

Gathering 4 Gardner™

PRESENTS

Celebration of Mind

For anyone who loves puzzles, math, and magic, Celebration of Mind (CoM) events around the world bring people together in the spirit of curiosity and fun!

ABOUT CELEBRATION OF MIND

Celebration of Mind (CoM) brings people together to explore and enjoy puzzles, games, math, and magic. Sponsored by the **Gathering 4 Gardner Foundation**, worldwide events are held annually on or around **Martin Gardner**'s birthday (October 21st) so that people can meet and share in the legacy of this polymath. As Gardner said, you can learn more when you're in a state of entrancement, and that's our guiding principle. CoM events and materials are designed to inspire, delight and awe. As new content is presented, it's added to our online repository of resources, which is accessible to all and continues to inspire new generations to discover a range of intellectual pursuits.

ATTEND AN EVENT

Looking to attend a future event? Check out our website to see upcoming events sorted by location or month: **www.CelebrationOfMind.org/Map**

Most CoM events take place around October 21st. If you can't find one to attend, consider hosting your own. You can make it private or open to the public.

Celebration of Mind Events Held in 2017

HOST AN EVENT

Bring people together to explore, discover and have fun with puzzles, magic and math! Here are some things to consider:

- **Audience:** Any group that enjoys math, magic, puzzles, and games will make a perfect audience for your event. Content can be tailored to suit a crowd of elementary-age kids, a room full of math professors, or even an audience of mixed ages and interests.
- **Size, Location, & Date:** Private backyard events for five friends can be just as much fun as those that fill an auditorium. If you choose a date close to October 21, it will be easier for us to help get the word out for public events, but any date is fine.
- **Public or Private:** You can plan an event that's open to the general public, or one that's only open to a specific group, such as your friends, a school classroom, a scout group, etc.
- **Theme & Content:** CoM events may include a magic show, a puzzle party, a game night, a DIY craft, or even just a good discussion. You might already have an idea in mind. If not, take a look at our online resources (**www.CelebrationOfMind.org/Resources**) or consider inviting a presenter (**www.CelebrationOfMind.org/Featured-Presenters**).

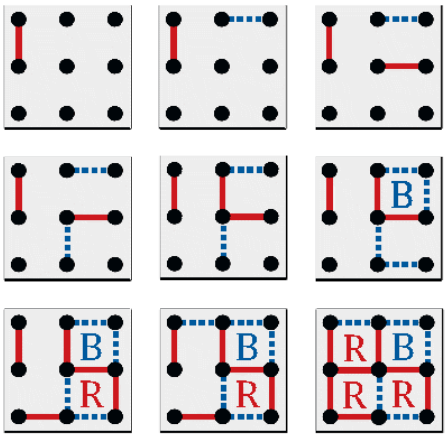
Once you have the details pinned down, register your event (**www.CelebrationOfMind.org/Registration**) and we'll add it to our map. You can also download our Host Welcome Package, which includes Martin Gardner posters and a banner to display at your event as well as business card and postcard invitations to help you spread the word.

After your event, we'd love to hear how it went! If you have any photos to send us, we can put them in our past events photo gallery: **www.CelebrationOfMind.org/Photo-Gallery**

DOTS & BOXES

Dots and Boxes is a pen-and-pencil game great for two players or even-numbered groups of people! Players start by choosing the size of the game board, which is a square grid of dots. (The board size is usually named in terms of squares instead of dots, so an array of 5 dots by 5 dots would be a 4x4 board.) Beginners might start with a 2x2 board while more seasoned players will likely already find 4x4 and 5x5 boards challenging. Once the board has been drawn or printed, players decide who will make the first move. A move consists of drawing a horizontal or vertical line segment connecting two neighboring dots. Each time a player draws the fourth side of a 1x1 square, the player should mark the box to signify he or she has captured it before making another move. A player's turn ends when a segment is drawn that doesn't result in a captured box. Once all possible line segments are drawn in, the player who has captured the most boxes wins the game.

Shown here is a game on a 2x2 board between Red and Blue players. The Red player moves first and wins the game 3 to 1.



As you play, here are some questions to ponder:

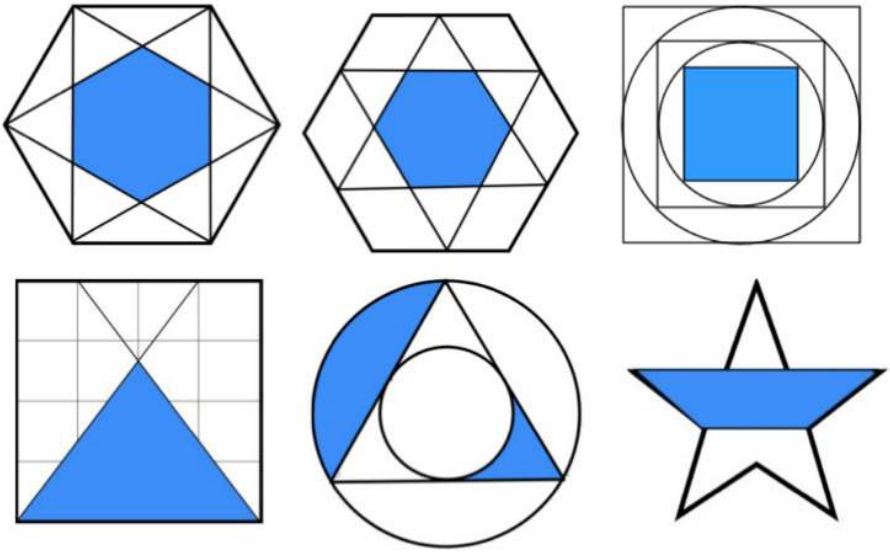
- Does every game have a winner or is it possible to end in a draw?
- Is it advantageous to go first? Does it depend on the board size?
- If you can capture a box, is it always in your best interest to do so? Or is it sometimes better to sacrifice a box for a bigger capture later?

To learn more about the nuances of this game:

Check out *The Dots and Boxes Game* by Elwyn Berlekamp:
www.taylorfrancis.com/books/9781482208498
Printable 4x4 game cards are available at:
www.CelebrationOfMind.org/archives/827
Test your skills against a computer at:
www.math.ucla.edu/~tom/Games/dots&boxes.html

WORDLESS GEOMETRY

The following puzzles by Dan Finkel are fun for individuals or small groups. In each picture, the shaded region represents some fraction of the total area, and it's your task to find the fraction! Each problem can be solved without numbers or words: just geometric observations. You can assume that drawings are to scale and that points that look like midpoints are midpoints, shapes that look like circles are circles, quadrilaterals that look like squares are squares, polygons that look regular are regular, etc.



As you work on these, you'll likely want to have some scratch paper handy – and maybe even some graph paper!

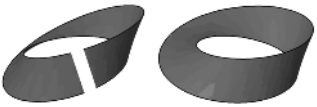
You can find square and other pertinent grids at:
www.incompetech.com/graphpaper
Larger versions of these puzzles are available at:
www.CelebrationOfMind.org/archives/1060
For more about Dan Finkel's company, **Math 4 Love**, visit:
mathforlove.com

MÖBIUS CUTS

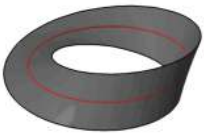
You've probably made a cylindrical wristband by taping along a strip of paper at its ends.

If we were to cut along the entire band keeping to the center, you likely wouldn't be too surprised to find that you end up with two cylinders.

If you instead gave the paper strip a twist before taping the ends together, you get a slightly different shape called a Möbius strip (or band).



What do you get if you cut all the way around this band, keeping to the center? Is it what you would predict?



What if you give the band two or more twists before taping and cutting?

Can you come up with a way to predict the outcome for any given number of twists? It might be good to come up with some numbers you can associate to each outcome:

- **How many bands did you end up with?**
  Coloring them might help with your count.
- **How tangled are they?**
  See if you can find a consistent way to count crossings.
- **How many twists does each have?**
  Cut the resulting bands and carefully untwist them.

This activity in experimental mathematics can be fun for individuals or medium-sized groups of people pooling their data and brainpower. Here are some other activities related to Möbius strips:

www.CelebrationOfMind.org/archives/838
www.CelebrationOfMind.org/archives/895

(Images on this page made with SageMath)

RECOMMENDED PRODUCTS

Commercially Available:

- 15 Puzzle
- Battleship
- Blokus
- Fluxx
- Flow Free (video game)
- Go
- Gobblet Gobblers
- Hex
- Hive
- Lights Out
- Mastermind
- Othello
- Peg Solitaire
- Prime Climb
- Rubik's Cube (and similar puzzles)
- Rush Hour
- Santorini
- Set
- Spot It
- Swish
- Quarto

Books:

- Sudoku or KenKen compendia
- *Path Puzzles* by Roderick Kimball
- Books written by Martin Gardner related to puzzles and games

MORE PUZZLES ONLINE

Celebration of Mind – Puzzles, games, magic tricks, and crafts: **www.CelebrationOfMind.org/resources**

Domino Puzzles: dominosolver.com/play

Julia Robinson Mathematics Festival – Math problem sets: **jrmf.org/mathematical-problem-sets/**

Math Pickle – Mathematics is beautiful: **MathPickle.com**

NY Times, Numberplay – Mathematical / logical puzzles and problems: **wordplay.blogs.nytimes.com/category/Numberplay**

Project Euler – Free engaging computation problems requiring more than just mathematical insights to solve: **projecteuler.net**

Puzzles.com – Martin Gardner puzzles online: **Puzzles.com/PuzzlePlayground/Authors/MartinGardner.htm**

ThinkFun – Empowering through play: **www.ThinkFun.com**



FOR MORE INFORMATION

Anyone who loves puzzles, recreational mathematics, wordplay, critical thinking, and an intellectual challenge is invited to participate in a Celebration of Mind event in their area, or to host a Celebration of their own. We offer resources for finding a local event, as well as plenty of activities for potential hosts, teachers, parents, or anyone just looking for some fun brain stimulation.

To find or organize a Celebration of Mind, visit:

www.CelebrationOfMind.org

For specific questions, email us at:
CelebrationOfMind@gmail.com

Celebration of Mind is a program developed and sustained by the Gathering 4 Gardner Foundation. www.Gathering4Gardner.org

Gathering 4 Gardner™