MoMath Exhibits

The Museum of Mathematics (MoMath) opens with more than 30 exhibits that reveal the wonders of math in its 19,000-square-foot space on the north side of Madison Square Park in Manhattan. Interactive, hands-on, engaging, and fun, the exhibits invite participation, encourage experimentation, and spark curiosity in visitors of all ages and math skills.

All exhibits were created exclusively by MoMath. They bring math concepts to life in ways that amaze, astound, enlighten, and entertain. Many exhibits have surprising outcomes that stimulate visitors to want to understand why.

Brief descriptions of selected exhibits:

Mathenaeum. Enter the seven-sided, columned geometric sculpture studio and use one of the stations to transform basic shapes into original designs. A 3D printer will build some of the original designs before your very eyes.

Feedback Fractals. Get behind – and in front of – a camera to use feedback and other effects to create unique, beautiful, and ever-changing fractals.

Coaster Rollers. Glide on a rounded triangle down a track on rollers that are not balls, but acorns and other lumpy shapes, and find out why the ride is still so smooth.

Tracks of Galileo. What does it take to make the fastest downhill track? Build tracks with different curves and discover how to speed things up.

Hyper Hyperboloid. Enter a chamber walled by vertical cords. Spin in the swivel chair, and watch as the collection of perfectly straight cords come together to form a beautifully curved surface that surrounds you.

Math Square. Walk onto an ever-changing display-screen floor that detects your feet. You might be inside a maze, a game, a pattern, or a simulation – while your steps can affect the action below!

Edge FX. Balls representing business transactions fall down chutes in a special device that evenly distributes good transactions and bad ones – until you make a small adjustment that has a big effect on profit and loss.

Enigma Café. Sit at an interactive table and solve one of dozens of new and classic physical puzzles – and note the puzzling aspects of the room and everything in it.

Formula Morph. Turn the dials and swing the lever to change the shapes of objects on the screen – by altering the parameters of the algebraic equations that define each shape.

Shapes of Space. Take tiling into a new dimension: step up to three differently curved stations and discover how shapes fit together differently depending on the curvature of the space they inhabit.

Human Tree. Strike a pose and see your body replicated as the trunk, branches, and sub-branches of a tree made of you! Move around and watch as the tree morphs, producing a surprising array of effects.

MoMath Logo Generator. Generate a personal MoMath logo by using your favorite symbol and playing with symmetry. Keep a sticker of it and look for it on displays throughout the museum.

Harmony of the Spheres. Touch the connected glowing spheres to make – and see – music. Explore major chords, minor chords, and harmonies, and watch the patterns of colored lights as your music moves through space.

Wall of Fire. Walk through a plane of laser light that illuminates a cross-section of your body. Move cones, cubes, and other shapes through the plane to see their sometimes surprising cross-sections.

In Plane Sight. Can you figure out the form of a virtual 3D object, just by seeing cross sections of it? Move the screen through space to see different cross sections and to lock onto one that matches the display.

Finding Fifteen. Taking turns with your opponent on the other side of the screen, select from numbers 1 to 9 to be the first to have three numbers add up to 15. What's the secret strategy that makes it seem so easy to your opponent?

Structure Studio. Build unusual three-dimensional structures with MoMath's changing series of construction toys based on unexpected geometrical relationships.

Water Frieze. Design a repeating border pattern by attaching shaped sponges to your paint roller, and then paint it in water on this specially-designed wall to see your pattern come to life.

Shape Ranger. Pick some shapes, put them on the table, and try to pack them together into the smallest area possible. If you fit them together well, you might set the daily or monthly record, or you just might find the best packing ever!

3D Doodle. Turn 2D doodles into 3D images by stacking them the right way in the 3D display case.

Twist 'n' Roll. Each shape at this table is split in two, but can be reconnected in multiple ways. When you put them together, the new shapes that result roll along delightfully offbeat paths. Can you match the tracks on the table?

Marble Multiplier. Multiplication is in motion as you bring balls cascading down to completely fill the rectangle corresponding to the product you selected. Then you can release the balls into the mechanical counter to find the answer the old-fashioned way.

Rhythms of Life. You are the DJ as you fill a circle with fractions that add up to 1. Each fraction represents part of a rhythm that will play with a sound from the world around us. Multiple turntables let you hear how rhythms combine to form more complex patterns.

Tile Factory. Create a unique tile that will fit together perfectly to cover any flat surface with no gaps or overlaps. Then watch as the MoMath laser cutter creates a real set of tiles in the shape you designed to take home.

Pattern Mesh. Pick two of the different grids or gratings, and superimpose them on a glowing table. The Moiré patterns that emerge and change as you move the grids around will amaze you.

Pattern Pants. Patterns created by visitors at the Polypaint exhibit are projected onto your clothes to give you an instant mathematical makeover. Get ready for some radical fashion statements!

Square-Wheeled Trike. Can you ride a square-wheeled trike on a bumpy track and have a . . . smooth ride!?! Yes, if the track is made of catenary curves that keep the wheel axles perfectly level.

Monkey Around. Watch the red and blue monkeys carefully as you turn the wheel. Count them carefully. Did a blue one disappear and a red one appear? How can this be?

Sixth Sense. This exhibit uses mystery math to predict how your numbers will add up. Select one number from each of six columns and rows, and watch as the exhibit always gets the answer correct.

Math Flash. Get the latest math headlines on the special MoMath news ticker, which shows how math is an ever-developing field, with new discoveries being made every day.

String Product. Choose two numbers and watch multiplication come to life in the monumental string-art paraboloid within the museum's central staircase.

Time Tables. Step up to one of the interactive stations, pick up an object and watch the history of math unfold in frequently-changing mini-exhibits – from the abacus to the first digital calculator.

Dynamic Wall. Enter MoMath and watch the Dynamic Wall move and pulse and morph into endlessly varying contours before your eyes.

Tessellation Station. Apply geometric magnetic tiles to MoMath's largest metallic wall ever and unleash your creativity to make an endless variety of patterns and designs.

Polypaint. Choose one of the 17 possible wallpaper symmetry patterns, grab an electronic paintbrush, dip into a color, and paint a masterpiece on the giant simulated canvas.

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