Science Knowledge Organisers

Year 7 PC1 Baseline (September Exam)

Kettering Science Academy

What is a 'knowledge organiser'?

A knowledge organiser is simply a collection of the all of the information which your teacher would like you to be able to **recall** from a particular topic. That means that it **does not have everything on it** for a unit of study but it does have **the most essential things to learn.**

A knowledge organiser has lots of facts and definitions on it. Did you know that there is as many new words in studying science as there is in studying a language?

A knowledge organiser does **not develop skills**, so good revision will involve **lots of practice questions** as well as learning the content of these organisers.

What do I do with it?

For most of us, the first thing that we learned at school in reception was our phonics sounds. We learned them by repetition – seeing them again and again until the association between the sound and the image stuck. We need to do the same thing with these knowledge organisers!

Retrieval Practice

A key part of learning anything is the act of trying to remember. In class, your teacher will be helping you to do this by asking lots of questions and setting quizzes. **The more often you try to remember something the more likely you are to remember it**. With knowledge organisers you can achieve the same thing at home.

Why are we doing this?

Research has shown that **the more you know** the **more you can learn.** By being able to recall the facts, you are able to understand more complicated ideas because you **already know what the key words mean.** You will also already have a set of ideas in your mind that the new ideas can connect to (this is often referred to as a **schema**).

What are the best techniques for memorising using a knowledge organiser?

READ COVER WRITE

Make sure you are working somewhere quiet and that you have something to write with and some paper. Focus on learning on part of the knowledge organiser only, for example box one. Read through it carefully several times. When you think you've got it, cover over the knowledge organiser and write it all down. Then check what you've been able to remember. Read the bits that you could not recall, cover and write again.

TEST ME

Once you have learned the sections, its time to see if you can remember larger amounts.

Ask a friend or family member to test you on the content of the knowledge organiser page. They don't need to be experts – only to say whether you have remembered it correctly.

TEST EACH OTHER

If you are revising with class mates, testing each other is great. By doing this you are thinking about what you need to know when you are answering questions but also when you are checking to see if your class mate is right. This works well on video calls!

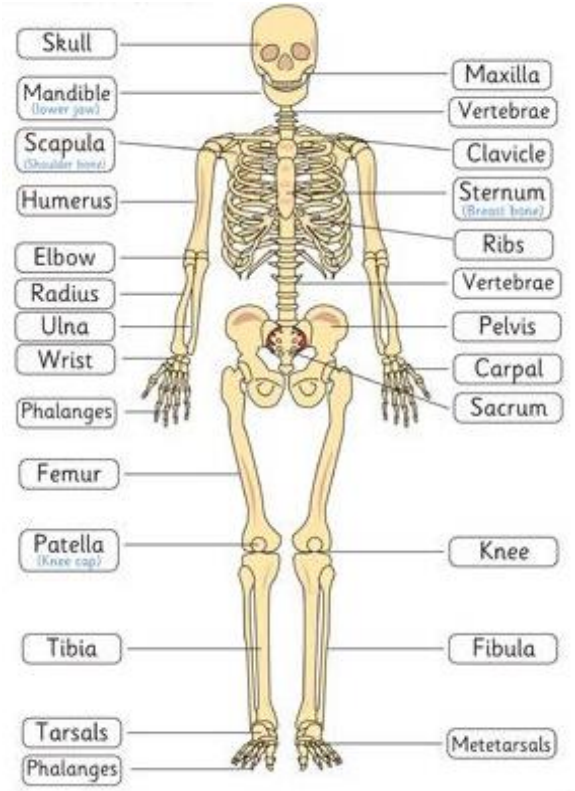
MAKING FLASH CARDS

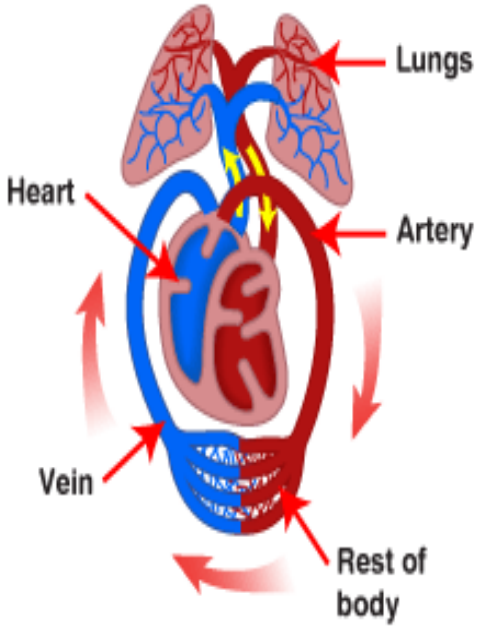
Some students find making flash cards really helps. You are thinking about what needs to be learned as you write! But don't fall into the trap of writing them and never using them! Once written they should be used regularly – you can test yourself with them or test each other!

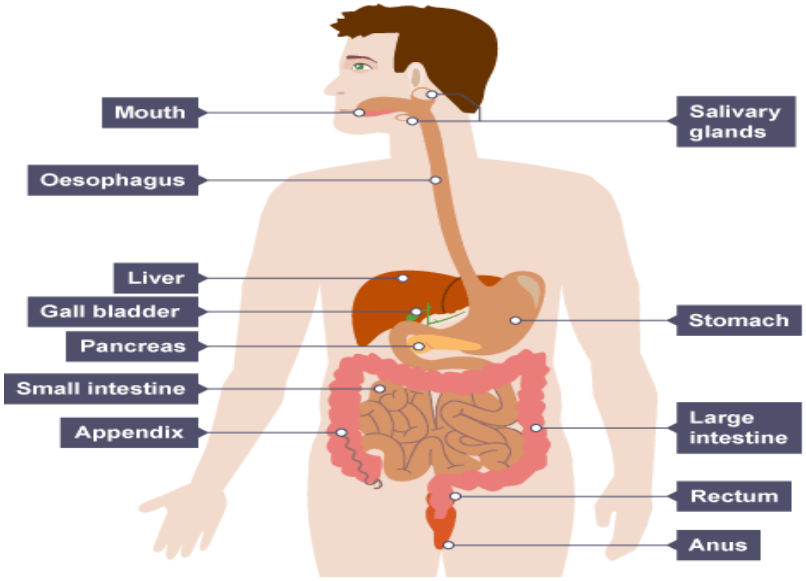
Spaced Learning

All of the techniques work best when they are done **little and often**. Aim to repeat something you have learned a week – studies have shown that once you learn something, if you see it again after a week recall is better long term. Then again after a month… and so on.

Animals







Key Vocabulary

Arteries – Muscular-walled tubes that transport blood from the heart to other parts of the body

Blood – Red liquid that circulates in arteries and veins, carrying oxygen to and carbon dioxide from tissues of the body

Blood vessel – A tubular structure carrying blood through the tissues and organs

Bones – Hard whitish tissue making up the skeleton in humans and other vertebrates

Circulatory system – The system that circulates blood through the body, including the heart, blood vessels and blood

Heart – A hollow muscular organ that pumps the blood through the circulatory system

Lungs – Pair of organs situated within the ribcage where oxygen can pass into the blood and carbon dioxide be removed

Muscles – A band or bundle of fibrous tissues that have the ability to contract, producing movement in or maintaining positions of parts of the body

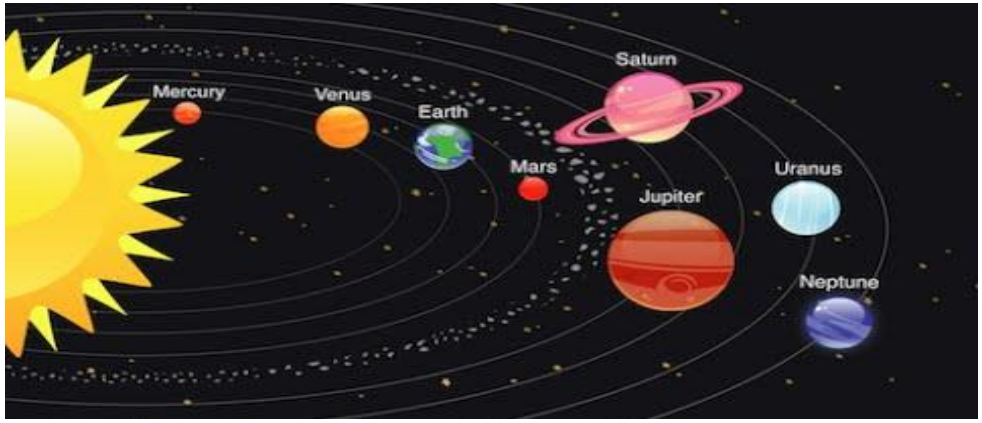
Nutrients – A substance that provides nourishment essential for the maintenance of life and for growth

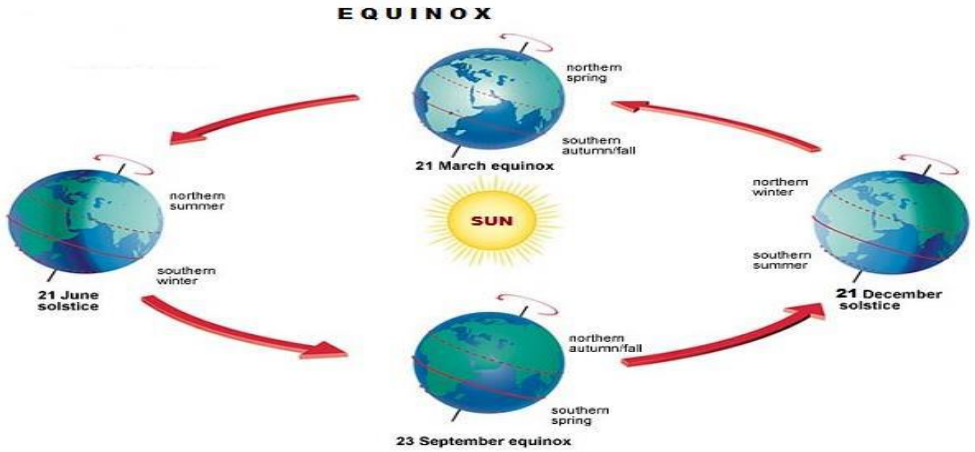
Organs – Part of an organism that is typically self-contained and has a specific vital function (e.g. the heart and lungs)

Veins – Tubes forming part of the blood circulation system of the body, carrying mainly oxygen-depleted blood towards the heart

Vitamins – Organic compounds essential for normal growth and nutrition

Earth and Space





Key Vocabulary

Asteroid – A small rocky body orbiting the sun

Axis – An imaginary line about which a body rotates

Celestial – Positioned in or relating to the sky, or outer space as observed in the astronomy

Day – A twenty-four hour period, from one midnight to the next, corresponding to a rotation of the earth on its axis

Dwarf planet – A celestial body resembling a small planet but lacking certain technical criteria to be classed as a planet e.g. Pluto

Geocentric – Where people believed the earth was at the centre of the solar system

Heliocentric – Representing the sun as the centre of the solar system, the modern view of the solar system

Moon – A natural satellite of any planet

Night – The period from sunset to sunrise in each twenty-four hours

Orbit – The regularly repeated oval course of a celestial object around a star or planet

Planet – A celestial body moving in orbit round a star

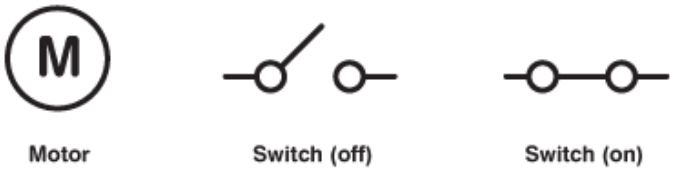
Rotation – The action of rotating about an axis or centre

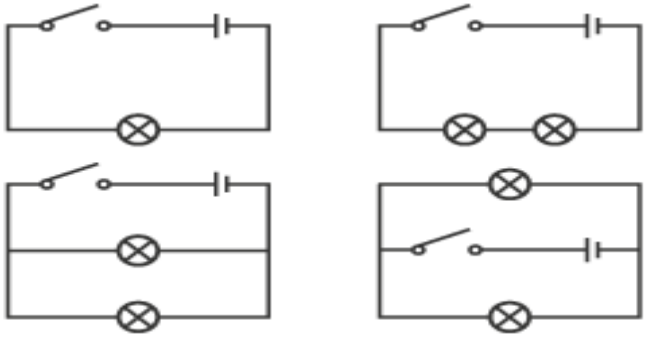
Solar system – The collection of eight planets and their moons in orbit round the sun

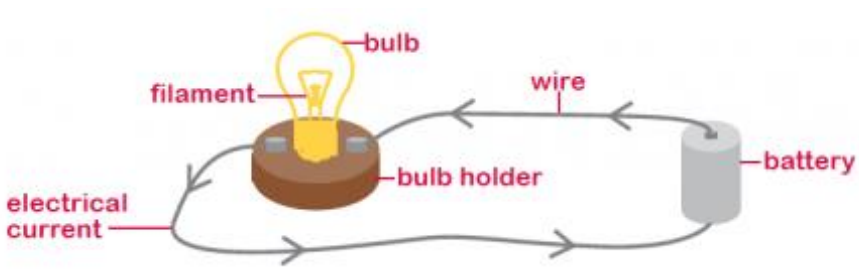
Star – A fixed luminous point in the night sky which is a large, remote body like the sun

Sun – The star round which planets orbit

Electricity







Key Vocabulary

Battery – A container consisting of one or more cells where chemical energy is converted into electricity and used as a source of power

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

Cell – A device containing electrodes that is used for generating current

Circuit – A complete and closed path around which a circulating electric current can flow

Conductor - A material or device which allows heat or electricity to carry through

Current – A flow of electricity which results from the ordered directional movement of electrically charged particles

Electricity – A form of energy resulting from the existence of charged particles

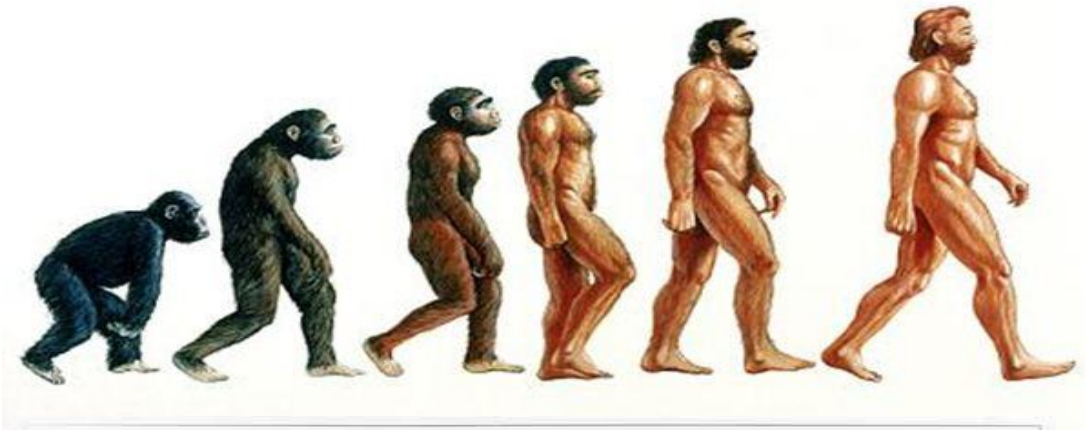
Filament – A conducting wire or thread with a high melting point that forms part of an electric bulb

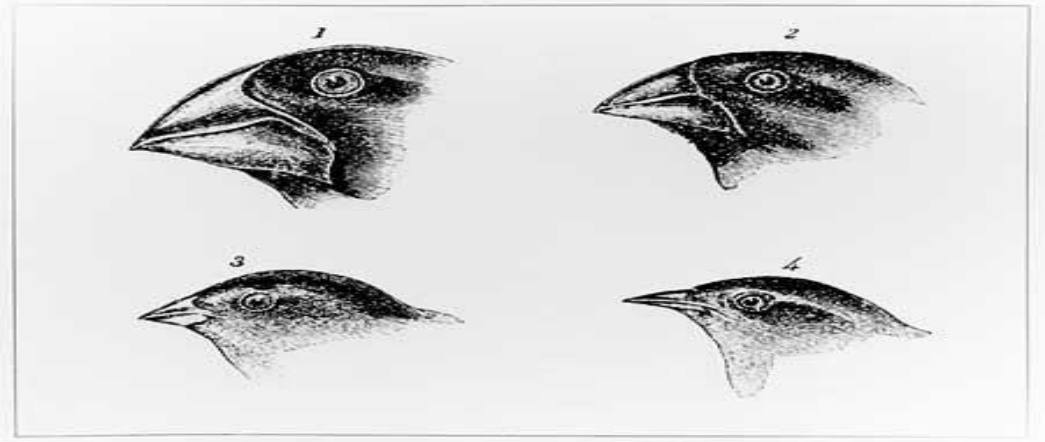
Motor – A machine powered by electricity that supplies motive power for a vehicle or other moveable device

Switch – A device for making and breaking the connection in an electric circuit

Voltage – An electrical force that makes electricity move through a wire, measured in volts

Evolution





Key Vocabulary

Adaptation – The process of change so that an organism or species can become better suited to their environment

Body fossil – Preserved remains of the body of the actual animal or plant itself

Breeding – The mating and production of offspring by animals

Environment – The surroundings or conditions in which a person, animal, or plant lives

Evolution – The process by which different kinds of living organism are believed to have developed from earlier forms during the history of the earth

Fossil – The remains or impression of a prehistoric plant or animal embedded in rock and preserved

Inherit – To gain a quality, characteristic or predisposition genetically from a parent or ancestor

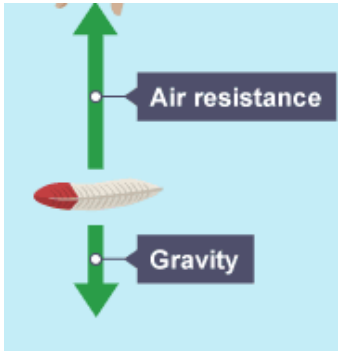
Offspring – A person's child or children/ an animal's young

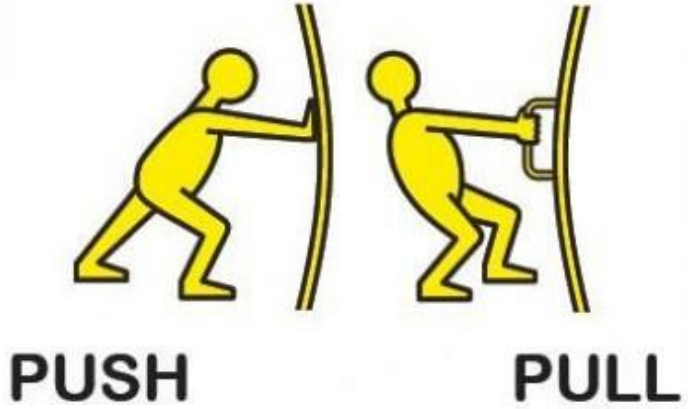
Reproduction – The production of offspring by a sexual or asexual process

Selective breeding – The process by which humans use animal breeding and plant breeding to develop selective characteristics by choosing particular animals and plants

Trace fossil – Indirect evidence of life in the past such as the footprints, tracks, burrows, borings and waste left behind by animals

Forces





Balanced Force

Unbalanced Force

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

Levers – 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

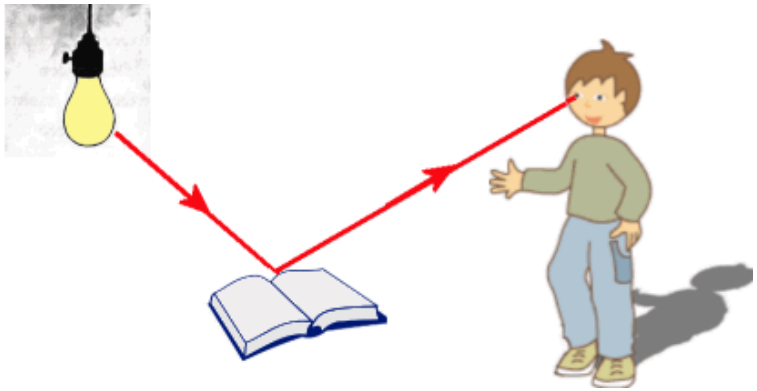
Pull force – To draw or haul towards oneself or itself, in a particular direction

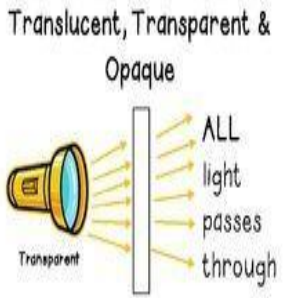
Pulleys – A wheel with a grooved rim around that changes the direction of a force applied to the cord

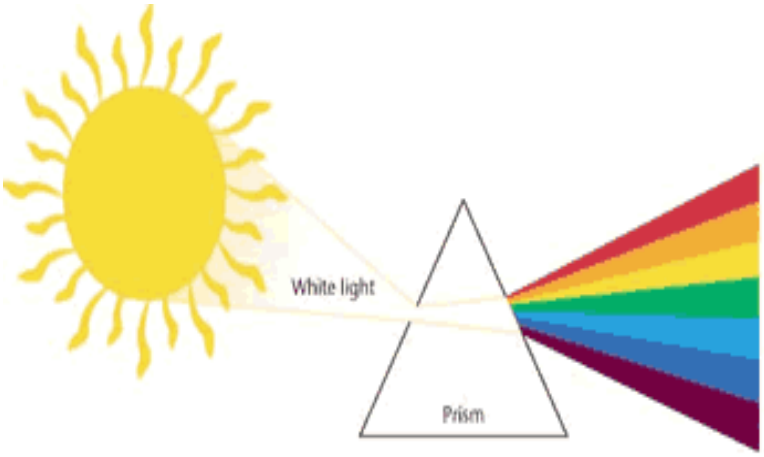
Push force – To move something in a specific way by exerting force

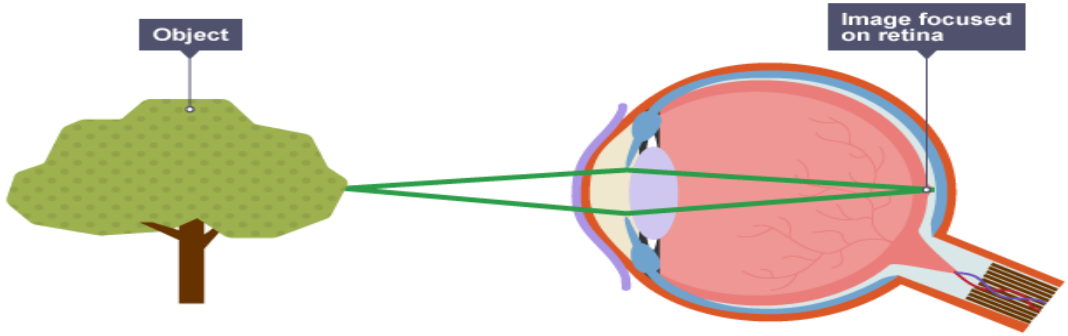
Water resistance – A force that is caused by water with the force acting in the opposite direction to an object moving through the water

Light









Key Vocabulary

Eyes – Globular organs of sight in the head of humans and vertebrate animals

Filter – Pass through a device to remove unwanted material (liquid, gas, light or sound)

Light – The natural agent that stimulates sight and makes things visible

Light source – Something that provides light, whether it be a natural or artifical source of light (e.g. the sun, a torch)

Periscope – An apparatus consisting of a tube of attached to a set of mirrors or prisms through which an observer can see things that are otherwise out of sight

Rainbow – An arch of colours visible in the sky, caused by the refraction and dispersion of the sun's light by rain or other water droplets in the atmosphere

Reflection – The throwing back by a body or surface of light, heat or sound without absorbing it

Refraction – The bending of light as it passes from one substance to another with the bending caused by the difference in density between two substances

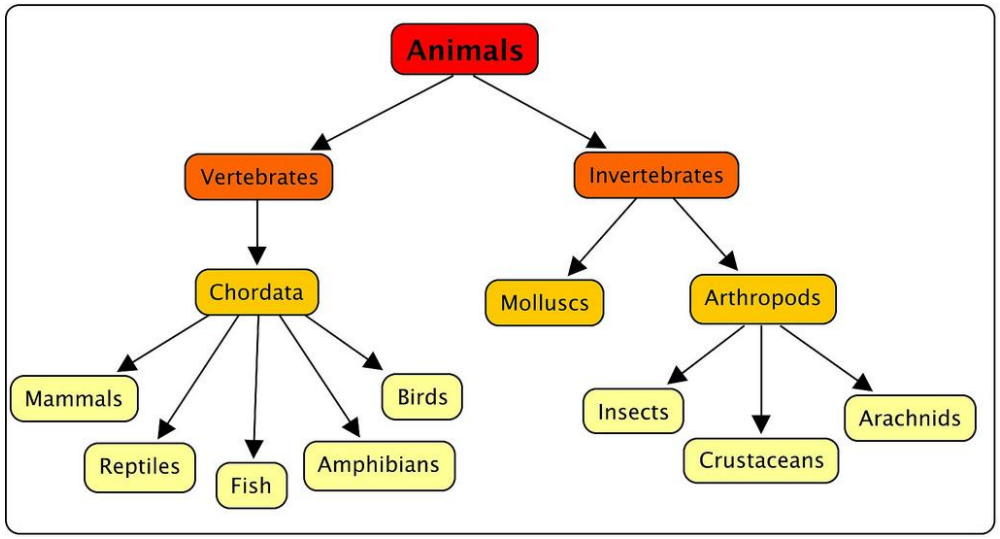
Shadow – A dark area or shape produced by a body coming between rays of light and a surface

Spectrum – A band of colours, as seen in rainbows, produced by separation of the components of light by their different degrees of refraction

Living Things

Domain	Bacteria	Archaea	Eukarya			
Kingdom	Bacteria	Archaea	Protista	Fungi	Plantae	Animalia
Example						
Characteristics	Bacteria are simple unicellular organisms.	Archaea are simple unicellular organisms that often live in extreme environments.	Protists are unicellular and are more complex than bacteria or archaea.	Fungi are unicellular or multicellular and absorb food.	Plants are multicellular and make their own food.	Animals are multicellular and take in their food.

Classification



Key Vocabulary

Amphibian – A cold-blooded vertebrate animal that compromises frogs, toads, newts, salamanders and caecilians

Annelid – A segmented worm

Arachnid – An animal that has eight legs and a body formed of two parts

Bird – A warm-blooded egg-laying vertebrate animal distinguished by the possession of feathers, wings, a beak and typically able to fly

Crustaceans – Mostly live in water with a hard shell and segmented body

Habitat – The natural home or environment of an animal, plant or other organism

Insect – A small animal that has six legs and generally one or two pairs of wings

Invertebrate – An animal lacking a backbone

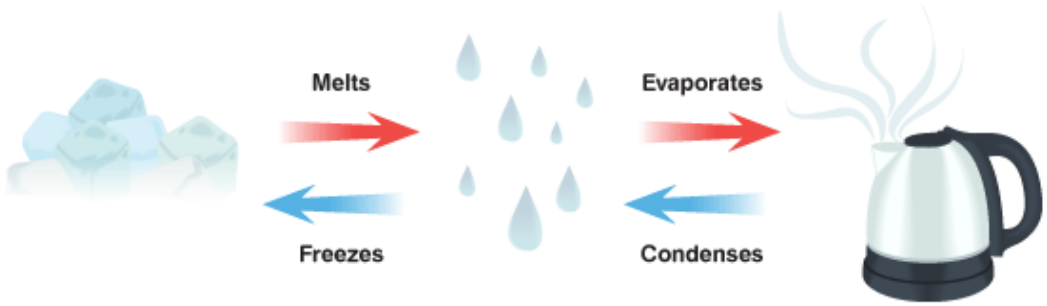
Mammal – A warm-blooded vertebrate animal, distinguishable by the posession of hair or fur, females secreting milk for young and typically giving birth to live young

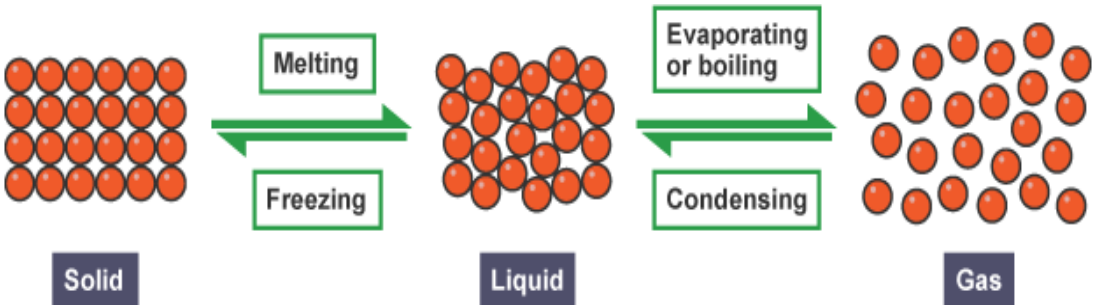
Microorganism – A microscopic organism, especially a bacteria, virus or fungus

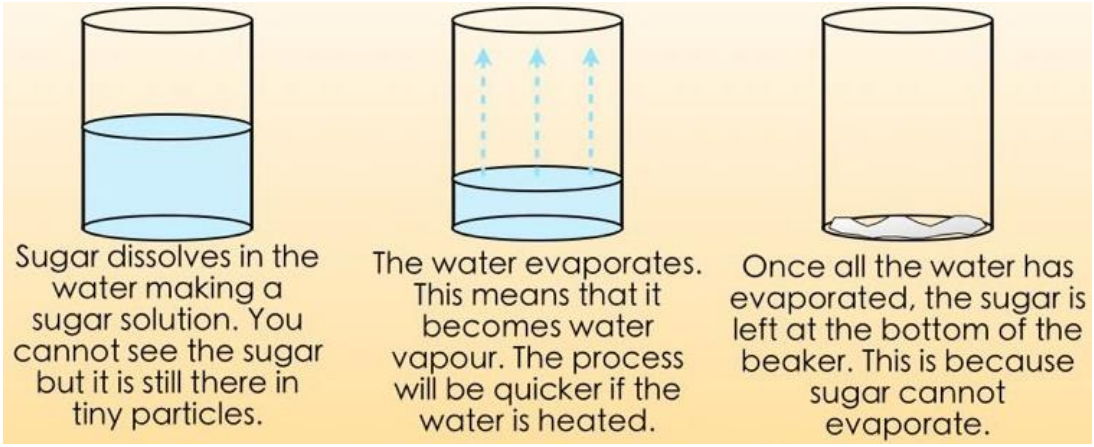
Reptile – A vertebrate animal that has dry scaly skin and typically lay soft-shelled eggs on land

Vertebrate – An animal with possession of a backbone/ spinal column

Materials







Key Vocabulary

Conductor – A material or device which allows heat or electricity to carry through

Dissolve – When something solid mixes with a liquid and becomes part of the liquid

Evaporation – The process of turning from liquid to vapour

Flexible – Capable of bending easily without breaking

Gas – An air-like fluid substance which expands freely to fill any space available

Insulator – A substance which does not readily allow the passage of heat or sound

Irreversible – Cannot be reversed back to its original state

Liquid – A substance that flows freely but can be measured by volume e.g. water or oil

Magnetic – Capabale of being magnetised or attracted by a magnet

Material – The matter from which a thing is or can be made from

Opaque – Not able to be seen through, not transparent

Reversible – Able to be reversed back to its original state

Solid – Firm and stable in shape, not a liquid or fluid

Soluble – Able to be dissolved, especially in water

Thermal – Relating to heat

Transparent – Allows light to pass through so that objects behind can be seen