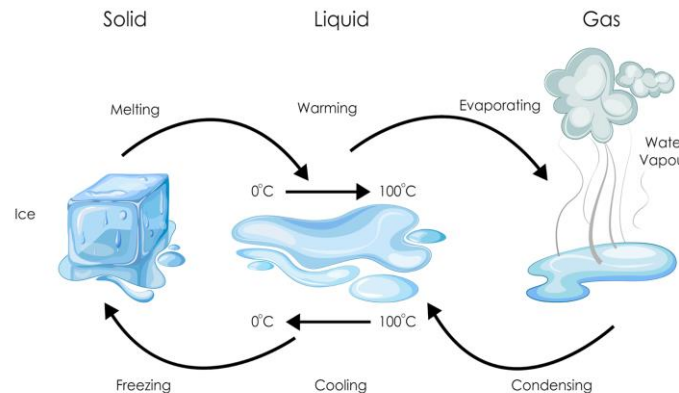
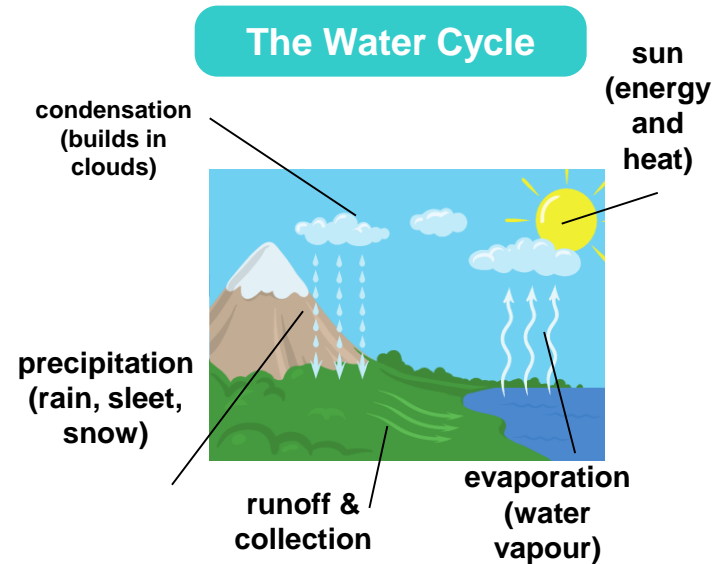


### Key Facts:

- There are 3 states of matter: solid, liquid and gas.
- Solid particles have strong bonds so solids have a fixed shape.
- Liquid particles have weaker bonds and more energy so liquids can change shape.
- Gas particles have really weak bonds so gasses can spread out and move freely.
- Substances can be heated or cooled to change from state to another.
- In water, the melting and freezing point is  $0^{\circ}\text{C}$  and the boiling point is  $100^{\circ}\text{C}$ .
- Different substances have different melting, freezing and boiling points.
- When water vapour (gas) touches a cold surface, the particles lose energy and the bonds become stronger, turning the gas into a liquid.
- Heating liquid water increase the particle's energy and the bonds become weaker, turning it into a gas.



### Key Scientists:

- **Daniel Fahrenheit** – A German physicist who is famous for inventing two things. One invention was a temperature scale, which later became known as the Fahrenheit scale. His other invention was a thermometer that used mercury.
- **Anders Celsius** – A Swedish astronomer who created a temperature scale, divided into small parts called degrees. In his scale, he set the point at which water freezes as  $100^{\circ}\text{C}$  and the point at which it boils at  $0^{\circ}\text{C}$ . This was later reversed.

### Key Vocabulary:

thermometer  
melting point  
freezing point  
boiling point  
solid  
liquid  
gas  
evaporation  
particles  
condensation  
water vapour  
substance



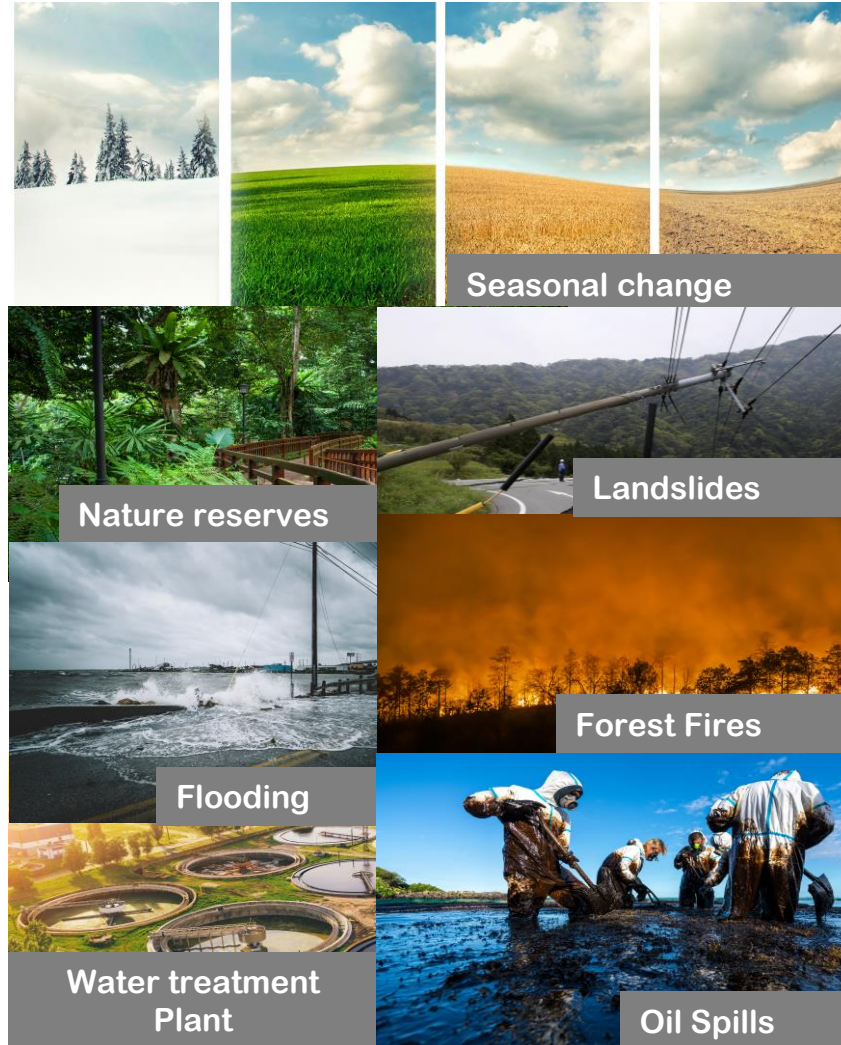
# Living things and their Habitats – Conservation

*Are living things in danger?*

**YEAR 4**  
**Term 2**

## Key Facts:

- Environments can change in a variety of ways: seasonal change, nature reserves, landslides, flooding, forest fires, water treatment plant and oil spills.
- The water people use in their homes comes from nature and must be cleaned up to be returned to nature so it can be used again. This is an important part of our water cycle.
- There are two types of changes: natural changes and human changes.
- Natural changes include: different seasons, greenhouse gases, climate change, hurricanes, floods and droughts.
- Human changes include how humans live and what they do that can impact habitats both negatively and positively.



## Key Scientists:

- **Cindy Looy** – a plant ecologist who investigates the response of Palaeozoic plants and plant communities to environmental change during periods of mass extinction and deglaciation.
- **Rachel Carson** – an American scientist and writer who studied the natural world ocean and the environment. Her book ‘Silent Spring’ convinced many people that the environment needed better protection. She is sometimes called the mother of the environmental movement.

## Key Vocabulary:

migrate  
monsoon  
deforestation  
biodiversity  
emissions  
pollution  
pesticide  
contaminate  
drought  
freshwater  
marine sanctuaries  
conservation areas



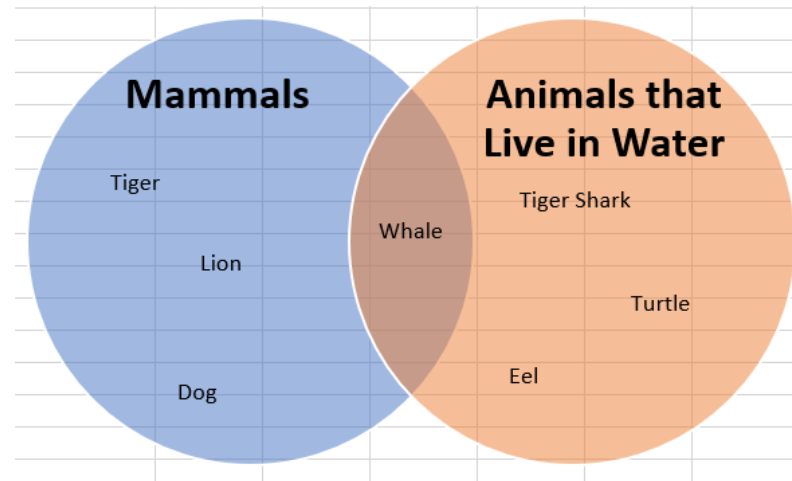
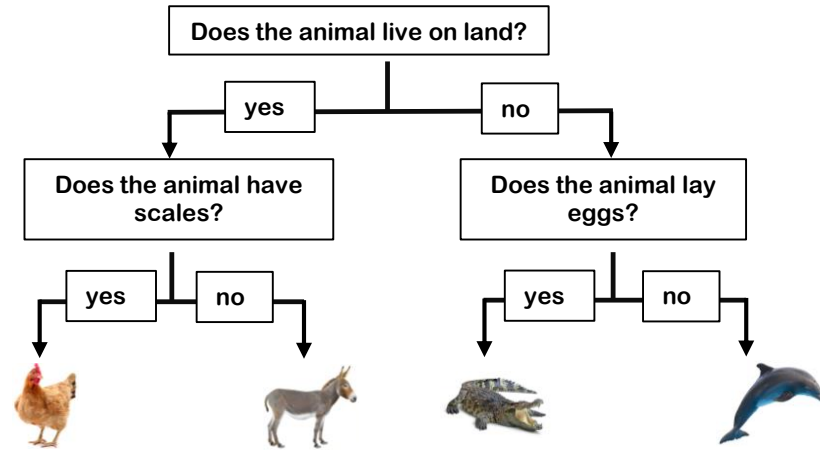
# Living things and their Habitats – *What is the same and what is different?*

## Classifying

**YEAR 4**  
**Term 3**

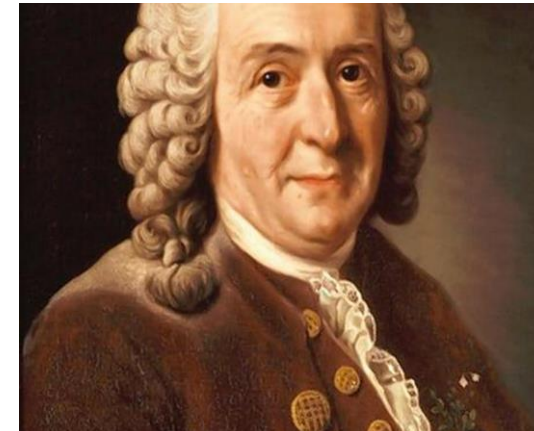
### Key Facts:

- Animals can be sorted, or classified, in a number of different ways. A 'branched' diagram or Venn diagram are just two examples.
- A classification key is a series of questions that determine an organism's physical characteristics.
- A classification key helps to identify an unknown organism, or work out how to categorise groups of similar organisms.
- A classification key is a useful tool for scientists, naturalists and anyone interested in learning about the natural world.
- Adaptations are physical, behavioural or physiological traits that help an organism survive and reproduce in its environment.



### Key Scientists:

- **Carl Linnaeus** – A Swedish naturalist who created two scientific systems: the system for classifying plants and animals and the system for naming all living things.

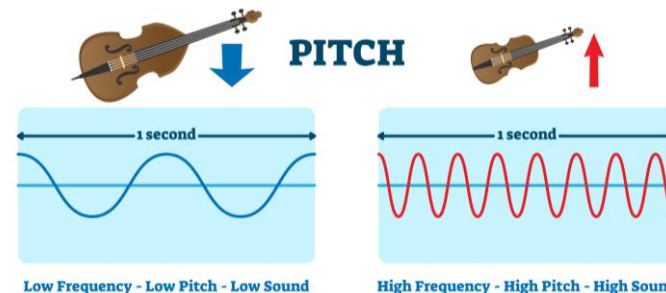
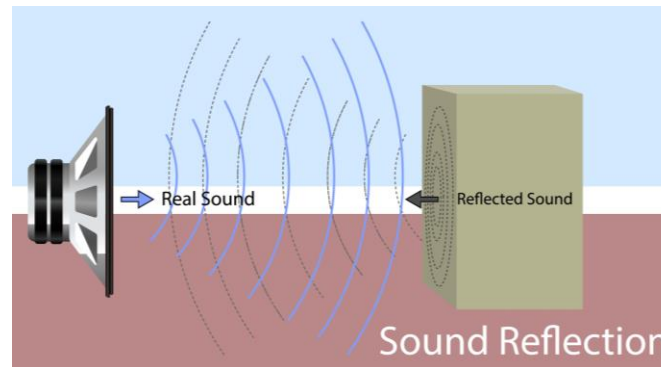
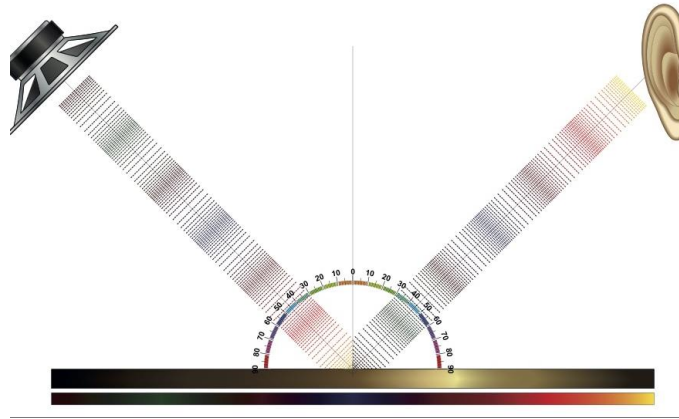


### Key Vocabulary:

- adapted
- camouflage
- coastal
- grassland
- classify
- species
- sub-group
- classification key
- region
- blubber
- ecosystem
- oxygenised

### Key Facts:

- When objects vibrate, a sound is made. The vibration makes the air around the object vibrate and the air vibrations enter your ear. These are called sound waves.
- If an object is making a sound, a part of it is vibrating, even if you cannot see the vibrations.
- Sound waves travel through- a medium (such as air, water, glass, stone, and brick).
- The sound waves travel to the ear and make the eardrums vibrate. Messages are sent to the brain which recognises the vibrations as sounds.
- The pitch of a sound is how high or low it is.
- A high pitch sound is made because it has a high frequency. The sound source vibrates many times a second.
- The volume of a sound is how loud or quiet it is.
- Quieter sounds have a small amplitude and less energy, louder sounds have a bigger amplitude and more energy.

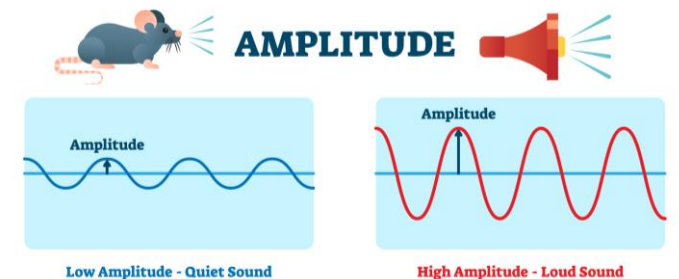


### Key Scientists:

- **Heinrich Hertz** – A German physicist who discovered the radio waves. The unit for frequency is named after him.
- **Alexander Graham Bell** – An inventor and a teacher of the deaf who is famous for creating one of the world's most important communication devices – the telephone.

### Key Vocabulary:

- vibration
- medium
- source
- energy
- materials
- reflect
- volume
- decibels
- pitch
- instruments
- particles
- sound source





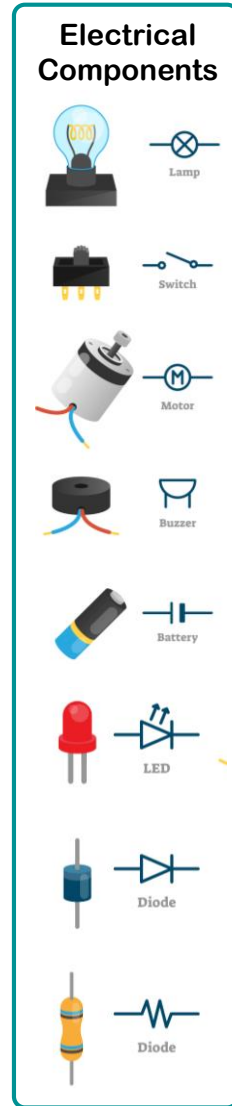
# Electricity

## Can we control electricity?

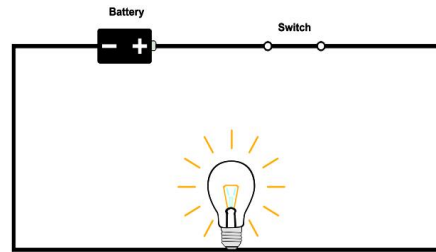
YEAR 4  
Term 5

### Key Facts:

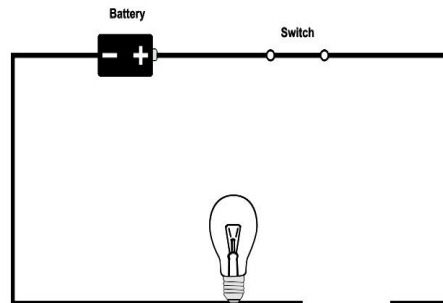
- A circuit contains a battery (cell), wires and a component that requires electricity to work (bulb, motor or buzzer).
- Electrical current flows through the wires from the battery (cell) to the bulb, motor or buzzer.
- A switch can break or reconnect a circuit.
- A switch controls the flow of the electrical current around the circuit. when the switch is off, the current cannot flow.
- Materials that allow electricity to pass through to create a complete circuit are called electrical conductors. Materials that do not are called electrical insulators.
- A complete circuit is a loop that allows electrical current to flow through wires.



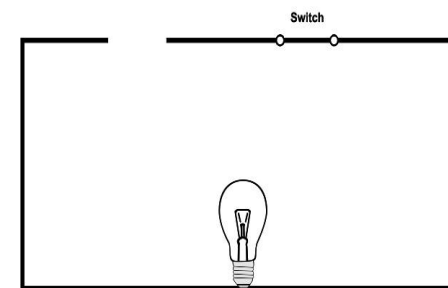
### Simple Circuit



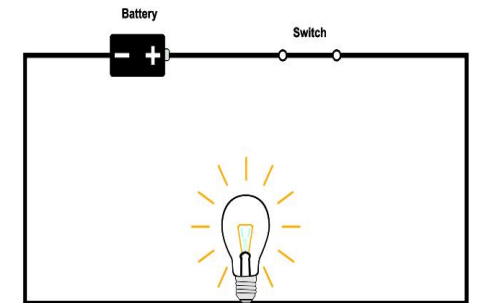
### Incomplete Circuit



### No Battery



### Complete Circuit



### Key Scientists:

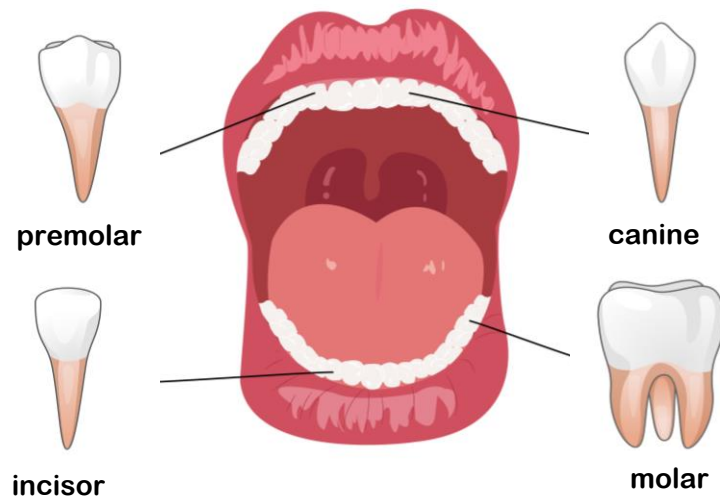
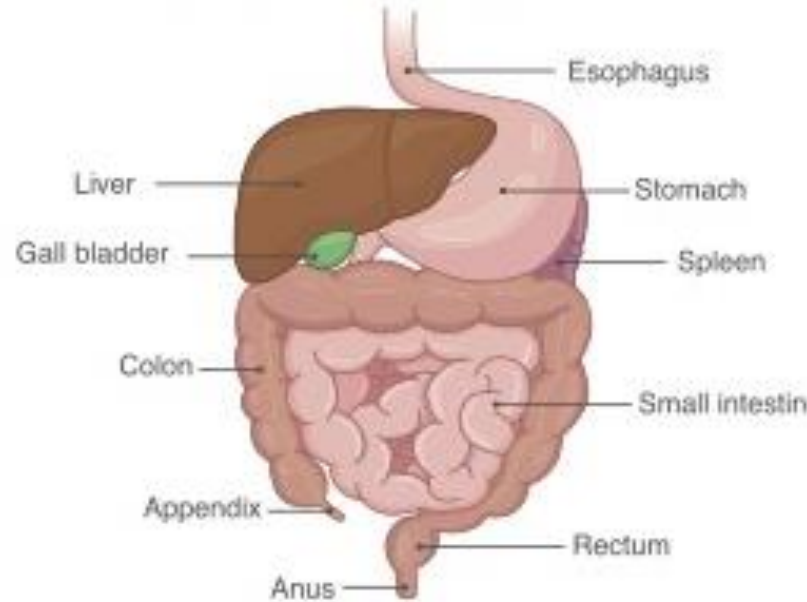
- **Thomas Edison** – A famous American inventor who is best known for inventing 'domestic' lightbulbs and the electric power system that allows them to work.
- **Michael Faraday** – A Victorian chemist and physicist who invented the electric motor.

### Key Vocabulary:

electricity  
batteries  
circuit  
voltage  
current  
bulb  
conductor  
insulator  
switch  
control  
wind turbines  
hydropower

### Key Facts:

- The digestive system begins with the mouth and teeth where food is ingested and chewed.
- 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 then sent to the small intestine which absorbs nutrients from the food.
- Any leftover, broken down food then moves on to the larger intestine.
- The food minus the nutrients arrives in the rectum where muscles turn it into faeces (poo).
- It is stored here until it is pushed out but the anus. This is called excretion.
- Different teeth have different functions.
- Teeth of animals are designed for the foods they eat.



### Key Scientists:

- **William Beaumont** - Beaumont was a surgeon in the US army. He carried out extensive research on human digestion.
- **Ivan Pavlov** – Pavlov was a physiologist who studied the digestive system. He is most famous for an experiment where he got dogs salivate on the ringing of a bell.

### Key Vocabulary:

digestive system  
oesophagus  
saliva  
peristalsis  
incisors  
molars  
enamel  
fluoride  
consumer  
predator  
tundra  
hide

