

Celebration of Mind 2017

honoring Martin Gardner
October 21-22, 2017, at Ye Olde Gamery,
Maryland Renaissance Festival

Our theme this year is *Dissection Puzzles – the Art of Combinatorics* (see attached description) highlighted by our tricolor Archimedes' Square (Stomachion) and its new Monograph analyzing/cataloguing all 1072 solutions. See its full story here: www.gamepuzzles.com/tsm.htm.

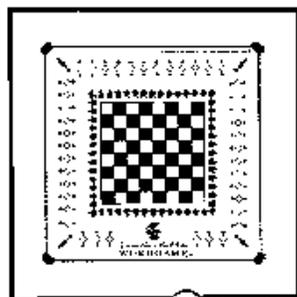
Kadon's philosophy and artistic vision in designing "gamepuzzles" sum up as a celebration of mind ... the joy of thinking. And the catalyst for this lifetime of creation was one man: Martin Gardner. We celebrate him annually on his birthday and invite all our visitors to join in and get in the spirit of puzzling, gaming, and designing with our wonderful collection of over 200 original gamepuzzles. And enjoy the six attached posters provided by the Gathering4Gardner Foundation about this giant of a man.



Kadon had the singular honor of publishing Martin Gardner's two games. See and play them at the Gamery. Here's their description in our Shakespearean Renaissance catalog:

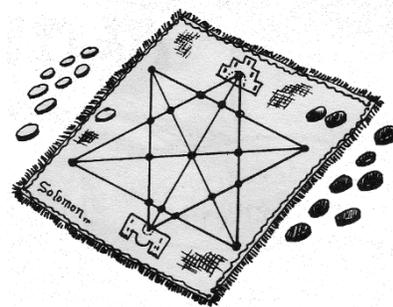
Lewis Carroll's Chess Wordgame

A tale is told of wonderlands of mind
Wherein as through a looking glass of thought
The traveler meets with marvels past recount.
A wordgame for a chessboard? Yes, indeed!
So Lewis Carroll's fertile brain opined
And Martin Gardner's skillful sense defined.
Now let the letters stalk about like queens
To range themselves as words upon the board.
Two players vie to weave the "spell" that scored.



Game Of Solomon

As rumour tells, Sol made this game to keep
His harem playing 'stead of quarreling!
The handsome emblem of his reign of peace,
On fringed fabric painted, serves as grid
For several games of thoughtful skill for two
And plentitudes for solo ponderings.
If truth be told, the sage's creative partner
Is famous scrivener-scholar Martin Gardner.



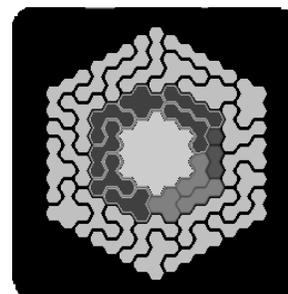
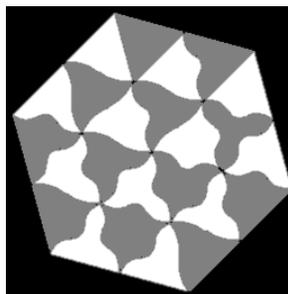
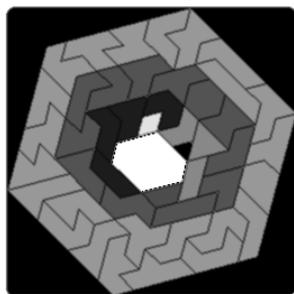
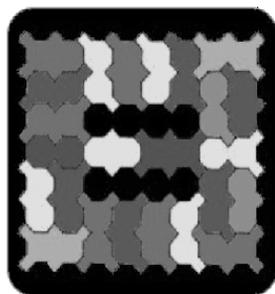
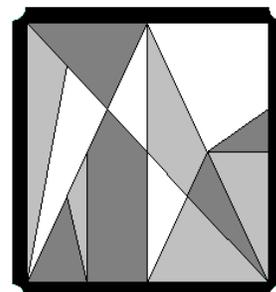
Dissection Puzzles—the Art of Combinatorics

Presented by Ye Olde Gamery at the Maryland Renaissance Festival for the
2017 Celebration of Mind – October 21-22, 2017
an annual world-wide event honoring the birthday of
the beloved author, Martin Gardner (1914-2010)

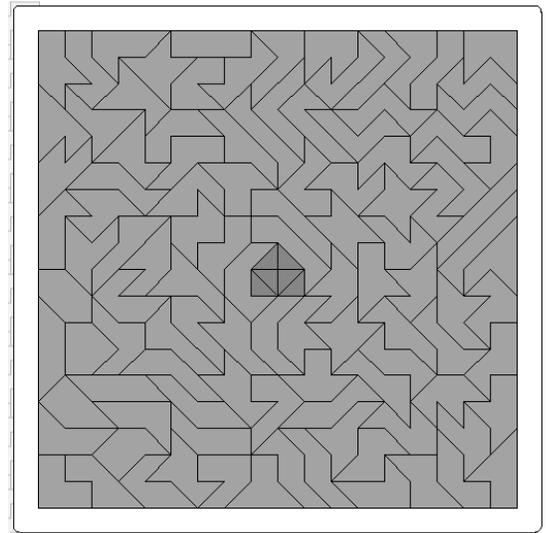
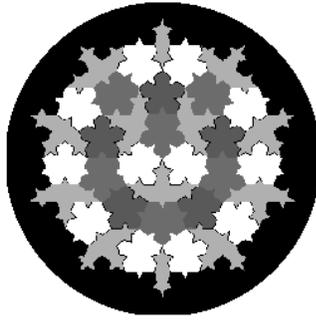
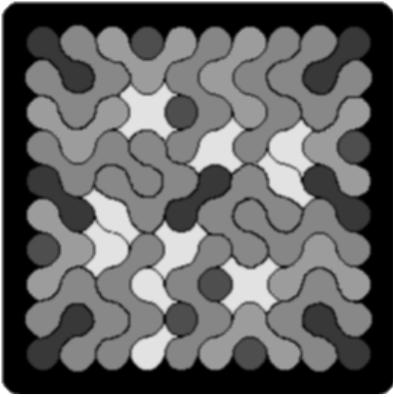
Combinatorics is the branch of mathematics dealing with combinations and permutations. Kadon's art of mathematical puzzles primarily works with tiling sets where all the pieces are logical members of a specific theme, either by color combinations that match, like dominoes, or shapes that include all the permutations of the same basic building block. It is the nature of such sets that the pieces can fit together in a great many different ways to form many different patterns, figures and designs, sometimes in the millions. So the puzzle challenges have more than one solution, more than one right answer. We can reflect on the versatility and variability of existence itself, from the way the tiniest subatomic particles interact to the movements of billions of galaxies.

Dissection puzzles may start with a certain shape, like a square or octagon, hexagon or rectangle, which is then cut into smaller parts, or start with a unit building block, copies of which combine to fill up a given space, like atoms that constitute elements and material objects. Mathematicians and scientists have formal ways and language to describe these phenomena. Martin Gardner's great legacy is writing about them with clarity and enthusiasm, popularizing these ideas through 70 years of books and articles on recreational mathematics, the science of magic, and the pursuit of truth and knowledge.

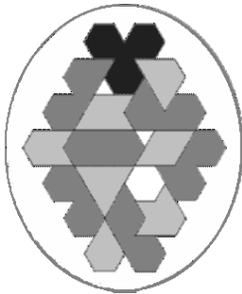
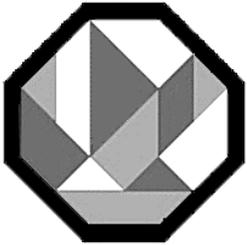
We illustrate here some of our most beautiful puzzles and their dissection principle. Our oldest and most famous is *Archimedes' Square*, also called *Stomachion*, with 14 pieces that form a 12x12 square 536 different ways, identified by Bill Cutler's computer program in 2003. Adding three colors doubled that to 1072 because one pair of congruent triangles received different colors. Note that in the solution shown, every cut line starts on the border and every intersection is on a node of the grid. Thus every tile's area is a whole number, from 3 to 24, with no adjacent tiles sharing a color and with each color having the same total area. A full analysis showed that only 6 solutions share this color separation feature. One of the colors can never be grouped. For more of this 2200-year-old story, see www.gamepuzzles.com/tiling3.htm#AS and www.gamepuzzles.com/tsm.htm.



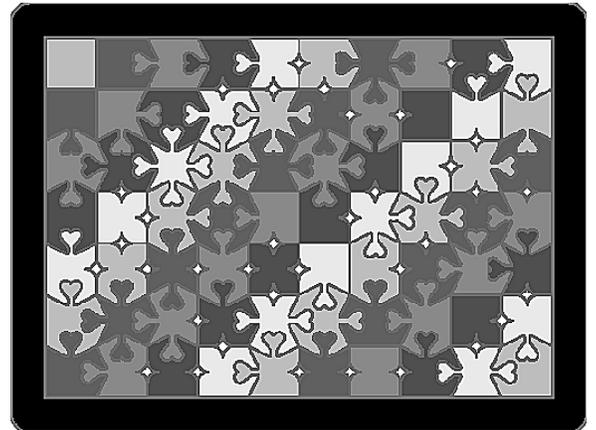
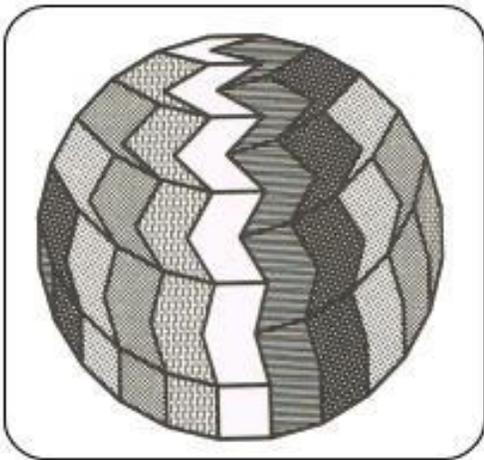
Above, from left to right: *Ochominoes*, octagon dominoes with squares attached; *Iamond Ring*, shapes of from 1 to 7 equilateral triangles joined; *Trifolia*, equilateral triangles with 4 shapes of edge; *Hexnut*, the shapes of from 1 to 5 hexagons joined. All have millions of solutions.



Above, left to right: *Grand Roundominoes*, shapes of 1 to 5 circles joined; *Pentarose*, tessellated Penrose diamonds and pentagons; *Tan Tricks III*, all the shapes of 6 isosceles right triangles joined.



Left to right: *Trio in a Tray*, pieces formed of half-squares; *StarHex-II*, triangles and hexagons on a star grid; *Pentominoes*, the 12 shapes of 5 squares.



Above, left to right: *Rainbow Rombix*, dissection of 24-sided polygon into rhombi; *Rombix Jr.*, dissection of octagons into rhombi; *Grand Snowflake*, squares tessellated with 4 shapes of edge.



See all these playable art sets and many more on the Kadon Enterprises, Inc., website, **Gamepuzzles for the joy of thinking**, www.gamepuzzles.com, where you can order securely and conveniently online. Visit our exhibits at art shows, conferences, and the Maryland Renaissance Festival. Our show calendar is here: www.gamepuzzles.com/showlist.htm. All product names are proprietary trademarks of Kadon Enterprises, Inc.

Martin Gardner



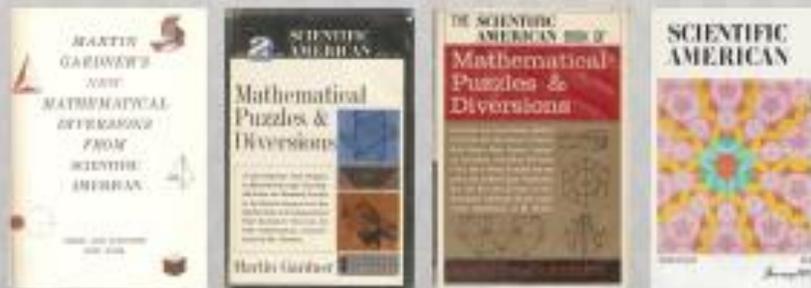
(1914 - 2010)



POPULARIZATION OF MATHEMATICS

"Gardner brought more math to more millions than anyone else." – Richard Guy

With clarity and enthusiasm, Gardner brought complex theorems and mathematical constructions to a wide audience.



Through his publications, Gardner made familiar names like John Conway (*The Game of Life*), Raymond Smullyan (Logic), Roger Penrose (Tilings), M. C. Escher (Visual Arts) and Mandelbrot (Fractals). Gardner's column in *Scientific American* from 1956-1981 even inspired several cover designs. He published over 70 books on subjects ranging from recreational mathematics, philosophy, and magic, to novels and an annotated edition of *Alice in Wonderland*.



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Martin Gardner

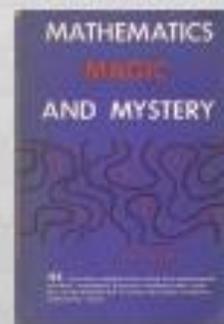
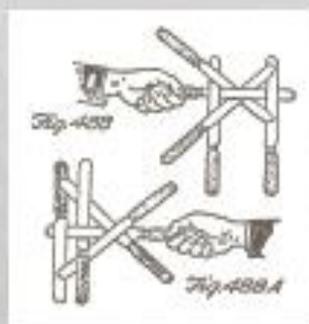
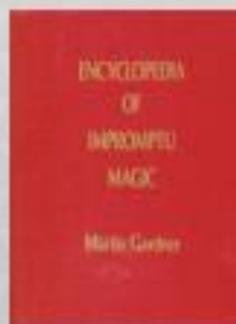


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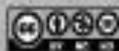
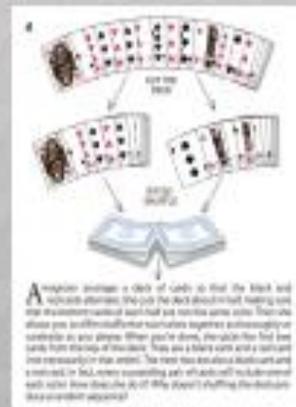


MAGIC

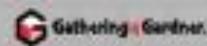
Gardner's interest in magic grew from an early age – when his father showed him a card trick. Gardner became an expert and contributed original work to the field. His most impressive work, *Encyclopedia of Impromptu Magic*, contains 600 pages of magic tricks using only everyday objects.



Gardner always explains the mathematics behind his tricks, often using a deck of cards to illustrate mathematical concepts.



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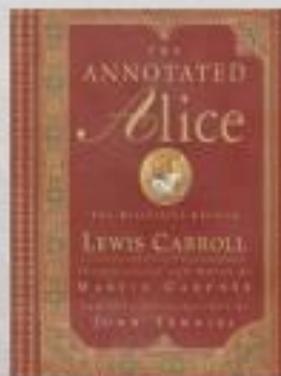
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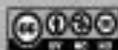
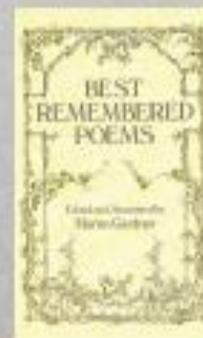
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LITERATURE

Gardner wrote a lot (even an autobiographical novel), but he read even more. He read the books of Frank Baum, the author of *The Wizard of Oz*, and eventually made a contribution to the bibliography of Oz. He enjoyed publishing annotated versions of the major works of his favorite writers, like Lewis Carroll.

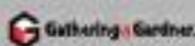


The literary movement Oulipo – characterized by radical word play mixed with literary production – was a theme of Martin's columns in *Scientific American*. He also published selections of the poems he most appreciated.



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Martin Gardner

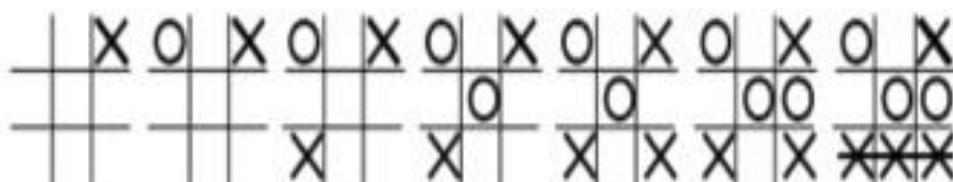


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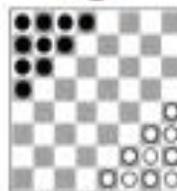


MATHEMATICAL GAMES

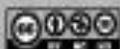
Gardner popularized lots of mathematical games during the 25 years of his column in *Scientific American*. He analyzed games like *Tic Tac Toe*, *Hackenbush*, and *Sprouts* (Conway). He also solved *NIM* – the first game to be mathematically solved in a research article. With some puzzles like the *Icosian* (Hamilton) and the *Hanoi Tower* (Lucas), Gardner explained their reciprocal relations.



Gardner also studied board games. Both *Hex* (Hein and Nash) and *Halma* have far reaching mathematical content. Gardner praised some card games, namely *Eleusis* (Abbott), that emulates the process of scientific discovery.



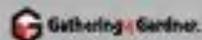
Hex | Halma



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AND



LEADING MATHEMATICIANS

The public first heard of some of the most important mathematical results and their authors through Gardner's publications:

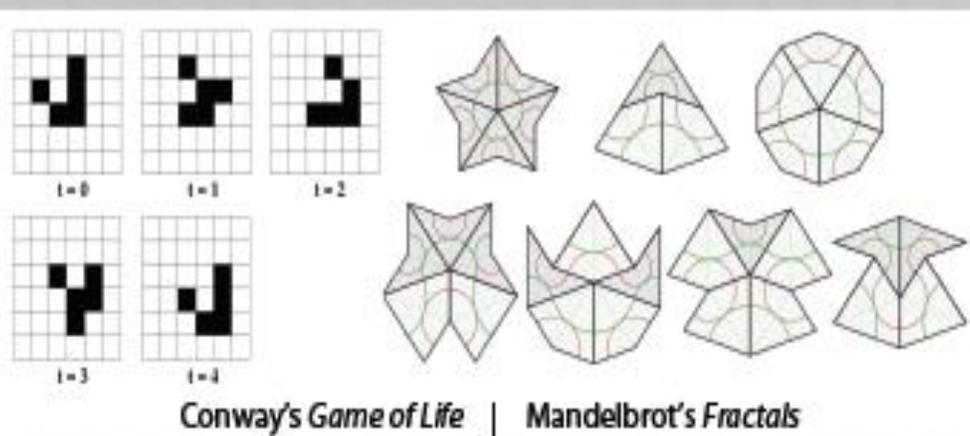
John Napier: Creator of logarithms and a singular calculation device, *Napier's Bones*.

Raymond Smullyan: Professional magician and creator of theoretically relevant puzzles.

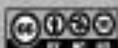
John Horton Conway: Invented the *Game of Life* in which generations of cells follow in succession according to rules about each particular cell and its neighbors.

Roger Penrose: Founded a non-periodic tiling of the plane as shown in Gardner's column in the January 1977 issue of *Scientific American*.

Benoit Mandelbrot: Gardner turned Mandelbrot's fractals into a subject of common conversation.



Conway's Game of Life | Mandelbrot's Fractals



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Martin Gardner



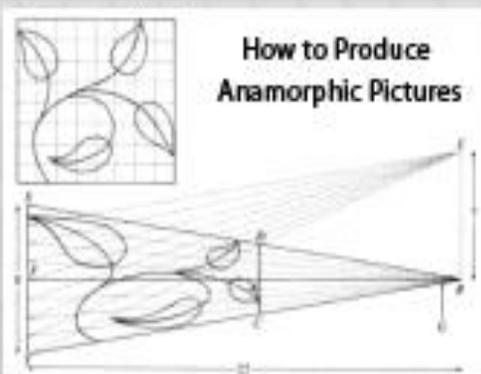
AND



VISUAL ARTS

Gardner often wrote about the mathematical concepts behind a wide range of fine art. Art styles such as Op Art, the minimalist sculptures of Picasso, and anamorphic pictures caught Gardner's imaginative eye and intellect. With words and diagrams, he could explain the illustrations of Loyd and the famous paintings of Holbein.

In the work of Maurits Cornelis Escher (1898-1972), Gardner found and dissected advanced mathematical concepts from self-reference to hyperbolic geometry.



Escher's *Infinite Stairs* (1960) | *Möbius Strip* (1963) |
Convex and Concave (1955) | Escher on *Scientific American* Cover (1961)



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