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Deeply Moved by the Murder of George Floyd Jazz Musician & Harvard-trained Mathematician Marcus Miller Presents "Math, Music, and the Moral Imagination" Hosted by the National Museum of Mathematics (MoMath)

Musician Stephon Alexander participates on a journey from music and math to question: "How can we imagine and play a role in a more socially just world?"

Monday, June 22, 6:30 p.m. EDT

New York, NY (June 22, 2020)—Deeply moved by the murder of George Floyd, jazz musician and Harvard-trained mathematician Marcus Miller presents "Math, Music, and the Moral Imagination" hosted by the National Museum of Mathematics (MoMath) on Monday, June 22 at 6:30 p.m. EDT. Musician Stephon Alexander participates on a journey from music and math to question: "How can we imagine and play a role in a more socially just world?"

"Quadrivium: Math, Music, and the Moral Imagination" will explore how the study and practice of math and music can help us to navigate public crises of health and justice, and foster the kind of self-development that offers a brighter future. During this event, Miller will also debut new music that he composed during quarantine.

"The inner work of mastering a craft can give rise to a deeper relationship to other humans," explained Marcus Miller. "Humility toward the ancestors (of your craft or otherwise), creative passion, and freedom of being are often markers of a spiritually healthy person or a functioning community. For me math and music can be teachers of this orientation toward life."

MoMath, the only math Museum in North America, is hosting a variety of online math programs to keep children and adults of all ages engaged with its fun math programming while cultural institutions and schools across the nation are closed. Audiences for MoMath's online education programs have skyrocketed to all 50 US States and 80 Countries, including Australia, Vietnam, Italy, Argentina, China, Spain, Sweden, and France.

"During these challenging times, we want to offer the public fun, interactive experiences that continue to highlight the joy of mathematics," said Cindy Lawrence, CEO and Executive Director of MoMath. "Our digital programs provide people of all ages a much needed outlet for recreation and learning while they are spending time at home. We will continue to develop online programs over the coming weeks as this situation evolves."

For more information about MoMath's "Quadrivium: Math, Music, and the Moral Imagination," visit **quadrivium.momath.org**.

For information about the Museum, visit **momath.org**.

MoMath's current online programming also includes:

Mind-Benders for the Quarantined (offered every Sunday):

When you sign up for "Mind-Benders for the Quarantined," each Sunday, MoMath will send you a challenging mathematical puzzle from the collection of their own puzzle master, Dr. Peter Winkler.

On Tuesday, you'll receive a subtle hint; on Thursday, a serious push; on Saturday, the solution. And the next day, of course, a new puzzle.

These puzzles are for your edification, enjoyment, and personal satisfaction. If you wish, however, you may send your answers and/or complaints to **mindbenders@momath.org** at any time. Dr. Winkler won't be able to reply, but he will be happy to benefit from your comments, and will announce a winner (for the most right answers with the least help) when the epidemic is over. To sign up visit **mindbenders.momath.org**.

Free **Ask A Mathematician**
First Thursday of every month at 4:00 p.m. EDT

Back by popular demand! Ever wanted to ask a mathematician something, maybe about a curious new idea you have, or a concept you'd like to understand better? Don't know

whom to ask? Here's your chance! MoMath's Dean of Academic Content and Rutgers Math Professor Alex Kontorovich will host a free one-hour online session the first Thursday of each month starting at 4:00 pm EDT (New York).

Come with your own questions, or just join to listen in. All are welcome, and no question is too basic (although plenty may be too hard!). This event is free, but registration is required and the number of participants is limited.

Learn more and register at **askmath.momath.org**.

Big and Very Big Number Series*, Part One: *Introduction to BIG Numbers
Tuesday, June 23 at 6:30 p.m. EDT (New York)
How can we describe large quantities, including scientific notation and logarithms? Play with big numbers and test your skills with the "Six Boxes of Kazakhstan" challenge.

Learn more and register at **bignumbers.momath.org**.

***Equilibrium*, featuring *Bullseye* maker Jorge Moore**
Friday, June 26 at 7:00 p.m. EDT

Join us to learn and play *Bullseye*, a new game from Jem Games in which players roll for a target number, then race to find as many combinations of six standard dice as possible in a short time. Game creator Jorge Moore will teach the game, discuss strategies, and talk about the development of the game and its applications to math education. Also, stick around for a sneak preview of Jorge's new game, *Fraction Traction Bullseye*. There will be challenge puzzles, games at every skill level, and a great social atmosphere. Connect with old friends and new for a fun-filled, adult-only evening featuring a broad array of mathematically rich games!

Learn more and register at **equilibrium.momath.org**.

Big and Very Big Number Series*, Part Two: *Unimaginably BIG Numbers
Tuesday, June 30 at 6:30 p.m. EDT

How can we use mathematics to find order within chaos? How big does a random object needs to be in order to contain something orderly? By asking some innocent questions and investigating a few examples, we'll land on some truly ENORMOUS answers.

Learn more and register at **reallybignumbers.momath.org**.

***Free** Math Encounters: "Weepy Wine: the Mathematics of Wine Tears" with Andrea Bertozzi*
Wednesday, July 1 at 4:00 p.m. and 7:00 p.m. EDT

Sit back, relax, pour yourself a glass of wine (alcoholic or not), and learn something new as Andrea Bertozzi illustrates the mathematics behind the little shock waves going through your vessel of vino, creating a weepy pattern of "wine tears" on the inside of your glass!

Learn more and register at **mathencounters.org**.

Big and Very Big Number Series*, Part Three: *To Infinity…
Tuesday, July 7 at 6:30 p.m. EDT

Let's leave finite numbers behind and explore two scales of the infinite: the countable and the uncountable. Once we admit the infinite into our mathematical world, things start to get really strange; in fact, even paradoxical!

Learn more and register at **infinity.momath.org**.

Cooperative Puzzles
Tuesday, July 12 at 6:30 p.m. EDT

The MoMath is pleased to present a special, two-part seminar for gifted high school students, featuring guest presenter Dr. Peter Winkler, as part of its ongoing *Expansions* program. For many mathematical puzzles, a solution requires collaboration; there may be multiple solutions, ideas requiring development, or just a kind of thinking that benefits from several points of view. We'll explore some of these, and maybe come up with some new solutions — or even some new puzzles! *Cooperative Puzzles* is open to all mathematically gifted high school students (enrolled in a gifted program or performing in the top 5% of their math class) and does not require prior admission into the *Expansions* program.

Learn more and register at **cooperate.momath.org**.

Meet a Mathematician
Tuesday, July 14 at 4:00 p.m. EDT

Did you ever wonder what a mathematician does all day? Or what made someone decide to become a mathematician? Or even, what a mathematician does for fun? You may be surprised by some of the answers! Join host Alex Kontorovich as we bring diverse and talented guests to the MoMath stage to share their experiences, their stories, and their love of mathematics.

Learn more and register at **meetmath.momath.org**.

Big and Very Big Number Series*, Part Four: *Beyond Infinity
Tuesday, July 14 at 6:30 p.m. EDT

A careful study of countable and uncountable sets, along with an innocent principle of logic, allows us to perform one of the strangest mathematical constructions: the Banach-Tarski paradox, where we will take a solid sphere, decompose it into a few pieces, then reassemble those pieces to form two perfect copies of the original sphere!

Learn more and register at **beyond.momath.org**.

***Free Family Fridays* — "Word Patterns: Pinwheels, Tessellations, and Ambigrams" with Scott Kim**
Friday, July 17 at 6:30 p.m. EDT

What do calligraphy and logo design have to do with geometry and mathematical patterns? In this highly participatory online event, mathematical artist and puzzle designer Scott Kim invites us to make patterns out of the written word. Duplicate letters to make pinwheels, repeat words to tile the plane, and draw ambigrams that read the same upside down and right side up. Scott will start with a tour of the many ways artists have spun patterns out of words, beginning with the MoMATH logo. Then he'll lead us through creative exercises where we will create patterns out of our own name and other words. Along the way we'll learn about geometric transformations, font design, logo design, and mathematical patterns. Come prepared with blank paper, pen or pencil, and colored pencils or pastels.

Learn more and register at **familyfridays.momath.org**.

***Hats and Liars*, a two-part series with Peter Winkler**
Part One: "Hat Puzzles": Tuesday, July 28 at 6:30 p.m. EDT
Part Two: "Logic Puzzles": Tuesday, August 4 at 6:30 p.m. EDT

In this two-part series, Peter Winkler will explore hat puzzles and logic puzzles. Each of these categories has spawned dozens of great conundrums. Be prepared the next time someone hits you with one of these! In July, imagine you are wearing a hat of unknown color. Given a specific set of rules, can you deduce the color of your own hat based on the hat colors you see on other people's heads? In August, you'll solve riddles by making a series of deductions — sometimes even deductions about other people's deductions! Some of those other people may be truth-tellers, others liars, or even random answerers — or they may even be friends wearing colored hats!

Learn more and register at **hatsliars.momath.org**.

***Free Math Encounters — Online* "Number Theory Problems: From Easy to Undecidable" with Bjorn Poonen**
Wednesday, August 5 at 4:00 p.m. and 7:00 p.m. EDT

Rational numbers are fractions such as -2/7. It turns out that the circle x^2+y^2=3 has no points whose coordinates are rational numbers, while the circle x^2+y^2=5 has infinitely many. Why do these equations behave so differently? What about more complicated equations: is there a method to decide whether there are any solutions in rational numbers? Join Bjorn Poonen, Distinguished Professor in Science at MIT, as a search for answers leads to questions about prime numbers, geometry, and problems that a computer will never be able to solve.

Learn more and register at **mathencounters.org**.

The Best of "Mind-Benders for the Quarantined"
Tuesday, August 25 at 6:30 p.m. EDT

Mind-benders guru Peter Winkler will reveal which puzzles were the hardest, which were easiest, and which were most controversial. Subscribers will get to vote on their favorites — and least favorites!

Learn more and register at **mindbenderstalk.momath.org**.

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