



# 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**?  
.....

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

**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?  
.....  
Why? .....

**Gently jump up and down on the white rectangles on each of the beams.**  
Which beam is the most flexible, 1 or 2? .....  
Do you think this makes it **stronger** or **weaker**?  
.....  
Look at the sections of beam on the wall by the exhibit.  
**Lift each one, which is the heaviest?**  
.....  
The way in which we shape materials is very important.  
How have we made one of the beams stronger? Look at its structure.  
.....  
Does this surprise you? Is the **heaviest** beam the **strongest** beam?

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

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 paddles on the wheel vertical, do you find it **harder** or **easier** to turn?  
.....  
Write down why you think this is.  
.....

**Find the 'What a Drag' exhibit!**

**Whilst exploring the rest of the museum!**

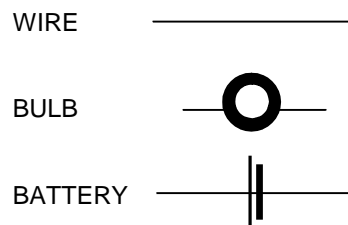
Find an aeroplane that has a propeller.  
What shape is this plane? Use some of these words to help you describe it:  
**Pointy, rounded, square, flat, long, short, wide, narrow.**  
.....  
Find an aeroplane without a propeller.  
**Notice the differences between the two aeroplanes.**  
What difference do you think the shape of each aeroplane makes to the way it moves through the air? Which aeroplane can go faster?  
.....

# 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?**