

Forces

Key Question/What will I learn by the end?

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

Biology/Chemistry/Physics

Lesson sequence

- * Gravity and Force meters
- * Friction
- * Air resistance
- * Parachutes investigation
- * Levers
- * Pulleys



Enquiry Types

Sticky learning

New Knowledge

- forces that make things begin to move, get faster or slow down
- what causes an object to remain stationary
- unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object
- effects of forces such as air resistance, water resistance and friction, that act between moving surfaces
- how different objects such as parachutes and sycamore seeds fall
- how objects can be streamlined (air and water) and how this may also appear in the natural world (e.g. animals)
- that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.
- what cause a moving object to slow down or increase in speed.
- the effects of friction on movement and find out how it slows or stops moving objects
- how Galileo Galilei and Isaac Newton helped to develop the theory of gravitation

Skills

- use test results to make further predictions or set up other tests.
- research information from more than one source to find the answer to scientific questions
- report and present my findings in an appropriate way.
- draw a valid conclusion and evaluate my test results or research
- understand scientific evidence can be used to support or refute ideas or arguments.
- explain and justify my reasoning using scientific vocabulary and concepts

Concept Links/Prior Knowledge

Making connections to previous topics and what they have already learnt

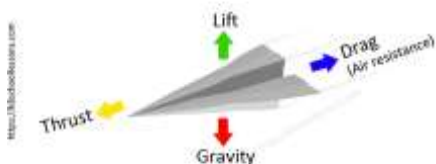
Year 3 – Forces and Magnets.

Visual representations



Forces acting when riding a bicycle

Forces acting on a paper plane



Significant people/places



Galileo Galilei

(b:15th February 1564 d: 8th January 1642)

Galileo has been called the founder of modern science. He was one of the first people to examine the heavens with a telescope. He also made breakthrough discoveries in the study of motion.



Isaac Newton

(b:25th December 1642 d: 20th March 1727)

Isaac Newton was one of the great figures in the history of science. His ideas about motion and gravity are very important to the science of **physics**.

Vocabulary revision (vocabulary I have been taught before)

Forces - Pushes or pulls.

Friction - A force that acts between two surfaces or objects that are moving, or trying to move, across each other

Repel - To force (something) to move away or apart

Attract - To exert a physical force on (an object) causing it to travel towards the source of the force.

Poles - Region at the end of a magnet where the external magnetic field is strongest

Weight - The measure of the force of gravity on an object.

Mass - A measure of how much matter (or 'stuff') is inside an object.

New vocabulary I will learn

Air resistance - A type of friction caused by air pushing against any moving object

Water resistance - A type of friction caused by water pushing against any moving object.

Gravity - A pulling force exerted by the Earth (or anything else which has mass).

Buoyancy - An object is buoyant if it floats. This is because the weight of the object is equal to the upthrust.

Streamlined - When an object is shaped to minimise the effects of air or water resistance.

Mechanism - Simple machines with moving parts that change input forces and movement into a set of useful output forces.

Examples of mechanisms are pulleys, gears and levers.

Upthrust - A force that pushes objects up, usually in water