

Frogwell School Year 5 Science Knowledge Organiser Term 4

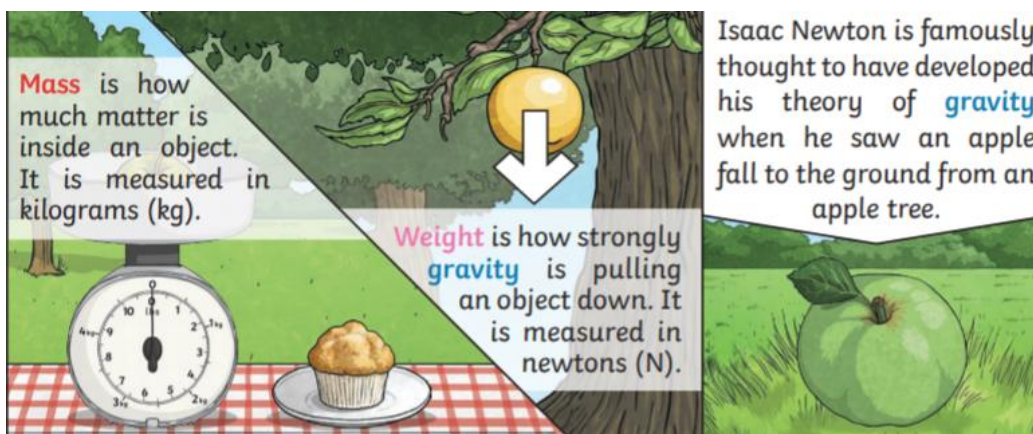
Who was Sir Isaac Newton? What can he tell us about forces?

Learning objectives:

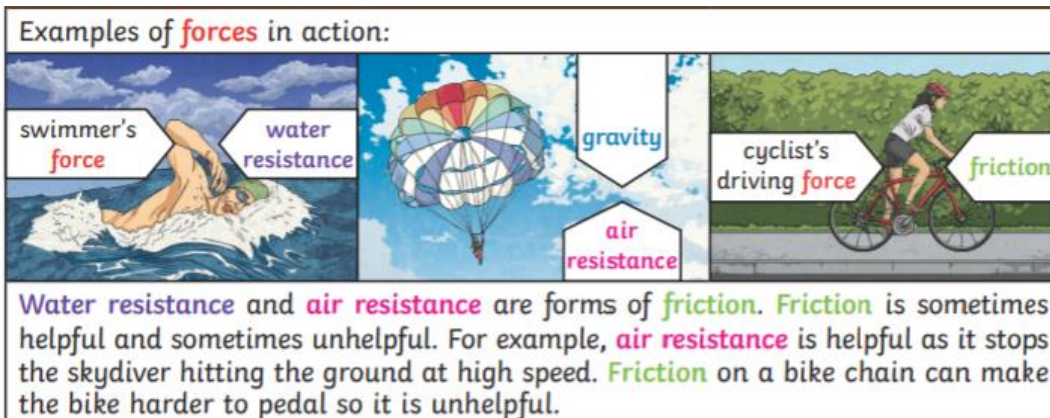
1. I know that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.
2. I can identify the effects of air resistance, water resistance and friction that act between moving surfaces.
3. I recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect.

Forces can make an object:

- Start to move
- Stop moving
- Change direction
- Change its shape
- Move faster
- Move slower




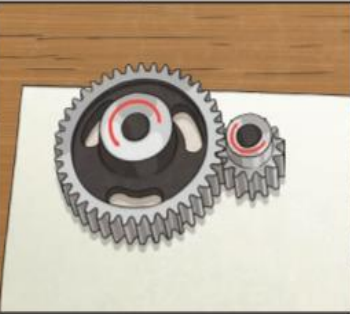

Examples of **forces** in action:

A composite image showing three examples of forces in action. On the left, a swimmer is in the water, with labels for "swimmer's force" and "water resistance". In the middle, a skydiver is falling with a parachute, with labels for "gravity" and "air resistance". On the right, a cyclist is riding a bike, with labels for "cyclist's driving force" and "friction".

Water resistance and **air resistance** are forms of **friction**. **Friction** is sometimes helpful and sometimes unhelpful. For example, **air resistance** is helpful as it stops the skydiver hitting the ground at high speed. **Friction** on a bike chain can make the bike harder to pedal so it is unhelpful.

Key Vocabulary

Gravity	Gravity is the force that attracts two objects towards each other, the force that causes items to fall to the ground and the planets to orbit the sun. The greater the mass of an object, the greater the force of gravity.
Friction	The force between two surfaces – for example there is friction between a car tyre and the road, or a ski and snow. Melted snow between the ski and the snow lubricates the ski and reduces the friction.
Mechanisms	A system of parts working together in a machine; a piece of machinery. Such as pulleys, levers and gears.
Up thrust	A force that is causing something to be pushed upwards in a gas or liquid.
Air resistance	A type of friction which slows the fall of a parachute or a piece of paper in air. The bigger the surface area the greater the amount of air resistance .
Water resistance	Water resistance is another type of friction which slows objects moving through water.
Forces	Pushes or pulls.
Weight	The measure of the force of gravity on an object.
Mass	A measure of how much matter (or 'stuff') is inside an object.

Pulleys	Gears/Cogs	Levers
		
Pulleys can be used to make a small force lift a heavier load. The more wheels in a pulley, the less force is needed to lift a weight .	Gears or cogs can be used to change the speed, force or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.	Levers can be used to make a small force lift a heavier load. A lever always rests on a pivot.