

Light: Physics

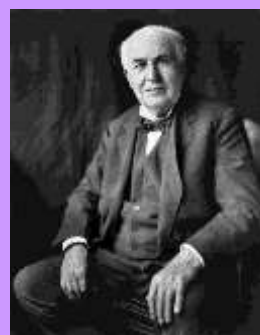


What? (key knowledge)		How does light travel and shadows	
What is light and dark?		Can light be dangerous?	Looking directly at a bright light, especially the Sun, can cause damage to the eye
What is light?	A light source is something that emits light by burning, electricity or chemical reactions		When light bounces off a surface and changes direction.
Why do we need light?	We need light so that we are able to see in the dark.	What is a reflection?	
What is darkness?	Dark is the absence of light	How are shadows formed?	When light is blocked by an opaque object, a dark shadow is formed.
How do we see objects?	Light reflects off the object and enters our eyes		
How does light travel?	Light travels in straight lines.	Are all shadows the same?	Shadows can appear different sizes dependent on where the light source is.

angle	the direction from which you look at something
dark	the absence of light
emits	to emit a sound or light means to produce it
light	a brightness that lets you see things
opaque	if an object or substance is opaque, you cannot see through it
reflects	sent back from the surface and not pass through it
shadows	a dark shape on a surface that is made when something stands between a light and the surface
source	where something comes from
translucent	if a material is translucent, some light can pass through it
transparent	If an object or substance is transparent, you can see through it



Influential Scientist: Thomas Edison

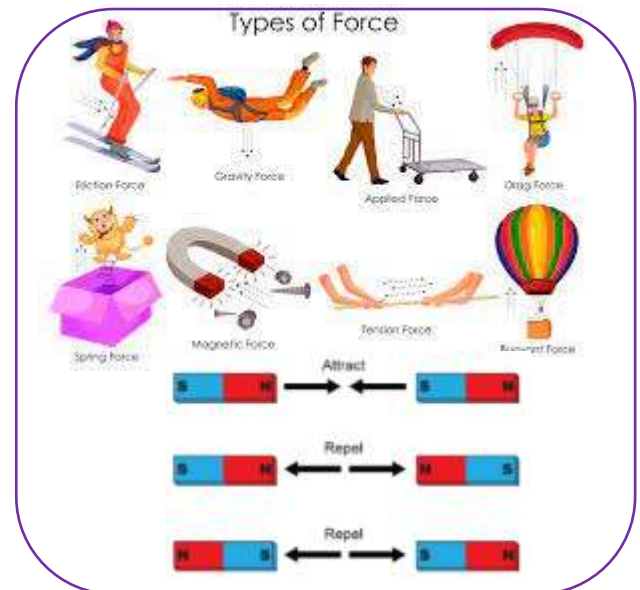


He is best known for inventing 'domestic' lightbulbs to go in houses

Forces and Magnets: Physics

What? (key knowledge)		Magnets		
Forces		How do magnets work?	Magnets produce an area of force around them called a magnetic field which attract or repel objects	
What are forces?	Forces are pushes and pulls		Which materials are magnetic?	
What do forces do?	They make objects start to move, speed up, slow down or even stop.			Objects that are magnetic, are attracted to magnets. Iron and steel are magnetic.
What is friction?	Friction is a force that holds back the motion of an object			What are the magnetic poles?
How do different surfaces affect the motion of an object?	Some surfaces create more friction than others which means that objects move across them slower	How do poles work?	The ends of a magnet are called poles. One end is called the north pole and the other end is called the south pole. Opposite poles attract, similar poles repel	

attract	causes an object to move towards another object
friction	a force between two surfaces that are sliding, or trying to slide, across each other
force	the pulling or pushing effect that something has on something else
gravity	the force which causes things to drop to the ground
magnet	a piece of iron which attracts magnetic materials towards it
motion	changing position or moving from one place to another
opposite	something which is completely different in a particular way
pull	move something towards you
push	move something away from you
surface	the flat top part of something or the outside of it



Influential Scientist: Isaac Newton



The famous story of an apple falling to the ground from a tree illustrates how Newton's work on gravity was inspired by things he observed in the world around him.




Rocks: Geology



What? (key knowledge)		Geology	
Rocks		How are metamorphic rocks formed?	When some igneous and sedimentary rocks are heated and squeezed (pressured), they form metamorphic rocks.
What are the different types of rock?	The three types of naturally formed rock are igneous, sedimentary and metamorphic.	What are fossils?	Fossils are the remains of prehistoric life.
How are igneous rocks formed?	When molten magma cools, igneous rocks are formed.	What do fossils show?	Fossils tell us about the Earth and about life that existed hundreds of thousands and millions of years ago.
How are sedimentary rocks formed?	Over millions of years, layers of this sediment builds up forming sedimentary rocks.	What is soil?	Soil is made from pieces of rock, minerals, decaying plants and water.


bedrock	The solid rock in the ground which supports all the soil above it.
decaying	Gradually being destroyed by a natural process.
magma	Molten rock that is formed in very hot conditions inside the earth.
mineral	Something that is formed naturally in rocks and in the earth.
palaeontology	The study of fossils as a guide to the history of life on Earth.
permeable	If a substance is permeable, something such as water or gas can pass through it or soak into it.
porous	Something that is porous has many small holes in it, which water and air can pass through
sediment	Solid material that settles at the bottom of a liquid, especially earth and pieces of rock that have been carried along and then left somewhere by water, ice, or wind.

Types of Rock

Igneous Sedimentary Metamorphic

SOIL LAYERS



ORGANIC MATTER


SURFACE SOIL

SUBSOIL

PARENT ROCK

BEDROCK

Influential Scientist:
Mary Anning



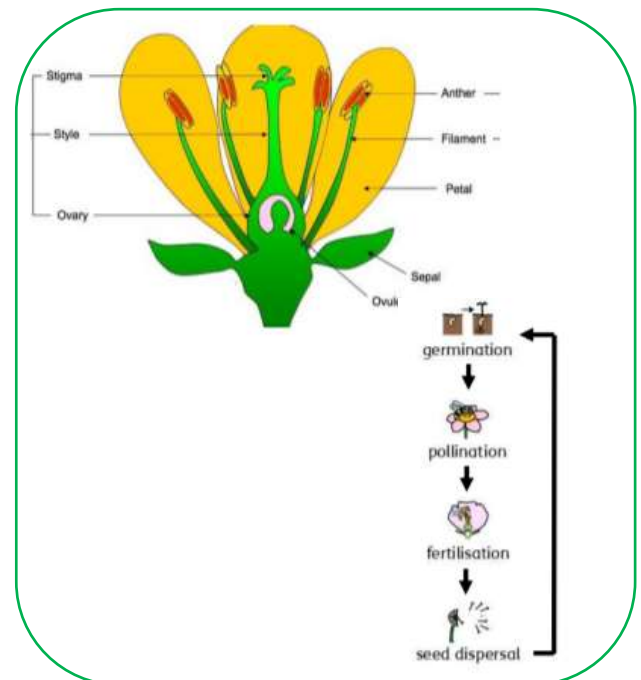
Mary Anning was a famous fossil hunter and collector from the 19th century.

Plants: Biology



What? (key knowledge)		Plants	
Parts of Plants			
What are roots?	The roots help to 'anchor' the plant in the soil. They also absorb water and nutrients from the soil for the stem to carry to the rest of the plant.	What do plants need to grow?	Air, water, sunlight, nutrients from the soil, room to grow and a suitable temperature
What is the stem/trunk?	The stem carries water and other nutrients from the roots to the rest of the plant.	How is water transported within plants?	Water is absorbed from the soil by the roots. It is then transported from the roots to the stem and then to the rest of the plant.
What are leaves?	Leaves use carbon dioxide and sunlight to make food for the plant.	How do flowers help the life cycle of flowering plants?	The flower's job is to create seeds so that new plants can grow.
What are flowers?	Flowers attract bees and other insects so that they can collect pollen to make seeds.		

absorb	soak up or take in
deciduous	a tree that loses its leaves in the autumn every year
dispersed	scattered, separated, or spread through a large area
dissect	to carefully cut something up in order to examine it
evergreen	a tree or bush which has green leaves all year round
fertilisation	where pollen meets the ovule to form a seed
flower	brightly-coloured part of a plant
flowering	trees or plants which produce flowers
germination	when a seed starts to grow
nutrients	substances that help plants and animals to grow
ovule	a small egg
stigma	the top of the centre part of a flower which takes in pollen



Influential Scientist:

Joseph Banks



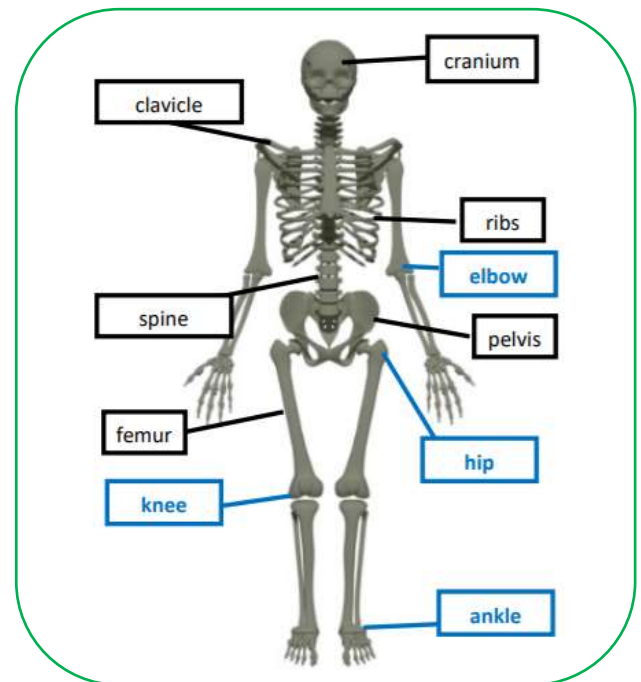
Banks took part in Captain James Cook's first great voyage from 1768 to 1771. About 80 species of plants are named after Banks.

Animals including Humans: Biology



What? (key knowledge)		Skeleton	
Nutrition		What does a skeleton do?	Provide support and shape to an animal's body, allow movement through the joints and protect organs (e.g. the skull protects the brain)
What are the different groups of nutrients?	Protein, carbohydrate, fat, vitamin, minerals, fibre		
What are carnivores?	Animals which eat meat.	What is an endoskeleton?	Skeletons which are on the inside of the bodies. These skeletons grow with the bodies.
What are herbivores?	Animals which eat plants.		
What are omnivores?	Animals which eat a mix of both meat and plants.	What is a vertebrate?	Vertebrates are animals that have a backbone.
How do we move?	Muscles contract to enable us to move.	What is an exoskeleton?	An exoskeleton is a covering that supports and protects animals.

bones	the hard parts inside your body which form your skeleton
contract	to make smaller by drawing together; shrink or make tighter
endoskeleton	the internal (inside) skeleton of an animal
exoskeleton	the protective structure covering the outside of some animals
joints	where two or more bones meet
muscles	something inside your body which connects two bones; used in movement
organs	a part of your body that has a purpose in keeping us alive
skeleton	the framework of bones in your body
tendons	a strong cord inside bodies which joins a muscle to a bone
vertebrate	a creature which has a spine
nutrition	getting the food necessary for health and growth
minerals	something which gives goodness to the body



Influential Scientist: Marie Curie



Marie Curie used the work of Wilhelm Roentgen to improve the use of X-Ray machines to help us to see inside our bodies.