

# St Clement's Catholic Primary School- Science

**Topic:** Forces

**Year:** 5

**Term:** Autumn 2

## What should I already know?

- How things move on different surfaces.
- About magnetic forces
- Gravity is a forces that causes something to drop and it keeps us on the Earth (Space topic)

## Vocabulary

<b>Force</b>	A force is a pushing or pulling effect that something has
<b>Gravity</b>	The force that causes something to drop
<b>Mass</b>	A measure of the amount of matter in an object (g or kg). This stays the same everywhere
<b>Matter</b>	Physical part of the universe consisting of solids, liquids and gases
<b>Weight</b>	The force of gravity on an object. This changes in space
<b>Friction</b>	The force that makes it difficult to move
<b>Air resistance</b>	A force that slows things down in the air
<b>Water resistance</b>	A force that slows things down in water
<b>Up thrust</b>	An upwards push or thrust
<b>Buoyancy</b>	The ability something has to float
<b>Mechanism</b>	A part, often consisting of a set of smaller parts, which performs a function
<b>Physics</b>	The scientific study of forces

## What will I know by the end of the unit?

### Forces and gravity

- Everything on Earth is powered by forces, either a push or a pull, which act on our bodies and things around us to cause movement.
- Gravity is the pulling force acting between the Earth and a falling object, for example when you drop something. Gravity pulls objects to the ground. Gravity also holds our universe together, moving the planets in our solar system around the Sun.
- Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

### Friction, air resistance and water resistance

- Friction is a 'sticking' force – the resistance that a surface or object encounters when moving over another surface or object. Friction both stops and makes things move: it causes things to stick and rub against each other, and also causes slipping and sliding. Air resistance, water resistance and surface resistance are kinds of friction.
- Air resistance is the force on an object moving through air, such as a plane moving through the sky. Air resistance affects how fast or slowly objects move through the air; some objects are more streamlined than others, which means the air pulls on them less and they travel faster.
- Water resistance is the force on objects floating on or moving in water.
- Identify the effects of air resistance, water resistance and friction, that act between moving surfaces

### Mechanisms

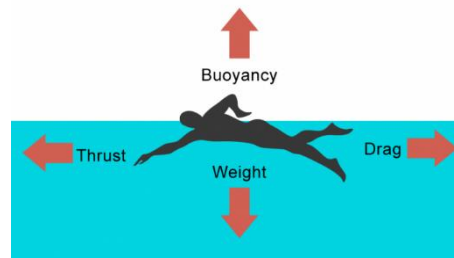
- Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
- Identify examples of simple machines, such as levers (which give us extra pushing or pulling force and help us lift great weights), gears (different-sized cogs which work together and give a machine extra force or speed) and pulleys (wheels and ropes used together to lift heavy objects)

## Diagrams

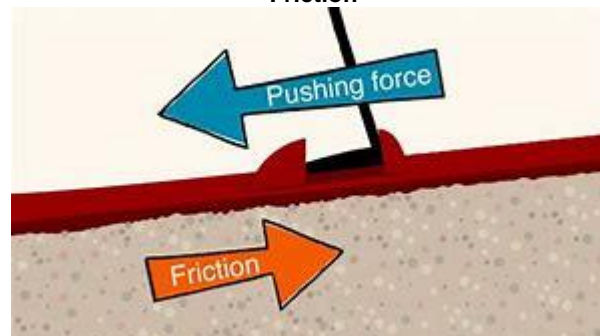
### Gravity and air resistance



### Water resistance



### Friction



## Key facts

- Forces can make an object start to move, stop moving, change direction, move faster, change its shape or move slower.
- Forces are measured in Newtons.

## Famous scientist(s)

**Galileo Galilei (1564-1642)**- discovered that if two objects of similar size and shape are dropped, they will fall at the same rate.  
**Sir Isaac Newton (1642-1726)**- an English mathematician and scientist. He discovered the concept of gravity when sitting under a tree and an apple fell to the ground near him.