Year Five – Autumn 1 – Forces

Science

Forces

By the end of this topic, children will be able to explain that unsupported objects fall towards the Earth because of the force of gravity. They will also be able to identify the effects of air resistance, water resistance and friction, that act between moving surfaces by conducting a range of investigations.

Key Questions

- Which forces around you are pushes or pulls?
- How does the shape of something affect how quickly it moves?
- How could we investigate this?
- Is friction a help or a hinderance?
- How do professional athletes ensure that they reduce air resistance?

Key Vocabulary

force	A force is a push or a pull. Forces make objects start moving, stop moving, speed up, slow down or change direction.
gravity	A force which pulls things down towards the centre of the Earth.
Forcemeter	Also known as a Newton meter, it is a piece of equipment used to measure the size of a force.
Newton (N)	The unit for measuring force.
air resistance	The force that slows down objects that move through air.
water resistance	A force that slows down objects moving through water.
friction	When one surface moves against another, the rubbing force that tries to stop them is called friction. It gives us grip.
balanced	When forces are balanced, they are equal and the object does not speed up, slow down or change direction.
unbalanced	When forces are unbalanced, the object can accelerate, decelerate, or change direction.
streamline	An object that presents very little resistance to a flow of air or water, increasing speed and ease of movement.

Seeds fall to the ground because of gravity.

Balanced and Unbalanced Forces

Here, the forces on the left and right are the same. They are balanced and the people on each team do not move.

Here, the force on the left is greater than the force on the right. The people will move towards the left as this is the greater force.

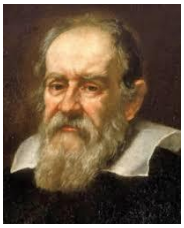
Real-life examples of forces in action

A skydiver falls fast until they open their

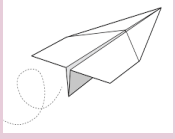
Dolphins have a streamlined shape.

A non-slip mat uses friction.

Significant scientists

Traditional	
Galileo Galilei *(1564-1642)* 	He was an Italian scientist. He discovered that if two objects of similar shape and size are dropped, they will fall at the same rate.
Sir Isaac Newton *(1642-1726)* 	He was an English scientist and mathematician. He 'discovered' the concept of gravity when sitting under a tree and an apple fell to the ground near him.
Contemporary	
Emma England - Aeronautical engineer Emma works as part of a team designing the wings of aircrafts.	

Home Learning Suggestions



1. Make a variety of paper aeroplanes and see which one goes the furthest.

   Can you explain why it went the furthest?

2. Try running in water at your local swimming pool.

   Why is it more difficult than when you are on land?

3. Research how athletes try to reduce friction. How are their clothes designed?