

Bimagic Square of Order 10

Original by Fredrik Jansson, Christian Boyer and Pan Fengchu. S1=505 and S2=33835.

#1a Credit: Fredrik Jansson, January 2004.

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

#1b Credit: Mikael Hermansson, November 2021.

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

#2a Credit: Christian Boyer, October 2006.

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

#2b Credit: Mikael Hermansson, November 2021.

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

#3a Credit: Pan Fengchu, September 2007.

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

#3b Credit: Mikael Hermansson, November 2021.

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

Bimagic Squares of order 10 are difficult to solve, because no Euler square. Fredrik Jansson from Finland had the luck to come over all known bimagic columns arrays of order 10. He had the skillfulness to put all ten arrays together into the very first known bimagic square of order 10. That was in January 2004. Later have in year 2006 Christian Boyer solved one perfect bimagic square of order 10. In year 2007 had Pan Fengchu study Fredrik Jansson's square from year 2004 and he get the same rows in his square like they are in Fredrik's square from 2004. It's possibly to get one new bimagic square from each one of the three squares if use the formula: n^2+1 minus square number in each of these small 100 squares of order 10.

Bimagic Square of Order 11

Original by Chen Mu-tian, Fredrik Jansson and Christian Boyer $S_2=54351$, $S_3=4952651$ and $P_2=1578251$.

#1a Credit: Chen Mu-tian, November 2005.

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

#1b Credit: Mikael Hermansson, November 2021.

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

#2a Credit: Fredrik Jansson, January 2004.

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

#2b Credit: Mikael Hermansson, November 2021.

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

#3a Credit: Christian Boyer, 2006. Real prime number!

277	401	239	23	647	421	181	229	7	653	419
131	137	317	5	47	457	359	541	467	683	353
269	463	701	157	59	257	557	563	179	101	191
617	307	397	571	241	661	107	109	79	281	127
311	593	379	197	503	83	521	53	149	89	619
443	373	29	383	587	61	409	19	631	173	389
599	43	151	509	199	487	163	223	293	139	691
11	73	607	613	433	577	97	263	227	283	313
37	673	113	193	271	31	431	601	331	479	337
569	367	461	347	71	211	13	349	643	449	17
233	67	103	499	439	251	659	547	491	167	41

#3b Credit: Mikael Hermansson, 2022. Partial Bimagic.

277	401	239	23	647	421	181	229	7	653	419
131	137	317	5	47	457	359	541	467	683	353
269	463	701	157	191	257	557	563	179	101	59
617	307	397	571	241	661	107	109	79	281	127
311	593	379	197	503	83	521	53	149	89	619
443	373	29	383	389	61	409	19	631	173	587
599	43	151	509	199	487	163	223	293	139	691
11	73	607	613	433	577	97	263	227	283	313
37	673	113	193	337	31	431	601	331	479	271
569	367	461	347	71	211	13	349	643	449	17
233	67	103	499	439	251	659	547	491	167	41

Bimagic Squares of order 11 are like order 10 difficulty to solve bimagic. Fredrik Jansson has solved first known 11th-order bimagic square in year 2004. Year later Chen Mu-tian had solved first known bimagic square with trimagic diagonal, central column and row. I have found one other one, where: $55+105+23 = 99+17+67$. These make one new bimagic square 1b, different from the original made by Chen Mu-tian.