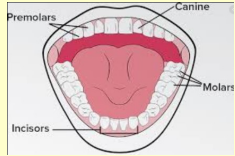


PICKHURST ACADEMY - SCIENCE KNOWLEDGE ORGANISER

Year:	4	Topic:	Animals inc humans (Where does all the food go?)	Strand: Biology
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What will I know by the end of the unit:

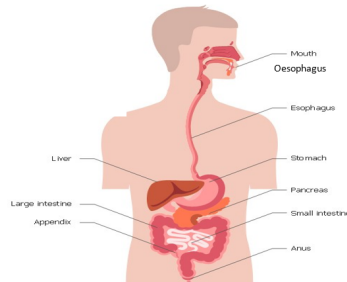


- Teeth are used for cutting and chewing food.
 - They start the **digestive process** which gives us the energy we need to live.
 - Humans look after their teeth by brushing and flossing and ensuring that they do not eat foods high in sugar.
- Not looking after teeth can lead to an increase in **plaque** and **tooth decay**.

- Canines** are pointed for tearing and ripping food - these are usually used when chewing meat.
- Incisors** are shovel shaped and help bite lumps out of and cut food.
- Premolars** and **molars** are flat and they grind and crush food

The Digestive System

- The smell of food triggers **saliva** to be produced.
- 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.



What might I know already:

The parts of the human body and what they do. All animals need water, air and food to survive. The different ways in which humans are healthy. Animals get **nutrition** from what they eat. Humans and some animals have skeletons and **muscles** for support, protection and movement. What **carnivores**, **omnivores** and **herbivores** are. **Excretion** is one of the seven living processes

Key vocabulary

absorb	soak up or take in
canine	pointed teeth near the front of the mouth of humans and of some animals
carnivore	an animal that eats meat
decay	gradually destroyed by a natural process
digestion	breaking down ingested food material
enamel	the hard white substance that forms the outer part of a tooth
excretion	the process of eliminating faeces , urine, or sweat from the body
faeces	the solid waste substance that people and animals get rid of from their body by passing it through the anus
herbivore	an animal that only eats plants
incisor	the teeth at the front of your mouth which you use for biting into food
ingested	When animals or plants ingest a substance, they take it into themselves, for example by eating or absorbing it
intestines	the tubes in your body through which food passes when it has left your stomach
molar	the large, flat teeth towards the back of your mouth that you use for chewing food
muscles	something inside your body which connects two bones and which you use when you make a movement
nutrition	the process of taking food into the body and absorbing the nutrients in those foods
oesophagus	the part of your body that carries the food from the throat to the stomach
omnivore	person or animal eats all kinds of food, including both meat and plants
organ	a part of your body that has a particular purpose
plaque	a substance containing bacteria that forms on the surface of your teeth
premolar	two situated on each side of both jaws between the first molar and the canine
process	a series of actions used to produce something or reach a goal.
saliva	the watery liquid that forms in your mouth and helps you to chew and digest food
stomach	the organ inside your body where food is digested before it moves into the intestines

PICKHURST ACADEMY - SCIENCE KNOWLEDGE ORGANISER

Year:	4	Topic:	Human Impact	Strand: Biology
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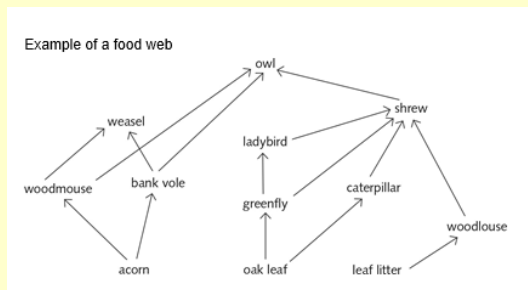
What will I know by the end of the unit:

Humans can have a negative impact on the local environment through different types of **pollution** (e.g. litter, chemical, air, noise) and through destruction of habitats through building housing, roads etc.

Humans can also have a positive impact when developments are designed to be **environmentally friendly**, when they improve **brownfield sites** and where **parks, nature reserves** and other green spaces are deliberately created or actively maintained to increase **biodiversity**.

Global issues affecting biodiversity include habitat destruction through **deforestation** (for intensive agriculture, building or use of the trees as a resource), **pollution** (for example from oil spills) and **global warming**, which can be explored through its impact on polar habitats.

A **food chain** is used to describe feeding relationships. These relationships are complex and, for the whole ecosystem, are shown as an interconnected food web, with any one organism being food for or a feeder on one or more other species. A food chain isolates one linear relationship from within the web.



What might I know already:

A food chain is a series of organisms each dependent on the next as a source of food. An ecosystem is a biological community of interacting organisms and their physical environment. Food chains can be broken by habitat disruption or the removal of a species from an ecosystem

Key vocabulary

environment	the surroundings or conditions in which a person, animal, or plant lives or operates.
pollution	Pollution is when gases, smoke and chemicals are introduced into the environment in large doses that makes it harmful for humans, animals and plants. Some forms of pollution can be seen, some are invisible. Our Earth has an atmosphere that's made up of different gases
biodiversity	Biodiversity is all the different kinds of life you'll find in one area—the variety of animals, plants, fungi, and even microorganisms like bacteria that make up our natural world. Each of these species and organisms work together in ecosystems, like an intricate web, to maintain balance and support life
habitat	The natural home or environment of an animal, plant, or other organism.
producer	Producers are any kind of green plant. Green plants make their food by taking sunlight and using the energy to make sugar. The plant uses this sugar, also called glucose to make many things, such as wood, leaves, roots, and bark.
consumer	Consumers: any organism that can't make its own food. Consumers have to feed on producers or other consumers to survive
global issue	A global issue is a matter of public concern worldwide. This list of global issues presents problems or phenomena affecting people around the world, including but not limited to widespread social issues, economic issues, and environmental issues
deforestation	the action of clearing a wide area of trees.
climate	the weather conditions prevailing in an area in general or over a long period.
endangered	a species seriously at risk of extinction
predator	an animal that naturally preys on others.
prey	an animal that is hunted and killed by another for food
conservation	prevention of wasteful use of a resource
viewpoint	a person's opinion or point of view
debate	A debate is a formal discussion

PICKHURST ACADEMY - SCIENCE KNOWLEDGE ORGANISER

Year:	4	Topic:	Electricity (Switched On)	Strand: Physics
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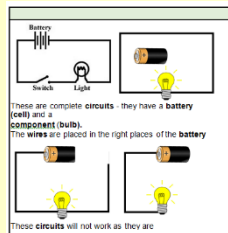
What will I know by the end of the unit:

- **Electricity** is **generated** using **energy** from natural **sources** such as the Sun, oil, water and wind.
- These can also be called **fuel sources**.
- Some **appliances** use **batteries** and some use **mains electricity**.
- **Batteries** come in different sizes depending on how much and for how long the **appliance** is used.
- Common **appliances** that use **electricity**.



- A complete **circuit** is a loop that allows **electrical current** to flow through **wires**.
- A **circuit** contains a **battery (cell)**, **wires** and an **appliance** that requires **electricity** to work (such as a **bulb**, **motor** or **buzzer**).
- The **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. This is not the same as an incomplete **circuit**.
- When objects are placed in the **circuits**, they may or may not allow **electricity** to pass through. Objects that are made from materials that allow **electricity** to pass through a create a complete **circuit** are called **electrical conductors**.

Objects that are made from materials that do not allow **electricity** to pass through and do not complete a **circuit** are called **electrical insulators**.



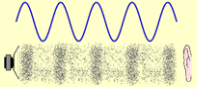
What might I know already:

- **Electricity** is a form of **energy** that can be carried by wires and is used for heating and lighting, and to provide **power** for **devices**.
Sources of light and sound may need **electricity** to work.

Key vocabulary

appliances	a device or machine in your home that you use to do a job such as cleaning or cooking. Appliances are often electrical.
battery	small devices that provide the power for electrical items such as torches
bulb	the glass part of an electric lamp, which gives out light when electricity passes through it.
buzzer	an electrical device that is used to make a buzzing sound
cell	a synonym for battery
circuit	a complete route which an electric current can flow around
component	the parts that something is made of
conductor	a substance that heat or electricity can pass through or along
current	a flow of electricity through a wire or circuit
device	an object that has been invented for a particular purpose
electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices
energy	the power from sources such as electricity that makes machines work or provides heat
fuel	a substance such as coal, oil, or petrol that is burned to provide heat or power
generate	cause it to begin and develop
insulator	a non-conductor of electricity or heat
mains	where the supply of water, electricity, or gas enters a building
motor	a device that uses electricity or fuel to produce movement
power	power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating and machinery
source	where something comes from
switch	a small control for an electrical device which you use to turn the device on or off
wires	a long thin piece of metal that is used to fasten things or to carry electric current

PICKHURST ACADEMY - SCIENCE KNOWLEDGE ORGANISER

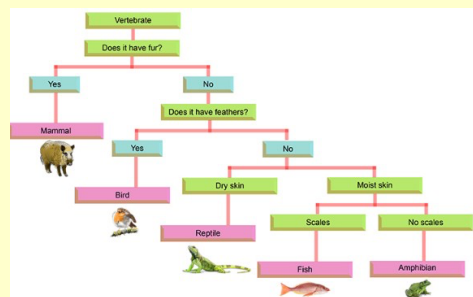
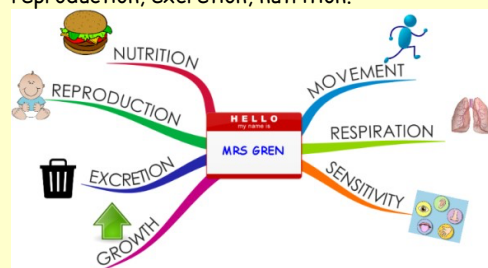
Year:	4	Topic:	Sound (Good Vibrations)	Strand: Physics
What will I know by the end of the unit:			What might I know already:	
A sound is a thing that can be heard. The object that makes the sound is called the source. When objects vibrate, a sound is made. The vibration makes the air around the object 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). For example, if somebody is playing music in the room next door, the sound can travel through the bricks in the wall. When an object vibrates, the air around it vibrates too. This vibrating air can also be known as sound waves. 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 squeak of mouse has a high pitch. A roar of a lion has a low pitch. The volume of a sound is how loud or quiet it is. When a sound is created by a little amount of energy, a weak sound wave is created which doesn't travel far. This makes a quiet sound. A small tap of a hammer is used with small amounts of energy and so creates a quiet noise. A vibration with lots of energy makes a powerful sound wave and therefore a loud sound. A powerful, smashing tap of a hammer is used with lots of energy and so creates a loud noise. Amplitude measures how strong a sound wave is. Decibels measure how loud a sound is. Frequency measures the number of times per second that the sound wave cycles.			- Hearing is one of my five senses. - Sounds can be combined using musical instruments. - What the word vibration means.	
			Key vocabulary	
			amplitude	a measure of the strength of a sound wave
			decibel	a measure of how loud a sound is
			electricity	a form of energy that can be carried by wires and is used for heating and lighting, and to provide power for devices
			energy	the power from sources such as electricity that makes machines work or provides heat
			frequency	a measure of how many times per second the sound wave cycles
			medium	something that makes possible the transfer of energy from one location to another
			pitch	how high or low a sound is
			power	Power is energy, especially electricity, that is obtained in large quantities from a fuel source and used to operate lights, heating, and machinery
			sound waves	invisible waves that travel through air, water, and solid objects as vibrations
			source	where something comes from
			transmit	to pass from one place or person to another
			travel	how something moves around
			vibrations	invisible waves that move quickly
			volume	how loud or quiet a sound is

PICKHURST ACADEMY - SCIENCE KNOWLEDGE ORGANISER

Year:	4	Topic:	Living Things (Who am I?)	Strand: Biology
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What will I know by the end of the unit:

All living things, which can also be called organisms, have to do certain things to stay alive. These are the life processes: movement, respiration, sensitivity, growth, reproduction, excretion, nutrition.



Living things can be grouped according to different **criteria** (where they live, what type of **organism** they are, what features they have). For example, a camel can belong in a group of **vertebrates**, a group of animals that live in the desert, and a group of animals that have four legs.

- A **classification key** is a

tool that is used to group living things to help us identify them.

- **Habitats** can change throughout the year and this can have an effect on the plants and animals that live there.
- Humans can have positive and negative effects on the environment:
 - positive effects: nature reserves, ecological parks
 - negative effects: litter, **urban** development

What might I know already:

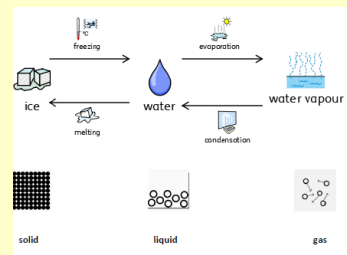
Animals can be grouped into **vertebrates** (and then further into fish, reptiles, amphibians, birds and mammals) and **invertebrates**. Animals can be grouped into **carnivores**, **herbivores** and **omnivores**. The differences between the teeth of **carnivores** and **herbivores**. The names of some common wild and garden plants, **deciduous** and **evergreen** trees. Examples of **habitats** (including **microhabitats**) and the animals and plants that can be found there. Living things depend on each other to survive. How land use has changed over time and the effects this has on the **environment** (e.g. **urban** development)

Key vocabulary

biomes	a natural area of vegetation and animals
carnivore	an animal that eats meat
classification key	a system which divides things into groups or types
criteria	a factor on which something is judged
deciduous	trees that lose leaves in the autumn every year
environment	all the circumstances, people, things, and events around them that influence their life
evergreen	a tree or bush which has green leaves all the year round
excretion	the process of eliminating waste from the body
food chain	a series of living things which are linked to each other because each thing feeds on the one next to it in the series
habitat	the natural environment in which an animal or plant normally lives or grows
herbivore	an animal that only eats plants
invertebrate	a creature that does not have a spine, for example an insect, a worm, or an octopus
life processes	there are seven processes that tell us that living things are alive
microhabitat	a small part of the environment that supports a habitat, such as a fallen log in a forest
minibeast	a small invertebrate animal such as an insect or spider
nutrition	the process of taking food into the body and absorbing the nutrients in those foods
omnivore	person or animal eats all kinds of food, including both meat and plants
organism	a living thing
reproduction	when an animal or plant produces one or more individuals similar to itself
respiration	process of respiring; breathing; inhaling and exhaling air
sensitivity	responding to the external environment
urban	belonging to, or relating to, a town or city
vegetation	plants, trees and flowers
vertebrate	a creature which has a spine.

PICKHURST ACADEMY - SCIENCE KNOWLEDGE ORGANISER

Year:	4	Topic:	States of Matter (In a State)	Strand: Chemistry
What will I know by the end of the unit:			What might I know already:	
Particles are what materials are made from. They are so small that we cannot see them with our eyes. he properties of a substance depend on what its particles are like, how they move and how they are arranged Particles behave differently in solids, liquids and gases. <i>In the solid state, the material holds its shape.</i> Solids have vibrating particles which are closely packed in and form a regular pattern. This explains the fixed shape of a solid and why it can't be poured. Solids always take up the same amount space. <i>In the liquid state, the material holds the shape of the container it is in. This means that liquids can change shape, depending on the container. Liquids have particles which are close together but random. Liquid particles can move over each other. Liquids can be poured.</i> <i>In the gas state, particles can escape from open containers.</i> <i>Gases have particles which are spread out and move in all directions.</i> When water (in its liquid form) is heated, the particles start to move faster and faster until they have enough energy to move about more freely. The water has evaporated into a water vapour. When water is cooled, the particles start to slow down until a solid structure (ice) is formed. The water has frozen. The temperature at which water turns to ice is called the freezing point. This happens at 0 degrees celsius.			Why some materials are used for certain purposes because of their properties	
			The water cycle , and the processes of evaporation , condensation and precipitation .	
			Key vocabulary	
			condensation	small drops of water which form when water vapour or steam touches a cold surface, such as a window
			cooling	lowering the temperature of something
			evaporation	to turn from liquid into gas; pass away in the form of vapour.
			freezing	if a liquid or a substance containing a liquid freezes, it becomes solid because of low temperatures
			freezing point	the freezing point of a particular substance is the temperature at which it freezes. The freezing point of water is 0 degrees celsius.
			gas	a form of matter that is neither liquid nor solid. A gas rapidly spreads out when it is warmed and contracts when it is cooled.
			heating	raising the temperature of something
			liquid	in a form that flows easily and is neither a solid nor a gas.
			melting	to change from a solid to a liquid state through heat or pressure
			melting point	the melting point of a particular substance is the temperature at which it melts.
			particles	a tiny amount or small piece
precipitation	rain, snow, sleet, dew, etc, formed by condensation of water vapour in the atmosphere			
process	a series of actions used to produce something or reach a goal.			
properties	the ways in which an object behaves			
solid	having a firm shape or form that can be measured in length, width, and height; not like a liquid or gas			
temperature	a measure of how hot or cold something is			
vibrations	when something vibrates, it shakes with repeated small, quick movements			
water cycle	the process by which water on the earth evaporates, then condenses in the atmosphere, and then returns to earth in the form of precipitation.			
Water vapour	Water in the gaseous state, esp when due to evaporation at a temperature below the boiling point.			



The diagram illustrates the water cycle and the states of matter. At the top, a cycle of three states is shown: ice (solid) with a snowflake icon, water (liquid) with a water drop icon, and water vapour (gas) with a cloud icon. Arrows indicate the transitions: 'freezing' from water to ice, 'evaporation' from water to water vapour, 'melting' from ice to water, and 'condensation' from water vapour to water. Below this, three particle diagrams are shown: 'solid' (a regular grid of dots), 'liquid' (a cluster of dots with some gaps), and 'gas' (a few widely spaced dots). The labels 'solid', 'liquid', and 'gas' are at the bottom.