
	392	388	384	376	400	67	63	59	51	75	242	238	234	226	250	117	113	109	101	125	4010
	387	386	391	394	382	62	61	66	69	57	237	236	241	244	232	112	111	116	119	107	4010
	396	395	379	393	377	71	70	54	68	52	246	245	229	243	227	121	120	104	118	102	4010
	380	381	397	399	383	55	56	72	74	58	230	231	247	249	233	105	106	122	124	108	4010
	210	215	214	203	223	135	140	139	128	148	360	365	364	353	373	85	90	89	78	98	4010
	217	213	209	201	225	142	138	134	126	150	367	363	359	351	375	92	88	84	76	100	4010
	212	211	216	219	207	137	136	141	144	132	362	361	366	369	357	87	86	91	94	82	4010
	221	220	204	218	202	146	145	129	143	127	371	370	354	368	352	96	95	79	93	77	4010
	205	206	222	224	208	130	131	147	149	133	355	356	372	374	358	80	81	97	99	83	4010
	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010	4010

Above three magic squares of order 20 formed by multiples blocks of magic squares of order 5 are with entries

$$D_{30\times 30} := \{1, 2, \ldots, 399, 400\}.$$

2.6 Magic Squares of Order 15

These magic squares are obtained from the magic squares of order 25 by using the formula $\frac{a^2-b^2}{2}$, $a > b$. Removing the external border of order 5 and then subtracting $\frac{25^2-15^2}{2} := 200$ from each entry, we get magic squares of orders 15 given by

1	mgc	1770	1845	1920	1995	2070	1920	1770	1620	1470	1320	1395	1470	1545	1620	1695
	126	132	138	144	150	1	7	13	19	25	176	182	188	194	200	1695
	143	149	130	131	137	18	24	5	6	12	193	199	180	181	187	1695
	135	136	142	148	129	10	11	17	23	4	185	186	192	198	179	1695
	147	128	134	140	141	22	3	9	15	16	197	178	184	190	191	1695
	139	145	146	127	133	14	20	21	2	8	189	195	196	177	183	1695
	151	157	163	169	175	101	107	113	119	125	51	57	63	69	75	1695
	168	174	155	156	162	118	124	105	106	112	68	74	55	56	62	1695
	160	161	167	173	154	110	111	117	123	104	60	61	67	73	54	1695
	172	153	159	165	166	122	103	109	115	116	72	53	59	65	66	1695
	164	170	171	152	158	114	120	121	102	108	64	70	71	52	58	1695
	26	32	38	44	50	201	207	213	219	225	76	82	88	94	100	1695
	43	49	30	31	37	218	224	205	206	212	93	99	80	81	87	1695
	35	36	42	48	29	210	211	217	223	204	85	86	92	98	79	1695
	47	28	34	40	41	222	203	209	215	216	97	78	84	90	91	1695
	39	45	46	27	33	214	220	221	202	208	89	95	96	77	83	1695
	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695

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2	mgc	1788	1905	1866	1971	2070	1938	1830	1566	1446	1320	1413	1530	1491	1596	1695
	147	150	130	132	131	22	25	5	7	6	197	200	180	182	181	1695
	127	137	142	135	149	2	12	17	10	24	177	187	192	185	199	1695
	128	136	138	140	148	3	11	13	15	23	178	186	188	190	198	1695
	143	141	134	139	133	18	16	9	14	8	193	191	184	189	183	1695
	145	126	146	144	129	20	1	21	19	4	195	176	196	194	179	1695
	172	175	155	157	156	122	125	105	107	106	72	75	55	57	56	1695
	152	162	167	160	174	102	112	117	110	124	52	62	67	60	74	1695
	153	161	163	165	173	103	111	113	115	123	53	61	63	65	73	1695
	168	166	159	164	158	118	116	109	114	108	68	66	59	64	58	1695
	170	151	171	169	154	120	101	121	119	104	70	51	71	69	54	1695
	47	50	30	32	31	222	225	205	207	206	97	100	80	82	81	1695
	27	37	42	35	49	202	212	217	210	224	77	87	92	85	99	1695
	28	36	38	40	48	203	211	213	215	223	78	86	88	90	98	1695
	43	41	34	39	33	218	216	209	214	208	93	91	84	89	83	1695
	45	26	46	44	29	220	201	221	219	204	95	76	96	94	79	1695
	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695

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3	mgc	1767	1887	1920	1956	2070	1917	1812	1620	1431	1320	1392	1512	1545	1581	1695
	135	140	139	128	148	10	15	14	3	23	185	190	189	178	198	1695
	142	138	134	126	150	17	13	9	1	25	192	188	184	176	200	1695
	137	136	141	144	132	12	11	16	19	7	187	186	191	194	182	1695
	146	145	129	143	127	21	20	4	18	2	196	195	179	193	177	1695
	130	131	147	149	133	5	6	22	24	8	180	181	197	199	183	1695
	160	165	164	153	173	110	115	114	103	123	60	65	64	53	73	1695
	167	163	159	151	175	117	113	109	101	125	67	63	59	51	75	1695
	162	161	166	169	157	112	111	116	119	107	62	61	66	69	57	1695
	171	170	154	168	152	121	120	104	118	102	71	70	54	68	52	1695
	155	156	172	174	158	105	106	122	124	108	55	56	72	74	58	1695
	35	40	39	28	48	210	215	214	203	223	85	90	89	78	98	1695
	42	38	34	26	50	217	213	209	201	225	92	88	84	76	100	1695
	37	36	41	44	32	212	211	216	219	207	87	86	91	94	82	1695
	46	45	29	43	27	221	220	204	218	202	96	95	79	93	77	1695
	30	31	47	49	33	205	206	222	224	208	80	81	97	99	83	1695
	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695	1695

Above three magic squares of order 15 formed by multiples blocks of magic squares of order 5 are with entries

$$D_{15\times 15} := \{1, 2, \ldots, 224, 225\}.$$

3 Pentagonal Magic Squares Multiples 5

This section brings pentagonal magic squares multiples 5. It includes magic squares of orders 15, 20, 25, 35 and 40. The details are excluded as these are studied extensively in author's previous works [5, 7, 20].

3.1 Pentagonal Magic Square of Order 5

Below is a **pentagonal** magic squares of order 15.

	pan	65	65	65	65	65
65	1	7	13	19	25	65
65	18	24	5	6	12	65
65	10	11	17	23	4	65
65	22	3	9	15	16	65
	14	20	21	2	8	65
	65	65	65	65	65	65

It is the same magic square given in the beginning of Section 2.

3.2 Pentagonal Magic Square of Order 15

Below is a **pentagonal** magic squares of order 15.

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

The blocks of order 5 are **equal sums** magic squares, i.e., $M_{5\times5} := 565$

3.3 Pentagonal Magic Square of Order 25

Below is a **pentagonal** magic squares of order 25.

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	mgc			3271775	3280775	3271275	3267025	3263025	3243775	3237275	3237275	3243775	3263025	3267025	3271275	3280775	3271775	3263025	3276525	3265275	3260525	3256025	3263025	3256025	3260525	3265275	3276525	3263025
3260775	pan		7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	
3271275	7825	1	220	284	498	562	417	606	75	139	328	183	272	461	530	119	599	38	227	316	385	365	429	518	82	171	7825	3263025
3280775	7825	484	573	12	201	295	150	339	403	617	56	536	105	194	258	472	302	391	585	49	238	93	157	371	440	504	7825	3263025
3265525	7825	212	276	495	559	23	603	67	131	350	414	269	458	547	111	180	35	249	313	377	591	446	515	79	168	357	7825	3263025
3263025	7825	570	9	223	287	476	331	425	614	53	142	122	186	255	469	533	388	577	41	235	324	154	368	432	521	90	7825	3263025
3276525	7825	298	487	551	20	209	64	128	342	406	625	455	544	108	197	261	241	310	399	588	27	507	96	165	354	443	7825	3263025
3259025	7825	583	47	236	305	394	374	438	502	91	160	15	204	293	482	571	401	620	59	148	337	192	256	475	539	103	7825	3263025
3254275	7825	311	380	594	33	247	77	166	360	449	513	493	557	21	215	279	134	348	412	601	70	550	114	178	267	456	7825	3263025
3256025	7825	44	233	322	386	580	435	524	88	152	366	221	290	479	568	7	612	51	145	334	423	253	467	531	125	189	7825	3263025
3263025	7825	397	586	30	244	308	163	352	441	510	99	554	18	207	296	490	345	409	623	62	126	106	200	264	453	542	7825	3263025
3256025	7825	230	319	383	597	36	516	85	174	363	427	282	496	565	4	218	73	137	326	420	609	464	528	117	181	275	7825	3263025
3254275	7825	415	604	68	132	346	176	270	459	548	112	592	31	250	314	378	358	447	511	80	169	24	213	277	491	560	7825	3263025
3259025	7825	143	332	421	615	54	534	123	187	251	470	325	389	578	42	231	86	155	369	433	522	477	566	10	224	288	7825	3263025
3276525	7825	621	65	129	343	407	262	451	545	109	198	28	242	306	400	589	444	508	97	161	355	210	299	488	552	16	7825	3263025
3263025	7825	329	418	607	71	140	120	184	273	462	526	381	600	39	228	317	172	361	430	519	83	563	2	216	285	499	7825	3263025
3265525	7825	57	146	340	404	618	473	537	101	195	259	239	303	392	581	50	505	94	158	372	436	291	485	574	13	202	7825	3263025
3280775	7825	367	431	525	89	153	8	222	286	480	569	424	613	52	141	335	190	254	468	532	121	576	45	234	323	387	7825	3263025
3271275	7825	100	164	353	442	506	486	555	19	208	297	127	341	410	624	63	543	107	196	265	454	309	398	587	26	245	7825	3263025
3260775	7825	428	517	81	175	364	219	283	497	561	5	610	74	138	327	416	271	465	529	118	182	37	226	320	384	598	7825	3263025
3263025	7825	156	375	439	503	92	572	11	205	294	483	338	402	616	60	149	104	193	257	471	540	395	584	48	237	301	7825	3263025
3256275	7825	514	78	167	356	450	280	494	558	22	211	66	135	349	413	602	457	546	115	179	268	248	312	376	595	34	7825	3263025
3249775	7825	199	263	452	541	110	590	29	243	307	396	351	445	509	98	162	17	206	300	489	553	408	622	61	130	344	7825	3263025
3249775	7825	527	116	185	274	463	318	382	596	40	229	84	173	362	426	520	500	564	3	217	281	136	330	419	608	72	7825	3263025
3256275	7825	260	474	538	102	191	46	240	304	393	582	437	501	95	159	373	203	292	481	575	14	619	58	147	336	405	7825	3263025
	7825	113	177	266	460	549	379	593	32	246	315	170	359	448	512	76	556	25	214	278	492	347	411	605	69	133	7825	3263025
		466	535	124	188	252	232	321	390	579	43	523	87	151	370	434	289	478	567	6	225	55	144	333	422	611	7825	3263025
		7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	7825	
		3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025	3263025		3263025

The blocks of order 5 are **equal sums pandiagonal** magic squares, i.e., $M_{5\times 5} := 1565$. Moreover it is bimagic squares with bimagic sum $Sb_{5\times 5} := 3263025$

3.4 Pentagonal Magic Square of Order 35

Below is a **pentagonal** magic squares of order 35.

	pan	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455
21455	901	674	90	312	1088	649	210	216	1213	777	253	1177	524	746	365	1081	817	619	390	158	865	457	714	63	966	433	30	981	1032	589	109	926	1147	535	348	21455
21455	300	1117	878	691	79	1196	793	637	194	245	769	361	260	1163	512	409	145	1068	836	607	49	973	861	480	702	1016	577	449	13	1010	552	325	138	914	1136	21455
21455	668	96	289	1105	907	182	229	1225	776	653	1170	498	757	384	256	823	626	397	164	1055	476	725	37	959	868	29	993	1045	561	437	943	1124	541	342	115	21455
21455	1094	895	697	73	306	805	636	198	217	1209	372	279	1166	505	743	152	1074	810	613	416	947	854	483	721	60	590	421	17	1009	1028	331	132	920	1153	529	21455
21455	102	283	1111	884	685	233	1197	789	665	181	501	750	358	267	1189	600	403	171	1062	829	728	56	970	842	469	997	1044	573	450	1	1130	558	319	121	937	21455
21455	445	2	994	1043	581	118	940	1121	542	344	879	681	97	290	1118	656	184	230	1222	773	264	1190	496	758	357	1058	827	629	396	155	871	467	724	40	963	21455
21455	1029	588	441	25	982	526	332	134	923	1150	307	1095	908	669	86	1210	802	633	201	219	741	373	252	1174	525	419	151	1065	813	617	59	950	858	486	712	21455
21455	21	1005	1017	574	448	939	1133	555	316	122	698	74	296	1112	885	178	236	1199	790	662	1162	509	770	356	268	820	603	407	174	1061	473	731	47	969	845	21455
21455	562	434	28	1001	1040	345	106	927	1149	538	1101	902	675	103	284	779	650	207	213	1216	385	251	1178	497	754	162	1084	816	610	393	957	864	460	718	66	21455
21455	1008	1036	585	422	14	1137	554	328	135	911	80	313	1089	891	692	242	1193	796	639	195	513	742	369	280	1161	606	400	148	1072	839	705	53	976	852	479	21455
21455	1069	840	601	408	147	848	477	734	46	960	451	12	1004	1020	578	130	912	1134	553	336	888	695	71	297	1114	634	191	237	1200	803	271	1164	510	767	353	21455
21455	391	163	1057	824	630	69	956	855	463	722	1039	565	438	31	992	539	343	126	935	1122	281	1102	904	678	100	1217	780	663	179	226	755	382	248	1181	499	21455
21455	812	614	420	146	1073	470	708	57	979	851	18	1011	1027	584	425	931	1145	527	329	133	694	83	310	1086	892	208	214	1206	797	640	1158	516	744	370	277	21455
21455	175	1056	828	602	404	967	874	466	715	43	572	444	5	998	1046	317	119	938	1141	550	1115	876	682	99	293	786	657	185	243	1194	359	265	1187	493	761	21455
21455	618	392	159	1085	811	711	50	953	862	489	985	1033	591	432	24	1148	546	340	107	924	87	309	1098	905	666	220	1223	774	646	202	522	738	376	254	1175	21455
21455	643	205	211	1207	799	249	1171	517	745	383	1076	814	615	417	143	859	490	706	58	952	428	22	1014	1026	575	136	922	1144	530	333	900	667	84	308	1106	21455
21455	1191	787	659	188	240	762	360	278	1159	506	405	172	1053	831	604	41	968	847	474	735	1049	571	435	8	1002	549	320	123	941	1132	294	1113	896	690	72	21455
21455	204	223	1220	771	647	1188	494	751	377	255	808	621	394	160	1082	462	719	70	951	863	15	988	1037	594	431	928	1151	537	339	110	686	95	282	1099	903	21455
21455	800	631	192	239	1203	366	272	1165	523	739	149	1070	837	598	411	980	846	478	707	54	582	454	11	995	1023	327	129	915	1138	556	1087	889	693	91	305	21455
21455	227	1219	783	660	176	500	768	354	261	1182	627	388	166	1059	825	723	42	964	875	461	991	1030	568	442	34	1125	543	346	117	934	98	301	1110	877	679	21455
21455	113	932	1154	536	330	906	677	94	285	1103	655	177	224	1218	791	258	1185	491	752	379	1054	821	622	395	173	866	464	720	67	948	439	35	986	1038	567	21455
21455	559	326	120	918	1142	304	1090	893	696	82	1204	798	651	200	212	736	367	274	1168	520	412	150	1083	809	611	55	977	843	481	709	1021	583	427	19	1015	21455
21455	925	1128	547	349	116	683	101	292	1109	880	196	235	1192	784	658	1184	503	765	351	262	838	599	401	167	1060	458	726	44	965	872	7	999	1050	566	443	21455
21455	337	139	921	1135	533	1097	899	670	88	311	772	644	203	231	1215	380	246	1172	519	748	156	1077	815	628	389	954	860	487	703	61	595	426	23	987	1034	21455
21455	1131	540	323	127	944	75	298	1116	887	689	238	1211	795	632	189	507	764	363	275	1156	605	418	144	1066	832	732	38	971	849	475	1003	1022	579	455	6	21455
21455	844	471	727	45	978	446	9	1000	1047	563	124	945	1126	548	322	883	687	104	291	1100	661	187	234	1195	788	270	1157	504	763	371	1063	835	596	402	169	21455
21455	62	955	873	459	716	1035	592	423	26	989	531	338	112	929	1155	314	1096	890	673	92	1214	775	648	206	222	749	378	266	1180	492	386	157	1079	818	625	21455
21455	488	704	51	972	850	3	1006	1024	580	452	917	1139	560	321	128	680	78	302	1119	886	193	241	1202	794	635	1176	515	737	364	273	834	608	415	141	1067	21455
21455	961	867	465	733	39	569	440	32	983	1041	350	111	933	1127	544	1107	909	676	85	288	782	654	180	228	1221	352	259	1183	511	760	170	1051	822	624	398	21455
21455	710	68	949	856	482	1012	1018	586	429	20	1143	532	334	140	916	81	295	1093	897	699	215	1208	801	642	199	518	756	375	247	1169	612	414	153	1080	806	21455
21455	276	1167	514	740	368	1075	807	609	413	161	853	485	701	52	974	424	16	1007	1025	593	131	919	1140	557	318	894	700	76	303	1092	638	197	244	1201	785	21455
21455	759	355	263	1186	502	399	168	1071	830	597	36	962	869	468	730	1042	570	453	4	996	545	347	108	936	1129	286	1108	882	684	105	1224	781	645	183	232	21455
21455	1173	521	747	374	250	826	620	387	154	1078	484	713	65	946	857	33	984	1031	587	430	913	1146	534	335	137	672	89	315	1091	898	190	218	1212	804	641	21455
21455	362	269	1160	508	766	142	1064	833	616	410	975	841	472	729	48	576	447	10	1013	1019	324	125	942	1123	551	1120	881	688	77	299	792	664	186	225	1198	21455
	495	753	381	257	1179	623	406	165	1052	819	717	64	958	870	456	990	1048	564	436	27	1152	528	341	114	930	93	287	1104	910	671	221	1205	778	652	209	21455
	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455	21455

The blocks of order 5 are **equal sums pandiagonal** magic squares, i.e., $M_{5\times 5} := 3065$.

Remark 1. *The **excel file** is attached with this work contains only **pandiagonal** magic squares with **equal sums** of order 5 up to order 145, i.e., these are of orders 15, 25, 35, 45, etc. It is not possible to write **pandiagonal** magic* *squares of orders 30, 50, 70, etc. The pandiagonal magic squares of orders 20, 40, 60, 80, 100, 120 and 140 formed by different sums of order 5 shall be given in another work.*

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

- **Inder J. Taneja**, Recreation of Numbers - *https://numbers-magic.com/?p=671*.
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