

FORCES & MAGNETS

YEAR 5/6 KNOWLEDGE ORGANISER

What I will have learnt by the end of the unit

I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object.

I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces.

I can recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

What I should already know

Compare how things move on different surfaces.

That some forces need contact between two objects, but magnetic forces can act at a distance.

How magnets attract or repel each other and attract some materials and not others.

Compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.

Describe magnets as having two poles.

Predict whether two magnets will attract or repel each other, depending on which poles are facing.

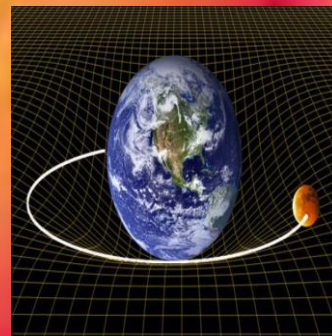
What I will have learnt at the end of the key stage

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

Recall & Remember

Add information to your knowledge mind map regularly, to help you reflect on, and remember what you have learnt throughout the unit.

At the end of the unit, work in a small group to create a fun quiz on purple mash about forces for your friends to complete.



Key Concepts

Biology
Chemistry

Physics
Scientific enquiry

Science for the future

Vocabulary

Key Skills I will learn/use

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
- Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
- Using test results to make predictions to set up further comparative and fair tests
- Reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and a degree of trust in results, in oral and written forms such as displays and other presentations
- Identifying scientific evidence that has been used to support or refute ideas or arguments

Opportunities for teaching diversity, equality (including protected characteristics and expanding cultural capital)

Get to meet a scientist! Explore people who use science in their jobs. I'm a Scientist, Get me out of here! - A super-curricular science outreach education & engagement activity (imascientist.org.uk) Science for Everyone (science4everyone.org)

Skills I may use for other subjects

Literacy- I can use my literacy knowledge to write about my findings.

Mathematics- I can use my knowledge carry out simple tests and record my findings using diagrams and graphs. Measurements in capacity Read/Interpret/create line graphs, bar graph and tables of data.

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Key Vocabulary

Air resistance - A force that is caused by air with the force acting in the opposite direction to an object moving through the air

Force - A push or pull upon an object resulting from its interaction with another object

Friction - The resistance that one surface or object encounters when moving over another

Gears - A toothed wheel that works with others to alter the relation between the speed of a driving mechanism (e.g. engine) and the speed of the driven parts (e.g. the wheels)

Gravity - The force that attracts a body towards the centre of the earth

Lever - A rigid bar resting on a pivot that is used to move a heavy or firmly fixed load

Mass - The weight measured by an objects acceleration under a given force or by the force exerted on it by gravity

Pull force - To draw or haul towards oneself or itself, in a particular direction

Pulleys - A wheel with a grooved rim around that changes the direction of a force applied to the cord

Push force - To move something in a specific way by exerting force

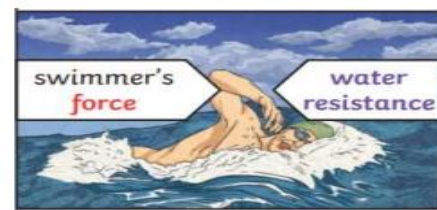
Water resistance - A force that is caused by water with the force acting in the opposite direction to an object moving through the water



KEY KNOWLEDGE

Mass is how much matter is inside an object. It is measured in kilograms (kg).

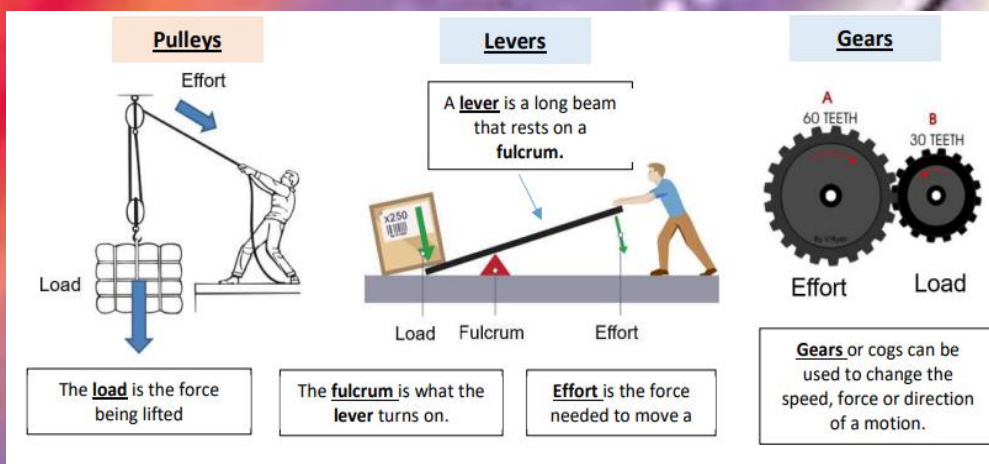
Weight is how strongly gravity is pulling an object down. It is measured in newtons (N)



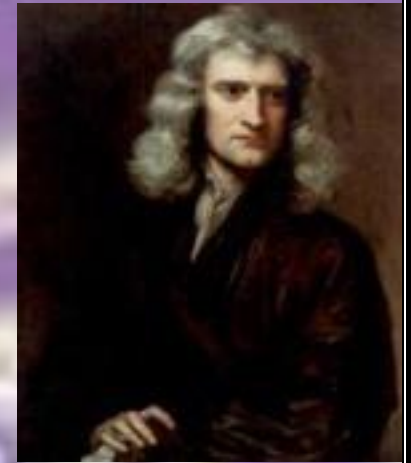
Water resistance is a type of friction caused by water pushing against any moving object.



Air resistance is a type of friction caused by air pushing against any moving object.



ISAAC NEWTON Is considered by some as one of the most important scientists in history. One of his achievements was developing the theory of gravity. It is thought he developed the theory when he saw an apple fall from a tree.



Gravity - the force that pulls things to the ground. Gravity also holds Earth and other planets in their orbits around the sun. **Friction** - friction is a force between 2 surfaces that are sliding or trying to slide across each other. Friction works in the opposite direction to which the object is moving. It slows down the moving object and also produces heat. It can be helpful in certain situations but not helpful in others. **Air resistance** - a type of friction between air and another material. Aeroplanes and cars are streamlined so that they can move through the air as easily as possible. **Water resistance** - a type of friction between water and another material. When you go swimming there is friction between your skin and the water particles.

