



Living Things and their Habitats

Science Year 4 Knowledge Organiser



Life Processes

To stay alive and healthy, all living things need certain conditions that let them carry out the seven **life processes**:

Movement **Growth**
Respiration **Reproduction**
Sensitivity **Excretion**
Nutrition

Deforestation

Many of the things that humans do, destroy animal habitats. Only a very small amount of the world's land is covered in rainforest, but about half of all plants and animals live here. Humans have cut down large areas of the forest to clear space for building or farming. This has destroyed the habitats of many species and made it difficult for them to survive.



Grouping living things

Animals can be put into one of two groups

Vertebrates – animals with a backbone
Invertebrates - animals without a backbone

Vertebrates

Vertebrates can be grouped 5 ways

- Fish
- Amphibians
- Reptiles
- Birds
- Mammals

How to spot a fish



- Breathes with gills
- Lays eggs in water
- Has fins and scales
- Its body changes temperature

How to spot an amphibian



- Born with gills then develops lungs
- Lays eggs in water
- Damp skin
- Body temperature changes

How to spot a reptile



- Breathes with lungs
- Lays eggs on land
- Dry scaly skin
- Body temperature changes

How to spot a bird



- Breathes with lungs
- Lays eggs with hard shells
- Has feathers
- Steady body temperature

How to spot a mammal



- Breathes with lungs
- Babies are born live
- Body hair or fur
- Steady body temperature
- Feeds babies milk

Classifying plants and animals

We organise living things into groups based on their similarities and differences, so that we can learn more about what makes each species unique. The differences between living things is sometimes called variation.

Invertebrates

Invertebrates can be grouped 4 ways

- Insects
- Arachnids
- Snails and slugs
- Worms

How to spot an insect



- 3 body sections
- 6 legs

How to spot an arachnid



- 2 body sections
- 8 legs

How to spot snails and slugs



- Slimy foot
- Often have a shell

How to spot a worm



- 0 legs
- Long tube-like body



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Key Vocabulary:

1	Vertebrate	Vertebrates are animals with a backbone
2	Invertebrate	Invertebrates are animals without a backbone
3	Gills	Slits on the side of a fish which help it breathe
4	Fins	Part of a fish that helps it move and balance
5	Scales	Thin plates protecting the skin of fish or reptiles
6	Lungs	Spongy bags in the chest used when breathing
7	Body temperature	How hot or cold the inside of an animal's body is
8	Section	A part of something
9	Deciduous	A tree that loses its leaves in Autumn and grows new ones in Spring
10	Coniferous (Evergreen)	A plant or tree that keeps its leaves all year

Sticky Knowledge

- Living things can be divided into groups based upon their characteristics.
- Environmental change affects different habitats differently.
- Different organisms are affected differently by environmental change
- Different food chains occur in different habitats.
- Human activity significantly affects the environment.

Plant Groups

Plants can be put into one of two groups

Flowering plants
Non flowering plants

Flowering plants are made up of 4 groups

- Grasses
- Cereals
- Garden shrubs
- Deciduous trees

Non flowering plants are made up of 3 groups

- Algae
- Coniferous trees
- Ferns



Branched Diagram



Some species are very good at adapting to changes in their habitats. These species are able to live alongside humans successfully in towns and cities.





Electricity

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A Circuit

Electricity can only flow around a complete **circuit** that has no gaps. There must be wires connected to both the positive and negative end of the power supply/battery.



What is electricity?

Electricity is an energy. This energy can be used to power electrical items such as toasters, kettles, cookers, televisions and computer tablets.

Electrical energy is caused by electrons (the particles in atoms) moving about to make a current.

Electricity is created by generators which can be powered by gas, coal, oil, wind or solar.

The electrical energy can be converted into other types of energy such as light, heat, movement or sound.

Electricity is dangerous, so be careful when using electrical appliances.

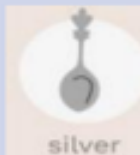
Switches

Switches can be used to open or close a circuit. When off, a switch 'breaks' the circuit to stop the flow of electricity. When on, a switch 'completes' the circuit and allows the electricity to flow.



Electrical conductors and insulators

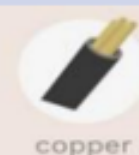
A **conductor** is a material that allows charges to flow easily throughout the material. Metals are often good conductors. Examples include: silver, gold, copper, steel and sea water.



silver



gold



copper

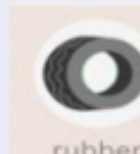


steel



sea water

An **insulator** is a material that does not allow charges to flow easily throughout the material. Examples include: rubber, glass, oil, diamond and dry wood.



rubber



glass



oil



diamond

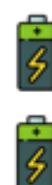


dry wood



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Key Vocabulary

electricity	The flow of an electric current through a material, e.g. from a power source through wires to an appliance .
generate	To make or produce.
renewable	A source of electricity that will not run out. These include solar, geothermal, hydro and wind.
non-renewable	This source of energy will eventually run out and so will no longer be able to be used to make electricity . These include fossil fuels – coal, oil and natural gas.
appliances	A piece of equipment or a device designed to perform a particular job, such as a washing machine or mobile phone.
battery	A device that stores electrical energy as a chemical.

Sticky Knowledge

- Many household **appliances** run on electricity- these include a fridge, kettle, television and dishwasher.
- Electricity flows through all the components in a **circuit** - a circuit has a power source, wires and other components such as bulbs or buzzers.
- Electricity only flows through a **complete circuit**.
- An **open switch** breaks the circuit stopping electricity from moving around the circuit.
- **Insulators** do not allow electricity to pass through them; plastic, wood, glass and rubber are good electrical insulators.
- **Conductors** are materials that let electricity pass through them easily; metals, such as copper, iron and steel, are good electrical conductors
- **Renewable electricity** can naturally replenish, while **non-renewable electricity** cannot.
- The main hazards of electricity include risk of electric shock and burns from touching live parts.

Water

Water is an excellent electrical conductor so it can be very dangerous to have electrical devices near water.
Make sure your hands are dry before touching electrical devices.



Vocabulary

appliances, electricity, electrical circuit, cell, wire, bulb, buzzer, danger, electrical safety, sign, insulators, wood, rubber, plastic, glass, conductors, metal, water, switch, open, closed, components, plug, motor, mains