

Mathematics

The Winton Gallery

SCIENCE
MUSEUM



INFORMATION

Age 11-14
14-16

Location
LEVEL 2, SCIENCE MUSEUM, LONDON

🕒 40 MIN

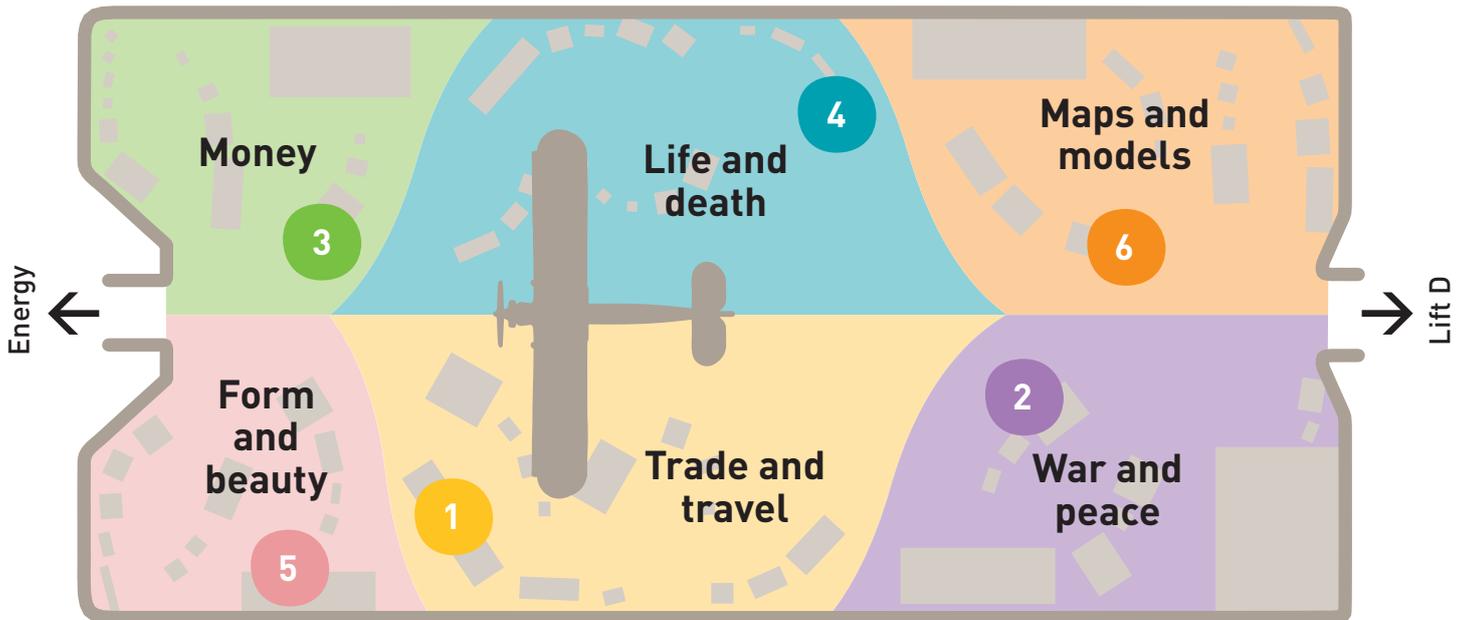
Topic

MATHEMATICS

Mathematics: The Winton Gallery tells the story of how mathematics has shaped our world. It shows that mathematics is at the heart of everything we care about: life and death, war and peace, trade, money and more. An aeroplane hangs in the centre of the gallery. Making aircraft safe is just one example of how mathematics plays an important role in our lives.

Here you will find people who use mathematics every day, at work at home and at play. From salespeople to sailors, gamblers to garden designers, medics to and the military – all of them use maths and all have interesting stories to tell.

The gallery's design, by Zaha Hadid Architects, is mathematical. Zaha Hadid studied mathematics and ideas about geometry inspired her designs.



1 Trade and travel

Mathematics underpins the huge and complex global economy. We rely on it for everything from navigating safely to buying and selling goods fairly and communicating business information privately.



Don't miss: Model oil tanker
Globtik Tokyo, 1973

Once this was largest ship in the world. Its bulbous bow made it cheaper to run.

Find: Enigma machine, 1934
Enigma machines were designed to create complex coded messages that were almost impossible to crack.

2 War and peace

Mathematical innovation has been driven by the demands of war and opportunities created in peacetime. From bomb production and artificial intelligence, to making difficult decisions in a hurry, there has always been a relationship between mathematics, war and peace.



Don't miss: Wisard pattern-recognition machine, 1981
This machine imitated the human brain to spot patterns; it is an early example of artificial intelligence.

Find: Differential analyser, 1935
This mechanical computer solved mathematical problems, from electrical power transmission to bomb production.

3

Money

Money makes the world go round. Some of the earliest mathematical innovations came from our desire to keep what we have – and get more of it. From counting and gambling to understanding the world's economy, where there is money there is mathematics.



Don't miss: National Lottery Machine 'Guinevere', 1994

Used in the UK's National Lottery draws since November 1994, 'Guinevere' performed an ancient statistical task – selecting a random number.

Find: London School of Economics 'Moniac', 1952

This machine modelled the British economy using the flow of water to represent money.

4

Life and death

With medical tools we can cure illness, ease pain and live longer. But mathematics helps us understand statistics about our health and quality of life. Mathematics is even used to answer one of the biggest questions of all: when will we die?



Don't miss: *England and Her Soldiers*, by Harriet Martineau, 1859

Martineau wrote this book with Florence Nightingale. Nightingale's diagrams showed, at a glance, how many soldiers were dying of preventable causes.

Find: Human skulls with phrenological markings, 19th century

Phrenology suggested that the shape of people's heads reflected their personality.

5

Form and beauty

Mathematics shapes the world around us. From designing furniture, to laying out gardens and building ever taller skyscrapers, mathematics enables us to build structures which are elegant, daring and reflect who we are.



Don't miss: Door case from 56 Lincoln's Inn Fields, London, about 1750

This wooden door case was designed following a set of ancient mathematical rules of proportion.

Find: Model of the National Westminster Tower, 1981

Once the tallest building in the UK, this tower was made possible by mathematical analysis.

6

Maps and models

Our world is enormous, and sometimes overwhelming. We use mathematics to try to bring the world to order. This involves making maps and models – physical and virtual – so we can explore, understand and control our surroundings.



Don't miss: Electronic ocean model, 1960–83

Built by oceanographer Shizuo Ishiguro after a devastating flood hit Europe in 1953, this machine could be used to predict storm surges.

Find: Astrolabe, 1666

Astrolabes represent the night sky. They were used for everything from telling the time to locating Mecca.

Make the most of your visit



There are over 100 objects in this gallery – everything from a pair of dice to a huge 18th-century telescope.

The aeroplane suspended at the centre inspired the gallery's design. The glowing canopy and the layout of the showcases represent airflow around the aeroplane; you'll notice airflow lines on the floor too. These features are driven by actual equations of airflow used in the aviation industry. To find out more, watch the animated film underneath the aeroplane.

There are large-print label books located at both entrances to the gallery.

Talk about...



As you explore the gallery, think and talk about the how maths connects to our everyday lives. You can use questions at home or in the classroom too:

- What interests or surprises you about what you have seen in the exhibition?
- How does maths influence your everyday life?
- What would you like to know more about? How could you find out more?
- Who do you know that would find maths useful in their work or life?
- What would you tell someone else about it?

Museum links



Investigate the maths that shapes our everyday lives in our hands-on gallery **Wonderlab: The Statoil Gallery**.

Find out more about the evolution of planes and air travel in the **Flight** gallery.

Continue the experience back in the classroom and at home too. The Science Museum website features lots of hands-on activities inspired by the principles demonstrated in the gallery, which you can use to investigate the mathematics in your world.

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With additional support from

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