Tour: Maths & Money

Destination: Greater New York City
Specialization: Maths, Physics, Finance, History & Science
Itinerary: 6-days / 5-nights in New York

### Mathematics & Money - New York City

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Specialists in STEM Student Travel

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.
New York City... Immerse yourself in New York City for five minutes, and you’ll see why it’s like no other place on earth. Only here will you find all of America’s best attributes – the diversity, the culture, the style – intensified in such an intriguing way! Join us in New York City for exploration to find mathematics genius and modern money management!

Day 1
Dinner on arrival, dependent upon flight times

Arrive in New York City, transfer to your hotel. Get settled, have a Welcome, Safety & Orientation Meeting, then head out for Manhattan, Times Square and dinner!

Your hotel will be allocated upon booking. Sample hotels include selections such as the Renaissance Meadowlands Hotel and Wingate Wyndham Midtown. Dependent upon hotel options, breakfasts will generally be taken at your hotel, lunches are on your own so we can stop at a variety of places and enjoy different types of food, and dinners are at various restaurants in the NYC area. Hotel selections will feature two queen/double beds to sleep four pupils. Staff will lodge in the same room type with two adults sharing a room. If you desire different lodging, please let us know and we are happy to quote with your tailored preferences.

Day 2
Breakfast & dinner included; lunch on own

We’ll have an opportunity to dive into Mathematics today with 2 specialty Master Classes. Afterwards, we’re off to the Empire State Building, dinner in Manhattan and then some free time to explore.

National Museum of Mathematics aka “MoMath” – The Coolest thing that ever happened to Maths!

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. Visions 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 Maths.

Knot Theory - Dating back to prehistoric times, knot theory has been used to record information, create the shelter and transportation methods necessary for survival, and adorn artwork all over the world. In modern life, we encounter knots daily, in more places than just our shoes. Inspired by these everyday knots, mathematical knot theory focuses on knots whose ends are joined together and cannot be undone. Since the 19th century, over six billion knots and links have been classified. Today, knot theory, a branch of topology, is used to help us understand statistical mechanics, quantum computation, pharmaceutical design, and even our own DNA.

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.

**The Empire State Building** - New York’s famous Empire State Building, a New York City Landmark and a National Historic Landmark, soars more than a quarter mile into the atmosphere above the heart of Manhattan. Located on the 86th floor, 1,050 feet above the city’s bustling streets, the Observatory offers panoramic views from within a glass enclosed pavilion and from the surrounding open-air promenade. The building, one of New York City’s main tourist attractions, offers a variety of activities for its visitors. One can tour the Observatory 365 days per year, day and night, rain or shine, for breath-taking views of Manhattan and beyond.

**Day 3**
*Breakfast & dinner included; lunch on own*

Today we’ll have an opportunity to explore one of the top museums in the world – the American Museum of Natural History. Afterwards, we’re off to view the 9/11 Memorial & Museum, followed by a local dinner and then a Scavenger Hunt at Ripley’s Believe It or Not.

**The American Museum of Natural History** - Get ready to experience one of the finest museums in the world. Voted as the “top rated NYC tourist attraction” and the “3rd most popular tourist attraction in the United States,” this experience is for learners of all ages. This excursion includes the Museum’s permanent collection, the Rose Center for Earth and Space, plus a specialized Master Class at the Sackler Educational Laboratory (special exhibitions, IMAX films and space shows at the Planetarium are available at extra cost). [www.amnh.org](http://www.amnh.org)

**9/11 Ground Zero; Memorial and One World Trade Center** - The National September 11 Memorial & Museum commemorate the September 11, 2001 attacks which killed 2,977 victims, and the World Trade Center bombing of 1993, which killed six. The Museum offers a diverse set of inquiry-based programs
designed to challenge students to think critically about a wide range of topics related to 9/11. www.911memorial.org

This evening, after a fabulous dinner out, we’ll head over to Ripley’s for a night of fun!

Ripley’s Believe It or Not – From the moment your group steps inside the bizarre, unimaginable and intriguing world of Robert Ripley you know you’ve made the right choice! The aim is to inspire creativity, expand understanding and provide an experience that is both memorable and fun with the collection of more than 500 weird, wild and odd artefacts in 25 distinctly themed galleries (including the world's largest collection of shrunken heads!). Groups will participate in a Scavenger Hunt while here to keep their active minds engaged, excited and focused on the remarkable artefacts.

Day 4
Breakfast & dinner included; lunch on own

Today we’ll be exploring the NYC Transit Operations, walking the Brooklyn Bridge with an Engineer guide, discovering the Intrepid Sea, Air & Space Museum, having dinner in Manhattan and then on to a special show – That Physics Show!

The NYC Transit Museum – The Transit Museum is dedicated to telling and preserving the stories of mass transportation—extraordinary engineering feats, workers who laboured 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. Teachers will select their workshop of choice prior to arrival. Options include:

The 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.
**Immigration in Transportation** - From the immigrant workforce who built the subway to transportation’s influence on neighbourhood development, the story of this diverse City comes alive through discussion, photographs, and subway stories.

**Sustainability** - One city, one fare, one community of riders. Investigate the environmental, social, and economic sustainability of transportation over time using the Museum’s vintage train cars, collections, and exhibits that tell the story of moving the masses.

*The Brooklyn Bridge* – We’ll walk across the Brooklyn Bridge to explore and delight in this monumental structure, not only from the physics and engineering viewpoint, but also as an enduring work of human achievement. Since construction first started in 1860, it has inspired poets, artists and writers. As always, any story of epic engineering also comes with a human story equal in depth. We’ll learn about the Roebling family and their tenacious 13-year battle to begin and then complete the longest and heaviest suspension bridge ever built. We’ll explore the bridge to discuss and observe just how John Roebling’s masterpiece was built.

*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 private tour.

*Aviation Physics Tour / Master Class* – 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.

In the evening, after dinner the night is ours for exploration!
Day 5
Breakfast & dinner included; lunch on own

Today is all about finance! We’ll explore the world of money in a specialized Wall Street Walking Tour followed by a visit to the Museum of Finance with a Master Class workshop. After dinner in Manhattan, we’ll spend our final evening sailing the stunning NYC harbour to see the Statue of Liberty!

The New York Stock Exchange & Wall Street Walking Tour – As insiders, our specialty guides have many stories to share from the trenches of Wall Street. They 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 exclusive 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.

With the Wall Street gang, we’ll also try our hand at the Trading Game. Designed by a Wall Street Trader, this 15-minute trading game simulates the excitement while providing a team building exercise that is educational, experiential and interactive.

The Museum of Finance – Financial success and ruin; the excitement of a trading floor; getting a leg up on investing through information; entrepreneurship; the origins of money and counterfeiting; the life of Alexander Hamilton. These are just some of the topics that will be shared with you and your students during a visit to the Museum of American Finance. Located in the heart of Wall Street, the Museum provides students with an opportunity to delve into important historical topics and current financial events through exhibits of historical documents, financial artefacts, short original movies and contemporary, interactive materials.

Your visit to the Museum and the following Curriculum Guides will allow students to hone critical thinking skills, gain historical context, learn about America’s financial history and begin to plan their own financial futures.

High School Scavenger Hunt
Curriculum Guide: The Financial Markets
Curriculum Guide: Money
Curriculum Guide: Banking in America
Curriculum Guide: Entrepreneurs
Curriculum Guide: Alexander Hamilton

School will have an opportunity to participate in two of the following Master Class options which teachers will select prior to travel. Classes are approximately 45-minutes to an hour in length.

Banking in America – This lesson, based on the Museum’s “Banking in America” exhibit, will help students understand why banks today are safe places to deposit money, how banks earn profits, why banks are important to the overall economy and what role the Federal Reserve plays in our banking system.

Booms, Bubbles & Busts – Takes students through the history of financial bubbles focusing on the United States. Students learn about the cyclical pattern of bubbles, common causes and how the
economy adapts and regulates. Seen through the lens of editorial cartoons from the Museum’s collection as well as other sources, students learn both how to interpret political cartoons and how to find common threads through history to identify booms and busts. This course is only for advanced students (11th and 12th grades or A-levels) with a background in US History, Economics or Finance.

**Financial Markets 1** - This is an introductory class to the three main asset classes: stocks, bonds and commodities. The class covers the creation and mechanics of each asset class. In addition, students learn how financial products are used by individuals and companies to help them run their existing businesses or grow into the future.

**How to Analyse a Stock** - This classroom lesson will teach students who are new to investing how to analyse a stock. Upon completion, students will have a basic understanding of stocks and the stock market, as well as the ability to go beyond beginner techniques used to pick stocks. By learning the P/E (Price/Earnings) and PEG (Price/Earnings/Growth) ratios, students will learn the basics of how to apply research data in determining if a stock price is considered “fair.”

**Mint Condition: A World History of Coins** - If money doesn’t grow on trees, where does it come from? What is it made of? How is it made? Why does it look the way it does? Why does it keep getting... smaller? Collecting expert Harley Spiller shares how he discovered the many rules that govern our money, as well as the fascinating techniques and technologies used to protect money from counterfeiting. He brings the subject to life with his own personal experiences with money, as well as many examples of old, unique and interesting coins and objects once used as money. Will you know it when you see it?

**The History of American Money** - This classroom lesson, based on the Museum’s Money Room exhibit, will help students understand the evolution of money in America including how the change from many different bank-issued notes to one federal currency helped unify the country. Students will also learn about how the Bureau of Engraving and Printing protects against counterfeiting.

**Open Outcry: Trading Then & Now** - This class is designed to teach students the mechanics of trading markets, the interplay between profit-seeking individuals and the economics of market pricing. Students are divided into groups of buyers and sellers, and then they interact with each other in a mock trading session. Profits and losses are totalled after each trading session, and trends are identified. Finally, there is a discussion of the contrast between historic and modern market participation due to developments in electronic trading.

**The Secret Life of Money** - Harley Spiller, a museum professional and collections expert, presents his mind-boggling collection of unusual artefacts and little-known information from the world of currency and coins. Learn to protect yourself against dishonesty, discuss strategies used by the visually impaired, and see how nations of the world put their best foot forward on their paper money. Use magnet detectors, ultra-violet lights, and other anti-counterfeiting devices as Spiller reveals the active ingredient in counterfeit-detecting markers and other secrets behind U.S. currency. Handle his extraordinary collection of unusual government misprints, offbeat bills and coins, and notes designed or altered by important modern artists.

**Your Money and Your Success** - This course demonstrates why being financially savvy helps gain a competitive advantage in the workplace and in life. Topics include practical information about banking, budgeting, credit, and building financial disciplines that prepare young people for managing their money as they enter the working world. Topics include setting goals for the short-term and long-term, the basics of making a budget, using on-line tools to gain an advantage, determining banking needs and
using bank products, the importance of credit and managing credit (the role of credit reports and credit scores) and using credit cards responsibly.

This evening we’ll have dinner and then cruise the NYC waterways!

**Statue Harbour Cruise: Statue of Liberty & Ellis Island** – Departing from Battery Park, get a chance to see the Statue of Liberty National Monument and the Ellis Island National Immigration Museum up close! 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 available; concessions and souvenirs are available on board. Be sure to wear comfortable clothing and shoes!

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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 timings) and then traveling to the airport for our flight home, taking memories away with us that will last forever.
**MATHS & MONEY**

**Minimum Booking Numbers:**
20 students

**What's Included:**
- Roundtrip international flights
- 5-nights’ accommodation in NYC Metro area
- Airport motorcoach transfers
- Metro pass transportation (for daily activities)
- Meals in destination – Breakfasts & dinners daily starting with dinner on your night of arrival and ending with breakfast on your day of departure
- National Museum of Mathematics + 2 Master Classes
- NYC Transit Museum + Master Class
- NY Stock Exchange & Wall Street Walking Tour
- Museum of Finance + 2 Master Classes
- Brooklyn Bridge Guided Walk
- American Museum of Natural History
- Ripley’s Believe It or Not NYC + Scavenger Hunt
- Intrepid Air, Sea & Space Museum + Master Class Tour
- NYC Harbour Cruise with Statue of Liberty
- 9/11 Memorial, One World Trade Center + Master Class
- Empire State Building Excursion
- Times Square Excursion
- Dedicated Visions Tour Ambassador
- 24-hour emergency cover

**What’s Not Included:**
- Fully comprehensive insurance (mandatory)
- Transfers to/from home airport
- Meals not shown as ‘included’ above (lunches)
- 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 – meals, mini-bar items, recreation charges, purchases billed to room,
- Any gratuities – coach drivers, maid/ bellman services, Visions Ambassador, local guides

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.

The Americas: info@visions-in-education.com / 417.231.4892
United Kingdom: info@visionsineducation.co.uk / 01444 810399