Hollingworth Primary School Knowledge Organiser

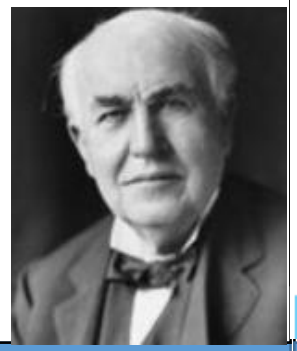
Topic: Light | **Year: 6** | **Strand: Physics**

Famous scientist

Thomas Edison

(February 11, 1847 – October 18, 1931).

He was an American inventor and entrepreneur, who invented many things. Edison developed one of the first practical light bulbs, but contrary to popular belief did not invent the light bulb.

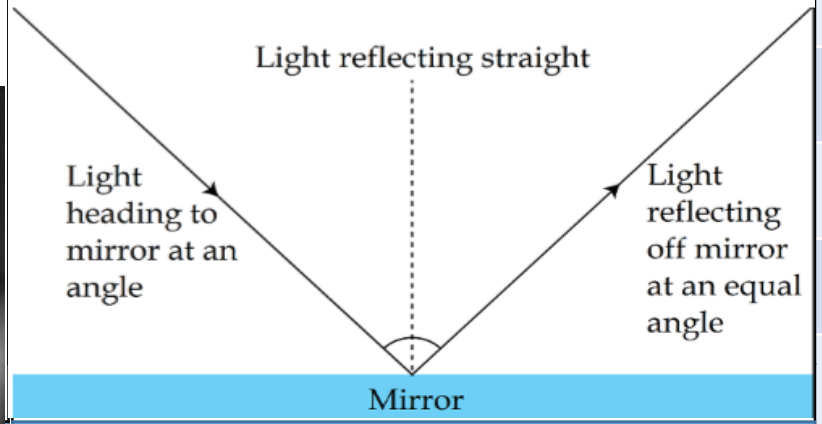


In 1879, Edison made a light bulb that lasted longer than others. Another invention, the electric power distribution network, lasted even longer.

Reflection of light

We see objects because light rays enter our eyes after bouncing off rough surfaces

When light rays hit a smooth surface the light is reflected at equal angles.



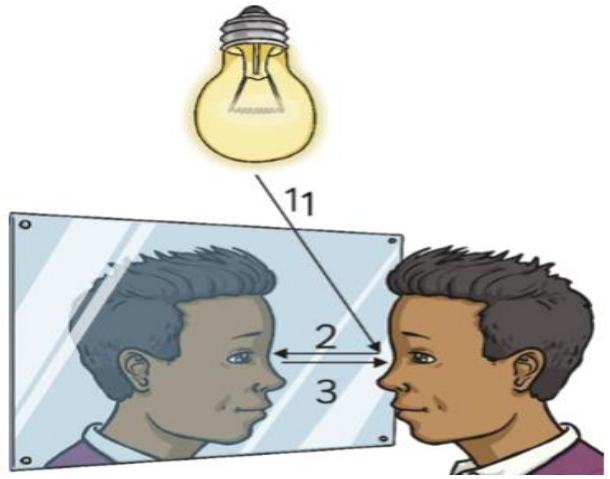
Key Vocabulary

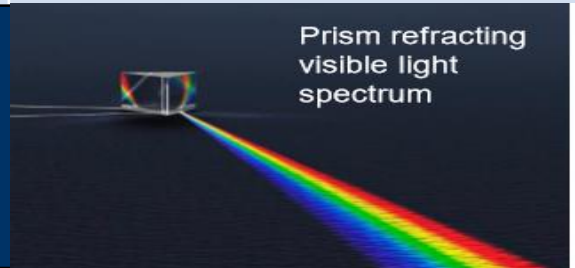
light	Light is a type of energy that makes it possible for us to see the world around us.
Source of light	The Sun and other stars, fires, torches and lamps all make their own light and so are examples of sources of light.
Reflection	Reflection occurs when a light ray hits a surface and bounces off.
Refraction	Refraction is the bending of light as it passes from one substance to another.
Shadow	A dark area or a shape produced by an object coming between rays of light and a surface.
Opaque	An opaque material does not let light through. It does not reflect light.
Translucent	A translucent material lets light pass through, but objects on the other side can't be seen clearly.
Transparent	Transparent materials allow you to see clearly through them.
Prism	A prism is a three-dimensional shape with identical ends. A prism allows us to see the visible spectrum

What should I already know?

- Recognise that they need light in order to see things and that dark is the absence of light.
- Notice that light is reflected from surfaces.
- Recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- Recognise that shadows are formed when the light from a light source is blocked by an opaque object.
- Compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets.)

How we see things





Hollingworth Primary School Knowledge Organiser

Topic: Electricity

Year: 6

Strand: Physics

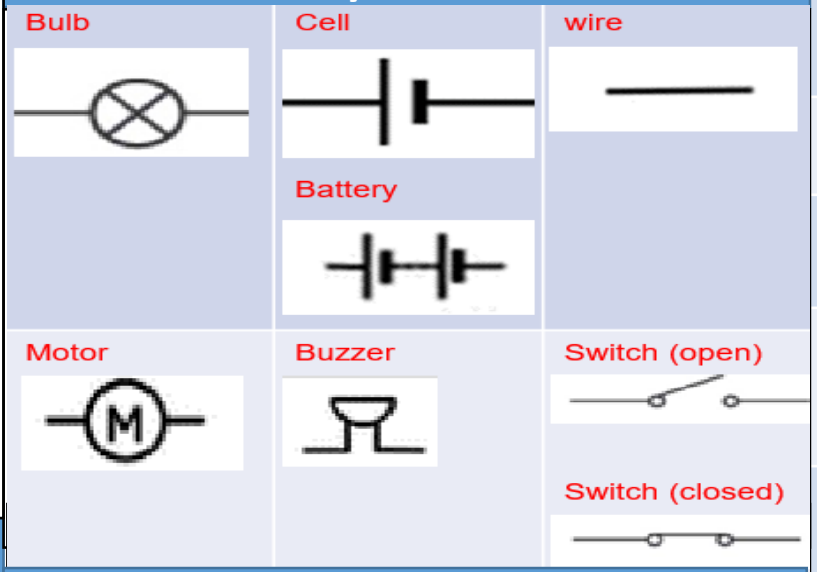
Famous scientist

Hedi Lamar

What should I already know?

- Identify common appliances that run on electricity.
- Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers.
- Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery.
- Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit.
- Recognise some common conductors and insulators, and associate metals with being good conductors.

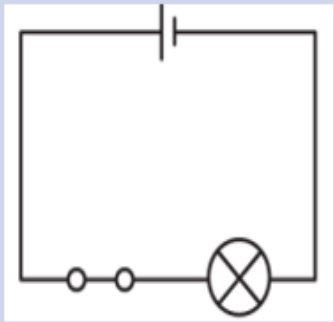
Components of a circuit and their symbols



Simple circuit diagram

These symbols can be used to create electrical circuit diagrams.

This is a simple circuit diagram



Key Vocabulary

circuit	A complete path that an electric current can flow around.
symbol	A visual picture that stands for something.
Circuit diagram	A visual representation of an electrical circuit using symbols to represent the electrical components.
Cell/ battery	A device that stores energy as a chemical until it is needed. A cell is a single unit. A battery is a collection of cells
Switch	An electrical component that can make or break an electrical circuit.
Voltage	The force that makes electricity move through a wire.
Bulb	A glass bulb which provides light by passing an electrical current through a filament.
Buzzer	An electrical device that makes a buzzing noise and is used for signalling (for example, in a burglar alarm).
Current	A flow of electricity, measured in amps.
Motor	A machine that produces motion or power for doing work.

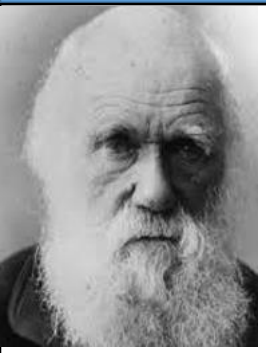
Hollingworth Primary School Knowledge Organiser

Topic: Evolution and Inheritance

Year: 6

Strand: Biology

Famous scientist



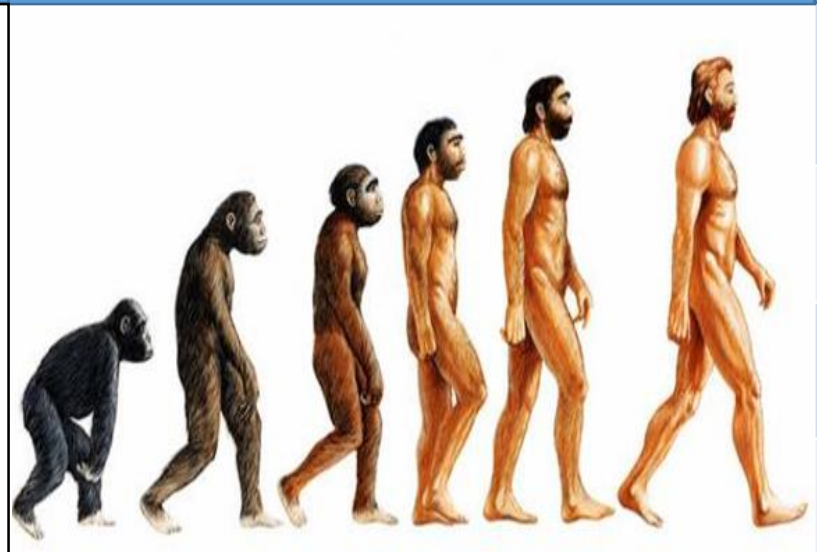
Charles Darwin (1809 – 1882) was an expert in natural history. He went on a famous sea voyage in 1831 on a ship called **HMS Beagle** and visited many places around the world, collecting animal and plant samples. The observations he made led him to his theory of evolution.

He came up with the idea that animals evolve due to having the characteristics that make them best suited to their environment. He called this **'The survival of the fittest'** or **'natural selection'.**

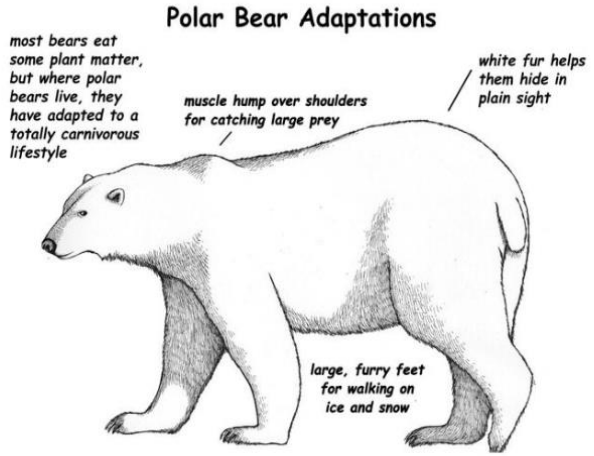
What should I already know?

- Identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- Notice that animals, including humans, have offspring which grow into adults.
- Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.
- Describe in simple terms how fossils are formed when things that have lived are trapped within rock.

Evolution



Animal Adaptations – Polar Bear



Key Vocabulary

off-spring	When living things reproduce they pass on characteristics to their offspring. All living things produce offspring of the same kind, but normally offspring are not identical to their parents.
adaptation	Adaptation is the process by which animals, plants and other living things have changed so that they better suit their habitat.
evolution	Evolution is the theory that all the kinds of living things that exist today developed from earlier types.
inheritance	When living things reproduce they pass on characteristics to their offspring. This is known as inheritance.
Genes	Genes that are passed on to you determine many of your traits, such as your hair colour and skin colour .
Selective breeding	Selective breeding is the process by which humans control the breeding of organisms in order to exhibit or eliminate a particular characteristic.
Natural selection	The process where organisms better adapted to their environment tend to survive and produce more offspring. It is now regarded as the main process that brings about evolution
Characteristics	A feature or quality belonging typically to a person, place, or thing and serving to identify them.

Hollingworth Primary School Knowledge Organiser

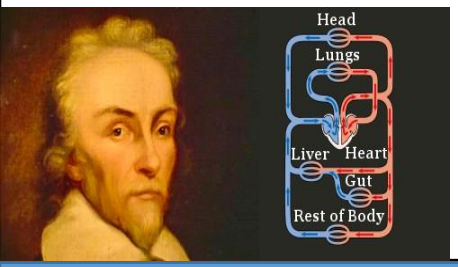
Topic: Animals Including Humans

Year: 6

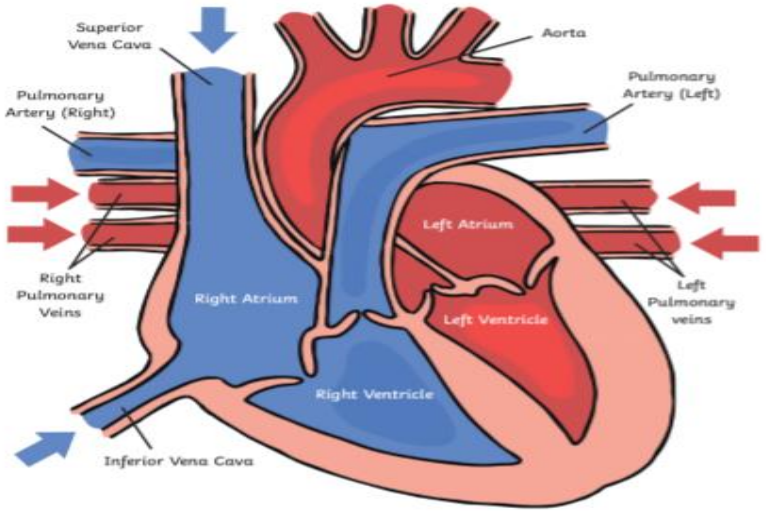
Strand: Biology

Famous scientist

William Harvey was born on April 1, 1578 in Folkstone, England. He was born into a relatively wealthy family: his father, Thomas Harvey, was a successful businessman who became Mayor of Folkstone; his mother, Joane Hawke, gave birth to nine children, of whom William was the eldest. William Harvey was the first person to correctly describe blood's circulation in the body. He showed that arteries and veins form a complete circuit. The circuit starts at the heart and leads back to the heart.



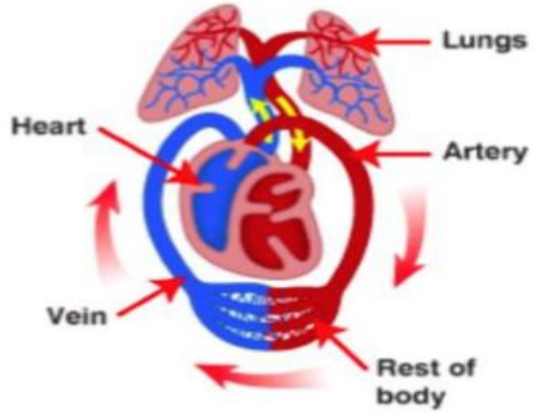
The Heart



What should I already know?

- Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
- Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.
- Describe the simple functions of the basic parts of the digestive system in humans.
- Identify the different types of teeth in humans and their simple functions.

The Circulatory System



Key Vocabulary

Circulatory System	An organ system that allows blood to circulate and transport nutrients, oxygen, carbon dioxide around the body.
heart	A muscular organ that pumps the blood through the circulatory system.
Blood vessels	Tubular structures carrying blood through the tissues and organs; a vein, artery, or capillary.
blood	The red liquid that circulates in the arteries and veins of humans and other vertebrate animals, carrying oxygen to and carbon dioxide from the tissues of the body.
arteries	Any of the muscular-walled tubes forming part of the circulation system by which oxygenated blood is taken from the heart to all parts of the body.
veins	Vessels that carry deoxygenated blood towards the heart.
capillaries	Tiny blood vessels connecting arteries to veins.
Lungs	The two spongy organs inside your chest that fill with air when you breathe.

Hollingworth Primary School Knowledge Organiser

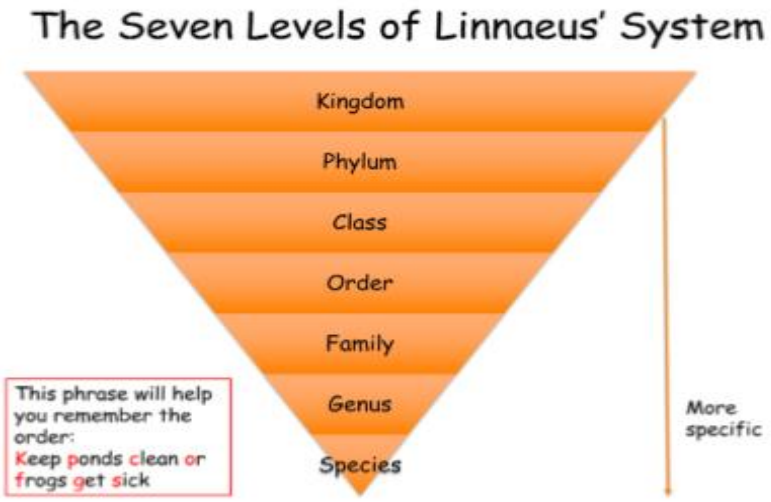
Topic: Living Things and their Habitat | **Year: 6** | **Strand: Biology**

Famous scientist

Carl Linnaeus was a Swedish scientist who believed it was very important to have a standard system of classification.
At the time he was alive, in the 1700s, there was no agreed standard method.

In 1735, he published his first edition of 'Systema Naturae', which described his system for classifying living things. Linnaeus' original system of classification classified everything in nature into a hierarchy.

Classification



What should I already know?

- Recognise that living things can be grouped in a variety of ways.
- Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment.
- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- Describe the life process of reproduction in some plants and animals.

Grouping Living Things

Animals can be put into on of two groups:
Vertebrates
Invertebrates
The two groups can be split into further, smaller groups.

Vertebrates can be split into:	mammals, birds, fish, reptiles and amphibians.
Invertebrates can be split into:	insects, arachnids, annelids, molluscs, crustaceans and echinoderms

Key Vocabulary

Micro-organisms	A living thing too small to been seen by the human eye.
invertebrate	Animals without a backbone.
vertebrate	Animals with a backbone or spinal column.
insect	A small arthropod animal that has six legs and three body parts.
molluscs	Invertebrate with an unsegmented body that can have a hard shell.
arachnid	A small invertebrate usually with eight legs.
bacteria	A single celled organism that can live anywhere.
species	A group of living things that are closely related.