



Sound

Year Group: 4

Term: Autumn 1

How do we hear?

What you should already know

- Energy comes in different forms and cannot be created nor destroyed, only changed from one form to another.

Investigations

Which instrument is the highest pitch? Which is the lowest?

- Ask questions and use scientific enquiries to answer them.
- Make careful observations.
- Listen and compare the instruments.
- Record findings using labelled diagrams.
- Report on findings from enquiries orally.
- Identify difference and similarities or changes related to scientific ideas and processed.
- Use scientific evidence to answer questions.
- Draw conclusions from the investigation.

New Learning

- Sound is generated when an object vibrates.
- Some of the energy from the vibrating object is transferred to the air, making the air particles move.
- Sound is a form of energy in a wave.
- Sound travels through a medium (particles in the air).
- Sound waves are detected in the ear by humans and the brain interprets this as the sounds we hear.
- Sound travels at different speeds through different objects.
- Sound travels much slower than light. That is why we hear the thunder after we see the lightning.

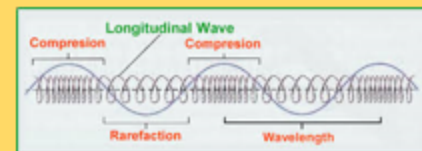


- Pitch is how high or low a sound is and that depends on how many vibrations per second are being made by the vibrating object.
- The number of vibrations per second is called frequency.
- Volume is how loud or quiet a sound is and it depends on the amount of energy in a wave – how hard or soft a drum is hit.
- The volume of a sound is quieter if the listener is further away from the object.

Vocabulary

conductor	energy	insulator
particle	vibration	percussion
frequency	volume	pitch
medium	vacuum	

Diagrams/Pictures



Frequency & Wave Shape





Electricity
Year Group: 4
Term: Autumn 2



Where did the power come from?

What you should already know

- An object is made from/of a **material**.
- Metal is a material which objects can be made from.
- Energy comes in different forms and can be neither created nor destroyed – it can only be changed from one form to another.

Investigations

Which materials are conductors of electricity?

- Ask questions and use a form of enquiry to answer them.
- Set up a practical test which is **fair**.
- Make careful **observations**.
- Collect **data** and present the results (data) in a table.
- Use labelled diagrams.
- Report on findings from an enquiry.
- Use the results to draw a **conclusion** which will answer the question.
- Make predictions based on the results of the investigation.
- Ask further questions.

New Learning

- Electrical energy is one of many forms of electricity.



- **Static electricity** is an imbalance of charged particles on a material.
- **Electrical current** flows well through some materials (electrical conductors) and poorly through others (electrical insulators).
- Metals are good **electrical conductors**.
- A **chemical reaction** inside a cell makes the charged particles that flow around a circuit.
- **More than one cell lined up to work together is called a battery.**
- Electrical current can flow when there is a **complete circuit**.
- A **switch** functions by completing or breaking a circuit.
- Exposure to high levels of electrical current can be dangerous.



Vocabulary

component	conductor	energy
material	circuit	appliance
electron	battery	cell
bulb	buzzer	switch
wire	current electricity	
static electricity	negative terminal	
positive terminal	emit	

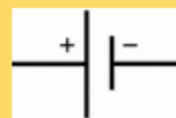
Diagrams/Pictures



Insulators and conductors



Battery



Cell



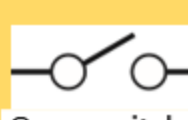
Buzzer



Motor



Bulb



Open switch



Animals and Humans - Habitats

Year Group: 4

Term: Spring 1/2

How have humans made an impact on the lives of animals?

What you should already know

- Living things move, grow, consume nutrients and reproduce.
- Polar bears are an example of an animal adapted to its environment.
- A trout is an example of a fish, a frog is an amphibian, a lizard is a reptile, a robin is a bird, rabbits and humans are mammals.
- Herbivorous animals eat plants, omnivorous animals eat plants and animals and carnivores eat meat.

Investigations

- Ask questions and use scientific enquiries to answer them.
- Make careful observations.
- Classify and present data.
- Record findings using drawings, labelling diagrams and tables.
- Report on findings from enquiries.
- Identify difference and similarities or changes related to scientific ideas and processed.
- Use scientific evidence to answer questions.

New Learning

- Animals can be grouped based on their physical features (vertebrates and invertebrate) and based on their behavior (carnivores, herbivores and omnivores).
- Living things are divided into kingdoms – animal kingdom, plants, fungi, bacteria.
- A species is a group of living things that have many similarities.
- A classification key uses questions to sort and identify different living things.
- Changes to the environment make it more difficult for animals to survive and reproduce. This can lead to extinction.
- Climate change caused by pollution can change the environment for many living things.

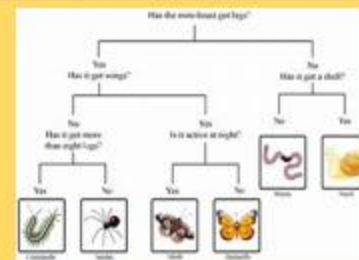


- A polar bear is an example of how environmental changes can endanger living things.
- As the climate changes and gets warmer, the sea ice where polar bears live is becoming smaller making it harder for them to survive.

Vocabulary

decay energy habitat
 herbivore carnivore omnivore
 environment reproduction vertebrate
 kingdom classification key
 species fungi bacteria
 climate change extinction
 pollution

Diagrams/Pictures



Invertebrate



Vertebrate



Animals and Humans
Year Group: 4
Term: Spring 2

FOOD

What you should already know

- Proteins are good for growth, carbohydrates for energy and fruit and vegetables provide vitamins and minerals which help keep us healthy.
- Tooth decay can be caused by excess sugar.
- Living things move, grow, consume nutrients and reproduce.
- Plants absorb energy from the Sun. This energy is consumed by herbivores and that carnivores eat other animals.

Investigations

How do our digestive systems work?

How do different drinks affect our teeth?

- Ask questions and use scientific enquiries to answer them.
- Make careful observations.
- Present findings using a display.
- Record findings using drawings and annotated photographs.
- Report on findings from enquiries.
- Identify difference and similarities or changes related to scientific ideas and processed.
- Use scientific evidence to ask further questions.
- Make further predictions based on knowledge gained.

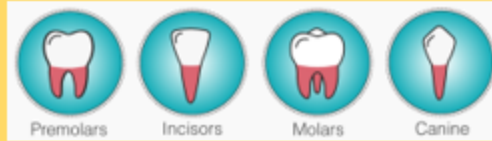
New Learning

- Food passes through the body. Nutrients are taken out and waste products are excreted – this is called **digestion**.
- Digestion is when complex foodstuffs are broken down so these can be absorbed by the body.
- The first part of digestion is when the food is chewed by the teeth and saliva is added.
- Each human has three types of teeth – incisors (slice food), canine (tear food) and molars (grind food).
- Food is then squeezed down the esophagus (food pipe) in a wave-like action.
- The stomach releases acid to continue breaking down the food.
- The stomach is an organ.
- The small intestine absorbs the nutrients.
- The large intestine absorbs water from any undigested food.
- All energy for a food chain starts with the sun.
- This energy is absorbed by plants which are called producers.
- An animal eaten by another animal is called prey.
- The first consumer in a food chain is called a primary consumer. The second is called a secondary consumer and the final one, a tertiary consumer.

Vocabulary

absorption	dissolving	energy
nutrients	consumption	hygiene
herbivore	carnivore	organ
digestion	enzyme	anus
small intestine	large intestine	bile
stomach	rectum	esophagus
tongue	saliva	acid
incisors	molars	prey
predator	consumer	

Diagrams/Pictures





States of Matter
Year Group: 4
Term: Summer 2



What the matter?

What you should already know

- An object is made from/of a material.
- Materials can be hard, soft, strong, weak, absorbent, heavy, light, solid, runny, smooth, rough – these are the properties of materials.
- Matter (stuff) is made from tiny building blocks.

Investigations

At what temperature does chocolate melt?

- Ask questions and use a form of enquiry to answer them.
- Set up a practical test which is **fair**.
- Make careful **observations**.
- Take accurate **measurements** (using thermometers)
- Collect **data** and present the results (data) in a table.
- Report on findings from an enquiry.
- Use the results to draw a **conclusion** which will answer the question.
- Make further predictions based on the results.

New Learning

- All things are in one of the states of matter – solid, liquid or gas.
<https://www.stem.org.uk/resources/elibrary/resource/30642/what-stuff-does>
- Things are made of particles (tiny building blocks) that are organized differently in different states (solid, liquid or gas).
- There are bonds between the particles in a solid. When the temperature increases these particles absorb energy and can change into a liquid. With a further increase in temperature, the bond of the particles is broken down so the liquid changes to a gas.
- Solid to a liquid = melting. Liquid to a solid = freezing.
- Liquid to a gas = evaporation. Gas to a liquid = condensation.
- Solid to a gas (without the liquid stages) = sublimation.
- Melting point of water = 0 degrees Celsius.
- Boiling point of water = 100 degrees Celsius.
- Water flows around the world in a continuous process called the Water Cycle.
- Rain condenses in clouds and falls the earth as rain, snow or hail in a process called precipitation.

Vocabulary

absorb	dissolve	energy
evaporation	freezing	matter
melting	particle	temperature
ice	water	solid
bond	condensation	evaporation
reversible	boiling point	melting point
liquid	gas	water cycle
precipitation	transpiration	sublimation

Diagrams/Pictures



Solid, liquid and gas particles.



The water cycle.



Melting (solid to liquid)

Freezing (liquid to solid)

