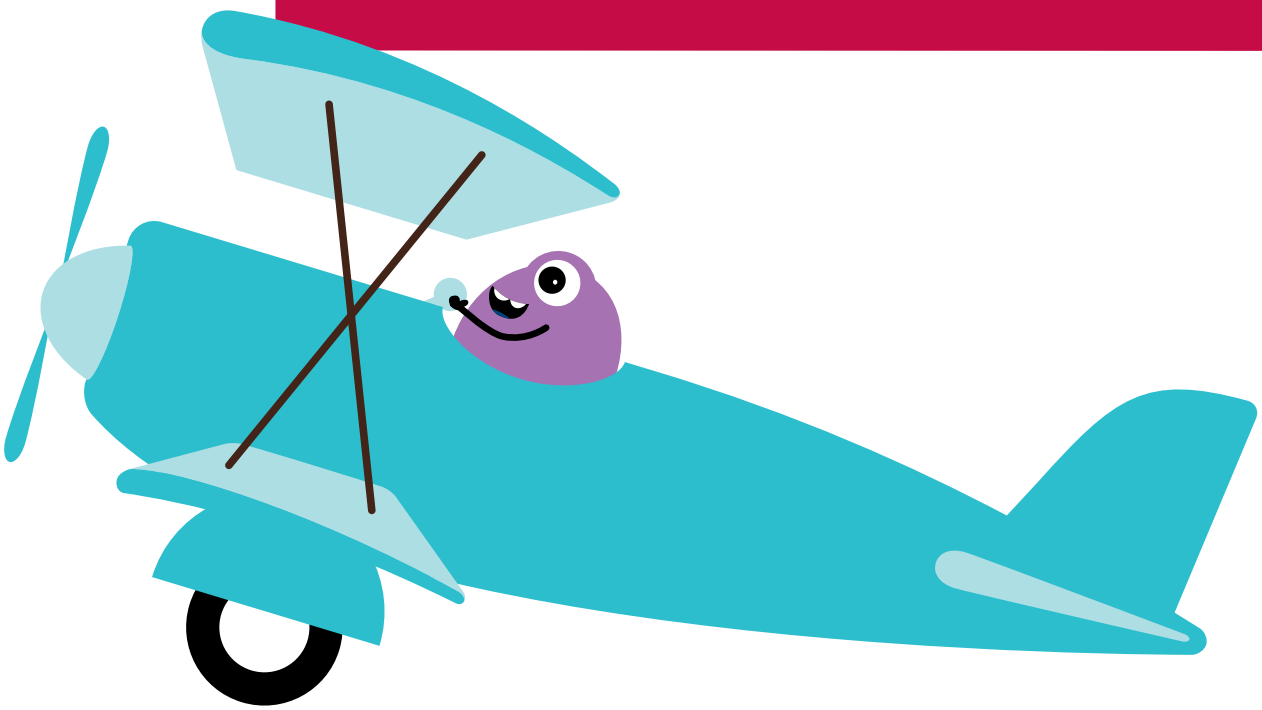
British Science Week 2022



This British Science Week, take inspiration from the growth of aeroplane design as you explore the RAF Museum London.

Our museum is full of incredible technology and fascinating science. Use this guide to find out how aeroplanes have changed over time and learn some fun facts along the way.

BRITISH SCIENCE WEEK

ROYAL AIR FORCE museum

Early Aeroplanes, 1903–1913

The Wright Flyer – the first ever aeroplane

Key features

Early aeroplanes had small engines. To be able to fly they often had several sets of wings.
As they had to be very light they were built simply and didn't have roofs. Sometimes not even any sides.

Materials

Wooden frame
Fabric wings
Paper wings (on cheaper aeroplanes)
Metal cables for strength and control

Aircraft Roles

Early aeroplanes usually didn't have any set jobs.
They were mainly used for pilots to experience the thrill of flight, for some wealthier people to travel, and to test different designs.

BRITISH SCIENCE WEEK

ROYAL AIR FORCE museum

H1

H2

First World War, 1914–1918

Sopwith Dolphin biplane

Key features

First World War aeroplanes were mostly biplanes with two sets of wings but some had three sets of wings!
They had propellers to give them thrust and some even put the propeller at the back rather than on the front.
The wheels were fixed in place so were always out.
Pilots still didn't have roofs but did gain sides and even windscreens.

Materials

Wooden frame
Fabric covered wings and fuselage (the main body of the aeroplane)
Metal around the engine and in the cables used to strengthen the wings.

Aircraft Roles

During the First World War, aeroplanes were used for reconnaissance. This means looking for information by flying over the battlefield. Later they were fitted with guns and bombs for fighting. Larger aeroplanes also started to be made that could carry larger numbers of people.

H1

H3

H4

H5

Second World War, 1939–1945

Supermarine Spitfire MkVb

Key features

In the Second World War, engines became more powerful, allowing for all-metal aeroplanes that could fly much faster. As aeroplanes got faster, the need for biplanes disappeared as you didn't need as many wings if you had a high enough speed.

The wheels, known as the undercarriage, also became retractable. They could fold away for faster flight.

Pilots were finally given enclosed cockpits.

Materials

Metal

Wood – some aeroplanes were still made from wood as it was cheaper and easier to get than metal.

Aircraft Roles

Aeroplanes in the Second World War did a huge range of jobs. There were fighters and bombers. There were bigger and bigger transport planes to carry cargo and people. There were aeroplanes designed to take pictures and even aeroplanes designed to float on the water to rescue people and destroy submarines.

BRITISH SCIENCE WEEK

ROYAL AIR FORCE museum

H1

H3

Early Jets

Gloster Meteor F8

Key features

Once jet engines were invented, aeroplanes could fly much faster than those that came before. Aeroplanes became pointier and more aerodynamic to help them gain even more speed with their wings swept backwards. They could go so fast that ejector seats had to be invented for pilots to escape in an emergency.

Materials

Metal

Aircraft Roles

Early jet engines were first used on fighter aeroplanes as they needed more speed. Jets also started to be used for bomber aeroplanes to match the speed of fighters. The first jet airliner flew with paying passengers onboard in 1952 and made faster travel around the world possible.

H1

H6

Modern Jets

F35 Lightning II

Key features

Modern jet aeroplanes can travel very fast. Passenger jets can fly at 650mph with hundreds of passengers on board, but fighter jets can fly at over 1500mph! Modern jet aeroplanes use a range of newer and lighter materials and have streamlined shapes with swept back wings.Some modern fighter aeroplanes also have stealth technology and even takeoff and land vertically – no need for a runway!

Materials

Metal
Plastics
Carbon Fibre
Smart Materials

Aircraft Roles

Modern jets can fill almost any flying role. They can fly passengers around the world and carry huge amounts of cargo and supplies where they are needed.They are used in combat against other aircraft and targets on the ground.

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ROYAL AIR FORCE museum

Modern Jets

F35 Lightning II

Early Aeroplanes

The Wright Flyer

Second World War

Supermarine Spitfire MkVb

1903-1913 **1939-1945** **1970s - today**

1914-1918 **1945-1960s**

First World War

Sopwith Dolphin

Early Jets

Gloster Meteor F8

More STEM activities at RAF Museum London

When you get home why not try out our Aviation Creation Activity to try your hand at designing your own aeroplane. You can find this fun family activity in the British Science Week Community Activity Pack:
britishscienceweek.org/plan-your-activities/activity-packs

Find out more at:
rafmuseum.org.uk/london/schools/family-resources

STEM at RAF Museum London

Calling all teachers! We have a range of STEM Workshops for Primary and Secondary students available to book at RAF Museum London. For our full programme, head to:
rafmuseum.org.uk/london/schools

For information on how to apply for free STEM events sponsored by RAF Youth & STEM, head to:
rafmuseum.org.uk/london/schools/special-events

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