Great Moor Junior School
"Learning Together"
Respect, Kindness, Tolerance, Responsibility, Co-operation

Year 6

Classifying and microorganisms

KINGDOMS

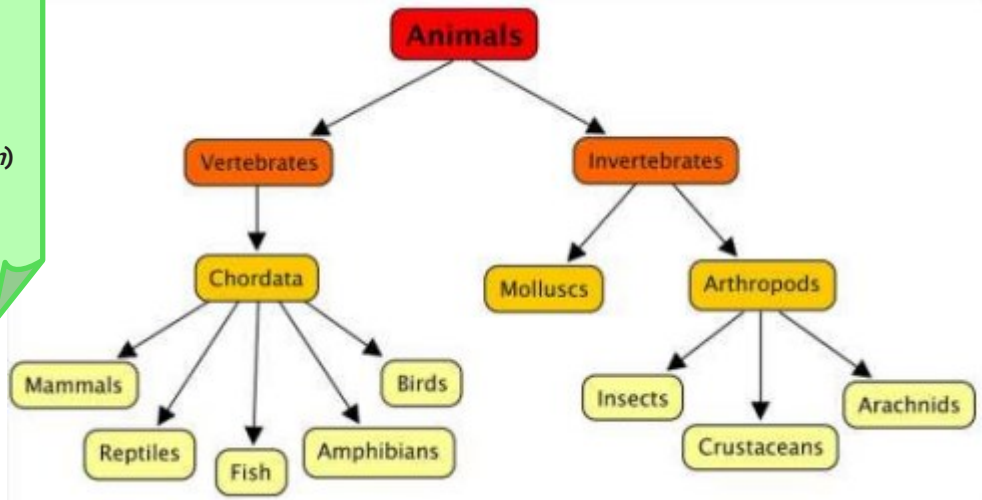
The first division of living things in the classification system is to put them into one of five kingdoms.

The five kingdoms are:

- Animals (all multicellular animals)
- Plants (all green plants)
- Fungi (moulds, mushrooms, yeast)
- Protist (*Amoeba, Chlorella* and *Plasmodium*)
- Prokaryotes (bacteria, blue-green algae)

Carl Linnaeus

Carl Linnaeus simplified the naming of living things in 1735. Names of living things were often very long so he gave them a two -part (binomial) name. It was a mixture of genus and species (and in Latin) e.g. Human was Homo Sapien.



The 7 Levels of Classification

Today we use 7 different levels of classification. These are as follows:

Kingdom (Keeping)

Phylum (Precious)

Class (Creatures)

Order (Organised)

Family (For)

Genus (Grumpy)

Species (Scientists)

In about 350 B.C. Aristotle (a Greek philosopher) classified all things into 4 main groups.

1.) In complex organisms, groups of cells form tissues (for example: in animals, skin tissue or muscle tissue; in plants, the skin of an onion or the bark of a tree).

2.) Tissues with similar functions form organs (for example: in some animals, the heart, stomach, or brain; in some plants, the root or flower).

3.) In complex organisms, organs work together in a system (the digestive, circulatory, and respiratory systems).

What are microorganisms?

- Microorganisms are very tiny organisms where a microscope has to be used to see them.
- Examples of microorganisms include dust mites, bacteria and fungi, such as mould.
- Some microorganisms can be helpful in certain situations. Others can be harmful, and their spread needs to be controlled or contained.

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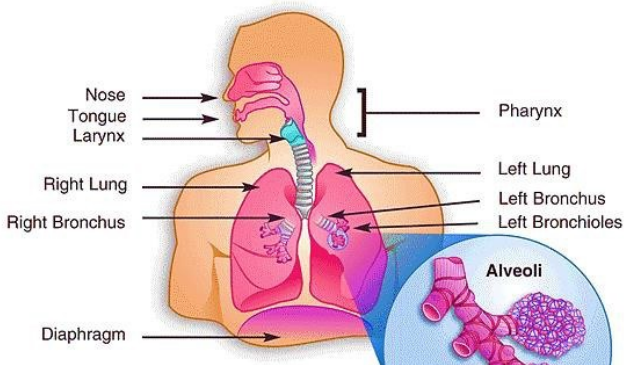
Circulatory and Respiratory System

Red blood cells are pushed around your body by your heart, which acts like a pump, beating about 100,000 times a day!

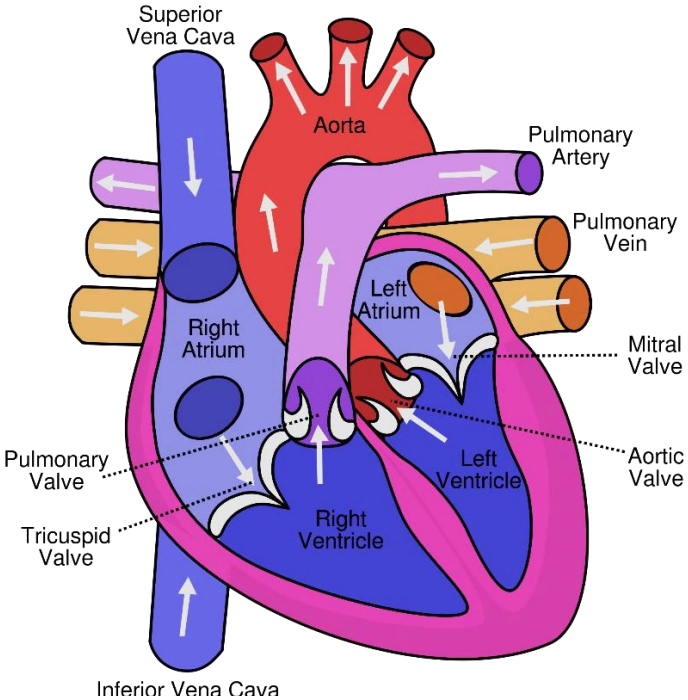
As the blood cells reach your heart, they pass through valves, which are like doors and only open one way, keeping blood pumping in the same direction.

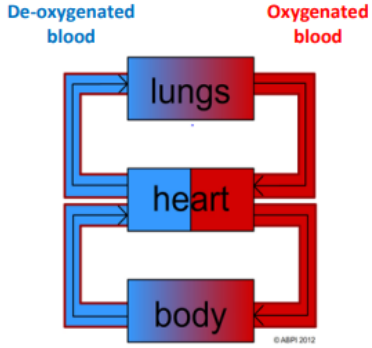
Blood is pumped to the lungs to pick up oxygen (O2) which has been inhaled (breathing in). It then goes back to the heart to get pumped to every other part of the body.

As it drops off oxygen around the body, it picks up carbon dioxide (CO2) to take back to the lungs for the lungs to exhale (breathing out).



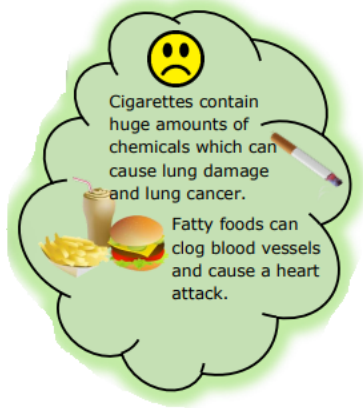
Alveoli are tiny sacs within our lungs that allow oxygen and carbon dioxide to move between the lungs and the bloodstream.





Nutrients (made from eating carbohydrates, fats and proteins) allow your body to perform daily activities. Enzymes help break food down in the digestive system and they become useable nutrients, which are absorbed into your bloodstream and passed to parts of your body to be used or to be stored.

STAYING HEALTHY



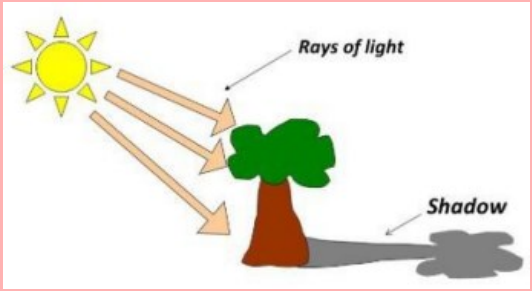
Blood Vessels

1.) Arteries – Take blood AWAY from the heart to the body organs and tissues. When blood is pumped through these, you can feel your pulse.

2.) Veins – Take blood TOWARDS the heart from body organs and tissues,

3.) Capillaries – Tiny blood vessels which take the blood into organs and tissues.

Because light travels in straight lines, when there is an opaque object blocking the light, a shadow is formed. These shadows have the same shape as the objects that cast them.



The size of a shadow changes as the light source moves.

1.) We can see objects because light reflects off them and into our eyes.

2.) Light reflects off most objects, especially colours like white and yellow.

3.) If there is no light at all (pitch-black), then there is no light to reflect and we can't see anything at all.

4.) At night you can still see a bit in the dark because the moon is reflecting light.

Rainbows are formed when the sun shines through water particles (transparent) and when white light passes through, it 'bends' and splits into the range of colours which make white light

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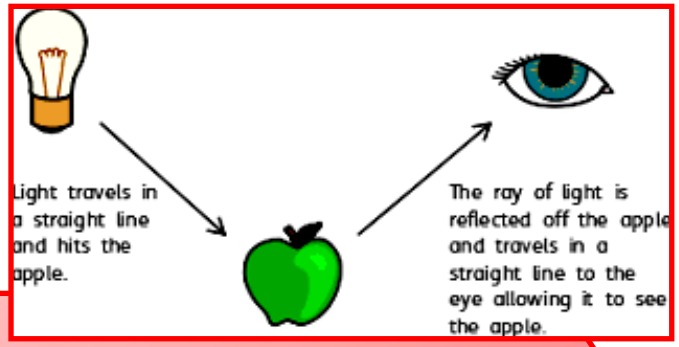
Light



Reflection and Refraction

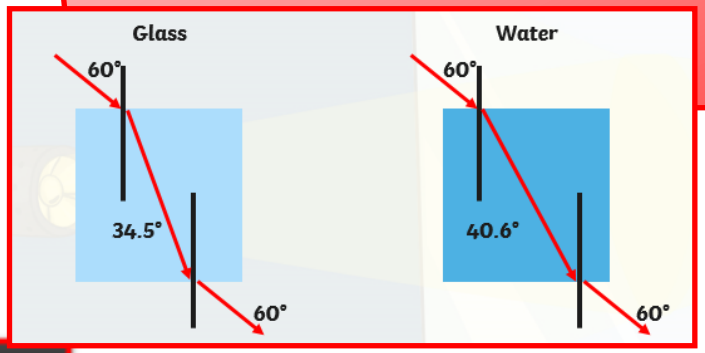
Angle of Incidence = Angle of Reflection

The reflection in a plane mirror is the same size as the object and the reflected image is as far behind the mirror surface as the object is in front.

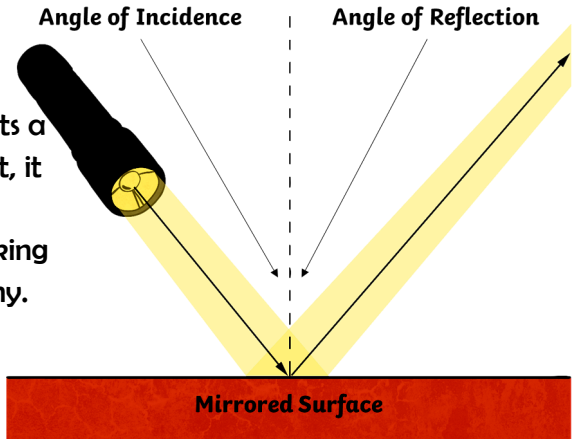
Completely smooth surfaces like a mirror will reflect light in a specific direction but rougher surfaces scatter light in many different directions.

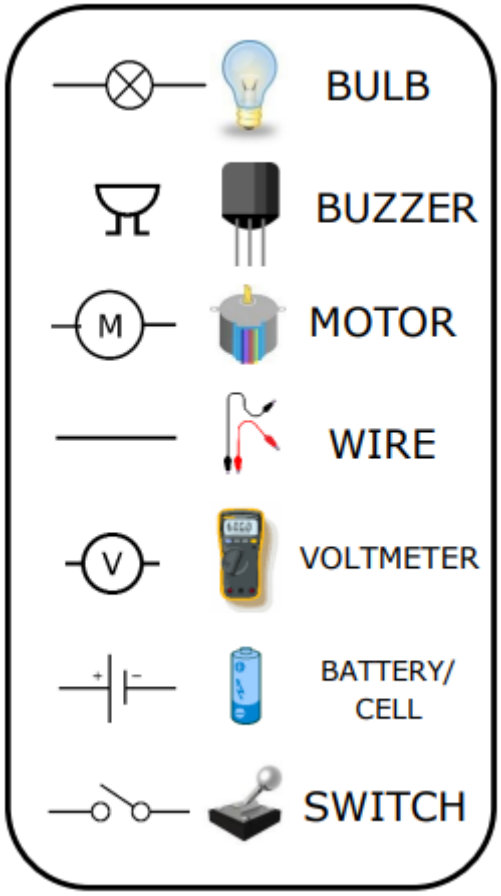
Refraction = the bending of light rays

Refraction happens as the rays travel at a slightly different speed. When they enter a more dense medium e.g. water - the ray slows down and when they enter a less dense medium e.g. air - the rays speed up.



When light hits a smooth object, it bounces off (reflects) making it appear shiny.





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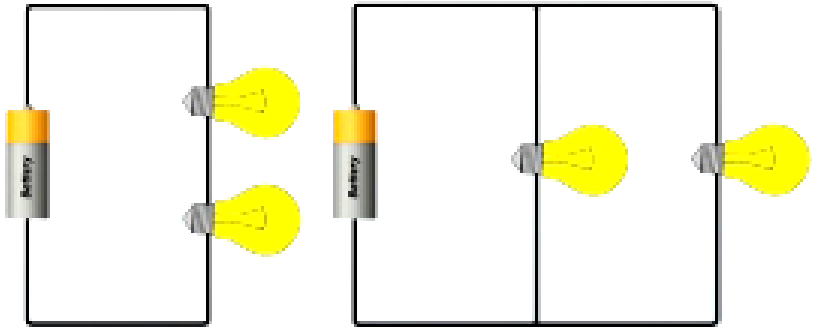
Electricity

Types of Circuits



series parallel

DANGER!

Water is an excellent electrical conductor. It is very important to keep all electrical appliances away from water and you should not have any electrical appliances in the bathroom.

Simple circuit variations

The bulb will be dimmer if resistance is increased. Resistance can be increased by:

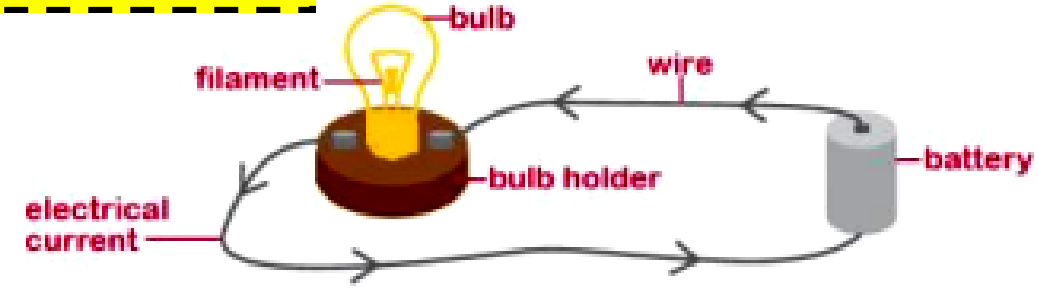
1. Having longer wires
2. Increasing the number of devices e.g. bulbs.

The bulb will be brighter if you decrease resistance and increase the current by:

1. Adding more batteries
2. Having a battery with a higher voltage.

Common Electrical Hazards

1. Overloading a plug socket
2. Exposed wires
3. Damaged wall sockets
4. Wires as trip hazards
5. Placing metal into electrical appliances
6. Electrical appliances or wires near water



Fossils provide information about living things from the past.

How are fossils formed and what do they tell us about animals and plants that used to inhabit the earth?

Fossils are the impressions of the remains of prehistoric animals or plants embedded in rock and preserved in petrified form.

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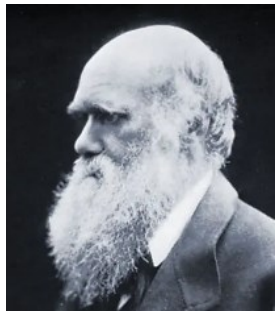
Evolution and Inheritance

Charles Darwin

Charles Robert Darwin (12 February 1809 – 19 April 1882) was an English born evolutionary biologist, naturalist and geologist who was best known for his contributions to the science of evolution.



What was Darwin's theory of evolution?

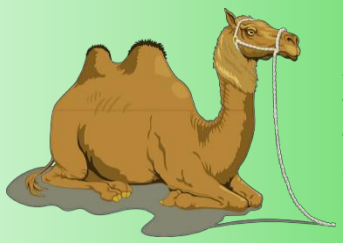
The theory of evolution by natural selection (first formulated in Darwin's book "On the Origin of Species" in 1859) is the process by which organisms change over time as a result of changes in inheritable physical or behavioural traits.

Question: What is adaptation?

Answer: A change in a plant or animal's body to suit its location which can evolve over thousands of years in the most efficient way. If they don't adapt, then they may not survive.

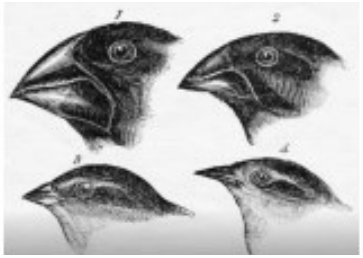
A cactus stores water to help keep it alive in the desert. It also has spikes to protect itself from attack.

A polar bear has adapted to camouflage itself against white snow/ ice so it can hunt without being seen.



A camel has humps of fat storage to use up for energy in the dry desert when there is a shortage of food.

Darwin observed that there were many forms of finches that had different beak sizes and shapes. Once he considered the food sources of each finch, he noted the reason for these adaptations.



Evolution means change over time. It is the reason we have so many species on earth. It happens when there is competition to survive (natural selection) and through differences within a species caused by inheritance and mutations.

Inheritance is when something is passed on to the next generation. Offspring are not identical to their parents and some characteristics are inherited (carried in offspring from parents) and other differences are new in the offspring – these are called mutations