

St Anne's C of E Primary School Curriculum Plan

Subject: Science

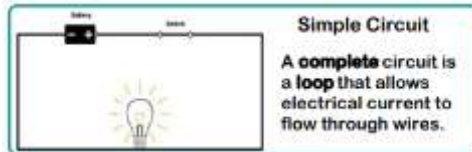
Year: 4

Term: Autumn 1



Unit: Electricity



Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
<p>electricity - energy that powers electrical appliances.</p> <p>power - a force that causes things to work.</p> <p>current - The flow of electricity.</p> <p>cell - a device that makes electricity.</p> <p>voltage - The measure of electrical power.</p> <p>main electricity - electricity that comes through power sockets.</p> <p>appliance - a device that uses electricity to work.</p>	<p>common appliances that run on electricity.</p> <p>electrical components (see image below).</p>	<p>the dangers of using electrical appliances. (how) to keep safe when using electrical appliances.</p> <p>(how) a simple electrical circuit works.</p>  <p>Simple Circuit A complete circuit is a loop that allows electrical current to flow through wires.</p>	<p>Question ask relevant questions and use different types of scientific enquiries to answer them.</p> <p>Plan predict if a simple electrical circuit will work. pose an investigation question and make a prediction.</p> <p>Set-up construct a simple series electrical circuit.</p> <p>apply knowledge of how a switch works to create a switch.</p> <p>set up an investigation to prove or disprove a prediction.</p> <p>set up simple practical enquiries,</p>

socket - plastic cover cases that enable electrical devices to be plugged into the mains.

battery/batteries - containers made of cells in which chemical energy is converted into electricity.

circuit - a pathway that electricity flows around.

series circuit - a pathway where the components are joined in a loop.

complete circuit - a circuit that joins all the components together; also called a closed circuit.

incomplete circuit - a circuit that has one or more gaps in it; also called an open circuit.

components - objects that can be added to an electrical circuit. E.g. bulb, battery, switch, buzzer, motor.

bulb - the glass that contains the filament of an electric lamp.

switch - a device for making and breaking the connection in an electric circuit.

buzzer - an electrical device that makes a buzzing noise and is used for signalling.



the difference between a complete and an incomplete circuit (see image below).

(how) a switch works.

comparative and fair tests.

Observe

investigate which objects are conductors and which are insulators.

explain how a switch works.

make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.

Record

gather, record, classify and present data in a variety of ways to help in answering questions.

Conclude

provide a detailed conclusion about your own investigation that you proved or disproved.

report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Evaluate

use straightforward scientific evidence to answer questions or to support their findings.

motor - a machine that supplies motive power for a vehicle or for another device with moving parts.

wire - a thin piece of metal which electric currents flow through, usually covered in plastic.

conductor - materials which allow electricity to flow through them easily.

insulator - materials which do not allow electricity to flow through them easily.

metal - a material that is a good electrical conductor.

copper - a type of metal that is often used in electrical wiring.

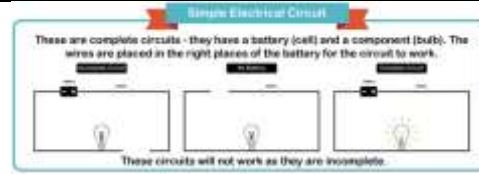
rubber - a material that is a good insulator.

control - to manage the amount of something.

wind turbines - a device which produces electricity with the power of wind.

solar panels - a device which produces electricity with the power of sunlight.

hydropower - a device which produces electricity with the power of water.



examples of insulators and conductors in everyday appliances.

the difference between an insulator and a conductor.

<p>renewable energy - energy gained by using natural or replaceable resources such as wind, sunlight and water.</p> <p>non-renewable energy - energy gained by burning substances that cannot be replaced, such as oil and coal.</p>			
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St Anne's C of E Primary School Curriculum Plan

Subject: Science

Year: 4

Term: Autumn 2



Unit: Sound



Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
term- definition			Question Plan Set-up Observe Record Conclude Evaluate

St Anne's C of E Primary School Curriculum Plan

Subject: Science

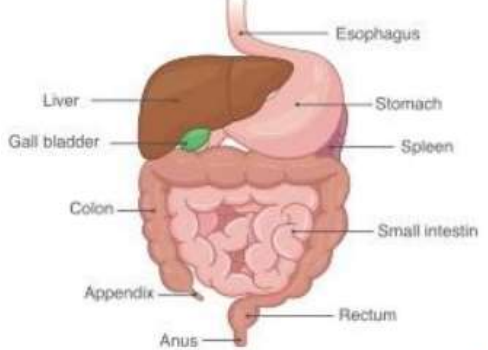
Year: 4

Term: Spring 1



Unit: Animals including Humans



Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
<p>small intestine - organ where nutrients are absorbed into the blood.</p> <p>digestive system - series of organs that break down food.</p> <p>large intestine - organ where mainly water is absorbed into the blood.</p> <p>oesophagus - tube running from mouth to stomach.</p> <p>stomach - organ where food is broken down.</p> <p>jaw - two bones that hold the teeth.</p>	<p>the main organs of the human digestive system.</p>  <p>the different types of human teeth.</p>	<p>the role of the digestive system and the organs within it.</p> <p>the functions of the different types of human teeth.</p>	<p>Question</p> <p>Plan</p> <p>Set-up create an accurate diagram of the main organs of the human digestive system.</p> <p>create a food chain within a chosen ecosystem.</p> <p>create a food web for a chosen ecosystem.</p> <p>research living things within a chosen ecosystem.</p> <p>set up simple practical enquiries, comparative and fair tests.</p>

gum - tissue that covers the jaw and keeps the teeth in place.

molars - wide, flat teeth for grinding food.

canines - sharp, pointed teeth for tearing food.

incisors - front teeth for cutting food.

consumer - an animal which gets its food from other living things.

predator - an animal that gets its food from killing and eating other animals.

ecosystem - a community of living things within an environment.

prey - an animal hunted or killed for food.

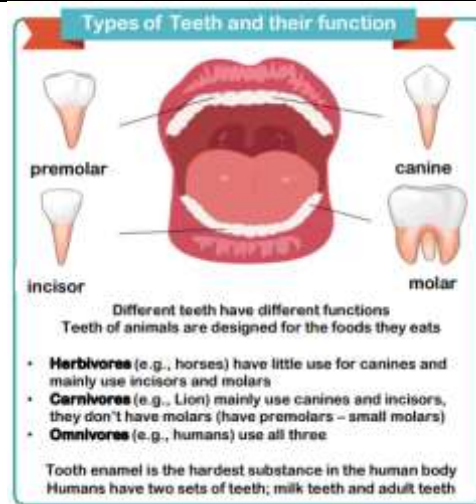
producer - a living thing that makes its own food (such as a plant).

tundra - region found in the Arctic, where the climate is cold and windy.

threatened - at risk.

interdependence - how one living thing depends on another to survive.

hide - the skin of an animal.



the key parts of a food chain.

threats to living things within their chosen ecosystem.

why humans have two sets of teeth.
(how) to care for your teeth.

(why) it is important to keep food chains balanced.
the difference between a food chain and a food web.



why there are threats to living things within an ecosystem.

Observe

use a model of the digestive system to explain the journey of food.

observe and record the effect of each liquid during the teeth investigation.

make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.

Record

explain how the equipment used in the created model relates to the digestive system.

record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

Conclude

draw conclusions from the teeth investigation.

report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Evaluate

use results to draw simple conclusions, make predictions for

<p>food web - a group of food chains within an ecosystem.</p>			<p>new values, suggest improvements and raise further questions.</p>
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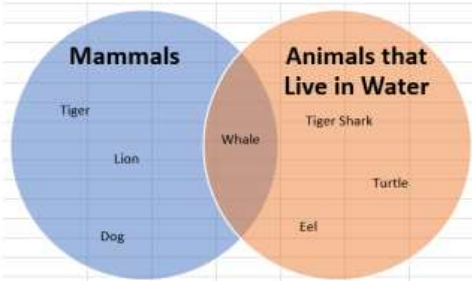
Year: 4

Term: Spring 2



Unit: Living Things and their Habitats



Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
<p>habitat - a place where living organisms live</p> <p>adapted - changed to suit an environment</p> <p>conditions - all the things that surround a living thing, such as the weather and the terrain</p> <p>camouflage - a way of blending into or hiding in your surroundings</p> <p>microhabitat - a small area within a larger habitat.</p> <p>coastal - at or near the coast, or beach.</p>	<p>the similarities between animals that live in the same habitat.</p> <p>descriptions of habitats that are found in the UK.</p> <p>different ways to classify animals into groups.</p> 	<p>certain living things are suited to different environments.</p> <p>the threats that the living things face in these UK habitats.</p> <p>animals can be classified based on different features or characteristics.</p> <p>how a classification key is used.</p>	<p>Question Plan apply knowledge of adaptations to create a classification key for a 'new' species.</p> <p>Set-up research key facts about a habitat and report on the climate, temperature and type of soil and water they would typically find there.</p> <p>create a complex classification key using a series of questions that group animals into sub-groups before identifying the species.</p> <p>Observe</p>

grassland - areas containing grass.

climate - the usual weather in a place.

exposure - being in contact or affected by something, such as sunlight or wind.

environment - the conditions that are all around.

species - a grouping of animals with similar characteristics.

invertebrate - an animal without a backbone, or spine.

classify - to arrange things in classes or groups according to shared qualities or characteristics.

vertebrate - an animal with a backbone, or spine.

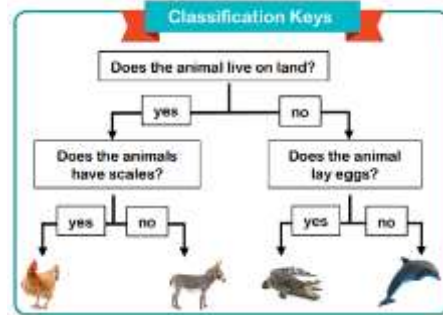
characteristics - a feature or quality which belongs to a species and can be used to identify them.

classification key - a series of questions that help to identify a species.

organism - a living thing; plant, animal or germ.

identify - show what someone or something is.

how to interpret a classification key.



(describe) how animals adapt to their environment.

some plants that live in a pond habitat.

group living things according to the environment they are suited to.

some plants that live in a pond habitat.

identify differences, similarities or changes related to simple scientific ideas and processes.

Record

organise animals into different classification groups.

begin to organise animals into different classification sub-groups.

classify and sort plants that live in a pond habitat.

gather, record, classify and present data in a variety of ways to help in answering questions.

Conclude

report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.

Evaluate

<p>criteria - a way in which to decide.</p> <p>sub-group - a group within a larger group.</p> <p>region - a large space or area.</p> <p>blubber - a layer of fat beneath the skin of sea mammals.</p> <p>adapted - changed to suit an environment.</p> <p>colouring - the colour of something.</p> <p>features - a part of something.</p> <p>non-flowering plant - a plant that does not produce flowers.</p> <p>flowering plant - a plant that produces flowers.</p> <p>pond dipping - a way to explore an aquatic habitat, sometimes using a net.</p> <p>oxygenised - contains oxygen.</p> <p>ecosystem - a community of living things.</p>			
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St Anne's C of E Primary School Curriculum Plan

Subject: Science

Year: 4

Term: Summer 1



Unit: Living Things and their Habitats- Conservation



Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
<p>ecosystem - a community of living things.</p> <p>migrate - to move from one area to another.</p> <p>Northern Hemisphere - the half of the earth that is north of the equator.</p> <p>Southern Hemisphere - the half of the earth that is south of the equator.</p> <p>monsoon - rainy season.</p> <p>recycling - reusing unwanted items.</p>	<p>habitats around the world experience different seasons which change their ecosystem.</p> <p>what deforestation means. the measures humans can take to protect the rainforests.</p>	<p>ecosystems are affected by changes in the seasons. it is not just the seasons which cause ecosystems to change (see image below).</p> <p>the human impact on the environment through deforestation (see image below).</p>	<p>Question</p> <p>Plan</p> <p>Set-up</p> <p>Observe explain the impact of different kinds of water pollution.</p> <p>make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>Record gather, record, classify and</p>

<p>biodiversity - the variety of living things.</p> <p>drought - a long period with little or no rain, causing a lack of water.</p> <p>deforestation - the cutting down of forests, including rainforests.</p> <p>rainforest - a tropical forest that receives a large amount of rain all year long.</p> <p>greenhouse gases - a group of gases which trap heat in the Earth's atmosphere, causing the planet to warm up.</p> <p>fossil fuels - fuel containing carbon that is burnt, such as coal, petroleum and natural gas.</p> <p>emissions - the production or discharge of something, especially gas or radiation.</p> <p>pollution - harmful or poisonous substances.</p> <p>climate change - a change in global or regional climate patterns, due to more atmospheric gases, in particular, carbon dioxide.</p> <p>sewage - waste water such as human urine or solid waste that is flushed and removed to sewers.</p> <p>chemicals - substances that can be involved in a reaction.</p>	<p>what air pollution is.</p> <p>ways to prevent water pollution.</p> <p>(list) ways in which humans can protect the environment.</p>	<div data-bbox="1137 98 1547 673" style="border: 1px solid black; padding: 5px;"> <p style="text-align: center; background-color: #0070c0; color: white; margin: 0;">Why environments change</p> <p>NATURAL CHANGES – different seasons can change habitats. Greenhouse gases cause climate change and climate change has caused our planet to get a lot warmer over a very short period of time. This has caused more extreme weather events like hurricanes, floods and droughts. It has also caused the extinction of many living things.</p> <p>HUMAN CHANGES – How humans live and what they do can impact habitats both negatively and positively.</p> <p>Negative ways:</p> <ul style="list-style-type: none"> • Deforestation - cutting down trees for a range of reasons • Littering – dropping rubbish or leaving large objects lying in the environment • Pollution – introducing harmful substances into the environment. • Air pollution from cars, e.g., carbon monoxide, and the burning of fossil fuels. • Water pollution through industrial waste and farm fertilisers that can pollute rivers and streams. • Rubbish—Plastic and household waste ends up on the streets, in the sea or in rubbish dumps, destroying habitats and wildlife. <p>Positive ways:</p> <ul style="list-style-type: none"> • Protecting endangered species via conservation projects • Cleaning bodies of water • Recycling • Creating nature reserves </div> <p>what contributes to air pollution. the impact air pollution has on the environment and human health.</p> <p>how water pollution is caused.</p> <p>how these ideas can protect the environment (in everyday life).</p>	<p>present data in a variety of ways to help in answering questions. record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.</p> <p>Conclude use scientific evidence to present your findings about deforestation.</p> <p>report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions.</p> <p>Evaluate use straightforward scientific evidence to answer questions or to support their findings.</p>
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<p>pesticides - a chemical substance used to kill insects that harm plants and crops.</p> <p>water treatment plant - a place which cleans, purifies and processes water so it is safe to use.</p> <p>contaminate -to make something impure by adding a poisonous or polluting substance.</p> <p>endangered - at risk of no longer existing.</p> <p>protect - keep from harm.</p> <p>conservation areas - areas on land or sea that protect the wildlife from harm.</p> <p>marine sanctuaries - ocean areas that protect the wildlife from harm.</p>			
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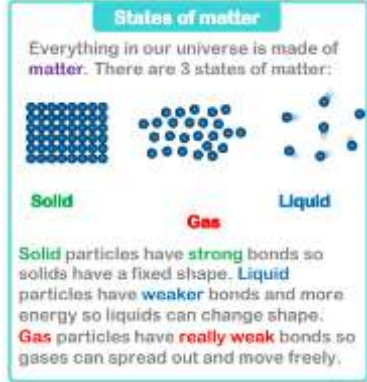
Year: 4

Term: Summer 2



Unit: States of Matter



Vocabulary	Knowledge	Understanding	Skills
	Children will know (that)	Children will understand (that)	Children will be able to
<p>matter - anything which takes up space and has a mass.</p> <p>volume - the amount of space something takes up.</p> <p>gas - state of matter which flows, can spread out and be squashed.</p> <p>liquid - state of matter which flows and forms a pool.</p> <p>solid - state of matter which holds its form and shape.</p> <p>particle - one very small part of matter.</p> <p>arranged - how something is structured together.</p> <p>bond - a connection between particles.</p>	<p>the 3 states of matter.</p> <p>how particles behave in each state of matter.</p> <p>the temperature at which water changes state.</p>	<p>the properties of the 3 states of matter.</p>  <p>how substances change state.</p>	<p>Question raise further questions to be investigated.</p> <p>Plan predict the melting point of different foods.</p> <p>Set-up investigate the effect of temperature on the rate of evaporation.</p> <p>Observe make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.</p> <p>observe and accurately record the temperature at which food changes state.</p>

heated - to make something warmer.

cooled - to make something colder.

melting - the process of a solid changing state to a liquid.

melting point - the temperature at which a solid changes state to a liquid.

temperature - how hot or cold something is.

thermometer - a device used to measure temperature.

reverse - the opposite.

sublimation - the process of a solid changing state straight to a gas.

deposition - the process of a gas changing state straight to a solid.

freezing - the process of a liquid changing state to a solid.

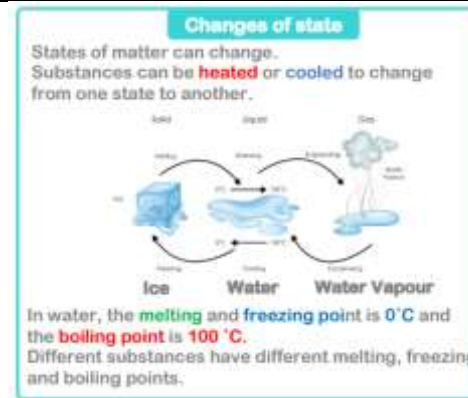
boiling - the process of a liquid changing state to a gas.

condensation - when a gas changes state to a liquid.

water vapour - water in the form of a gas.

what a 'melting point' means.

what evaporation and condensation mean.



different substances have different melting points.
freezing and boiling points.

the importance of evaporation and condensation within the water cycle.

Record
classify substances based on their state of matter.

freezing and boiling points.

create an accurate bar chart.

gather, record, classify and present data in a variety of ways to help in answering questions.

record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.

Conclude
Evaluate
use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.

use straightforward scientific evidence to answer questions or to support their findings.

<p>process - series of steps. absorb - take in.</p> <p>evaporation - when a liquid changes state to a gas.</p> <p>water cycle - the movement of water around the Earth in a continuous cycle.</p> <p>precipitation - rain, snow, sleet or hail.</p> <p>transpiration - when water evaporates from the surface of leaves.</p> <p>surface runoff - water which moves across the surface of the land.</p> <p>groundwater - water stored within the Earth.</p>	<p>the stages of the water cycle.</p>	<p>the stages of the water cycle in detail.</p>	
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