



Animals and Humans
Year Group: 6
Term: Autumn 1

Heartbeat

What you should already know

- Living things move, grow, consume nutrients and reproduce.
- Animals need air, water and food to stay alive.
- People need to exercise often to help their body stay strong and fit.
- Keeping clean, including brushing teeth, is an important part of staying healthy.
- There are food groups: fruit and vegetables, carbohydrates, protein, dairy, fat and sugars.
- Protein = growth. Carbohydrates = energy. Fruit and vegetables = vitamins and minerals.
- Fats and sugary foods should be eaten rarely.
- A balanced diet is getting the right amount of each food group.
- A lack of a nutrient can cause ill health.
- The process of digestion involves breaking complex foodstuffs in simpler building blocks that can be absorbed by the body.

Investigations

How quickly does the heart recover after exercise?

- Record results in a table and line graph.
- Plan how to answer the question using controlled variables.
- Use equipment – stopwatch.
- Record heartrate – resting, after exercise and after 5 minutes recovery.
- Write a scientific **conclusion**.
- Ask further questions.
- Make further predictions based on the outcome of the investigation.

New Learning

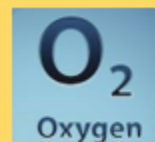
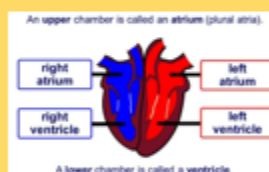
- The heart and lungs are organ protected by the ribcage.
- Blood travels around the body transporting nutrients that have been absorbed into the blood stream .
- Blood carries oxygen around the body which is used to power the body.
- The heart beats pumping blood around the body and blood vessels carry the blood.
- Arteries carry the blood away from the heart and veins carry the blood towards the heart.
- Capillaries are tiny blood vessels that connect arteries and veins.
- The heart has four chambers: two atria and two ventricles.
- The aorta is the largest artery in the body and most major arteries branch from it.
- When we exercise our heart beats more frequently so that oxygen that is used around the body can be replenished.
- Drugs are chemicals that have an impact on the chemicals inside peoples' bodies.
- Drugs can be harmful or helpful depending on what they are and how they are used.
- All drugs can be harmful if over used.



Vocabulary

energy	growth	survival
nutrients	skeleton ribcage	fat
protein	carbohydrate	artery
digestion	organ	atria
aorta	blood vessels	ventricle
capillaries	circulatory system	
vein	pulse	

Diagrams/Pictures



Aorta segments





Living Things in Their Habitats

Year Group: 6

Term: Autumn 2



Who lives with us on Earth?

What you should already know






- Animals can be grouped according to their **physical characteristics**.
- **Species** is a group of living things.
- A **classification key** can be used to identify living things.
- Know what a **vertebrate** and **invertebrate** are.
- Know the features of **fish, amphibians, reptiles, birds and mammals**.

Investigations

What conditions are good for growing mould?

- Identify conditions which can be controlled.
- Know how to make relevant predictions.
- Draw a table with collected data.
- Write a scientific conclusion.
- Produce annotated Scientific diagrams of the growth of the mould.
- Decide whether the results are reliable.
- Make further predictions and link to everyday growth of mould.

New Learning

- There are three types of **micro-organisms** – **viruses, fungi and bacteria**.
- **Germs** are disease-causing bacteria.
- **Arthropods** are invertebrates with a hard, external skeleton and joined limbs.

- **Insects** are types of arthropods and their bodies consist of 6 legs, a head, a **thorax** and an **abdomen**. Most have a pair of **antennae** and wings.

- An **arachnid** (spider) is a type of arthropod with 8 legs but no wings or antennae.

- A **crustacean** is a type of arthropod with two pairs of antennae (e.g. woodlouse).

- A **myriapod** is an arthropod with a flat and long body or cylindrical body and many legs (centipede).


Vocabulary

Fish	Bird	Amphibian
Reptile	Mammal	Species
Bacteria	Insect	Vertebrate
Invertebrate	Classification Key	
Virus	Micro-organism	
Thorax	Arthropod	Abdomen
Arachnid	Antennae	

Diagrams/Pictures



Micro-organism



Virus



Fungi



Electricity
Year Group: 6
Term: Spring 1

How do the lights in our houses work?

What you should already know

- An object is made from/of a material.
- Electrical is a form of energy.
- Static electricity is an imbalance of charged particles.
- Current electricity is the flow of charged particles (called electrons) around a circuit.
- Electrical current flows well through some materials (conductors).
- When electrical current flows through a circuit, components start to work.
- High levels of electrical current can be dangerous.

Investigations

Does the length of the wires affect the brightness of the bulb?

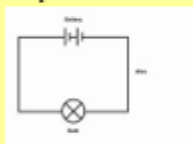
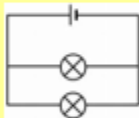
- Identify **conditions** which can be **controlled**.
- Plan how to answer the question.
- Draw a **table** with collected **data**.
- Record observations by producing a Scientific diagram (using the correct symbols)
- Make further predictions.
- Write a scientific **conclusion**.

New Learning

- Voltage is the measure of the power of a cell to produce electricity. It is the measure of the push of an electrical current.
- As the number and voltage of cells in a circuit increases, the brightness of the bulb will increase.
- Circuit diagrams are used to represent the components in a circuit.



- Each of components in a circuit are represented by a symbol.
- Two bulbs in a circuit can be wired up to create a series circuit.
- Two bulbs in a circuit can be wired up to create a parallel circuit.



- If one bulb blows in a series circuit, then the other will blow because the circuit is no longer complete.
- If one bulb blows in a parallel circuit, there will still be a complete circuit for the other bulb so it will continue to shine.
- Parallel circuits are used in the home.

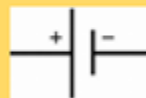
Vocabulary

Circuit	Component	Conductor
Insulator	Particle	Material
Appliance	Battery/Cell	
Bulb	Buzzer	Switch
Wire	Positive	Negative
Voltage	Series Circuit	
Parallel Circuit	Resistance	

Diagrams/Pictures



Battery



Cell



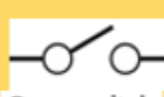
Buzzer



Motor



Bulb



Open switch



Switch (on)



Wire



Light
Year Group: 6
Term: Summer 1

What colour is light?

What you should already know

- Light is a form of energy.
- Energy cannot be created nor destroyed – only changed.
- We need light to see. Darkness is the absence of light.
- Light travels in straight lines.
- Light is reflected when it travels from a light source and then bounces off the object.
- The Sun is a light source.
- The Moon is not a light source – it reflects the light of the Sun.
- Filaments in bulbs heat up until they glow – giving off light and heat.
- Looking at the sun directly can damage your eyes.
- Opaque objects block light – creating shadows.
- Light passes through transparent objects.
- As objects move towards a light source, the size of the object increases.

Investigations

Is light white?

- Make careful observations and draw scientific diagrams which show the colour split.
- Use a labelled diagram to show refraction.
- Make further predictions and use knowledge to explain everyday Science – why/how do rainbows occur?

New Learning

- Translucent objects allow some light to pass through them but some of the light changes direction as it passes through the object (something seen through a translucent object is not clearly defined).



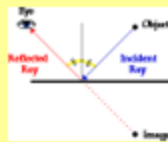
- When light passes from one medium to another (e.g. from air to water), it changes direction. This is called refraction.

- White light comprises all the colours of light.

- White light refracted by two surfaces in a prism will spread out so that all of the colours can be seen. This happens because the different colours of the white light, travel at different speeds. The array of colours that can be seen is called the spectrum.



- When light reflects off an object, the angle of incidence is equal to the angle of reflection.



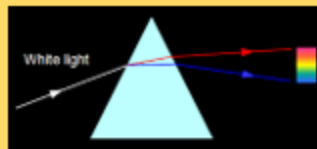
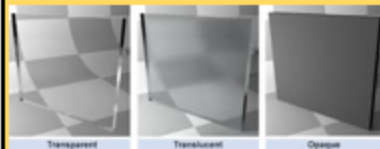
- A periscope uses the angles of incidence and reflection allowing the image to be seen by the viewer.



Vocabulary

absorption	energy	property
reflection	wave	mirror
incidence ray	image	beam
opaque	transparent	source
angle of incidence	angle of reflection	
spectrum	translucent	
medium	periscope	

Diagrams/Pictures





Evolution and Adaptation

Year Group: 6

Term: Summer 2

Our Changing World

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 – thick fur (warmth), oily pads (they don't freeze on the ice). Sharks – smooth skin and streamlined for quick swimming and gills for breathing underwater.
- Cacti (an example of how a plant has adapted to its environment – thick skin keeps a store of water safe; sharp spikes stop animals from stealing the water).
- Frogs live in ponds – they need somewhere safe to lay their eggs.
- A species is a group of living things that have many similarities.
- Human activity – such as climate change caused by pollution – can change the environment for many living things, endangering their existence. Polar bears are affected by climate change.

Investigations

Which is the best beak?

- Record results in a table.
- Ask further questions.
- Present findings in diagrams with annotations.
- How to draw a **table** with collected **data**.
- Write a scientific **conclusion**.

New Learning

- All life on earth began from a single point around 4.5 billion years ago.
- Living things change over time.
- This gradual change is called **EVOLUTION**.
- Natural selection is the cause of this change. (**Natural selection** is the process where organisms that are best suited to their environment survive).
- Natural selection works – across a species there is natural variation within a species.
- Within each species there is competition to survive and reproduce and that member of a species with advantageous characteristics survive and reproduce.



- These characteristics are passed on to their offspring.
- Offspring vary and are not identical to their parents.
- Charles Darwin was the first to discuss the theory of evolution by natural selection.
- The gradual change of species over millions of years can be observed by looking at examples of fossils.

What is Darwin theory of evolution by natural selection?



Vocabulary

birth decay energy irreversible
 extinction microhabitat life cycle
 food chain source nutrients
 reproduction consumption
 environment species adaptation
 evolution natural selection
 variation advantageous

Diagrams/Pictures

Evolutionary biology

