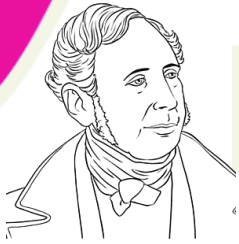




Year One: Physics – Seasonal Changes Knowledge Organiser



The Big Idea

Each year, the UK has four different seasons. Each season has different weather patterns and temperatures, which affect the lives of plants and animals in different ways.

Key Scientist: Robert Fitzroy

Order seasons with months of the year

Britain has four seasons: spring, summer, autumn and winter. These seasons occur in a cycle and consist of months of the year.



Seasonal events and changes



As the seasons change, so does the temperature, weather and the types of plants and animals that we can find.

Plants through the seasons

Some trees and plants change with the seasons. In spring, leaves and flowers begin to grow and are in full bloom in summer. In autumn, leaves change colour and fall from trees, with many plants stopping growing in winter.



How much daylight is in each season?

Daylight length changes during the year, with longer days in summer and shorter days in winter.



Type of weather for each season



Each season has different weather. Snow can fall at any time of the year as long as it is cold enough.

Scientific enquiry: Is the weather the same every day?



Vocabulary

season

spring

summer

autumn

winter

Year Two: Biology – Living things and their Habitats

Knowledge Organiser



The Big Idea



All living things live in habitats, places which give them everything that they need in order to survive (food, drink, shelter etc.). All living things must feed. Some create their own food (plants), whilst others eat each other (predators eat prey) in food chains.

Scientific enquiry: Is everything on Earth alive?

Some things are living, some are dead and some have never been alive.



MRS GREN



All living things must have seven things: MRS GREN.

Movement
Respiration
Sensitivity
Growth
Reproduction
Excretion
Nutrition

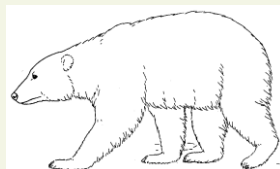
Explain how some animals are adapted to their habitats

All creatures need air, food, shelter and water in order to survive. They get these from the habitats in which they live. Habitats can be very different.

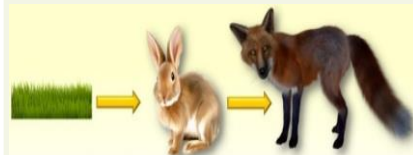


Identify and name some plants and animals in the local area

Living things live in habitats to which they are suited, for example, a polar bear has thick fur- this keeps it warm in a cold habitat.



Create and describe a basic food chain



Grass Rabbit Fox

Animals get their food from plants and other animals. Food chains show the order in which living things eat one another.

Vocabulary

habitat

prey

predator

food chain

human

Year Three: Chemistry – Rocks

Knowledge Organiser



The Big Idea

Rocks are formed in the Earth's crust and they have different properties. Soils are formed from the breakdown of rocks and decaying organic matter. Fossils are formed when dead animals are trapped within rocks.



Key Scientist: Mary Anning

Observe and describe the properties of rocks



Rocks have different properties. These include their physical properties, permeability, density and durability.

Scientific enquiry:
Are all rocks made in the same way?

There are three types of rocks – sedimentary, igneous and metamorphic and these are all formed differently.



Rock properties and their uses



The properties of different rocks make them useful for different uses such as building (example: roof tiles). Rocks can be natural or man-made. Crystals and jewels such as diamonds are types of rocks.

How fossils are formed

A fossil is the imprint of a dead plant or animal formed millions of years ago. There are 4 steps to the fossilization process.



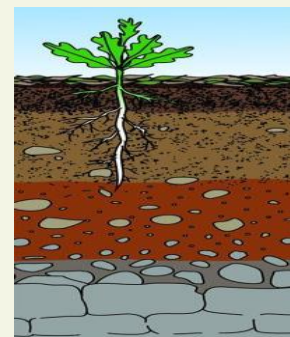
Biography: Mary Anning



Mary Anning was famous for her work with fossils. Her knowledge of fossils helped us to understand more about prehistoric animals, including dinosaurs.

What soils are made from

Different types of soils have different properties. There are 5 layers of soil: humus, topsoil, subsoil, weathered rock fragments and bedrock.



Vocabulary

permeable

impermeable

soil

fossil

sedimentary rocks

igneous rocks

metamorphic rocks

Year Four: Physics – Electricity

Knowledge Organiser

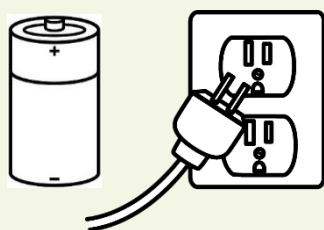


The Big Idea



Electricity is the flow of electrons within materials. As they move, they generate electrical power which can be used to make things work. Electricity flows through closed / complete circuits, using wires to connect a power source to electrical components such as bulbs.

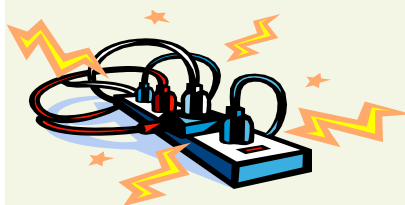
Methods of powering electrical appliances



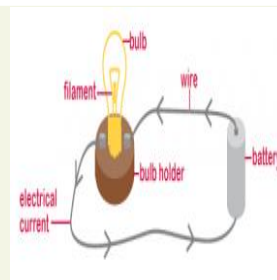
Different common appliances are powered by electricity, either by using batteries or mains power.

Situations when electricity can be dangerous

Electricity can be dangerous if used incorrectly. Dangers include: overloaded or damaged plug sockets, exposed wires, trip hazards, electricity near water and metal objects.



Creating a simple circuit



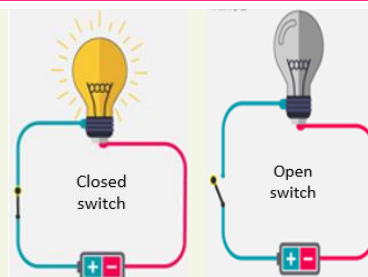
Circuits are complete loops, containing different components such as cells (batteries), wires, bulbs, switches and buzzers.

Scientific enquiry:
Does electricity flow easily through all objects?

Electricity flows through conductors but does not flow through insulators.



How an electrical switch works



Switches are designed to open and close a circuit, enabling or disabling the flow of electrons.

Vocabulary

mains

electrical circuit

short circuit

electrical conductor

cell / battery

positive / negative
electrical insulator

Year Five: Physics - Forces

Knowledge Organiser



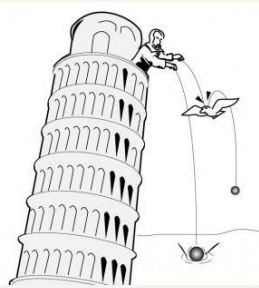
The Big Idea



Forces can move objects, change their direction of travel and their shape. Forces are pushes and pulls and can be contact forces such as friction or non-contact forces such as gravity. Friction, air and water resistance can slow the movement of objects. Simple machines such as gears, levers and pulleys can transform the direction and strength of forces. Forces are measured in Newtons (N).

Key Scientist: Isaac Newton

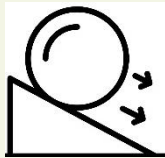
Why objects fall to Earth (gravity)



Gravity pulls objects that are the same shape downwards at the same speed, even if one is heavier than the other.

The effects of friction on different materials

Friction slows objects down and creates heat. Without friction we would not be able to walk. We move forwards by pushing our supporting feet backwards. This is why we slip on smooth surfaces such as ice.

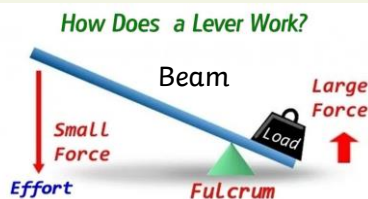


Scientific enquiry:
How does the size of the parachute affect the time it takes to fall?

Air and water resistance slow down movement.



How a lever works with real world examples

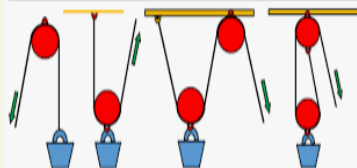


Levers are simple machines which can be used to move objects easier. The longer the beam, the less force is needed to lift the object.

How gears and pulleys work

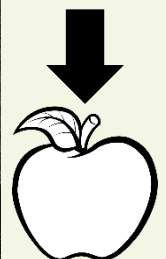
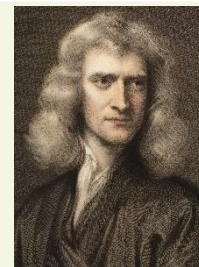
Pulleys are wheels on axils which when arranged in different ways can make lifting heavy loads easier. Gears are used to change the direction and speed of spinning axils and objects.

Types of Pulleys



Fixed Moveable Compound Block & Tackle

Biography: Isaac Newton



Sir Isaac Newton was an English mathematician and scientist. He developed Newton's law of universal gravitation and laws of motion.

Vocabulary

gravity

simple machines

air resistance

water resistance

levers

pulleys

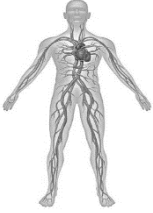
gears

Year Six: Biology – Animals including Humans

Knowledge Organiser

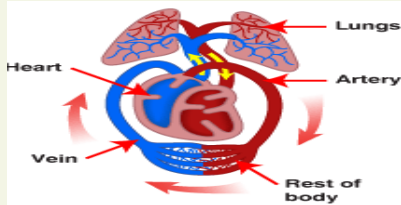


The Big Idea



The body is made up of tissues and organs, which are linked together to do particular functions. The heart and lungs are such organs, which work together as part of the circulatory (cardiovascular) system, transporting oxygen, sugar and nutrients around our bodies.

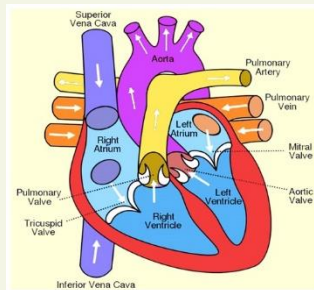
The main parts of the human circulatory system and their functions



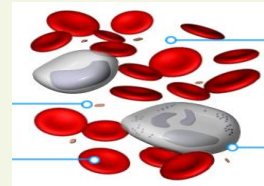
The circulatory system circulates blood through the body. This system consists of the heart, blood vessels, blood, veins, arteries, capillaries, oxygen, lungs and ribcage.

How the human heart works

The heart is a hollow muscular organ. The heart pumps blood and works by controlled contractions and the use of one-way valves.



The functions of blood and blood vessels



Blood is circulated through blood vessels to deliver oxygen to the body and to help remove carbon dioxide as part of respiration (breathing). Blood is made up of red and white blood cells, plasma and platelets.

Scientific enquiry: Is our heart rate always the same?

Cardiovascular exercises are designed to improve the fitness of the circulatory system.



How diet and exercise affect health



Your heart can be kept healthy with a well-balanced diet and exercise, as well as avoiding things that can damage it, such as smoking, drugs or foods with high cholesterol.

Vocabulary

heart

pulse (rate)
drugs

blood
carbon dioxide

blood vessels
circulatory system

lungs

oxygen