



Tour:

ADVENTURES IN MATH

Destination:

Manhattan, New York City, New York

Specialization:

Math, Physics, Finance, History & Science

Itinerary:

6-days / 5-nights in New York City

ADVENTURES IN MATH - NEW YORK CITY					
Day		Morning	Afternoon		Evening
1	Sun	Travel to NYC; transfer to hotel and check in		Rise NY Experience	Welcome, Safety & Orientation
2	Mon	Wall Street & Financial District Walking Tour	Statue of Liberty & Ellis Island + Ellis Island National Immigration Museum with Audio Guides		Times Square Dinner & Group Photo
3	Tues	Liberty Science Center + 2 Specialty Master Classes + Planetarium			Local Dinner
4	Wed	The NYC Transit Master Class - Construction, Engineering & more	Intrepid Sea, Air & Space + Aviation Physics Tour	I-Fly + Physics Master Class with 1-Jump Included	Local Dinner
5	Thur	Seaport Museum with Sailors' Pi Master Class	National Museum of Mathematics + 2 Master Classes - Cryptography, Graph Theory, Probability & Topology		Farewell Dinner
6	Fri	Free time until departure; travel home			



As with all sample itineraries, please be advised that this is an 'example' of a schedule and that the activities and hotels shown may be variable dependent upon dates, weather, special requests and other factors. Itineraries will be confirmed prior to travel.



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New York City... Cool, cosmopolitan, crowded, constantly evolving ... Amid the Big Apple's iconic landmarks and towering skyscrapers, you'll experience a vibrant culture permeating each of the city's distinctive neighborhoods and boroughs. Follow trendsetters to check out indie boutiques, iconic bakeries and the best trendy shops. Admire the cutting-edge art collections of world-renown galleries and museums, catch a show on Broadway and sit down for a meal at an iconic restaurant in Times Square. New York is a city filled with action, purpose and interest!

As the most populous city in the U.S. – set at the forefront of food, fashion and the arts – NYC requires stamina. But don't let the Big Apple's frenetic sights and sounds intimidate you from soaking up its grandeur. Wander through the concrete jungle and you'll discover roaring taxis zipping down bustling blocks, fast-paced pedestrians strolling past on their way to marquee galleries and trendy cocktail eateries, and Times Square's neon lights flickering at all hours. And yet, the city's twinkling lights and chaotic corners also invite you to embrace every New York minute, explore every enclave and create your own urban adventure. There are endless ways to spend your time in the city that never sleeps, but before you leave, stop and look around – what's here today will be transformed into something bigger and better tomorrow. – *US News*



Did you know?

- ✓ The term “Big Apple” originally referred to horse racing. The city got its most famous nickname from a local newspaper’s horse racing column in the 1920s.
- ✓ New Yorkers speak approximately 800 languages. Over 37 percent of New Yorkers were born in another country, so it’s unsurprising that the city’s residents speak a wide range of languages—but by any account, 800 is impressive. 4 in 10 households speak a language other than English.
- ✓ NYC’s population is the highest of any American city and a little over 8 million people live in the City. It means 1 in every 38 people in the United States call the city home.
- ✓ The Bronx takes its name from its first European settler. Jonas Bronck, who moved to America from Sweden in 1639, was the first European to settle in the Bronx. His farm, covering about 500 acres, was referred to as “Bronck’s Land,” and the river was called “Bronck’s River.” Over the years, people started calling the whole area the “Bronx”.



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- ✓ France gifted the Statue of Liberty to the United States in 1886 for its centennial celebration. The statue was shipped as 350 pieces and took 4 months to assemble at its current home on Ellis Island.
- ✓ New York City's Federal Reserve Bank has the largest gold storage in the world. The vault is 80 feet below street level and contains \$90 billion in gold.
- ✓ The first pizzeria in the United States opened in NYC in 1895. Since the 1960s, the price of a slice of pizza has been roughly the same price as a subway ride, generating the idea of "Pizza Principle" among economists.
- ✓ Times Square is named after the New York Times. It was originally called Longacre Square until the Times moved there in 1904.
- ✓ New York City became the first capital of the United States in 1789.

Day 1 Dinner

On arrival in the city, we'll be met at the airport, load our coach and transfer to our hotel. After check-in and getting sorted in our rooms, we will have our **Welcome, Safety & Orientation Meeting**, learn a little about the city in **Rise NY**, and then have our first dinner in **Times Square** to kick off the tour.

Rooming: Typical Manhattan hotel rooms have two full/queen beds and sleep 4 pupils per room. Teachers sleep one person per bed with up to 2 staff in each room. All rooming is based on gender. Please do understand that hotel rooms in NYC are expensive and this is why we always try to maximize occupancy. The most cost-effective times of the year to stay in NYC are January through March; the most expensive times are generally October and December. Summer can be a great time for hotel rates, but please beware of increased airfares if flying.



Rise NY - RiseNY is a three-part journey that lifts and connects you to New York City's most famous sites and moments. Start with a captivating film by award-winning documentarian Ric Burns, explore museum-style galleries that transport you through the city's expansive pop-culture evolution. Then, fly over the iconic skyline on a soaring ride that suspends you 30 feet in the air. Get ready to fall in love with New York! RiseNY is part ride, part museum, and all New York.

Times Square Exploration – Times Square is a major commercial intersection, tourist destination, entertainment center and neighborhood in the Midtown Manhattan section of NYC at the junction of Broadway and 7th Avenue. Brightly lit by numerous billboards and advertisements, it stretches from West 42nd to West 47th Streets, and is sometimes referred to as "the Crossroads of the World" or "the Center of the Universe". It is one of the world's



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busiest pedestrian areas, the hub of the Broadway Theater District, and a major center of the world's entertainment industry drawing an estimated 50 million visitors annually.

This evening, we'll have dinner locally and then meet in Times Square for a **Group Photo!**

Day 2

Breakfast & dinner included; lunch on own

Today we'll start to learn a little more about this amazing city with some pretty awesome historic sightseeing!

Wall Street & the Financial District Walking Tour – As insiders, the NY guides put faces and events to the buildings and landmarks to personify and demystify Wall Street. Meandering the narrow, winding streets of lower Manhattan, you'll hear stories that will entertain, inform and shock. Learn about 400 years of history that led to modern Wall Street from the Dutch trading outpost to the humble beginnings of the NYSE to the current financial markets. The itinerary includes the New York Stock Exchange, Wall Street Federal Hall, House of Morgan, 40 Wall Mercantile Exchange, Cotton Exchange Pearl Street, Deutsche Bank, Lehman Brothers, Goldman Sachs, Charging Bull, Bowling Green, Canon of Heroes, Trinity Church and the Federal Reserve.



Next, we're in for a real treat....

Statue of Liberty & Liberty Island exploration, plus the Ellis Island Immigration Museum – Departing from Battery Park, get a chance to see the Statue of Liberty National Monument and the Ellis Island National Immigration Museum in this absolutely fascinating journey. Enjoy an audio tour and get an in-depth look at America's enduring symbol of freedom: **The Statue of Liberty**. Continue to Ellis Island for access to the **Ellis Island Immigration Museum** and free time to explore. Indoor and outdoor seating is available; concessions and souvenirs are available on board. Be sure to wear comfortable clothing and shoes!



Day 3

Breakfast & dinner included; lunch on own

Rise and shine Manhattan! After breakfast at our hotel, we'll head to the Metro station, transferring to lower Manhattan and onto the New Jersey PATH system to take us to the Liberty Science Center.



The Liberty Science Center – At LSC, your students will be inspired to learn about the power, promise, and pure fun of science, math, engineering and technology. LSC's hands-on extended laboratory programming offers high-quality, interdisciplinary project-based learning that combines critical thinking, collaboration, and problem-solving skills using real world examples to help support students in making the connection to learning. Students will strengthen the tools and skills necessary for scientific study into math and science connections as well as the world of medical technology and engineering during STEM instructor led facilitated classroom discussions and experiments.

While here, please know that you may have your choice of 2 Master Classes. Current options include:

- ✚ **Intro to Game Design** - Design custom characters with animations and behaviors by completing a crash course in Stencyl. This intuitive toolset is limited only by your creativity. This platform sets a foundation of computational thinking—an essential skill in today's tech-driven world.
- ✚ **Unreal Creations! Designing a Game with Unreal Engine** - Level up your skills in this game design and programming primer course using industry-level tools! Take the first step into professional-level game design as you learn how to set up your first project in Unreal Engine and learn the basics of coding in C++. Some programming experience is recommended for this class.
- ✚ **Advanced 3D Modeling with Autodesk Maya** - In this program exploring advanced 3D modeling, students will learn the techniques and methods used professionally to create 3D models and meshes. Students will leave with access to a digital model that they have created (requires access to a Google Drive account or similar file-storage service).
- ✚ **Virtual Reality and Your Brain** - Ever want to know what it would be like to stand on an I-beam a few hundred feet in the air without safety gear? Using HTC Vive and other tools, students will learn how their brain perceives reality and why VR is such an immersive technology.
- ✚ **Bridge Engineering: Engineering & Design Challenge** - Your group will be engaged in advanced 3D design of bridges with Autodesk Tinkercad. Learn to work in collaborative groups to solve complex problems using 3D printers.
- ✚ **Physics of Car Crashes** - Explore the physics of car crashes and safety devices through the study of varying types of collisions (elastic and inelastic), force, and impact time. This exploration will guide your students to use Vernier sensors to engineer and analyze their own device which will survive the impact of a 'crash.'
- ✚ **Sphero Rovers: Mission to Mars!** - Can you create the next Mars rover design? In this program use your engineering and design skills to create a Sphero driven rover that can carry a payload across our simulated Mars surface. Once you have designed your rover, jump into the driver's seat and code your way through the tricky terrain!
- ✚ **Aviation: From Paper Airplanes to Drones** - This is drone training 101. Learn basic concepts of flight and apply this knowledge through hands-on experiences like using flight experiments and micro pocket drones.



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- ✚ **Stabilizing the System** - Learn about homeostasis and feedback mechanisms as you use Vernier sensors to observe and analyze your own heart rate, lung capacity, blood pressure, and more.
- ✚ **Our Water Systems: What's in Our Water?** - Where does the water we use come from, where does it go, and what happens to it along the way? Students explore our water systems through a gallery format, becoming an “expert” on a contributing aspect such as eutrophication, combined sewage overflow, pH levels, and marine life in New York Harbor. Students then test local water from the Hudson River as well as our tap water, comparing the results to EPA guidelines.
- ✚ **Unlocking Your DNA** - Discover the world of genetics as you explore the human genome. Use hands-on lab techniques and lab equipment such as micro-pipettes, centrifuges, and gel electrophoresis chambers as you solve a genetic mystery.
- ✚ **Forensic Anthropology** - Tibia or not tibia, that is the question! Learn to observe and identify the bones and features that make us unique. Tell the story of a human by reading the patterns in various skeletal features. Then, solve an archaeological crime by using clues dug up from Earth to determine whether you're dealing with a funeral or a fraud.

After our thrilling day, we'll head back to Manhattan for dinner and free time.

Day 4

Breakfast & dinner included; lunch on own

Today we'll be exploring the NYC Transit Operations and then discovering the Intrepid Sea, Air & Space Museum before flying through I-Fly and having dinner!



The NYC Transit Museum – The Transit Museum is dedicated to telling and preserving the stories of mass transportation—extraordinary engineering feats, workers who labored in the tunnels over 100 years ago, communities that were drastically transformed, and the ever-evolving technology, design, and ridership of a system that runs 24 hours a day, every day of the year. While here, we'll browse the museum and have an opportunity to participate in a 75-minute Master Class, offered from **September to June**.

- ✚ **The Transit Museum's Extended Tour** - Discover the magnitude and complexity of New York City's public transportation system by exploring elements of construction, social history, engineering and impact over time in this introduction to transit history.

Next up, let's take a look at some amazing physics in action!

Intrepid Sea, Air & Space Museum - The Intrepid Sea, Air & Space Museum is a unique journey through all things military and maritime, with spectacular interactive exhibits. Located at Pier 86, the complex boasts authentically restored vessels, the most impressive being the World War II aircraft carrier the USS Intrepid and the submarine USS Growler. You'll also spy a British Airways Concorde, as well as Sikorsky, Skyhawk, and Vietnam-era Iroquois Huey helicopters. As for space memorabilia, the Space Shuttle Pavilion showcases the Enterprise, the first space shuttle. You can also visit a replica of an Aurora capsule and try out the virtual flight zone, which simulates the exhilaration of flying in a supersonic jet. While here, students will participate in a specialized tour.



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- ✚ **Aviation Physics Master Tour** – This tour explores the aircraft carrier *Intrepid* and examines the machinery that makes flight at sea possible. In hands-on activities, students work in groups to demonstrate the physics of flight and how those forces interact with one another.

Then, hold on to your hats, we're going to investigate Physics in a but of a different way!

I-Fly Indoor Skydiving & Physics Master Class - The STEM Master Class uses iFLY's unique vertical wind tunnel facility to make STEM exciting. Curriculum has been designed by professionals and includes an interactive presentation based on engineering and physics, a lab activity including parachute investigation, and full training for indoor skydiving by IBA certified flight instructors. Each student will fly one-on-one with an instructor for 1 minute in the tunnel. Our schools love this activity!



Day 5

Breakfast & dinner included; lunch on own

We'll jump into Mathematics today with 2 incredible visits!

The South Street Seaport Museum – Located in the heart of the historic Seaport District, the museum preserves and interprets the history of New York as a great port city. Founded in 1967, the Seaport Museum includes an extensive collection of works of art and artifacts, a maritime reference library, galleries, working 19th-century print shop, and a fleet of historic vessels that all work to tell the story of "Where New York Begins."



- ✚ **Sailors' Pi Master Class** – In this 90-minute Master Class created for high school students, we'll board the tall ship Wavertree and learn how circles are central to the work of a sailor. Built at Southampton, England in 1885 and, after a 24 year sailing career and circumnavigating the globe at least three times, the Wavertree is now the last remaining iron-hulled three-masted full-rigged cargo ship.



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- ✓ Learn how a circle's geometry creates strength in marine architecture.
- ✓ Use pi to calculate the efficiency of a ship's capstan.
- ✓ Use compasses and charts to navigate and calculate error.
- ✓ Working together with your classmates, use these simple machines to raise sails and try a capstan tug-o'-war.

National Museum of Mathematics aka "MoMath" – The coolest thing that ever happened to Math! The National Museum of Mathematics highlights the role of mathematics in illuminating the patterns and structures all around us. Its dynamic exhibits, gallery and programs are designed to stimulate inquiry, spark curiosity, and reveal the wonders of mathematics. Groups will choose two out of the following 45-minutes sessions to participate in:



- ✚ **Topology** - Sometimes called "rubber geometry", topology is the study of properties of objects that don't change even when those objects are twisted, stretched, shrunk, and bent. Circles become squares, flat becomes curved, and coffee cups become doughnuts in this amazing branch of math.
- ✚ **Cryptography** - By hiding messages in shapes, gibberish, and number codes, cryptography has allowed people, from the time of the ancient Greeks through today, to safely transmit secrets. Court intrigue, star-crossed love, and war have all benefited immensely from this method of communication. These days, cryptographers have traded the cipher disk for the computer screen, but cryptography still influences our life in covert ways. By harnessing statistics, abstract algebra, and other branches of mathematics, cryptography lets us breathe easier when we go to an ATM, create a password for our computer, or send money electronically.
- ✚ **Graph Theory** - Graphs can help us study everything from the internet to transportation networks, and from ecological systems to groups of friends. Wherever things are connected or related to each other, graph theory is there. The programs offered in graph theory offer different introductions to the subject, highlighting the intuitive and creative problem solving that makes graph theory so much fun.
- ✚ **Probability** - Probability is a way to quantify the likelihood of an event occurring. Students explore this concept through guided interactive experiments and challenges. Some prior exposure to basic probability and familiarity with adding fractions is assumed for these programs.

In the evening, we're off to explore the stunning skyline view from the Empire State Building.



The Empire State Building - New York's famous Empire State Building, a New York City and National Historic landmark, soars more than a quarter of a mile into the atmosphere above the heart of Manhattan. Located on the 86th floor, 1,050 feet (320 meters) above the city's bustling streets, the Observatory offers an immersive experience with panoramic views from within a glass enclosed pavilion and from the surrounding open-air promenade.

The Observation Deck wraps around the building's spire, providing 360-degree views of New York and beyond. From up here you'll get one-of-a-kind views of Central Park, The Hudson River and East River, The Brooklyn Bridge, Times Square, The Statue of Liberty, and much more. The official Observatory Experience app teaches you about your view from every direction.



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Day 6

Breakfast included but dependent upon departure time

Today we'll end our tour with free time in the morning (dependent upon flight/transfer timings) and then traveling home, taking memories away with us that will last forever.



Farewell New York!



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ADVENTURES IN MATH

Minimum Booking Numbers:

20 students

What's Included:

Roundtrip flights or motorcoach transfers
5-nights' accommodation in Manhattan
Airport motorcoach transfers in NYC
Group metro transportation (for daily activities)
Meals in destination – Breakfasts & dinners daily starting with dinner on arrival and ending with breakfast on departure
National Museum of Mathematics with 2 Master Classes
NYC Transit Museum & Transit Extended Tour
Liberty Science Center, Planetarium & 2 Master Classes
Wall Street & the Financial District Walking Tour
Rise NY Experience
Intrepid Air, Sea & Space Museum & Aviation Physics Master Tour
Statue of Liberty excursion with Audio Guide
Ellis Island excursion with Audio Guide
South Street Seaport Museum with Sailors' Pi Master Class
I-Fly with Physics Master Class plus 1-Jump per person
Empire State Building – Evening view
Professional Photography in Times Square
Personal Tour Ambassador
24-hour emergency cover

What's Not Included:

Fully comprehensive insurance (mandatory)
Transfers to/from home airport
Lunches and snacks/beverages other than at meal times
Cost of visas, full or collective passports
Cost of inoculations or medication required for travel
Sightseeing / Entertainment Options not shown in Itinerary
Hotel incidental deposits & bills
Any gratuities – drivers, hotel services, Ambassador, local guides

Suggested Add-Ons:

9-11 Memorial & Museum
Broadway Show
Central Park Bicycle Rental with Guided Tour
The Metropolitan Museum of Art
Visit with an Architect
United Nations Visitors' Center

As always, our staff are always available to you to answer any questions you may have regarding programming.
If we may serve you in any way, please do not hesitate to contact us.



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