

Science Enquiry Organiser
Year 3, Cycle A

Autumn 1 - Living things and their Habitats

Knowledge I know...	Skills I can...	Links back to I remember... [KSI]
<ul style="list-style-type: none"> Living things can be called organisms. All living things have to do certain things to stay alive. These are the life processes (MRS GREN): Movement, Respiration, Sensitivity, Growth. Reproduction, Excretion, Nutrition. That organisms can be grouped in a variety of ways. A classification key is a tool that is used to group living things to help us identify them. Habitats can change throughout the year and this can have an effect on the plants and animals that live there. The process of the change from rural to urban is called urbanisation. Some species that are endangered and why they are endangered. 	<ul style="list-style-type: none"> Describe the characteristics of living things. Name plants and animals found in different habitats. Begin to talk about criteria for grouping, sorting and classifying. Use simple classification keys to group animals. Use a single criteria Venn diagram and Carroll diagrams. Begin to compare the features of mammals, reptiles, birds, amphibians and fish. Describe how animals adapt to their environments. Explain how and why animals migrate. 	<ul style="list-style-type: none"> Animals can be grouped into vertebrates (and then further into fish, reptiles, amphibians, birds and mammals) and invertebrates. Animals can be grouped into carnivores, herbivores and omnivores. The differences between the teeth of carnivores and herbivores. The names of some common wild and garden plants and deciduous and evergreen trees. Examples of habitats (including microhabitats) and the animals and plants that can be found there. Living things depend on each other to survive. How food chains work.

Vocabulary:

Adaptation: suiting to the environment where the organism lives.

Amphibians: a cold-blooded animal, living on land and in water

Birds: have a beak, wings and feathers, they lay eggs and live on land

Camouflage: using different ways to hide their identity or appearance from other animals.

Classification key: a system which divides things into groups or types.

Classify: putting things into groups.

Climate: weather conditions in a certain place.

Criteria: a factor on which something is judged.

Environment: all the circumstances, people, things and events around them that influence their life.

Endangered: any type of plant or animal that is in danger of disappearing forever.

Excretion: getting rid of waste from the body.

Extinction: no individuals left.

Fish: a cold-blooded animal with gills and fins living in water

Growth: increasing in size or changing physically

Habitat: a natural environment in which an animal or plant normally lives or grows.

Invertebrate: a creature that does not have a spine, for example an insect, a worm, or an octopus.

Mammals: a warm-blooded animal with hair or fur, and (typically) the birth of live young

Migration: animals leave their usual home to move to another place for a period of time.

Movement: to change position.

Nutrition: the process of taking food in and absorbing the nutrients.

Organism: a living thing.

Prey: an animal that is hunted and killed by another for food

Predator: an animal that naturally preys on others

Reproduction: when an animal or plant produces one or more individuals similar to itself.

Respiration: process of respiring; breathing ; inhaling and exhaling air.





Reptiles: a cold blooded animal with scales, living on land and in water

Species: a group of living things that naturally produce young with other members of the same group but not with those of other groups.

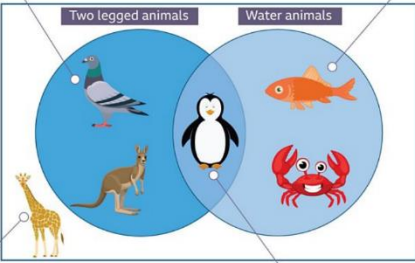
Vertebrate: a creature which has a spine.

Images:

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The first circle shows two legged animals The second circle shows water animals



A giraffe has 4 legs and is not a water animal. It does not fit into either circle.

Where they overlap, the **intersection**, shows the penguin which is both two legged and a water animal

Science Enquiry Organiser
Year 3, Cycle A

Autumn 2 – States of Matter Solids, liquids, gases & water cycle – evaporation & condensation

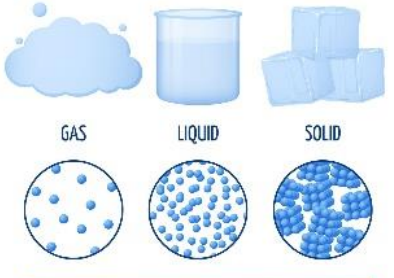
Knowledge I know...	Skills I can...	Links back to I remember...
<ul style="list-style-type: none"> • Solids stay in one place and can be held. • Most solids keep their shape and do not flow like liquids. Some like sand and salt can be poured as they are made up of lots of solid particles. • Solids always take up the same amount of space (fixed volume). • Liquids can flow or be poured easily and are not easy to hold. • Liquids change shape depending on the container they are in but have a fixed volume. • Gases are often invisible. • Gases do not keep their shape – changing this and their volume to fill up whatever container they are in. • When a material changes from one material type to another, we refer to it as ‘having changed state of matter’. • Water evaporates into the air. • The sun heats up water on land, and in rivers, lakes and seas and it turns it into water vapour. The water vapour rises into the air. • Water vapour condenses into clouds. • Water vapour in the air cools down and changes back into tiny drops of liquid water, forming clouds. • Clouds get heavy and water falls back to the earth in the form of rain or snow. • Rain water runs over the land and collects in lakes or rivers, which take it back to the sea. 	<ul style="list-style-type: none"> • Name and sort solids, liquids and gases. • Begin to compare and group according to properties, based on testing. • Make observations. • Set up some simple practical enquiries. • Begin to recognise when a simple fair test is necessary and help to decide how to set it up. • Begin to use results to draw simple conclusions. • Begin to use straightforward scientific evidence to answer questions or to support their findings. • Begin to see a pattern in my results. • Use simple scientific language, drawings and labelled diagrams when talking about the water cycle. 	<ul style="list-style-type: none"> • The names of materials. • The properties of materials e.g. fabric, metal, wood. • That materials are suitable or unsuitable for particular purposes. • That some materials are used for more than one thing e.g. metal used for can, spoon • That different materials are used for the same thing e.g. a spoon (can be wooden, metal or plastic). • Observing materials closely, identifying and classifying the use of different materials and recording their observations.

Vocabulary:

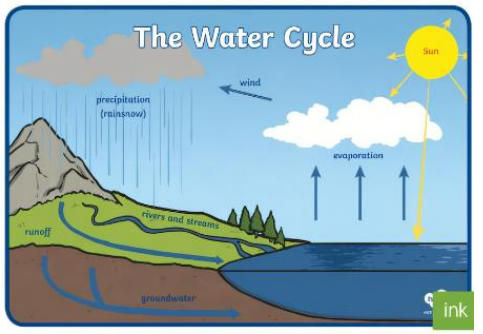
Solid: has a defined shape and volume.
Liquid: has an almost-fixed volume, but no set shape.
Gas: has neither a definite volume or definite shape.
Particles: an extremely tiny piece of matter.
Properties: what a material is like and how it behaves (soft, stretchy).
Variables: factors that can change.
Fair test: a way of finding out something by changing only one thing at a time.
Method: how an experiment is carried out.
Evaporate: when a liquid becomes a gas.
Water vapour: water in its gas state.
Condensation: a process by which a substance changes from a gas to a liquid.
Compressed: the squashing of particles.
Water Cycle: the journey water takes as it moves from the land to the sky and back again.
Precipitation: Water falling back to the earth in the form of rain/snow/hail.
Run off: water running over land back to lakes, rivers and the sea.

Images:

STATES OF MATTER



GAS LIQUID SOLID



The Water Cycle

Science Enquiry Organiser

Year 3, Cycle A

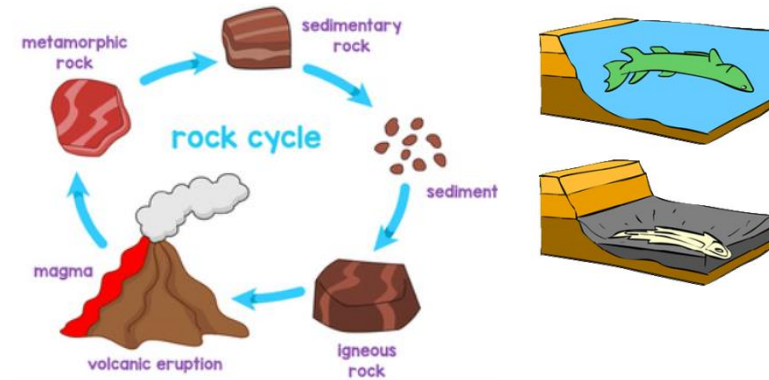
Spring 1 – Rocks

Knowledge I know...	Skills I can...	Links back to I remember...
<ul style="list-style-type: none"> • There are 3 main types of rock: sedimentary, metamorphic, igneous. • Sediment builds up into layers and over a long period of time, hardens into rock. • Sedimentary rock is usually crumbly and allows water through them. • Sedimentary rock is made of layers and stuck together with mineral crystals. • Sedimentary rock contain fossils within their layers • Metamorphic rock is formed under the surface of the Earth from the metamorphosis [change] that occurs due to intense heat and pressure [squeezing]. • Metamorphic rock is usually hard and may contain tiny crystals or fossils. • Igneous rocks is formed when magma cools and solidifies. • Igneous rock is very hard and contains crystals. • How a fossil is formed: <ol style="list-style-type: none"> 1. An organism dies and it's skeleton settles on the sea or river bed and is buried by sediment. 2. The sediment surrounding the skeleton thickens and turns to stone. 3. The skeleton dissolves and forms a 'mould'. 4. Minerals crystallise inside the mould and a cast is formed. 5. The fossil is eventually exposed on the Earth's surface. • Soil is made from minerals, organic matter, water and air. • There are different types of soil which include sandy soil, clay soil, chalky soil and peat. • Some soils are permeable like sandy soil and chalky soil. 	<ul style="list-style-type: none"> • Compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. • Simply explain how a fossil is formed. • With support create a representation of The Rock Cycle. • Make observations about rocks. • Begin to talk about criteria for classifying and use simple keys. • Test and compare rocks based on their hardness. • Investigate the properties of rocks [can be scratched with a nail, are porous, or can float in water]. • Record my results in a table. • Examine what a soil sample is made from. 	<ul style="list-style-type: none"> • The names of materials • The properties of materials e.g. fabric, metal, wood • That materials are suitable or unsuitable for particular purposes • That some materials are used for more than one thing e.g. metal used for can, spoon • That different materials are used for the same thing e.g. a spoon (can be wooden, metal or plastic).

Vocabulary:

Sedimentary: rocks made of layers of sediment
Metamorphic: rocks made in the Earth due to intense heat and pressure.
Igneous: formed when magma cools and solidifies, which it can do above or below the Earth's surface.
Permeable: allows liquids (or gases) to pass through.
Impermeable: doesn't allow liquids to pass through
Magma: hot fluid below or within the Earth's crust from which lava and other igneous rock is formed on cooling.
Solidify: to become solid or hard.
Dissolve: to become part of a liquid.
Organic matter: made up of decaying animals and plants.
Organism: a living thing, animal or plant.
Minerals: small stone fragments:clay, silt or sand.
Soil: made from minerals, organic matter, water and air.
Sandy soil: pale in colour with lots of small air gaps and water drains through easily so it feels quite dry.
Clay soil: an orange or blueish sticky soil with few air gaps. Water does not drain through easily and puddles tends to stay on top of the soil for a long time when it rains.
Chalky soil: light brown in colour, allowing water to drain through it quickly.
Peat: unlike other soils as it doesn't contain any rock particle. It is made from very old decayed plants. It is dark, crumbly and rich in nutrients (chemicals plants need to grow).

Images:



Science Enquiry Organiser
Year 3, Cycle A

Spring 2 – Animals inc. humans: Nutrition & Skeletons

Knowledge I <i>know</i> ...	Skills I <i>can</i> ...	Links back to I <i>remember</i> ...
<ul style="list-style-type: none"> Humans cannot make their own food like plants do - we need to eat plants and animals to get our energy. Healthy, balanced diets lead to healthy, active people. The different food types are: <ul style="list-style-type: none"> Fruit and vegetables Bread, rice, potatoes, pasta and other starchy foods Milk and dairy Oils and spreads Meat, fish, eggs, beans and other non-dairy sources of protein The different type of nutrients: protein, carbohydrates, fats, vitamins, minerals, fibre and water. Protein helps your body grow and repair itself. Carbohydrates give you energy. Fats give you energy. Vitamins keep your body healthy. Minerals keep your body healthy. Fibre helps you to digest the food that you have eaten. Water helps to move nutrients in your body and get ride of waste that you don't need. Humans and some other animals have skeletons and muscles for support, protection and movement. Vertebrates are animals that have a backbone. When a skeleton grows on the inside of a body, it is called an endoskeleton. When the skeleton exists outside the body, it is called an exoskeleton. An exoskeleton is a covering that supports and protects animals. These have to be shed and a new skeleton is grown. A skeleton provides support and shape to an animal's body. A skeleton allows movement through the joints. A skeleton protects organs [e.g. the skull protects the brain]. Joints are where bones meet - they allow our bodies to move. Muscles contract and relax. Muscles are connected to bones by tendons. 	<ul style="list-style-type: none"> Compare and contrast the diets of different animals (including pets) and decide ways of grouping them according to what they eat. Research. Describe what happens if one part is missing from a balanced diet. Identify the key features of the skeleton. Match animals to their skeletons. Begin to explore ideas about what would happen if humans did not have skeletons. Identify which bones are used for support (e.g. backbone), which are used for protection (e.g. cranium) and which are used for movement (e.g. joints) Begin to identify and group animals with and without skeletons and compare the ways in which they move. 	<ul style="list-style-type: none"> The parts of the human body and what they do. There are five types of vertebrates (mammals, fish, reptiles, amphibians, birds) Vertebrates are animals that have a backbone. Invertebrates are animals that do not have a backbone. All animals need water, air and food to survive. The different ways in which humans can be healthy.

Vocabulary: Images:

Balanced diet: a variety of food that you regularly eat.
Diet: the type and range of food that you regularly eat.
Disease: an illness which affects people, animals, or plants.
Energy: the ability and strength to do physical things.
Healthy: well and not suffering from any illness.
Hygiene: keeping yourself and your surroundings clean especially in order to prevent illness or the spread of diseases.
Nutrients: the process of taking food into the body and absorbing the nutrients in those foods.
Starchy: foods that contain a lot of starch [a nutrient which gives you energy].
Backbone: the column of small linked bones down the middle of your back . Also known as a spine.
Bones: the hard parts inside your body which form your skeleton
Contract: to make smaller by drawing together; shrink or make tighter.
Elbow: the bend or joint between the upper arm and the lower arm
Endoskeleton: the internal skeleton of an animal, especially the bony skeleton of vertebrates
Exoskeleton: the protective or supporting structure covering the outside of the body of many animals
Joints: the junction between two or more bones.
Muscles: something inside your body which connects two bones and which you use when you make a movement.
Organ: a part of your body that has a particular purpose.
Protect: protecting someone or something means to prevent them from being harmed or damaged.
Relax: when a part of your body relaxes it becomes less stiff or firm.
Skeleton: the framework of bones in your body.
Support: to hold something up.
Tendons: a strong cord in a person's or animal's body which joins a muscle to a bone.
Vertebrate: a creature which has a spine.

Science Enquiry Organiser
Year 3, Cycle A

Summer 1 – Light: Shadows & Reflections

Knowledge I <i>know</i> ...	Skills I <i>can</i> ...	Links back to I <i>remember</i> ...
<ul style="list-style-type: none"> Light is a type of energy that travels in wave form from a light source. A wave of light can only travel in a straight line. A light source is something that gives light, like the sun, fire or a light bulb. Some light sources can be turned on and off with a switch, like the light from a TV or torch. Some animals, such as fireflies and glow-worms, are light sources. Lights that are caused by chemical reactions are much less common. This happens when different chemicals react and light is a product of that reaction e.g. glow sticks and fire flies. Reflection is when light bounces off an object. The difference between reflective and non reflective materials. Dark is the absence of light. Daytime is when you can see the sun from where you are, and its light and heat can reach you. Night is when the sun is on the other side of the Earth, and its light and heat can't reach you. We get day and night because the Earth spins on an imaginary line called its axis and different parts of the planet are facing towards the Sun or away from it. Transparent objects and materials e.g. glass, lets almost all of the light rays pass through them. Opaque objects and materials do not allow any light to pass through them. Shadows are made when an opaque object blocks light. An area of darkness appears behind an object when the light rays are blocked. During the day the light from the sun can cause shadows when it reaches an opaque object. When you move an object closer to the light source, the shadow becomes smaller. When you move an object further away from the light source, the shadow becomes bigger. We must never look directly at the Sun as the light produced is very bright and can be harmful to our eyes. This is why we wear sunglasses. 	<ul style="list-style-type: none"> Define light and dark. Identify some light sources. Set up some simple practical enquiries, comparative and fair tests. Begin to choose from a selection of equipment. With support make decisions about what observations to make, how long to make them for and the type of simple equipment that might be used. Begin to look for patterns, similarities and differences in my data in order to draw simple conclusions and answer simple questions. Begin to talk about criteria for grouping and sorting e.g. sorting reflective and non-reflective materials. Begin to explore everyday phenomena e.g. what happens to light when it is reflected. Begin to make some decisions about which types of enquiry will be the best way of answering questions. Begin to use straightforward scientific evidence to answer questions or to support their findings. 	<ul style="list-style-type: none"> The names of materials The properties of materials e.g. fabric, metal, wood That materials are suitable or unsuitable for particular purposes That some materials are used for more than one thing e.g. metal used for can, spoon That different materials are used for the same thing e.g. a spoon (can be wooden, metal or plastic).

Vocabulary:

Angle: the direction from which you look at something

Bright: a colour that is strong and noticeable, and not dark

Dark/darkness: the absence of light

Dim: light that is not bright

Electricity: a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for machines

Emit: to emit light means to produce it

Light: a brightness that lets you see things

Mirror: a flat piece of glass which reflects light, so that when you look at it you can see yourself reflected in it

Reflects: light sent back from the shiny and smooth surface and does not pass through it

Shadow: a dark shape on a surface that is made when something stands between a light and the surface

Source: where something comes from

Transparent: can be seen through

Opaque: can't be seen through

Non-reflective: not capable of reflecting light.

Surface: forms the top of it or is on the outside of it.

Images:

The diagrams illustrate the following concepts:

- Light rays and shadows:** A sun emits rays that hit a tree, creating a shadow on the ground.
- Opaque vs. Transparent:** An opaque cube blocks light, while a transparent cube allows light to pass through.
- Reflection and vision:** Light from a sun reflects off an apple and enters an eye.
- Shadow formation process:**
 - Light source emits light
 - Light travels in a straight line to the object
 - Light is reflected off the object
 - Light travels in a straight line to the eye
- Shadow size:** Three diagrams show a toy figure casting a large shadow (close to light), a smaller shadow (further from light), and a tiny shadow (far from light).

Science Enquiry Organiser

Year 3, Cycle A

Summer 2: Animals inc. humans: Digestive System & Food Chains

Knowledge I know...

- Teeth are used for cutting and chewing food. The start the digestive process.
- Humans look after their teeth by brushing and flossing and ensuring that they do not eat foods high in sugar.
- Not looking after teeth can lead to plaque and tooth decay.
- Canines are pointed for tearing and ripping food.
- Incisors are shovel shaped and help bite lumps out of and cutting food.
- Premolars and molars are flat and they grind and crush food.
- How the Digestive System works:
 - The smell of food triggers saliva to be produced.
 - Food is ingested and chewed in the mouth.
 - Saliva is mixed with the food which helps to break it up.
 - When the food is small enough to be swallowed, it is pushed down the oesophagus by muscles to the stomach.
 - In the stomach, food is mixed further.
 - The mixed food is sent to the small intestine which absorbs nutrients from the food.
 - Any leftover broken down food then moves on to the large intestine.
 - The food, minus the nutrients, arrives in the rectum where muscles turn it into faeces. It is stored here until it is pushed out by the anus. This is called excretion.
- A food chain is a simple way to show the direction in which energy moves from the producer to the tertiary consumer.
- The producer (a plant) gets its energy from the Sun.
- A primary consumer gets its energy from a produced e.g. a mouse gets its energy from wheat.
- A secondary consumer gets its energy from a primary consumer e.g. an owl is the predator and a mouse is the prey.
- A tertiary consumer gets its energy from a secondary consumer e.g. a wolf gets its energy from an owl.
- The arrows in a food chain show the direction in which the energy travels.
- A food web shows the direction in which energy travels when animals and producers (plants) are eaten by more than one thing.
- A food web shows multiple food chains where there are multiple feeding relationships.

Skills I can...

- Match predators and their prey depending on their habitats.
- Create food chains for different habitats and compare them. How do the producers, predators and prey compare? What are their teeth like?
- Dissect owl pellets and investigate and identify the contents.
- Create food webs.

Links back to I remember...

- Humans cannot make their own food like plants do - we need to eat plants and animals to get our energy.
- Healthy, balanced diets lead to healthy, active people.
- Humans and some other animals have skeletons and muscles for support, protection and movement.
- The life processes (MRS GREN): Movement, Respiration, Sensitivity, Growth, Reproduction, Excretion, Nutrition.
- Animals can be grouped into carnivores, herbivores and omnivores and other ways in which to classify animals.
- Most animals live in habitats to which they are suited.
- Animals and plants depend on each other.
- How animals obtain their food and an example of a food chain.

Vocabulary:

Absorb: soak up or take in

Canine: pointed teeth near the front of the mouth of humans and of some animals

Carnivore: an animal that eats meat

Decay: gradually destroyed by a natural process

Digestion: breaking down ingested food material

Enamel: the hard white substance that forms the outer part of a tooth

Excretion: the process of eliminating faeces, urine, or sweat from the body

Faeces: the solid waste substance that people and animals get rid of from their body by passing it through the anus

Herbivore: an animal that only eats plants

Incisor: the teeth at the front of your mouth which you use for biting into food

Ingested: When animals or plants ingest a substance, they take it into themselves, for example by eating or absorbing it.

Intestines: the tubes in your body through which food passes when it has left your stomach

Molar: the large, flat teeth towards the back of your mouth that you use for chewing food

Nutrition: the process of taking food into the body and absorbing the nutrients in those foods

Oesophagus: the part of your body that carries the food from the throat to the stomach

Omnivore: person or animal eats all kinds of food, including both meat and plants

Organ: a part of your body that has a particular purpose

Plaque: a substance containing bacteria that forms on the surface of your teeth

Premolar: two situated on each side of both jaws between the first molar and the canine

Saliva: the watery liquid that forms in your mouth and helps you to chew and digest food

Stomach: the organ inside your body where food is digested before it moves into the intestines

Classification key: a system which divides things into groups or types

Energy: the ability and strength to do physical things

Environment: all the circumstances, people, things, and events around them that influence their life

Food chain: a series of living things which are linked to each other because each thing feeds on the one next to it in the series

Food web: a combination of food chains that integrate to form a network

Habitat: the natural environment in which an animal or plant normally lives or grows

Organism: a living thing

Predator: an animal that kills and eats other animals

Prey: an animal hunted or captured by another for food

Primary consumer: an organism that feeds on producers. They are always herbivores.

Producer: organisms that make their own food using energy from the Sun.

Secondary consumer: organisms that eat primary consumers for energy.

Tertiary consumer: eat primary and secondary consumers as their main source of food.

Images:

Example: