

National Museum of Flight

Guidance for teachers and adult helpers

Fantastic Flying Forces

Second level (P5–7)

Prior to your visit we recommend that all pupils and accompanying adults are briefed that the hangars and other buildings are widely spread apart. There is no shelter as you move between the buildings and therefore appropriate footwear, warm and waterproof clothing is essential.

Upon arrival pupils should be briefed to understand the following hazards they may encounter:

- The roads around the site are often busy and can be dangerous. Pavements and grass verges should be used where appropriate. When moving along the roads, pupils should walk in single file or pairs down the side of the road.
- Running indoors is discouraged as the buildings contain various tripping hazards, slippery surfaces and sharp items at eye level.
- We ask that visitors do not touch the aeroplanes or display objects unless signage states otherwise. This is to protect both the collection and the safety of visitors.

Coach parking

A designated parking area is available for coaches bringing groups to the museum.

Behaviour

We ask that groups are mindful that there will be other visitors enjoying the site whilst they are here. Please moderate noise levels and behaviour accordingly.

Eating

We are generally able to provide packed lunch facilities for groups on request and therefore ask that unless otherwise discussed that the eating of lunches and snacks is restricted to the designated areas of the museum. We also have outdoor picnic tables beside the shop, the assault course and Education Centre.

Accessibility of the site

At the National Museum of Flight we aim to make as much of the site as accessible as possible to visitors with additional support needs and disabilities. Information regarding the accessibility of our site can be found here, together with further information about our facilities: <https://www.nms.ac.uk/national-museum-of-flight/plan-your-visit/>

Toilet facilities can be found in the shop, the café, Hangar 4, Fantastic Flight (building 10 on the map) and in the Education Centre.

Airfield Explorer is a vehicle which shuttles visitors between the buildings on site. This is available on request.

The Concorde Experience and Jet Age (Hangar 4)

No trip to the National Museum of Flight would be complete without a look around the Concorde- the only one displayed in Scotland.

We ask that you supervise pupils as they make their way inside this aeroplane and ensure that they enter in small groups as it is cramped inside.

Please note that this is inaccessible to people in wheelchairs.

Flying at top speed, Concorde reached 1,380 miles per hour. That is two times the speed of sound (referred to as Mach 2). In the 'Concorde Experience' exhibition, you can explore the theme of supersonic travel with displays about the technological advances that Concorde represents and the cultural significance of this wonder of the jet age.

A large film screen plays a three and a half minute long film showing Concorde in it's hay day. This loops every fifteen minutes. Additionally the Concorde Theatre shows a more detailed film every twenty minutes lasting twelve minutes.

Red Arrows Hawk T.1A

Hawks are flown by the Royal Air Force Aerobatic Team, the Red Arrows. One of this aeroplane's memorable flights was when the Red Arrows flew in formation with Concorde over Edinburgh on 1 July 1999 to mark the opening of the Scottish Parliament.

Boeing 707 cockpit and cabin

Please note that this is inaccessible to people in wheelchairs.

Groups may explore this aeroplane by climbing up a set of stairs where they will be able to watch a short film lasting six minutes. Lined with interactive displays, they can move toward the front of the aeroplane and view to cockpit.

The 707 ushered in the age of commercial passenger travel and creating the original 'jet set' of the 1960s.

Outside, groups may explore the British Airways aeroplane the BAC 1-11 and the de Havilland Comet. These make for a good opportunity to compare and contrast the design features with the Concorde and the Boeing 707.

Adjoining facilities to Hangar 4.

Aviator Café- Open daily from 10am-5pm. Serves a selection of hot and cold drinks, snacks and lunches. More information can be found here: <https://www.nms.ac.uk/national-museum-of-flight/plan-your-visit/#eating>

Shop

Sells a selection of toys, gifts and books.

Civil Aviation (Hangar 3)

Displays in this hangar cover the themes of 'Flying for Fun', 'Connecting Communities' and 'Aerial Photography' with films for each running in sequence and lasting three and a half minutes each.

The interactive touch screens in this hangar let you hear from the people who built, piloted or travelled on our historic aircraft.

Military Aviation (Hangar 2)

The displays in this hangar tell the stories of aircraft in war, from the first use of air-to-air weapons in 1914 to drone warfare in the 21st century. Here groups can see how the technology of military aircraft developed. Key aircraft include the world-famous Spitfire, the oldest surviving Harrier jump jet, and the Tornado F3.

The interactive touch screens in this hangar let you hear from the people who built, piloted or travelled on our historic aircraft.

Four times per hour a large screen to the rear of the hangar begins to show a film with each aeroplane in flight. At this point the main exhibition lights drop and as each aeroplane in turn appears on the screen they are highlighted by spotlights above. This film runs for on loop and is accompanied by a loud sound track. The best place to view this is on the raised platform in the middle of the hangar. This can be reached by stairs and by a lift for disabled visitors.

Please note that pupils with particular sensitivity to loud sounds may find this environment challenging. Please alert the museum staff as soon as possible if this presents a problem for any pupils as this can be turned down on request.

Additionally, a smaller film below the platform runs for in the gap between the other film timings.

Outside, groups can walk under the Vulcan bomber and learn more about its' Cold War story. Likewise the Matador and Green Goddess trucks offer a further insight into the vehicles used on airfields such as this during the Second World War and Cold War periods respectively.

Fantastic Flight (building 10)

This building is split into three galleries full of science displays, interactive games and simulators. Larger groups may be split up and rotated between these to spread out around the space. This space is ideal for allowing pupils to learn through playful engagement.

Fortunes of War (building 7)

The First and Second World War displays here chart the evolution of East Fortune as an Airship station to a training airfield. This is illustrated with a large model with corresponding lights making it a good introductory point for groups. The launch of the first East to West crossing and return flight over the Atlantic Ocean took place at East Fortune and so the commemorative plaque outside and the display case inside mark the significance of this event.

A film to the rear of the building runs on a twelve minute loop summarises this rich history.

Parachute Store (building 11)

As groups enter this space, a sound recording starts to play. The narrator highlights the features in the building and explains how important it was for pilots to check and maintain their parachute during the Second World War.

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The experiments carried out in the workshop are designed to foster an understanding of the physics of flight and introduce pupils to the role of engineers.

The definition of a force as something that makes things move either by pushing or pulling can be demonstrated in a number of ways for each of the four forces involved in flight; **gravity**, **lift**, **thrust** and **drag**.

Fantastic Flight (building 10) houses three galleries of interactive displays and can be used to explore all of these forces by way of a reminder through direct experience.

Gravity is what gives us weight and this is one of the key learning outcomes of the workshop. The middle gallery of the three presents a range of material samples laid out to allow pupils to feel the contrasting weights for themselves. This tactile opportunity will help pupils to understand that things that fly must be made to be as light as possible using special materials. This underlies the fact that it is gravity, which pulls things down to the ground.

Lift is the force generated by the wing of an aeroplane as air moves around it. Pupils can investigate different wing shapes in the **Military Aviation Hangar (2)**.

Thrust is the force that provides the movement of the aeroplane through the air in order to generate lift. It is produced by either a propeller driven by an engine or by a jet engine. In the **Jet Age** display in **Hangar 4**, we display a range of jet engines.

Drag may be best understood by visiting the **Parachute Store (building 11)**. A parachute is a vital piece of safety equipment deployed in an emergency when a pilot has to abandon their aircraft in flight. The tightly packed material is designed to unfold to create a large surface area to slow the pilot down the pilot in descent by catching the air to create a safe and soft landing. Aeroplanes are designed to reduce drag, this is what we mean when we say they are aerodynamic. **Concorde** is the ultimate example of this with its pointed nose, swept back delta wings and thin sleek fuselage.

We hope that your group enjoy your visit to the National Museum of Flight. We welcome all feedback in order to ensure that we provide the best experience for our visitors. Please forward any comments to:

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East Lothian
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