

AERONAUTS INTERACTIVE KEY STAGE 2

MATERIALS

Push each of the long samples of material one at a time from side to side.

Which material do you think is the **strongest**?

Steel

Lift each of the samples. Which material do you think is the **lightest**?

Wood

Find the
'Materials'
exhibit!

Aeroplanes need to be very **strong** but **light**.

Stronger materials are often **heavier**, whilst **lighter** materials often have **less strength**.

This means that aeroplanes cannot be too strong as they will be too heavy to take off with passengers and fuel.

Which of the materials do you think is **most suitable** to build an aeroplane with?

Aluminium or carbon fibre

Why?

Both materials are light and very strong

Gently jump up and down on the white rectangles on each of the beams.

Which beam is the most flexible, 1 or 2? **1**

Do you think this makes it **stronger** or **weaker**?

Weaker

Look at the sections of beam on the wall by the exhibit.

Lift each one, which is the **heaviest**? **1**

The way in which we shape materials is very important.

How have we made one of the beams stronger? Look at its structure.

It is in the shape of a capital letter I

Does this surprise you? Is the **heaviest** beam the **strongest** beam?

The lightest beam is the strongest

Go to the
*'Bouncing
Beam'*
exhibit!

FORCES AND MOTION

Friction is a force which is created by two objects rubbing together.
Friction slows down or prevents movement between objects.

Find the
'Ball Bearings'
exhibit!

Stand on the white plastic circle and twist your body. Notice the white balls underneath your feet.

Do you think that the balls make it **easier** or **harder** to turn around?
.....

To find out if you are correct take the balls out.
Was it **easier** or **harder** with the balls?

Easier

By removing the balls is there **more** or **less** friction?
More

When aeroplanes fly they encounter **air resistance** (also known as **drag**).
Air resistance is caused by friction between the body of the aircraft and the air.
The **shape** of an aircraft is very important when trying to overcome air resistance.
The fastest aeroplanes are more streamlined in shape.

Turn the rod clockwise using the wheel.
Do you think it is **easy** or **hard** to turn?

Now change the position of the paddles and turn the wheel. Does it feel different?
With the paddle on the wheel vertical, do you find it **harder** or **easier** to turn?

Harder

Write down why you think this is.
There is more air resistance

Find the
'What a Drag'
exhibit!

Whilst
exploring
the rest of
the
museum!

Find an aeroplane that has a propeller.
What shape is this plane? Use some of these words to help you describe it:
Pointy, rounded, square, flat, long, short, wide, narrow.
.....

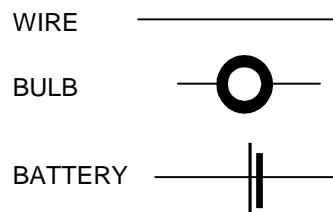
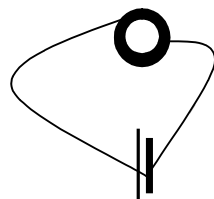
Find an aeroplane without a propeller.
Notice the differences between the two aeroplanes.
What difference do you think the shape of each aeroplane makes to the way it moves through the air? Which aeroplane can go faster?
The aeroplane without a propeller will travel faster

CIRCUITS

Electrical circuits in a modern aeroplane are very important and very complicated; they help the pilot to control all sorts of parts of the plane including the flaps on the wings and even help the plane to start.

Create a Simple **Series Circuit** using the battery pack, two wires and a light bulb. Draw your circuit below using the following symbols:

Use the 'Circuit Table' exhibit!



In order for the bulb to light up, there must be a current running through the circuit. This current is provided by the battery.
We measure current in **amps**.
In a series circuit the current that flows is the same in **all** parts of the circuit.

Exploring the rest of the Gallery

Well done for completing your discovery sheet!
Now take some time to explore the rest of the exhibits in the gallery. Read the banners and the explanation boards to find out what to do.
What else can you find out?