

Magic Squares

Science Or Magic?

Magic squares have been around for thousands of years and have fascinated so many with its unique construction of how numbers are arranged and put together.



RESOURCES

www.wikipedia.com



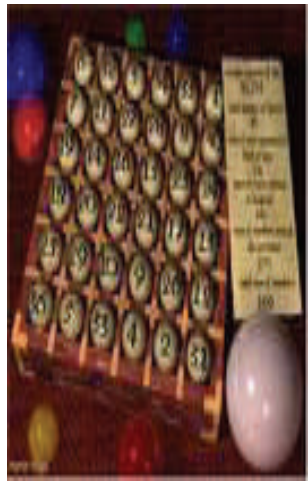
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113	127	120	128	1	18	14	4	21	35	36	34
124	118	129	121	11	6	7	5	32	38	37	33
126	122	123	127	8	16	11	7	38	39	35	32
125	119	116	122	13	5	2	16	39	37	32	36
12	47	46	38	63	78	72	62	97	111	119	106
44	35	39	45	76	79	75	71	108	102	103	105
46	32	40	37	72	74	73	69	104	106	107	101
45	33	34	42	77	87	86	88	109	99	98	112
49	43	42	51	129	140	142	132	17	31	38	28
60	54	55	57	148	134	135	137	23	32	33	25
56	50	59	53	136	138	139	131	24	30	37	21
61	51	56	54	141	133	139	144	29	39	38	22

Magic Squares in History

Magic squares have been studied for at least three thousand years, the earliest recorded appearance dating to about 2200 BC, in China. In the 9th century, Arab astrologers used them in calculating horoscopes, and by 1300 AD, magic squares had spread to the west. An engraving by the German artist Albrecht Durer includes a magic square in which the artist embedded the date 1514 in the form of two consecutive numbers in the bottom row! Because the concept of a magic square is so easily understood, magic squares have been particularly attractive to puzzlers and amateur mathematicians.



Construction of a Magic Square

Magic squares— a square arrangement of numbered squares containing rows and columns of numbers arranged in such a way that each horizontal, vertical, and diagonal line has the same sum. It consists of distinct positive integers. The magic comes from the fact that the numbers arranged in a square of equal sides all add the same total, coming and going, up and down, and often times even from an angle.

17	47	30	36	21	43	26	40
32	34	19	45	28	38	23	41
33	31	46	20	37	27	42	24
48	18	35	29	44	22	39	25
49	15	62	4	53	11	58	8
64	2	51	13	60	6	55	9
1	63	14	52	5	59	10	56
16	50	3	61	12	54	7	57

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

Types of Magic Squares

There are many types of magic squares. Some of these methods/forms include the construction of panmagic squares, Kronecker product, multiplicative magic squares, as well as the construction of a magic square using genetic algorithms. However, the simplest way is to follow certain arrangements that produce regular patterns. Magic squares can be classified into three types: odd, doubly even (n divisible by four), and singly even (n even, but not divisible by four). Odd and double even magic squares are more complex but several methods exist, including the LUX method for magic squares (due to John Horton Conway) and the strachey method for magic squares.