Year 6 Knowledge Organiser: Animals Including Humans

Key Vocabulary

Term	Definition
Circulatory	Relating to the system that moves blood through the body
System	A group of organs working together to perform a function
Heart	The muscular organ that pumps blood through the circulatory system
Blood	The fluid that carries oxygen, nutrients, and waste through the body
Vessel	Tubes such as veins, arteries, and capillaries that carry blood
Artery	Blood vessel that carries blood away from the heart
Vein	Blood vessel that carries blood towards the heart
Capillary	Tiny blood vessels where substances are exchanged
Oxygen	Gas that is essential for respiration and is carried by the blood
Red cell	Blood cell that carries oxygen
White cell	Blood cell that fights infection
Plasma	The liquid part of the blood
Platelets	Cell fragments that help in clotting
Nutrient	Substance needed for growth and

	energy
Absorb	To take in or soak up
Transport	To carry something from one place to another
Digestion	The process of breaking down food to be absorbed
Diet	The kinds of food a person regularly eats
Exercise	Physical activity to maintain health
Lifestyle	The way in which a person lives
Drug	A substance that has an effect on the body
Alcohol	A substance found in drinks that affects the body
Smoking	The act of inhaling tobacco smoke
Organs	Parts of the body with specific functions
Respiration	Process of converting oxygen and glucose into energy
Pulse	The beat felt as blood is pumped through the arteries
Variable	Something that can change in an experiment
Campaign	A planned series of actions to achieve a goal
Diagnosis	Identifying a disease or condition
Recommendation	A suggestion for the best course of action

Big Questions

- What does the circulatory system do and how does it work?
- What are the components and functions of blood?
- How do nutrients and oxygen get transported in the body?
- What can affect our health and how can we stay healthy?
- How do body systems work together to keep us alive?
- How does medical science help improve human health?

Sticky Knowledge

- The circulatory system transports blood, oxygen, and nutrients around the body.
- Blood is made of plasma, red cells, white cells, and platelets, each with a different role.
- Nutrients and oxygen travel in the blood to all parts of the body.
- A healthy lifestyle includes balanced diet, exercise, and avoiding harmful substances.
- Different body systems (digestive, respiratory, circulatory) are interdependent.
- Medical science helps diagnose and treat diseases to improve health outcomes.

Working Scientifically

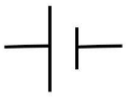
- Plan and carry out an investigation into heart rate.
- Use diagrams to explain processes like blood flow and nutrient transport.
- Record data and present it in graphs and charts.
- Evaluate health messages and assess their impact.
- Use case studies to apply scientific knowledge to real-life scenarios.
- Research roles in medical science and health care.

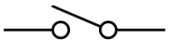
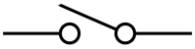
Real-World Links

- Public health campaigns (e.g. anti-smoking, balanced diets)
- How doctors and nurses use science to help patients
- Impact of lifestyle choices on long-term health
- Careers in medicine, healthcare, and biological sciences

Year 6 Knowledge Organiser: Electricity

Key Vocabulary

Term	Definition
Electricity	A form of energy resulting from charged particles
Circuit	A complete path through which electricity flows
Battery	A source of stored electrical energy
Appliance	A device powered by electricity
Energy	The capacity to do work or cause change
Cell 	A single unit that provides electric power in a circuit
Wire	Conductive material that carries electricity
Bulb 	A component that lights up when electricity flows through it
Series	A type of circuit where components are connected in a single path
Brightness	How much light a bulb gives off
Volume	The loudness of a sound from a component like a buzzer
Voltage	The force that pushes electric current through a circuit
Current	The flow of electric charge in a circuit

Component	A part of a circuit such as a bulb, wire, or switch
Output	The result from a component like light or sound
Variable	A factor that can be changed in an experiment
Prediction	A statement about what will happen based on knowledge
Switch 	A device that opens or closes a circuit
Open 	A circuit that is incomplete and electricity cannot flow
Closed 	A complete circuit where electricity can flow
Control	To manage the operation of a circuit
Observation	What is seen or measured during an experiment
Fair Test	An experiment where only one variable is changed
Investigation	A scientific inquiry to answer a question
Compare	To note similarities and differences
Symbol	A drawing used to represent a component in a circuit
Diagram	A simplified drawing showing how something works
Interpret	To explain or understand something

Fault	A problem or error in a circuit
Design	To create a plan for a working circuit
Buzzer 	A device that makes sound using electricity
Presentation	The act of explaining or displaying work
Real-world	Relating to actual use in everyday life
Safety	Precautions taken to avoid danger or injury
Device	A tool or piece of equipment with a specific function
Use	The purpose something serves

Big Questions

- What is electricity and how does it power devices?
- How do components work together in a circuit?
- How does changing a component affect a circuit?
- What are electrical symbols and why are they used?
- How is electricity used in the real world?
- How can we design and test an effective electrical circuit?

Sticky Knowledge

- Electricity flows through a complete circuit made of components like wires, bulbs, and switches.
- Changing the number or arrangement of components affects how the circuit works.
- Switches control the flow of electricity by opening and closing the circuit.
- Each component in a circuit has a specific symbol used in circuit diagrams.
- Circuits are used in real life in devices like alarms, toys, and home systems.
- Safety is important when working with electricity.

Working Scientifically

- Build and test circuits using real components.
- Observe and record how changes affect circuit output.
- Use circuit symbols to draw and interpret diagrams.
- Design circuits for a specific purpose and explain how they work.
- Carry out investigations using fair tests and record data in tables and graphs.
- Identify and fix faults in a circuit.

Real-World Links

- Understanding how electrical systems work in homes and schools
- Safety with electricity and how to avoid electrical hazards
- Careers in engineering, electronics, and electrical repair
- Designing and evaluating electrical devices for real purposes

Year 6 Knowledge Organiser: Evolution and Inheritance

Key Vocabulary

Term	Definition
Evolution	Gradual change in species over generations
Inheritance	Passing of traits from parents to offspring
Variation	Differences between individuals of the same species
Adaptation	Traits that help an organism survive in its environment
Fossil	Remains or traces of ancient life preserved in rock
Natural Selection	Process where beneficial traits become more common over time
Trait	A feature or characteristic of an organism
Offspring	Children or young of a particular parent or generation
Environment	The surroundings or conditions in which an organism lives
Charles Darwin	Scientist who developed the theory of evolution by natural selection
Mary Anning	Fossil hunter whose discoveries supported evidence for ancient life

Big Questions

- What is evolution, and how does it happen?
- How do offspring inherit traits from their parents?
- Why don't offspring look exactly like their parents or siblings?
- How do animals and plants adapt to survive in their environment?
- What can fossils tell us about the past?
- Who were Charles Darwin and Mary Anning, and why are they important?

Sticky Knowledge

- Evolution happens slowly over many generations.
- Fossils give evidence for how life has changed over time.
- Traits can be inherited (eye colour) or learned (riding a bike).
- Adaptations help organisms survive in their habitats.
- Darwin's observations of finches helped him form the theory of natural selection.

Working Scientifically

- Ask questions about how animals have adapted.
- Use evidence (like fossils) to support scientific explanations.
- Compare and group living things based on similarities and differences.
- Present findings using labelled diagrams, stories, and oral presentations.
- Use secondary sources for research (e.g., Mary Anning's biography, Darwin's finches).

Real-World Links

- Endangered species and conservation
- Evolution of human beings
- Fossil discoveries in local/national museums
- Genetics in farming and medicine

Year 6 Knowledge Organiser: Light

Key Vocabulary

Term	Definition
Light	A form of energy that enables us to see
Source	An object that emits light
Straight line	The path light travels in
Beam	A line or stream of light
Reflect	To bounce back from a surface
Eye	The organ that receives light to see
Object	Anything that reflects or blocks light
Vision	The ability to see
Mirror	A reflective surface
Reflection	Light bouncing off a surface
Angle	The space between two intersecting lines or surfaces
Bounce	To reflect or spring back
Smooth	A surface that reflects light evenly
Shadow	A dark area formed when light is blocked
Block	To stop light from passing through
Opaque	Not letting light through
Silhouette	A dark shape or outline
Light path	The direction light travels

Periscope	An optical instrument using mirrors
Observe	To watch or take notice of
Refraction	The bending of light as it passes through different materials
Bend	To change direction
Glass	A transparent material that refracts light
Prism	A transparent object that separates light into a spectrum
Medium	A substance through which light travels
Spectrum	A range of different colours produced when light is split
White light	Light that contains all colours of the visible spectrum
Rainbow	An arc of colours formed by refraction and reflection
Colour	The aspect of things caused by differing qualities of light
Investigation	A scientific process to find answers
Fair test	An experiment with only one variable changed
Variable	A factor that can change
Distance	The space between two objects
Laser	A focused beam of light
Fibre optic	Thin fibres that transmit light
Lens	A transparent object that bends light

Light beam	A directed stream of light

Big Questions

- How does light travel and how do we see objects?
- What causes shadows and how do they change?
- How does light reflect and refract?
- What is the spectrum of light and how do colours appear?
- How is light used in technology and everyday life?

Sticky Knowledge

- Light travels in straight lines from a source.
- We see objects because light reflects off them into our eyes.
- Shadows form when light is blocked by an opaque object.
- Mirrors reflect light, and the angle of reflection equals the angle of incidence.
- Light can bend (refract) when it moves through water or glass.
- White light is made up of all colours of the spectrum.
- Light is used in technology such as lasers, fibre optics, and cameras.

Working Scientifically

- Draw diagrams to show how light travels and reflects.
- Plan and carry out investigations on shadow size and reflection.
- Use mirrors and prisms to explore light paths and colour splitting.
- Explain how light enters the eye using labelled diagrams.
- Build models like periscopes to explore reflection.
- Record and explain observations with scientific vocabulary.

Real-World Links

- How mirrors and lenses are used in optical devices (e.g. glasses, cameras)

- Use of fibre optics in internet and communication
- Light and safety (e.g. traffic lights, reflective clothing)
- How understanding light helps in medicine (e.g. lasers, endoscopy)

Year 6 Knowledge Organiser: Living Things and Their Habitats

Key Vocabulary

Term	Definition
Classification	The process of grouping living things based on their characteristics
Characteristic	A feature or quality that helps to identify or describe something
Living things	Organisms that grow, reproduce, and respond to their environment
Group	A set of organisms sharing common features
Organism	Any living thing, such as an animal, plant, or microbe
Micro-organism	A tiny organism such as bacteria, fungi, or viruses
Bacteria	Single-celled organisms that can be helpful or harmful
Fungi	A group of organisms including mushrooms and moulds
Virus	A microscopic organism that can cause illness
Microscope	A tool used to see very small objects
Vertebrate	An animal with a backbone
Invertebrate	An animal without a backbone
Animal	A living organism that feeds on organic matter
Structure	The arrangement of parts in an

	organism
Key	A tool used to identify living things by answering questions
Branching	A type of key that splits into two or more options
Classify	To sort or group things based on similarities
Question	A sentence worded to elicit information
Sort	To arrange or organize by category
Identify	To recognize or name something
Species	A group of similar organisms capable of reproducing
Plant	A living organism that usually makes its own food through photosynthesis
Leaf shape	The form of a plant's leaf used in classification
Flower	The reproductive structure of flowering plants
Root	The part of the plant that absorbs water and anchors it
Traits	Features or qualities of an organism
Habitat	The natural environment where an organism lives
Carl Linnaeus	Scientist who developed a classification system
Genus	A group of related species
Binomial	A two-part scientific naming system
Unusual	Different or uncommon

Adaptation	A trait that helps an organism survive
Guide	A document or booklet giving information
Diagram	A drawing showing the parts or structure
Real-world	Relating to actual life situations
Conservation	Protecting natural environments and species
DNA	The material that carries genetic information

Big Questions

- Why do scientists classify living things?
- What are the main groups of living things?
- How can we use classification keys to identify organisms?
- What characteristics help distinguish plants and animals?
- Who was Carl Linnaeus and what was his contribution?
- How is classification used in the real world?

Sticky Knowledge

- Classification helps scientists group and identify living things.
- Micro-organisms are tiny living things, some helpful and some harmful.
- Animals can be grouped into vertebrates and invertebrates.
- Classification keys help identify organisms by answering yes/no questions.
- Carl Linnaeus created the binomial naming system used today.
- Classification is used in medicine, conservation, and research.

Working Scientifically

- Use classification keys to identify living things.
- Observe and record characteristics of organisms.
- Compare and contrast different species.
- Create branching keys for chosen groups of organisms.
- Apply classification to unusual or unfamiliar animals.
- Research how classification is used in science today.

Real-World Links

- Use of classification in wildlife conservation efforts
- How doctors use classification of microbes to treat disease
- Application of DNA in modern classification systems
- Role of scientists like Carl Linnaeus in taxonomy