

MOMATH MOMENTS

The Newsletter of
The National Museum of Mathematics
January 2012
Volume 6



Whitney, Lawrence, and Nissen count down at the 12-12-12 Opening Ceremony.

Opening Ceremony: Turning on the Museum

The MoMath newsletter is back, and there is plenty of news! After almost four years of intensive effort, MoMath opened Manhattan's only hands-on science center, and North America's only museum focused on mathematics and its many connections. The Opening Ceremony, which took place on 12-12-12, marked the culmination of a collaborative effort that included contributions from mathematicians, educators, artists, parents, and museums around the world, and MoMath was thrilled to bring this effort to fruition with a gala grand opening.

The Opening Ceremony began with cocktails and dinner, including a world premiere musical performance of *Coyote Scatters the Stars*, a piano and violin piece composed by NPR piano puzzler Bruce Adolphe in honor of the opening of MoMath.

Executive Director and Founder Glen Whitney then led approximately 350 guests across 27th Street, where they entered the wondrous world of mathematics, while "Pure Imagination," the theme song from *Willy Wonka & the Chocolate Factory*, played in the background. The Museum took on an almost magical mood, as the multitude of one-of-a-kind exhibits seemed to glow in the soft lighting. NSA Deputy Director John C. (Chris) Inglis welcomed the guests with brief comments about the importance of mathematics, then surrendered the podium to Whitney, Associate Director Cindy Lawrence, and Chief of Design Tim Nissen. Together, the threesome led the assembled group of over 400 guests and volunteers in a countdown from 12, culminating in the throwing of a large switch as suddenly the lights came up and the exhibits powered on. A cheer

erupted from the crowd as the realization dawned... MoMath was open!

The remainder of the evening included gourmet desserts and cordials served in chocolate cups, entertainment by the Flying Karamazov Brothers, sleight of hand feats performed by close-up magicians, and of course, an exclusive introduction to MoMath's innovative, educational, and inspiring lineup of exhibits. Ladies in long dresses whirled around on the hallmark square-wheeled trike, tuxedoed men glided back and forth smoothly on top of funny-looking shapes of constant diameter, and guests of all ages delighted in spinning around to cocoon themselves inside a giant hyperboloid.

It was a night to remember.

PHOTO GALLERY

Scenes from the Opening Ceremony



12-12-12



Look Who Has a MoMath T-Shirt!



Dr. Mayim Bialik, who plays Amy Farrah Fowler on TV's "The Big Bang Theory," is a natural for a MoMath shirt. The actress has a PhD in neuroscience from UCLA.

Even dedicated fans of the celebrated webcomic xkcd might not recognize the comic's creator Randall Munroe, shown here with a special edition black MoMath T-shirt.



Alan Alda, actor and staunch advocate of math and science education, poses with a MoMath shirt at Steve Strogatz's *Math Encounters* presentation.



Journalist and comedian Mo Rocca of *CBS Sunday Morning* spent a day reporting from MoMath, and was rewarded with his very own MoMath tee.

Opening Week at MoMath



MoMath's first visitors on 12-15-12 await entry to the Museum

descend upon the Museum, while day two was highlighted by the kick-off of *Dimensions*, the first annual MoMath Puzzle Hunt. Rounding out Opening Week were an evening preview for educators, including the exciting announcement of the winner of the first annual \$25,000 Rosenthal Prize for Innovation in Mathematics Teaching (and a \$10,000 runner up), and the first-ever *Math After Dark* tour, focusing on the math in and around the picturesque environs of Madison Square Park as seen after sunset.

USA Science and Engineering Festival

MoMath is always on the go, traveling far afield to festivals and conferences to show how cool math can be. Last April in Washington



MoMath staff and a young visitor under the Sierpinski tower.

DC, MoMath participated in the USA Science and Engineering Festival, presenting a unique, giant construction toy, Multi-Morphing Megaplex. Visitors delighted in creating large-scale constructions, including an arch that everyone could stand under and a giant Sierpinski tetrahedron that towered over even the tallest adults.

Addition of Additions



Shoppers check out the selection at *Additions*.

Another exciting development at 11 East 26th Street was the opening of *Additions*, MoMath's shop and Manhattan's newest store dedicated to mathematical puzzles, games, books, and gifts. *Additions* is the go-to place for puzzles, t-shirts, jewelry, and even infant bodysuits, all with a mathematical twist.

We Want You! At MoMath

Now that the visitor center is playing host to many special museum events, MoMath is ready to host the most special occasion of all: yours! Birthday celebrations for young and not-so-young math aficionados, corporate meetings, holiday parties, engagement parties, weddings, Bar and Bat Mitzvah celebrations—MoMath's team is prepared to help create an unforgettable memory of your unique event in sensational surroundings. Be among the first to say, "I booked it at MoMath!"

Introducing MM2GO

Like science, mathematics focuses by turns on the large and the small. Last year, the *Math Midway* inspired a smaller, more portable version of itself. *Math Midway 2 Go* (MM2GO), a suite of six interactive mathematics exhibits, is available for presentation at a wide variety of venues including schools, science festivals, community centers, and libraries.

After a successful launch at several science festivals around the nation, MM2GO made its academic debut at the Carle Place Middle School/High School on Long Island, thanks to the sponsorship of the Nassau County Mathematics Teachers Association (NCMTA). During the NCMTA's 2012-2013 kickoff meeting,



A young visitor plays with the *Ring of Fire* at the San Diego Festival of Science and Engineering.

students were able to explore and enjoy the exhibits, while area math teachers and supervisors also had the chance to get a firsthand look at this super-portable suite of exhibits. MM2GO's next stop was Manhattan's Brearley School, on the upper east side. The show then headed south to Miami Country Day School in Dade County, Florida, and followed that with a trip west to a receptive audience at the Bay Area Science Festival. MM2GO is scheduled to round out its tour of the nation's science festivals with a stop in Cambridge, Massachusetts this April. Schools interested in booking MM2GO should email mm2go@momath.org.

Rosenthal Prize



Honner, Rosenthal, and Goldthorp

On Monday, December 17, educators and other visitors attending MoMath's teacher preview were on hand to watch the highly-anticipated announcement of the winner of the first annual \$25,000 Rosenthal Prize for Innovation in Mathematics Teaching. Scott Goldthorp, a teacher at Rosa International Middle School in Cherry Hill, NJ, was the proud recipient of the prize designed to recognize and promote hands-on math teaching in upper elementary and middle schools. Patrick Honner of Brooklyn Technical High School was awarded \$10,000 as runner-up.

As part of the Rosenthal Prize, the best lessons submitted will be shared with schools around the country. This gesture is an effort to foster the goal of replicating successful, innovative ideas and improving math education in the United States. By sharing their methods and drive, Goldthorp and Honner make winners of us all!

Watch the MoMath website for information about the 2013 prize and how to apply, or e-mail rosenthalprize@momath.org.

NSA Supports MoMath!

The National Museum of Mathematics is pleased to announce that it recently received a grant from the National Security Agency in support of its program of interactive math tournaments.

MoMath MOVES

This August 4-6 in NYC, MoMath will host MOVES, Mathematics Of Various Entertaining Subjects, a recreational mathematics conference.

Research talk submissions will be refereed, and selected research papers will be published following the conference. Watch the MoMath website for more information coming soon.

Dimensions, the MoMath Puzzle Hunt

One of the most thrilling and anticipated events included in MoMath's opening week was the debut of *Dimensions*, the annual MoMath Puzzle Hunt. A puzzle hunt is essentially a race between individuals or teams to solve a series of interconnected challenges. Sponsored by PDT Partners, LLC, *Dimensions* was custom-designed by an expert team of professional puzzle constructors, many of whom have been published in *The New York Times*, *WIRED*, *Time Out New York*, and other publications.

On December 16, teams of two or more attempted to solve a series of math-inspired puzzles. Throughout the hunt, teams found creative ways to apply mathematical knowledge while having a tremendous amount of fun. The winning team was comprised of Yao Yu, Bart Horn, Kevin Bakhtmutsky, Tony Chen, and Arvind Bhusnurmath.



Four-fifths of the winning team.



Puzzle Hunt teams gather at *Math Square* on level -1.

Upcoming Events at MoMath



Get the party started with Bedtime Math's Pajama Party at MoMath! If you have a child aged 3 to 8 in your life, join Bedtime Math founder Laura Overdeck at MoMath on Saturday, February 2 from 6:30 p.m. to 8:30 p.m., and she will show you how much fun math can be.

"Coloring Cubes Creatively - The Art of Tessellated Polyhedra," a creative, hands-on exploration of cubes, pyramids, and other 3-D shapes, will be presented on Friday, February 8, at 7 pm. by Dr. Robert Fathauer, mathematical artist, rocket scientist, and father of two. This Family Friday event is appropriate for families with children aged 9 and up.



Celebrating the richness of mathematics.

mathencounters.org

Upcoming Presentations:

Doris Schattschneider
Ingenious Mathematics: The story of M.C. Escher & Marjorie Rice
February 6

Tony DeRose
Math in the Movies
March 6

Jim Tanton
Laundry Math
April 3

MoMath Highlights



A young visitor tries out a ride on square wheels.

Here's a peek at some of the exhibits you'll see when you visit MoMath:

Wheelie Fun — Everyone's favorite, the *Square-Wheeled Trike*, has returned to New York as a centerpiece of the Museum's street-level floor. The new fiberglass track provides an even smoother ride than ever before—come take a ride on square wheels, and see why at MoMath, it's hip to be square! (Mileage may vary.)

Parabolic Play — The inherent beauty of mathematics is expressed on a monumental scale at *String Product*, a two-story interactive sculpture of light and metal. Check out the "Photo Opp," created with the support of exhibit sponsor OppenheimerFunds.

From a Ring to a Wall — One of the most dazzling features of the *Math Midway*, *Ring of Fire* allows visitors to slip transparent solids through a plane of laser light to illuminate the mathematical shapes hidden within. Its much bigger cousin, the new *Wall of Fire*, allows bigger shapes, multiple users, and even whole body pass-throughs!

Constant Diameter = Constant Fun — One of MoMath's most popular exhibits, *Coaster Rollers* is a full-body experience that allows visitors to smoothly surf along, perched on a platform gliding atop irregular, acorn-shaped rollers.

MoMonkeys — Tessellation illustrations with playful primate patterns continue as the denizens of *Miles of Tiles* and the *Mathematical Monkey Mat* magnetically climb the MoMath walls in the *Tessellation Station* exhibit. The spry simians have been joined by two new additions to the MoMath menagerie: dovetailing dinosaurs and replicating rabbits have arrived on-site to complement their mischievous monkey friends.



Solids of constant diameter in *Coaster Rollers*.



String Product, an interactive light sculpture sponsored by OppenheimerFunds

Madison Square Park



Math After Dark in Madison Square Park.

The Museum of Mathematics is lucky to have found a home with a spectacular front yard. Madison Square Park is a jewel among Manhattan's parks, and it's one that hosts a variety of cultural events and activities throughout the year. In a lovely coincidence, MoMath's Opening Week was bookended by the installation of Leo Villareal's Buckyball light

sculpture, a Madison Square Park display highlighting the beauty of geometry. 2012 also marked the 20th anniversary of Madison Square Park Kids Fest, a biannual event sponsored by the Madison Square Park Conservancy. MoMath has been an enthusiastic participant since June 2011, as hundreds of children and their families enjoyed music, giveaways, and, of course, mathematics. Visitors to the MoMath booth this year folded flexagons and were delighted to see six different patterns emerge; they assembled the Amazing Acrobats sculpture into a colorful pentagonal hexacontahedron, constructed their own rotating rings of tetrahedra, built giant Sierpinski structures with MoMath's Multi-Morphing Megaplex, and explored cross sections with the perennial favorite *Ring of Fire*. Of particular note was the 2012 spring Kids Fest, during which MoMath was joined by a dozen enthusiastic volunteers from Goldman Sachs, who helped provide personal attention to each attendee.

The Word is Out

The MoMath opening was big news as many newspapers and magazines spread the word. *The New York Times*, *The Wall Street Journal*, *USA Today*, *Crain's New York*, *New York Magazine*, and *New Scientist* are among the publications that featured MoMath's grand opening. Visit momath.org/press to read all the latest press coverage of MoMath!

[New York Times](#), *Opening the Doors to the Life of Pi*

[Business Insider](#), *20 Fascinating Things We Saw At Manhattan's New Museum Of Mathematics*

[Wall Street Journal](#), *New Museum Really Adds Up*

[USA Today](#), *Can math be fun and cool? Museum wants to prove it*

[New York Magazine](#), *Sum Worshipping*

[Time Out New York Kids](#), *The Museum of Math: NYC museums make room for a newcomer*

MoMath on the Left Coast

On June 29, 2012, MoMath Executive Director Glen Whitney returned to his alma mater to deliver the UCLA Math Commencement Address. In typical MoMath style, Whitney fascinated the graduates with a fun and illustrative probability game involving hundreds of actual coin flips, correctly predicting up to 13 successive outcomes (on one coin, at least) before exhorting them to action. "Most of the world has never seen the raw beauty and adventure that is the world of mathematics," he stated, "You need to be its ambassadors." Ultimately, he invited the newly-minted mathematicians to join in the Museum's mission: "Together we can help prepare America for the increasingly technological and mathematical future that faces us."



Glen Whitney speaks to graduates at UCLA in June.

Where is the *Math Midway*?



The *Math Midway* at the Lawrence Hall of Science.

It all started with the *Math Midway*, but the opening of the MoMath visitor center doesn't mean the *Midway* will be slowing down. After four months at the Lawrence Hall of Science in Berkeley, California, the *Midway* relocated to the Museum of Discovery and Science in Fort Lauderdale, Florida, where it will live until Californians get another chance with the show as the *Midway* rolls into Redding, California in May.

A Concentration of Tournaments

The MoMath team was particularly busy in March of 2012, organizing no fewer than four middle school mathematics tournaments in and around New York City. MoMath partnered with Con Edison to produce tournaments in the Bronx, Manhattan, and Queens, and with Brookhaven National Laboratory for its Suffolk tournament.

Congratulations to the 2012 winners:
Suffolk: Longwood Junior High School
Nassau: New Hyde Park
Bronx County: MS 101
Manhattan: Trinity School
Queens: MS 67
Tournament of Champions: Trinity School



Students at one of MoMath's several math tournaments.

World Science Festival

New York City becomes a science wonderland each June, when the World Science Festival brings dozens of lectures, movies, performances, and exhibits to different venues throughout the city. When Washington Square Park is turned into an enormous Science Street Fair, you know MoMath is there. In 2012, MoMath's offerings included both *Math Midway* favorites (*Number Line Tightrope*, *Organ Function Grinder*) and new MoMath exclusives (*Multi-Morphing Megaplex*, *Motionscape*, and the *MoMath Logo Generator*).



MoMath at Gould Plaza

Are You Math Enough?

The MoMath opening was not merely a weeklong celebration; the grand opening will last all year with a slew of special events. Exciting new exhibits are slated to arrive throughout 2013, and new content will show up at several exhibits every few months. Think you've mastered all the challenges at *Enigma Café*? Check again in a few months when a host of new puzzles and games will be on hand to feed your mind. Finished building unusual polyhedra with MoMath's custom Zometool kit, MoMath Polystructures? MoMath will have a whole new building toy in place by spring, to explore additional unusual geometric constructions. Want to spend an evening at MoMath? MoMath will be hosting a Bedtime Math night for the wee ones, Family Fridays for older kids, and Higher Order, an adult-only evening so you don't have to wait in line behind the kids, all in the coming months. Watch for special weekend programs as well, and don't forget, MoMath is your go-to place for birthday parties!

Math Encounters

Math Encounters, the innovative monthly presentation series presented by MoMath and sponsored by the Simons Foundation, continues to inspire and energize audiences with dynamic presenters who seamlessly weave mathematics into sculpture, music, dance, art, and even basic human nature.

Craig Kaplan opened 2012 with a mathematical look at the world of design, and helped participants create a large-scale Islamic tiling that spanned the entire lecture hall. He was followed by Jeff Weeks, who had kids and adults clamoring for more with his engaging discussion about the shape of space. MoMath kicked off its second season of *Math Encounters* in March with Google's Director of Research Peter Norvig, who demonstrated how simple math underlies computational models for speech recognition, spelling correction, and more. He was followed by Germany's Communicator of the Year, Gunter Ziegler, who explored the elegance and wonder of mathematical proof. The season continued with Williams College math professor Colin Adams' tale of adventure (and knots) on the high seas, a series of brainteasers presented by puzzlemaster Peter Winkler, and a lovely illustration of what happens when math meets art, as demonstrated by computer scientist and artist Carlo Séquin. Rounding out 2012 were Parag Chordia, who spoke about the math of music, John D. Barrow, who chatted about the connections between math and sports, and Steve Strogatz, who gave a delightful presentation about writing a math column for the New York Times.

Math Encounters moves to MoMath this March. Space is limited, so be sure to register early at mathencounters.org!

Goudreau Campaign Meets its Goal

MoMath is pleased to announce that the campaign to honor beloved Long Island math teacher Bernie Goudreau is complete. Thanks to the support of friends and former students, including a dollar-for-dollar matching grant provided by Bernie's former student Andrew Davidson, the Museum raised \$30,000 for a commemorative plaque honoring this extraordinary educator. Come honor Bernie's memory by enjoying the changing selection of puzzles showcased at *Enigma Café*!



Enigma Café, home of the plaque honoring Bernie Goudreau.

Masterfully Done: The MoMath Masters Returns!



John Overdeck and other finalists showing their solutions to a final-round problem at the first annual MoMath Masters tournament.

The popular MoMath Masters tournament, a fundraising event for the Museum of Mathematics, returns to Tribeca Rooftop, at 2 Desbrosses Street in New York, on February 26, 2013. Last year dozens of crack mathletes from the city's academic, financial, and industrial circles turned out to prove their mettle by solving a tricky series of math problems, but it was John Overdeck of Two Sigma Investments who triumphed, winning the coveted MoMath Masters trophy.

If you think you can take your place among the math titans, or would just like to support MoMath by enjoying drinks, dinner, and conversation in close proximity to math titans, please join us. Tickets are available now at masters.momath.org, and preview pricing ends on January 31. Previous MoMath events have all been sell-outs, so be sure to claim your seat soon!

The National Museum of Mathematics is pleased to recognize the critical importance of its Founders with a Founders' Wall in the front entryway. This stone sculpture creates a permanent commemoration of the role the Founders played in opening the nation's only Museum of Mathematics.

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