

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

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

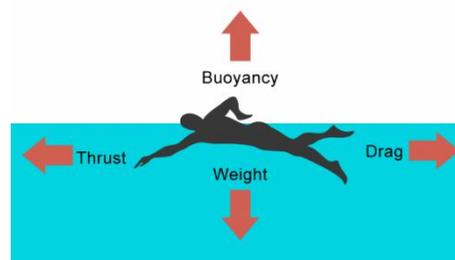
Diagrams

Gravity and air resistance

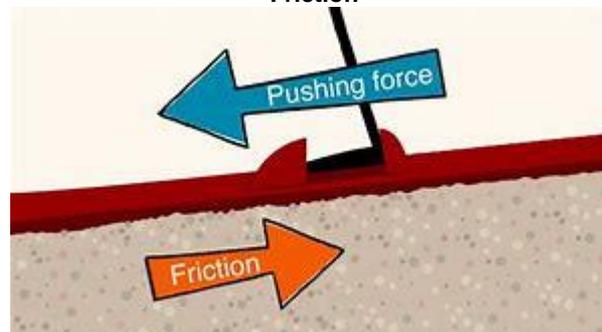
Air resistance



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.