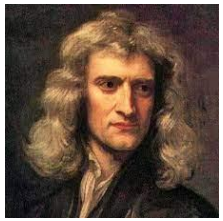
Year 5 Science Knowledge Organiser: forces

Key vocabulary

force	a force is an interaction which can change the motion of an object.
gravity	the force which causes things to drop to the ground.
air resistance	Air resistance is a type of friction between air and another material).
water resistance	a force that slows things down that are moving through water.
friction	the force that makes it difficult for things to move freely when they are touching each other.
upthrust	an upward push or thrust.
mass	A measure of the amount of matter in an object (measured in grams and kilograms). It will the same whether you are on Earth or in space
weight	Is the force of gravity on an object. This changes whether you are on Earth or in space. Measured in Newtons
gears	A toothed wheel that works with others to increase speed.
mechanisms	a part, often consisting of a set of smaller parts, which performs a particular function
pulleys	A machine with a wheel and a fixed axle (pin) .
buoyancy	the ability that something has to float on a liquid or in the air.
fulcrum	The point where a lever turns (also called a pivot)
lever	A rigid bar that rests on a fulcrum. It is used to lift/move heavy objects
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**.
mass	A measure of how much matter

Focus scientists

Sir Isaac Newton (1642-1726) first explained how forces act upon objects on Earth. He worked out how gravity acts upon objects on Earth and explained how for every action there is and equal and opposite reaction.



Brahmagupta (598-668AD) was a mathematician and astronomer who was the first scientist to talk about the notion of gravity.

Key Knowledge

Different types of force:

Contact—Contact forces are forces that require contact to push or pull another object e.g. friction and air, water and surface resistance.

Non-contact - Forces acting at a distance are forces that do not require direct contact between the objects to be able to push or pull them. Two examples are gravity and magnetism

Friction—Friction is a 'sticking' force – the resistance that a surface or object encounters when moving over another surface or object.

Air resistance—Air resistance is the force on an object moving through air. Air resistance affects how fast or slowly objects move through the air.

Water resistance - Water resistance is the force on objects floating on or moving in water.

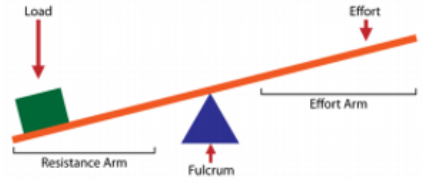
Gravity—Gravity is the pulling force acting between the Earth and a falling object. Gravity pulls objects to the ground

Unbalanced forces—can cause an object to change its motion. If an object is at rest and an unbalanced force pushes or pulls the object, it will move

Balanced forces—do not cause a change in motion. When two forces are the same strength but act in opposite directions, they are called balanced forces.

Levers

A way to lift heavy weights using the least amount of effort. The longer the easier it is to lift. The fulcrum is where the lever pivots in order to lift the load. The closer the fulcrum is to the load the easier it is to lift.



Pulleys

Used like levers to lift loads with less effort Rope is passed through a pulley and then is returned back round to be pulled.

Gears

Used to transmit power from one part of a machine to another. Connected gears can increase speed, increase force. When joined, the direction of rotation of the driven gear is the opposite of the drive gear.