Science Knowledge Organiser

Temple Hill
Primary Academy
An Exceptional Place To Learn

Contents

Temple Hill
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An Exceptional Place To Learn

Nursery

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Development Matters Statements

Nursery

- Use all their senses in hands-on exploration of natural materials.
- Explore collections of materials with similar and/or different properties.
- Talk about what they see, using a wide vocabulary.
- Plant seeds and care for growing plants.
- Understand the key features of the life cycle of a plant and an animal.
- Begin to understand the need to respect and care for the natural environment and all living things
- Explore and talk about different forces they can feel.
- Talk about the differences between materials and changes they notice.

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Reception

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Development Matters Statements

Reception

- Recognise some environments that are different to the one in which they live.
- Recognise some similarities and differences between life in this country and life in other countries
- Explore the natural world around them.
- Describe what they see, hear and feel whilst outside.
- Understand the effect of changing seasons on the natural world around them.

ELG

- Describe their immediate environment using knowledge from observation, discussion, stories, non-fiction texts and maps.
- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
- Understand some important processes and changes in the natural world around them, including the seasons and changing states of matter.
- Explain some similarities and differences between life in this country and life in other countries, drawing on knowledge from stories, non-fiction texts and (when appropriate) maps.

Reception: Science – Materials

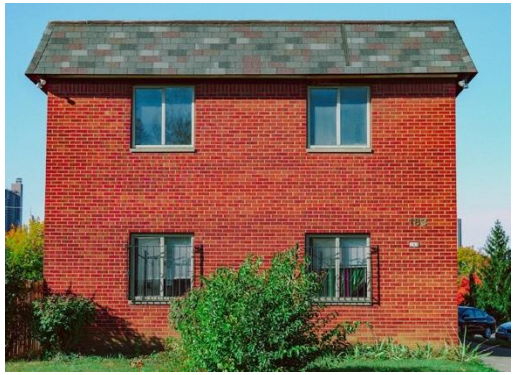
Prior Learning

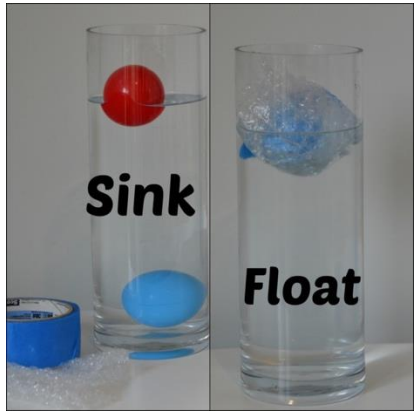
I know that things around me look and feel different and are used for different things.

Key Knowledge

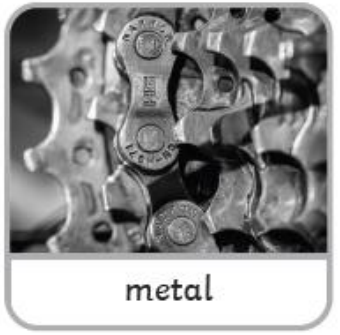
Materials
This is what an object is made from. It could be **water, paper, fabric, plastic, metal** etc.

There are **different types of materials with different uses**. Some materials are good for building houses, such as bricks. **Some materials float and some sink.**





Plastic is all around us. It's used to make our water bottles, food packaging, lunch boxes. It's everywhere! It is a useful type of material but it lasts for a long time and lots of it ends up in the ocean.



Key Vocabulary

 float	To rest on the surface of a fluid.
 sink	To go to the bottom.

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Reception: Science – Understanding The World

Key Knowledge

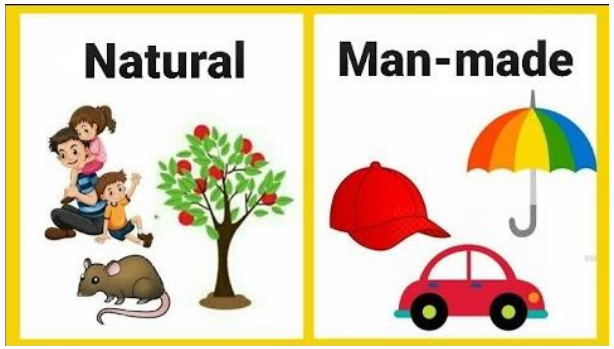
The Earth

- Our world is a planet called **Earth**. It is one of a number of planets that go around the **Sun**.
- The system of the Sun and planets is called the **solar system**. There are many solar systems.
- On Earth, there are many different **countries.** In each country, there are **cities, towns** and **villages**.

Key Knowledge

Natural and Man-Made

- Humans share the planet with lots of other things, including **plants** and **animals**, **mountains**, **rivers**, and **oceans**. None of these things are made by people. They are a part of nature – they are **natural**.
- There are also things that people have made in the world (**man-made**), e.g. buildings, cars, TVs and toys.



Key Knowledge

The Seasons

- There are **12 months** in a year (**January** – **December**).
- The weather changes at different times in the year.
- The **four seasons** are **winter**, **spring**, **summer** and **autumn**. It is **cold** in the **winter** and **warm** in the **summer**.
- Many things are born in spring. We can see different plants and animals in the different seasons.

Key questions

Which country do you live in?
Which town/city?

Is this natural?

Is this man-made?

What season do you think it is now?

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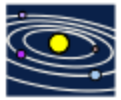
Reception: Science – Understanding The World

Key Vocabulary					
 Earth	The planet we live on.	 animals	Are living things.	 mountains	A bit of land that is much higher than the land around it
 Sun	The star that lights our days.	 plants	Living things that grow from the soil and need water and light to grow.	 rivers	A path that water takes as it flows downhill towards the ocean
 solar system	The Sun and planets altogether.	 natural	Things that are a part of nature.	 oceans	A huge area of water that surrounds countries.
 country	Is a land that is ruled by its own leader.	 man-made	Things that people have made.	 seasons	seasons are four different times during the year with different types of weather

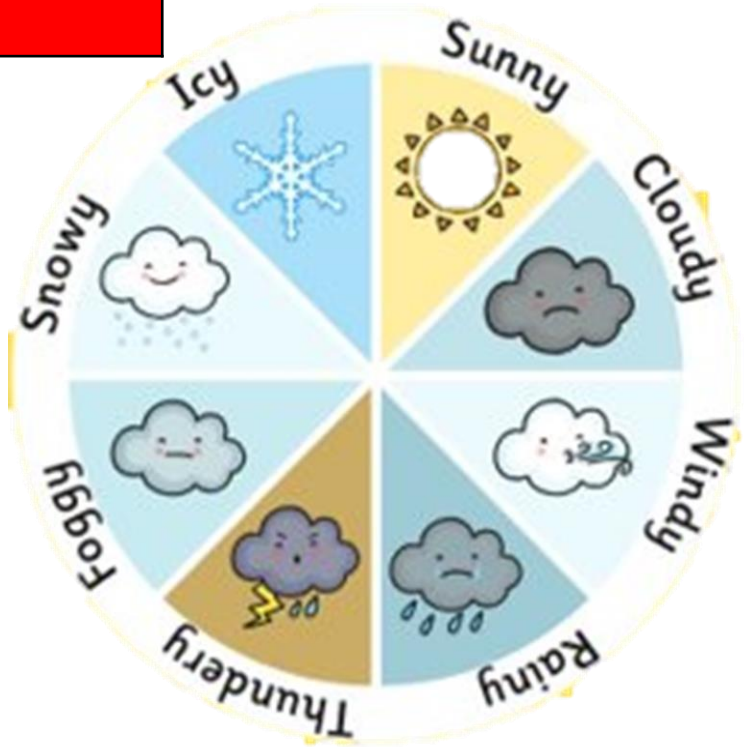
Reception: Science – Seasonal Changes

Prior Learning

To observes changes in nature such as the weather.

Key Questions

What season are we in now?
What is the weather like outside today?
What season comes next?
Is it warm or cold today?

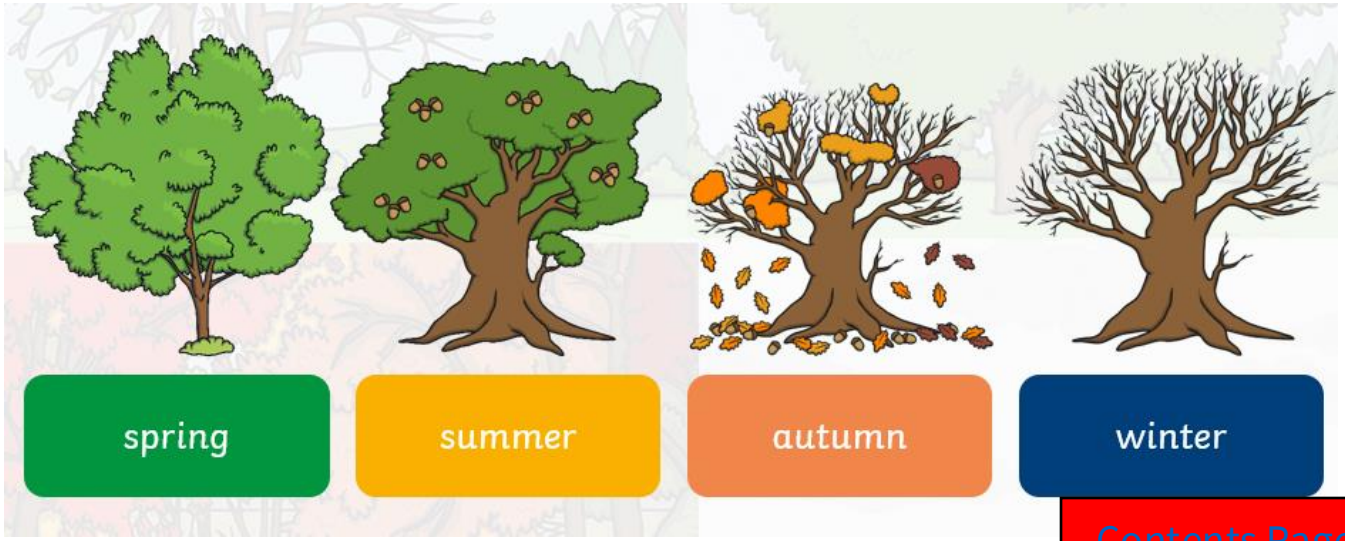


Key knowledge

To add naming seasons in continuous provision for daily recall.

I can name:
- spring
- summer
- autumn
- winter

I can name some of the weather changes I observe using key vocabulary such as:
- sunny
- raining
- snowing
- overcast
- foggy



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Reception: Science – Seasonal Changes

Key Vocabulary	
 spring	The season of the year occurring in months of March, April, May. Where new life is born and trees start to regrow their leaves.
 summer	The season of the year occurring in months of June, July, August. Where most trees are green and the weather is warm.
 autumn	The season of the year occurring in months September, October, November. Where most trees starts to turn red, orange, yellow and brown and they begin to fall.
 winter	The season of the year occurring in December, January, February. Where most trees have no leaves and

 weather	What the sky and the air are like. Reference to outside weather at the time.
 seasons	12 months of the year split into 4 parts based on the weathers that take place.
 change	When something is different.

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Reception: Science – habitats

Key Questions	Key knowledge
Where do you live? Where do animals live? Can you show me where an animal lives?	**A habitat provides food, shelter, water and somewhere to have babies (reproduce).**

Different animals live in different habitats

Woodland
deer
fox
squirrel
owl
badger

Arctic
polar bear
arctic fox
penguin
arctic hare

Jungle
jaguar
frog
parrot
orangutan

Marine
turtle
dolphin
jellyfish
octopus

Savannah
hyena
lion
giraffe
elephant

Contents Page

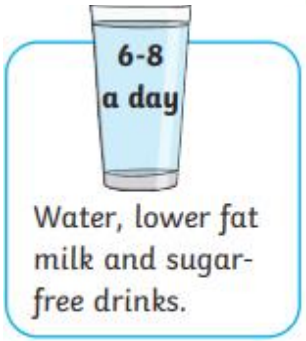
Reception: Science – PSED - managing self

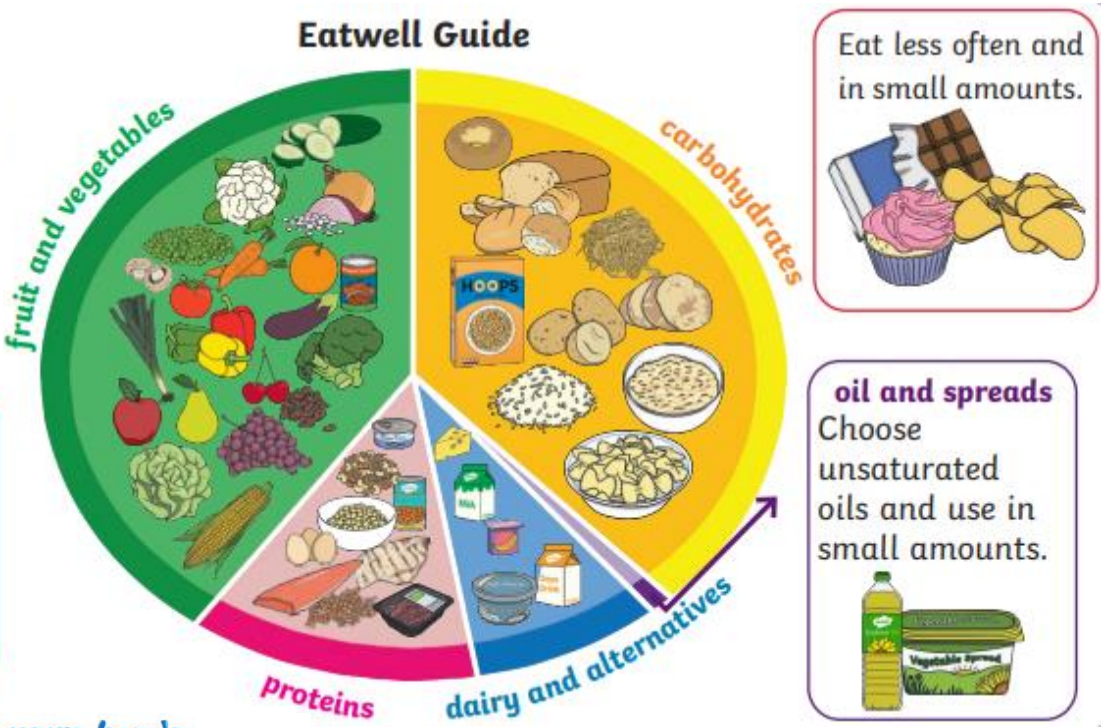
Key Questions

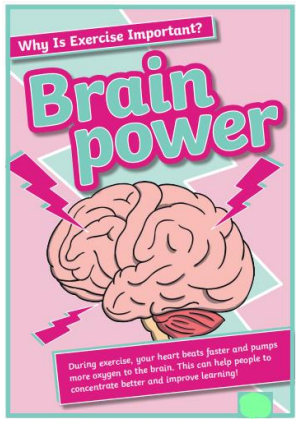
What do you eat?
What do you do for exercise?
How many times a day do you brush your teeth?
When should we wash our hands?

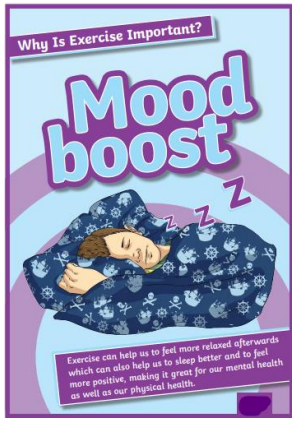
Key knowledge

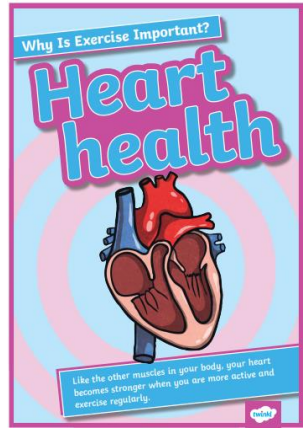
To grow into a healthy adult, we must eat the right types of food in the right amount and exercise.

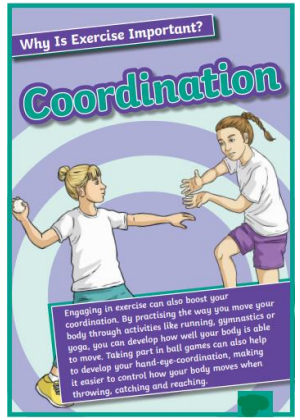


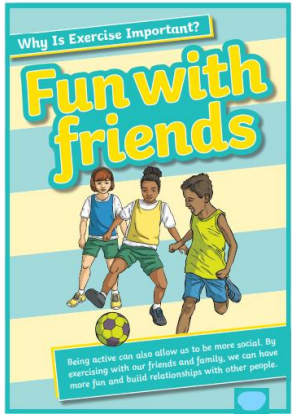


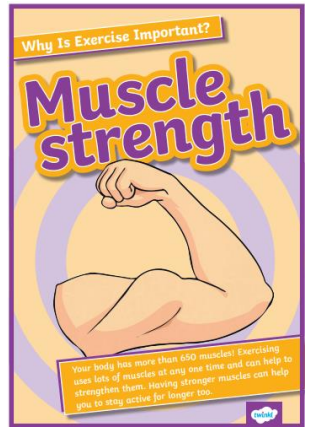












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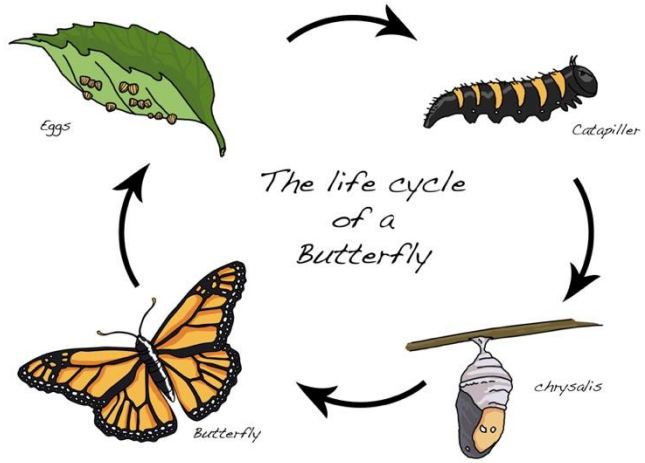
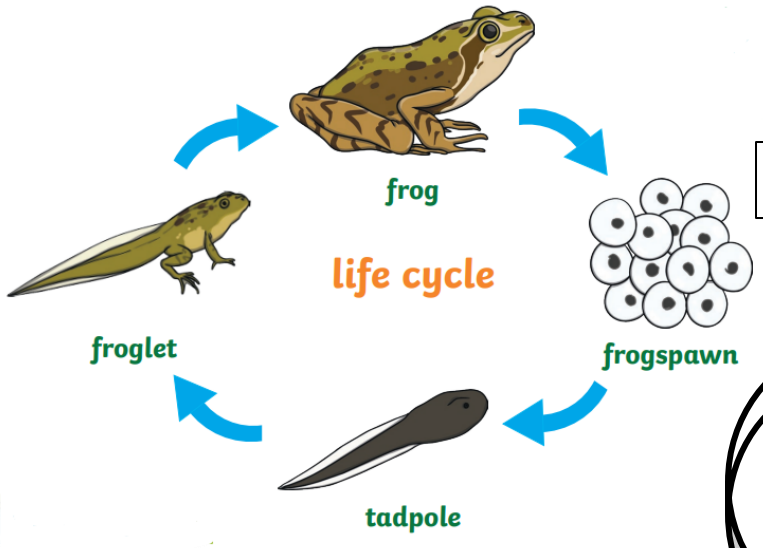
Reception: Science – lifecycles

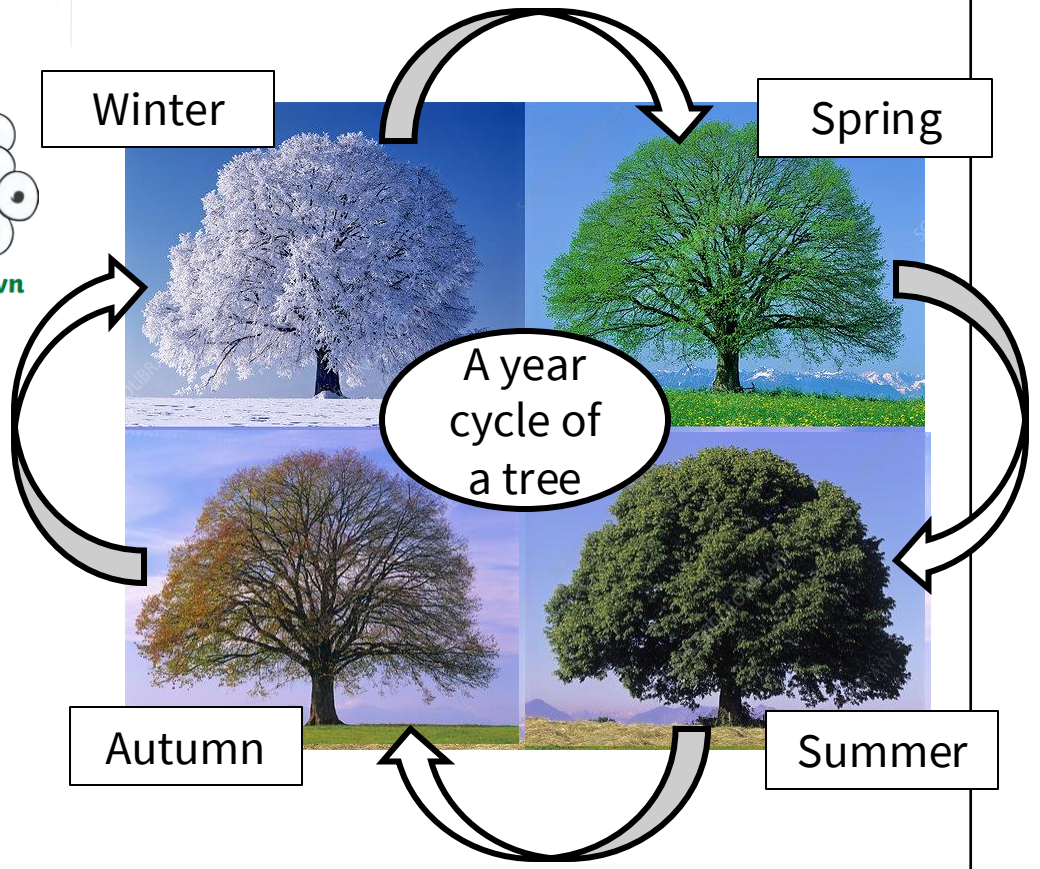
Key Questions

What does a _____ turn into?
What happens to a tree in autumn?

Key knowledge







Life cycle of a human

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Year 1

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Year 1: Science – Everyday Materials (1/3)

Prior Learning

I can use my senses to explore natural materials.
I can explore collections of materials with similar and/or different properties.
I can understand some important processes and changes in the natural world around me, including the seasons and changing states of matter.

Key Knowledge

I know the name of the materials we use to make things.


water


wood


stone


glass


plastic


metal


fabric


paper

Key questions

What is it? What can you do with it?
What does it feel like?
What colour is it? Where does it come from?
Where can you see these materials being used?

Key Knowledge

I know where materials are used in everyday life.


plastic toys


wooden furniture


metal tools

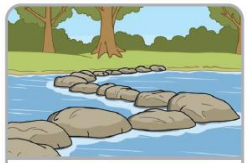

drinking water


glass window

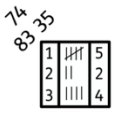
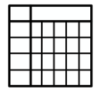

paper books


brick houses


fabric clothing


stepping stones

Working Scientifically Focus

To classify.		To perform simple tests.		To gather and record data.	
	To put things that are like each other into groups.	test 	A way of checking if something is true or not.	record 	To put in writing (or drawing).
Examples: Glass, plastic and metal are all waterproof. Fabric and paper are bendy.		predict 	Saying what we think will happen.	data 	Information. It could be facts, observations, numbers or lots of other things.
		Examples: I **predict** that the paper is **not waterproof.** I can **test** this by putting water on the paper and seeing what happens.		table 	A way to show data. Data goes into the different boxes.

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Year 1: Science – Everyday Materials (2/3)

Key Vocabulary	
object 	A thing that can be used. For example, a door, chair, car, table are all objects.
material 	What an object is made from.
hard 	Not easily broken or bent.
soft 	If something is soft, it is easy to cut, fold or change the shape of.

Key Vocabulary	
stretchy 	Can be pulled to make it longer or wider without breaking.
shiny 	Something that sparkles.
dull 	Something that doesn't sparkle.
bendy 	Bendy things can be bent easily into a curved or folded shape.

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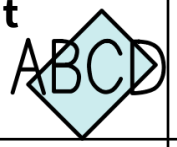
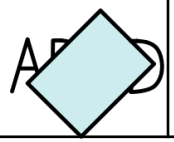
Year 1: Science – Everyday Materials (3/3)

Key Vocabulary	
smooth 	Smooth objects have no lumps or bumps.
rough 	Uneven or bumpy.
waterproof 	If something is waterproof, it keeps water out. It keeps things dry.
absorbent 	If something is absorbent, it soaks liquid up
transparent 	Transparent objects can be seen through.
opaque 	Opaque objects can't be seen through.

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Year 1: Science – Animals including humans (1/2)

Prior Learning

- Describe the natural world around them.
- Describe what they can see, hear and feel while outside.
- Explore the natural world around them, making observations and drawing pictures of animals and plants.
- Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.

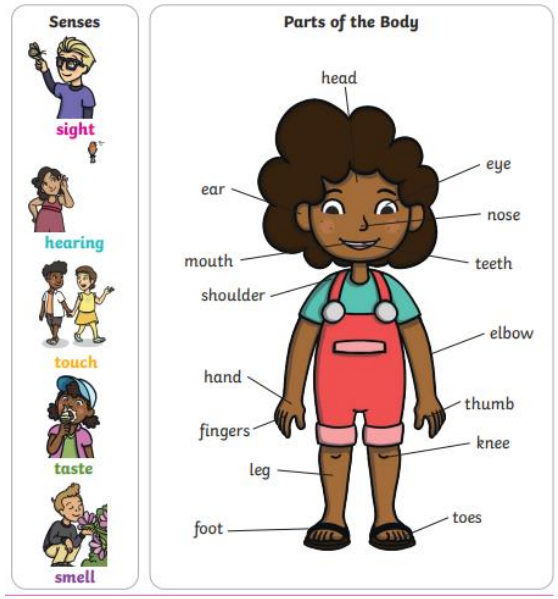
Key knowledge

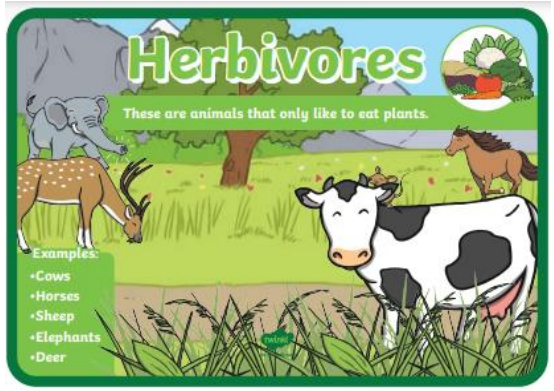
I know that:

- fish live and breathe underwater and have fins
- amphibians live in water as babies and go on land as they grow older
- reptiles have scaly skin and most have tails
- birds have beaks, wings and feathers
- mammals give birth to live young

Key Questions

What makes something a carnivore?
What makes something an omnivore?
What makes something a herbivore?
What classification is an animal?
What are the 5 senses?
What different body parts can you identify?





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Year 1: Science – Animals including humans (2/2)

Key Vocabulary	
Reptiles 	Animals that have scaly skin and live in hot climates.
Amphibians 	Animals that live in water as young and move onto land.
Mammals 	Animals that give birth to live young.
Birds 	Animals that have feathers and wings.
Fish 	Animals that live and breathe underwater.
Omnivore 	Animals that eat meat and plants.
Carnivore 	Animals that eat meat.
Herbivore 	Animals that eat plants.

Key Vocabulary	
Sight 	Using your eyes to see.
Hearing 	Using ears to listen, your brain communicates to interpret the sound.
Taste 	Using your tongue to decide if something is bitter, sweet, sour.
Smell 	Using your nose to smell.
Touch 	Using your skin to feel different touches, such as temperatures and contact.

Working Scientifically Focus			
To identify		To classify	
identify 	To know or say who someone is or what something is.	classify 	To put things that are like each other into groups.
Examples: A frog is an amphibian. A shark is a fish.		Examples: Carnivores – cows, sheep, elephants and horses.	

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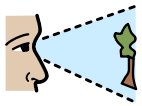
Year 1: Science – Plants (1/2)

Prior Learning

- I have planted seeds and watched them grow.
- I know the stages of a life cycle of a plant.
- I know that the look of plants change during the different seasons.

Working Scientifically Focus

To observe closely.

observe 	To watch and sometimes also listen to someone or something carefully.
Examples: I can see... I notice...	

Key Knowledge

Wild Plants


dandelion


daisy


buttercup


nettles


ivy


dog rose


clover


brambles

Garden Plants


fuchsia


pansy


sweet pea


sunflower


rose


lavender

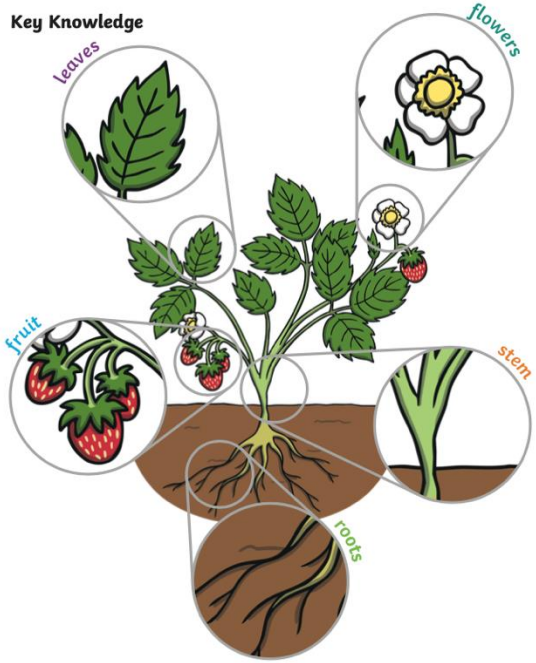

iris

Trees

cedar

horse chestnut

oak



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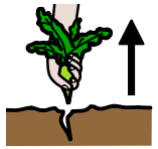
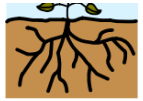
Year 1: Science – Plants (2/2)

Key Vocabulary	
wild plants	A wild plant seed grows where it falls. It doesn't need to be planted or cared for as it grows.
garden plant 	Garden plants are plants that people choose to grow in their gardens.
weed 	Weeds are wild plants that grow in places where people don't want them.
deciduous 	A deciduous tree loses its leaves each year.
evergreen 	An evergreen tree keeps its green leaves all year round, even in the winter.

Key Vocabulary	
roots 	Roots take in water and nutrients from the soil and keep the plant in the ground.
stem 	The stem holds the plant up and carries the water and nutrients from the roots to the leaves and flowers.
leaves 	Leaves catch sunlight to help the plant to make its own food.
flowers 	Flowers attract insects and birds.
petals 	Petals are the colourful part of the flower.
fruit 	Fruit contains the plant's seeds. Sometimes humans try to grow fruit without seeds because it's easier to eat.
seed 	Seeds grow into new plants.
bulb 	Bulbs grow into new plants.

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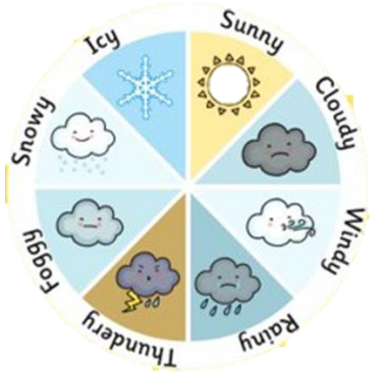
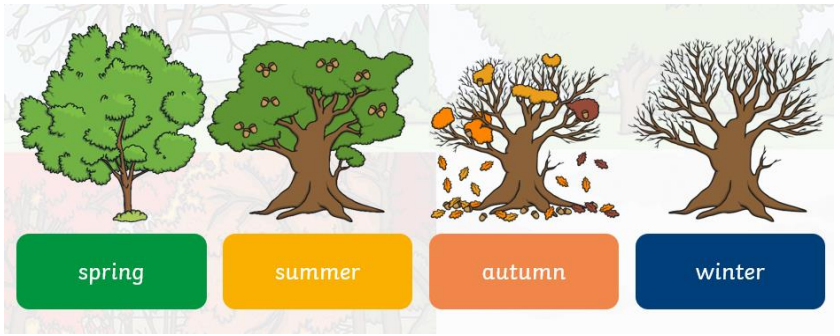
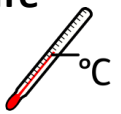
Year 1: Science - Seasonal Changes

Prior Learning





Key Vocabulary

temperature 	The amount of heat in something. It's measured with a thermometer.
daylight 	Daylight is when it is light outside. The amount of daylight changes with each season.
deciduous tree 	A deciduous tree sheds its broad, flat leaves at the end of the growing season.

Key knowledge

In the **U.K Summer** has the **longest days** and the **highest temperatures.**

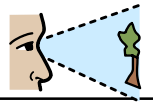
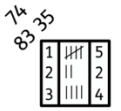
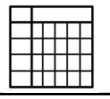
Four **seasons are formed** in one year due to the **earth travelling around the sun.**

Autumn is the time when deciduous trees shed their leaves.

In spring the weather usually turns warmer, trees begin to grow their leaves, plants start to flower and young animals such as chicks and lambs are born.

In the **U.K., Winter** is the season with the **shortest days** and the **lowest temperatures.**

Working Scientifically Focus

To observe closely.		To gather and record data.	
observe 	To watch and sometimes also listen to someone or something carefully.	record 	To put in writing (or drawing).
Examples: I can see… I notice…		data 	Information. It could be facts, observations, numbers or lots of other things.
		table 	A way to show data. Data goes into the different boxes.

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Year 2

Contents Page

Year 2: Science – Uses of Everyday Materials (1/2)

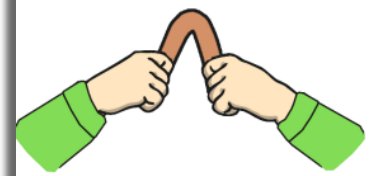
Prior Learning

I know simple physical properties of everyday materials.
I know ways to describe these properties.

Key Vocabulary

bendy 	**Bendy** things can be **bent** easily into a curved or folded shape.
stretchy 	Can be pulled to make it longer or wider without breaking.
twisty 	An object that be turned between two hands in different directions.
squashy 	An object that can be flattened by pushing both hands together.
suitability 	Suitability means having the properties which are right for a specific purpose.
properties 	This is what a material is like and how it behaves (bendy, hard, waterproof).

Key Knowledge



Bend
an object by grabbing both ends of the object and bringing the ends inwards together.

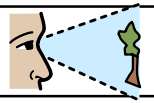
Stretch
an object by pulling your hands slowly and gently apart.

Squash
an object by pushing both hands together.

Twist
an object by turning your hands in opposite directions.

Working Scientifically Focus

To use observations to answer scientific questions.

observe 	To watch and sometimes also listen to someone or something carefully.
scientific question 	A special type of question that can be answered by testing or observing to find out.

Examples:
Do you think plants need light to grow? I wonder what will happen if we don't give a plant any water...

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Year 2: Science – Uses of Everyday Materials (2/2)

Key questions

What material would you use to make a _____?
Why? What are the properties of your chose material?

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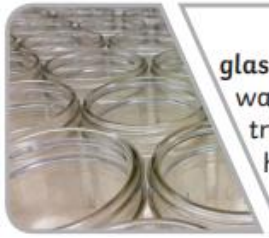
Key Knowledge

wood: hard, stiff, strong, opaque, can be carved into any shape.

plastic: water roof, strong, can e made to be flexi le or stiff, smooth or rough.

fabric: soft, flexible, hard-wearing, can be stretchy, warm, absorbent.



glass: waterproof, transparent, hard, smooth.

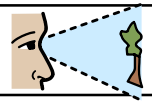
Different materials have different properties that make them suitable for different uses.

Core Text Link: The Secret of Black Rock
Experimenting with different materials to decide which would be most suitable for creating a life jacket.

Wider Curriculum Link: The Great Fire of London
Testing different materials to decide which would be most suitable for rebuilding London e.g. rubber bends, so we wouldn't use that because…

Working Scientifically Focus

To use observations to answer scientific questions.

observe 	To watch and sometimes also listen to someone or something carefully.
scientific question 	A special type of question that can be answered by testing or observing to find out.

Examples:
Which material is most suitable for creating a raincoat?
Which material is most suitable for rebuilding London?

metal: strong, hard, easy to wash.

rubber: hard-wearing, elastic, flexible, strong.

paper: lightweight, flexible.

cardboard: strong, light, stiff.

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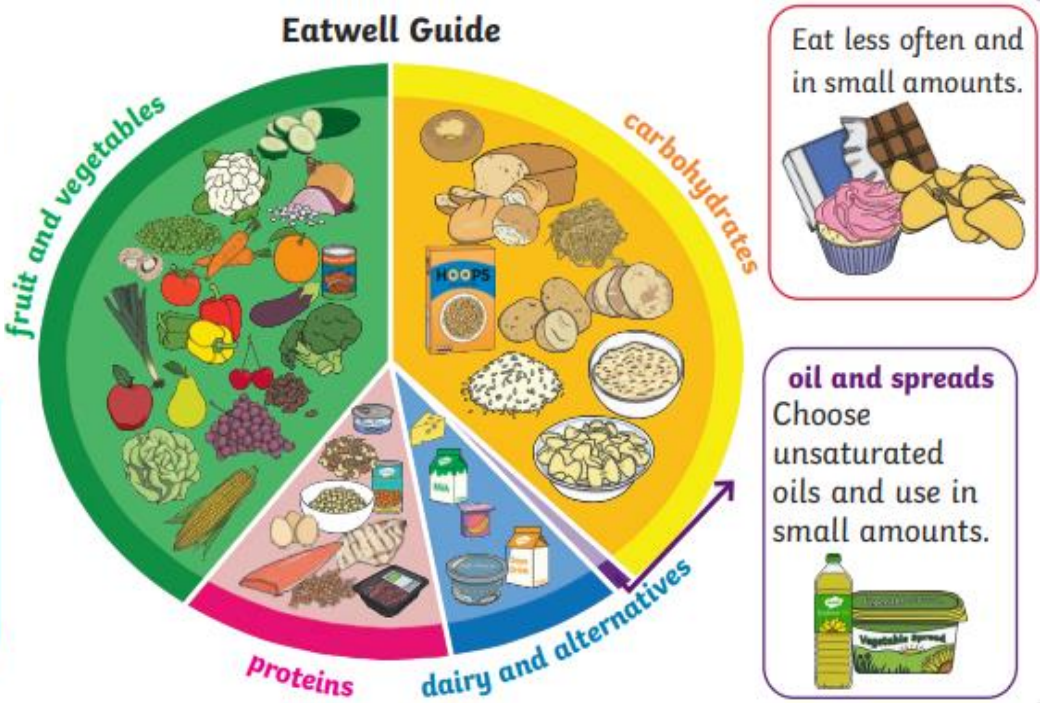
Year 2: Science – Animals including Humans (page 2/2)

Key knowledge

To grow into a healthy adult, we must eat the right types of food in the right amount and exercise.



Eat less often and in small amounts.

oil and spreads
Choose unsaturated oils and use in small amounts.

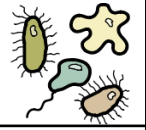
Water, lower fat milk and sugar-free drinks.

Being active and exercising keeps our bodies and minds healthy.

To stop germs from spreading, it is important to be hygienic.

1. How to Wash Hands
2. Oral Hygiene
3. Toilet Hygiene
4. Teach to Clean Body
5. How to Trim Nails

Key Vocabulary

diet 	The food and water that an animal needs.
exercise 	A physical activity to keep your body fit.
germs 	Tiny living things that can cause disease.
hygiene 	How we keep ourselves and the world around us clean so we can stay healthy and stop germs spreading.
nutrition 	Food needed to live.

Contents Page

Year 2: Science – Animals including Humans (page 2/2)

Prior Learning

- I know what herbivores, omnivores and carnivores are.
- I know what mammals, fish, reptiles, birds and amphibians are.

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Key knowledge

To stay alive, all animals have three basic needs for survival:

air

water

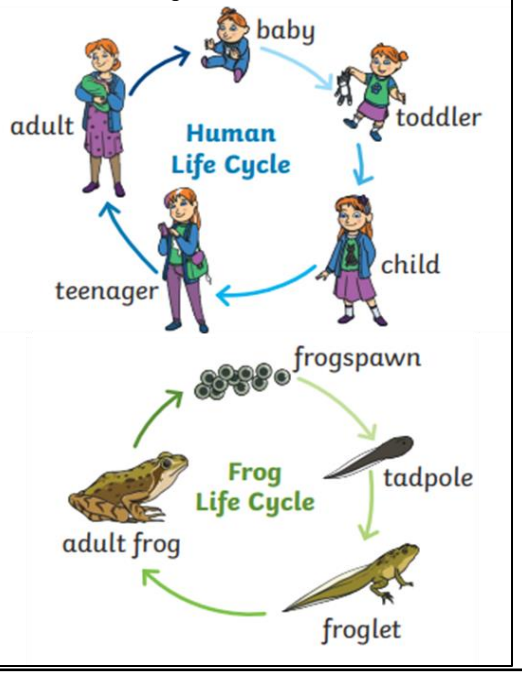
food

Some animals give birth to live young.	Some animals lay eggs which the young hatch from.
	
Both of these types of young then develop into adults.	

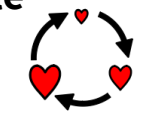
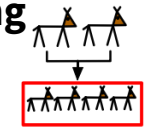
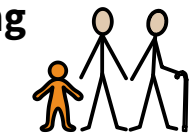
Some offspring look like their adult when they are born.

Some offspring do not look like their adult when they are born.

All young animals change as they go through the different stages of their life cycle and grow into adults.



Key Vocabulary

adult 	A fully grown animal or plant.
develop 	To grow bigger and become stronger.
life cycle 	The changes living things go through to become an adult.
offspring 	The child of an animal.
young 	Offspring that has not reached adulthood.
live young 	Offspring that has not hatched from an egg.

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Year 2: Science – Living Things and their Habitats (Page 1/2)

Prior Learning

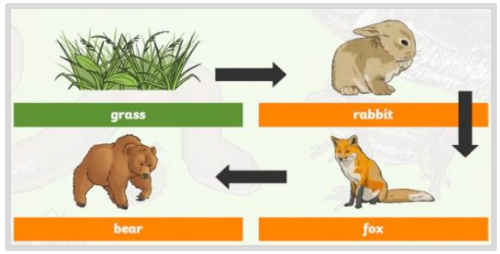
I know the 5 core groups (classification) of animals are mammals, amphibians, reptiles, birds and fish.
I know animals can be herbivores (eat only plants), carnivores (eat only meat) or omnivores (eat both plants and meat).

Key questions

Is this alive or dead? How do you know?
Has it ever been alive?
What might eat this?
What is your food source?

Key Knowledge

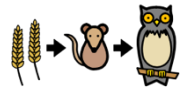
The arrows mean ‘is eaten by’.



Working Scientifically Focus

To identify		To classify	
identify 	To know or say who someone is or what something is.	classify 	To put things that are like each other into groups.
Examples: A car has never been alive. A fallen leaf is dead.		Examples: Never living – plastic bag, tin can, car.	

Key Vocabulary

life processes	These are the things that all **living** things do. They move, breathe, sense, grow, make babies, get rid of waste and get their energy from food.
living 	Things that are **living** have **all** the **life processes.**
dead 	Things that are **dead** were once **living**. They did have all the **life processes** but don’t now.
never living	Things made out of metal, plastic or rock were **never living**. They never had the **life processes**.
food chain 	A **food chain** shows how each animal gets its food. **Food chains** are one of the ways that living things depend on each other to stay alive.
food source	This is the place a **living** thing’s food comes from.

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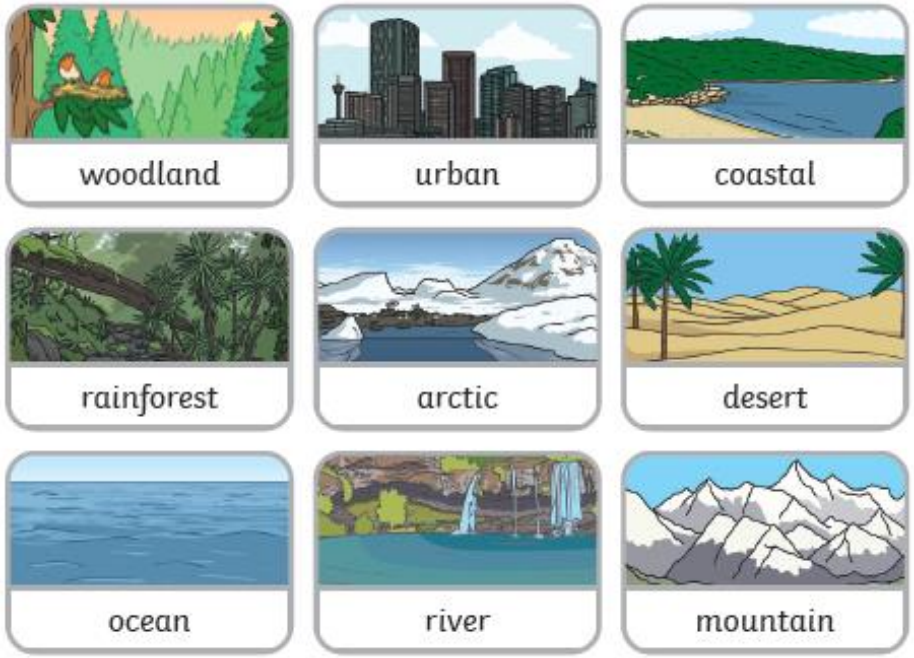
Year 2: Science – Living Things and their Habitats (Page 2/2)

Key Knowledge

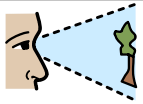
Habitats:



Microhabitats:

Working Scientifically Focus

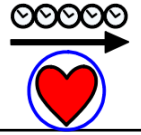
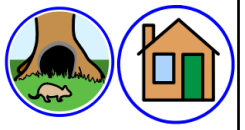
To observe closely, using simple equipment.

observe 	To watch and sometimes also listen to someone or something carefully.
scientific equipment 	Special things used to help us with our science learning. For example, bug viewers, magnifying glass and magnifying sheets.
Examples: I can see... I notice...	

Key questions

What is a habitat?
What do you think it would be like to live in this habitat?
What do you think lives here?
How could we look after this habitat?

Key Vocabulary

depend	Many **living things** in a **habitat depend** on each other. This means they need each other for different things.
survive 	This means to stay alive.
habitat 	A **habitat** is the natural place something lives. A **habitat** provides **living things** with everything they need to **survive** such as food, shelter and water. Humans call their **habitat** a home.
microhabitat	A **microhabitat** is a very small **habitat** in places like under a rock, under leaves or on a branch. Minibeasts live in **microhabitats**. The **microhabitats** have everything the need to **survive**.

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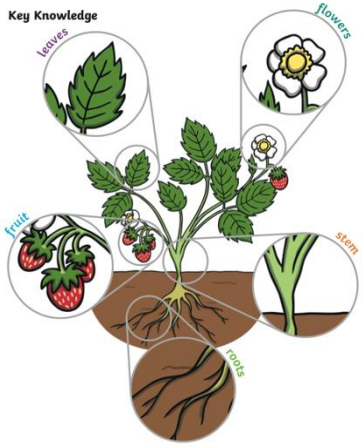
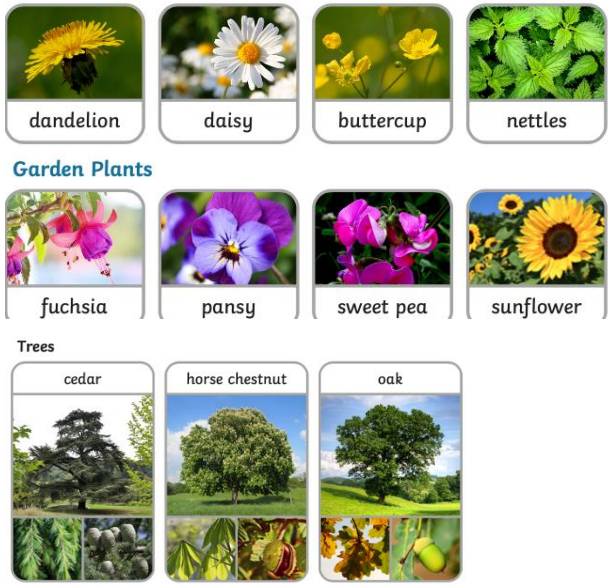
Year 2: Science – Plants (Page 1/2)

Prior Learning

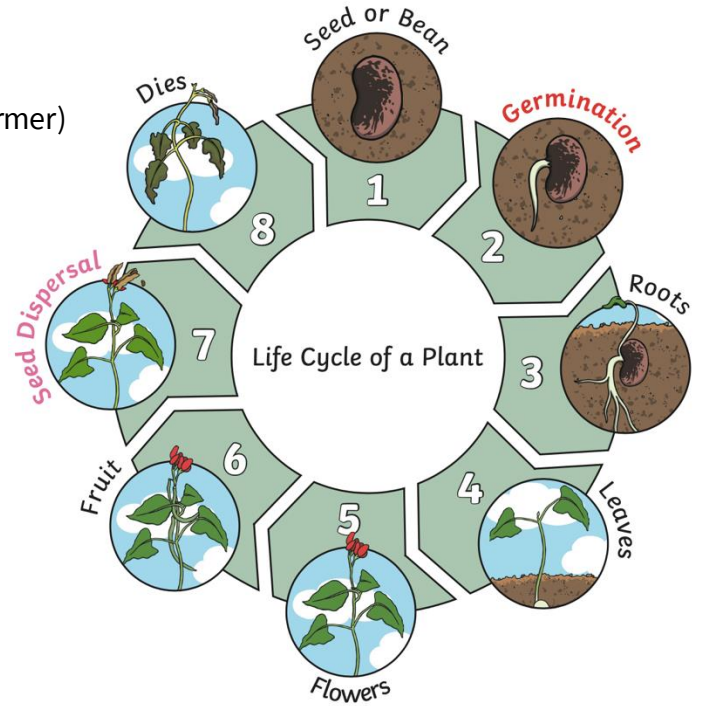




Key Knowledge

Plants need the following to grow:

- sunlight (some needs lots and some only need a little)
- water (without water the seeds and bulbs will not germinate
- temperature (some plants like cooler temperatures and others like warmer)
- nutrition (plants make their own food in their leaves using sunlight



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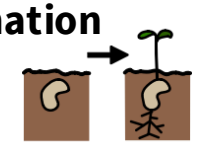
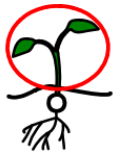
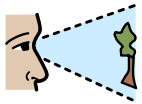
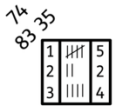
Year 2: Science – Plants (Page 2/2)

Key Vocabulary	
germination 	When the conditions are right, the seed soaks up water and swells, and the tiny new plant bursts out of its shell. This is called germination.
shoot 	A shoot grows upwards from the seed or plant to find sunlight.
seed dispersal 	Seed dispersal is when the seeds move away from the parent plant. They can drop to the ground in the plant's fruit or be moved by the wind or animals.

Working Scientifically Focus

To use observations to answer scientific questions.		To perform simple tests.		To gather and record data.	
observe 	To watch and sometimes also listen to someone or something carefully.	test 	A way of checking if something is true or not.	record 	To put in writing (or drawing).
scientific question 	A special type of question that can be answered by testing or observing to find out.	predict 	Saying what we think will happen.	data 	Information. It could be facts, observations, numbers or lots of other things.
Examples: Do you think plants need light to grow? I wonder what will happen if we don't give a plant any water...		Examples: I **predict** that a plant in the dark will not grow well because plants need light to grow. I can **test** this by putting one plant on the windowsill in sunlight and one in the cupboard with no light.		table 	A way to show data. Data goes into the different boxes. Tables have columns and rows.

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Year 3

Contents Page

Year 3: Science – Animals including Humans (page 1/3)

Key knowledge

All animals need nutrition to give them energy, grow and be healthy.
Animals get nutrition from what they eat.
There are 4 main food groups:


protein


carbohydrates


fats


vitamins and minerals

Animals are adapted to eat different types of nutrition.

Horse


Herbivores have lots of molars to grind the food.

Gorilla


Omnivores have small canines and flat molars for the mixture of both plants and other animals.

Lion


Carnivores have sharp canine teeth to tear meat and sharp claws to grip prey.


Herbivores get nutrition by eating plants directly.


Omnivores get nutrition by eating both plants and animals.


Carnivores get nutrition by eating plants indirectly because they eat other animals.

Prior Learning

- Herbivore, omnivore, carnivore (Y1)
- Life cycle (Y2).
- Animals need air, water and food to survive (Y2).
- I know what a healthy diet is (Y2).

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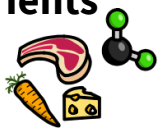
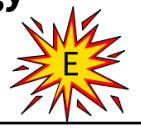
Key Vocabulary

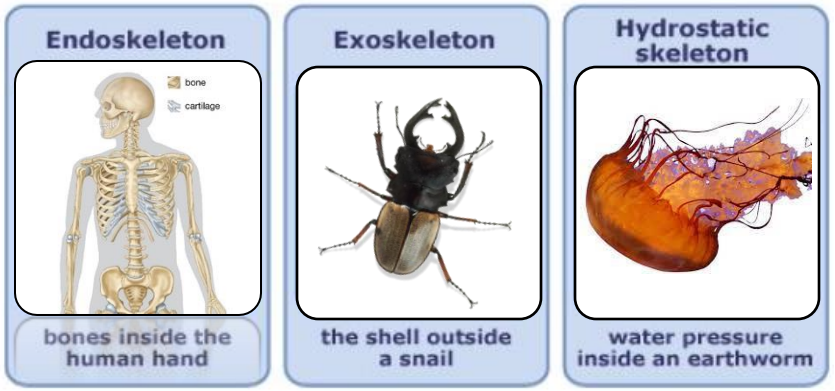
balanced diet 	A diet that means you get the right types and amounts of foods and drinks to keep you healthy.
healthy 	in a good physical and mental condition
nutrients 	substances that living things need to stay alive and healthy
energy 	strength to be able to move and grow
saturated fats 	types of fats, considered to be less healthy, that should only be eaten in small amounts
unsaturated fats 	fats that give you energy, vitamins and minerals

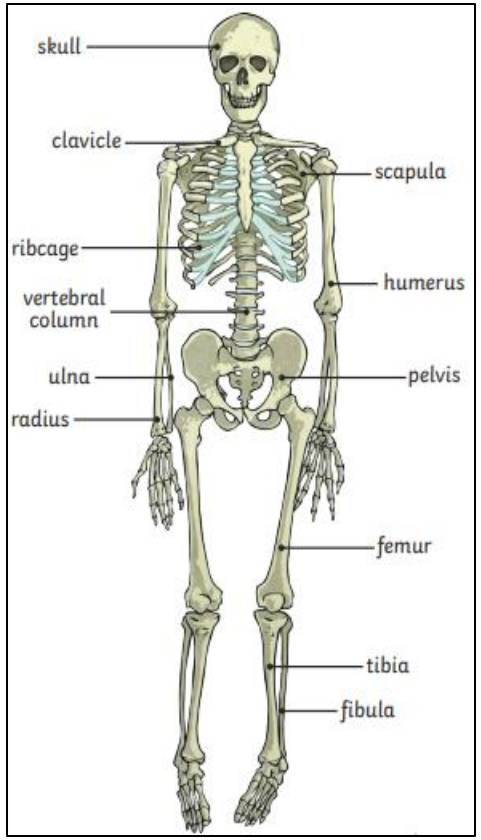
Contents Page

Year 3: Science – Animals including Humans (page 2/3)

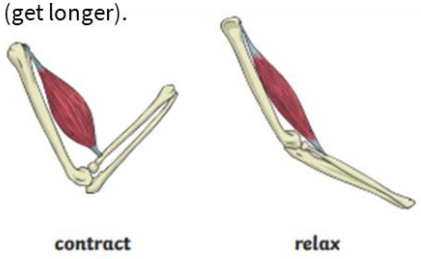
Key knowledge

Skeletons do three important jobs:
- protect organs inside the body;
- allow movement;
- support the body and stop it from falling on the floor.

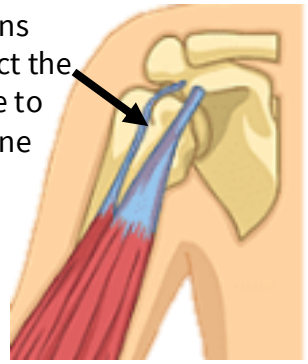




Skeletal muscles work in pairs to move the bones they are attached to by taking turns to contract (get shorter) and relax (get longer).



Tendons connect the muscle to the bone



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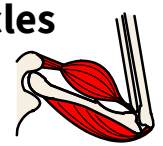
Key Vocabulary	
skeleton 	The hard structure that supports the body of a living thing.
muscles 	Move different parts of the body, inside and out.
skull 	Protects the brain.
spine 	Made of vertebrae and support the upper body's weight.
joints 	Hold two bones together and allow movement.
bones 	Support and protect organs of the body.
tendons	Connect the muscle to the bone.

Year 3: Science – Animals including Humans (page 3/3)

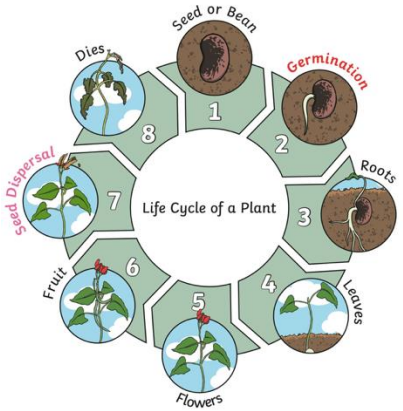
Working Scientifically Focus			
To identify		**To set up simple practical enquiries**	
identify 	To know or say who someone is or what something is. To say what something may need.	practical enquiry 	The process of trying to find out information through a test or experiment.
Examples: A car has never been alive. A fallen leaf is dead.		Example: Are all arms the same length? Do taller people have longer arms?	

Year 3: Science – Plants (1/3)

Prior Learning

Plants need the following to grow:

- sunlight (some needs lots and some only need a little)
- water (without water the seeds and bulbs will not germinate
- temperature (some plants like cooler temperatures and others like warmer)
- nutrition (plants make their own food in their leaves using sunlight



Key Knowledge

Life Cycle of a Flowering Plant

Germination
The seed start to grow.

Growing and Flowering
The plant grows bigger and forms a flower.

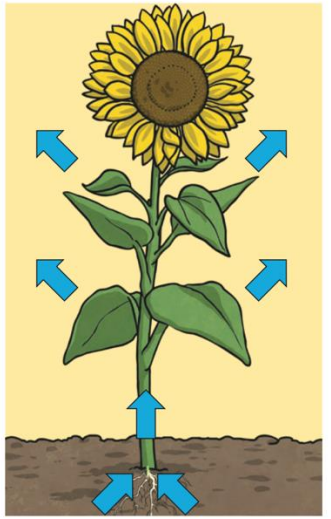
Pollination
Pollen lands and travels down the stamen.

Seed formation
A seed starts to form.

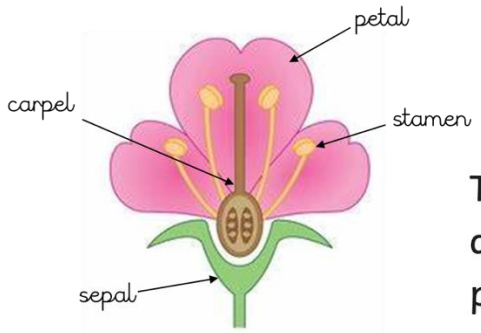
Seed dispersal
The fully formed seeds are moved away from the parent plant.

How Water Moves through a Plant

1. The **roots** absorb water from the soil.
2. The **stem** transports water to the **leaves**.
3. Water **evaporates** from the **leaves**.
4. This **evaporation** causes more water to be sucked up the **stem**.



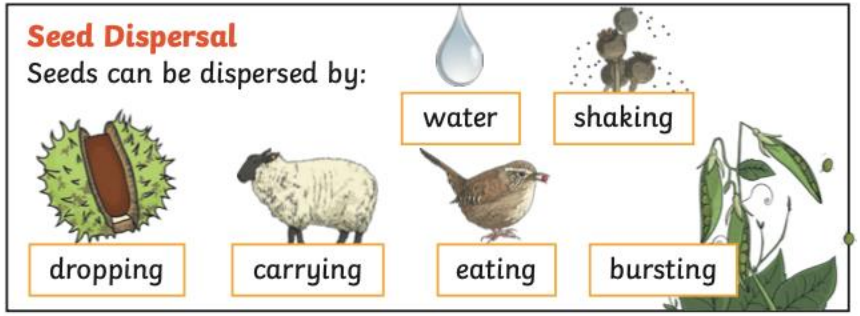
The water is sucked up the **stem** like water being sucked up through a straw.



The *flower's* job is to create seeds so that new plants can be grown.

Seed Dispersal

Seeds can be dispersed by:



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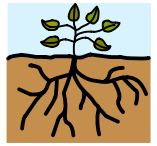
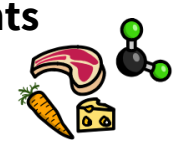
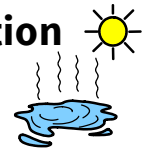
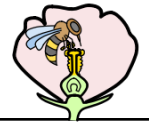
Year 3: Science – Plants (2/3)

Key Vocabulary	
roots 	These anchor the plant into the ground and absorb water and nutrients from the soil.
stem 	This holds the plant up and carries water and nutrients from the soil to the leaves. A trunk is the stem of a tree.
leaves 	These make food for the plant using sunlight and carbon dioxide from the air.
flowers 	These make seeds to grow into new plants. Their petals attract pollinators to the plant.
nutrients 	These substances are needed by living things to grow and survive. Plants get nutrients from the soil and also make their own food in their leaves.
evaporation 	When a liquid turns into a gas.
fertilisation 	When the male and female parts of the flower have mixed in order to make seeds for new plants.

Key Vocabulary (flowers – pollination, seed formation, dispersal)	
 petals	The brightly coloured parts of a flower.
 pollen	Like a powder, that plants make to allow them to produce seeds in another plant. (It's also what causes lots of people's hayfever!)
 pollinator	Animals or insects who carry pollen from one flower to another, allowing pollination to happen. Bees, bats and birds are all pollinators.
 pollination	When pollen moves from one flower to another flower, letting the flower make a seed.
 seed dispersal	The way seeds are carried or spread to another place.

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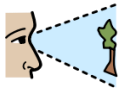
Year 3: Science – Plants (3/3)

Working Scientifically Focus	
To make systematic and careful observations, including taking accurate measurements using standard units (ruler)	
observe 	To watch and sometimes also listen to someone or something carefully.
measurement 	The action of measuring something to see the size, length or amount.
Examples: What is the height of the plant? What can we observe happens to the plant if it is not watered?	

Working Scientifically Focus			
To record findings using drawings		**To draw simple conclusions and make predictions**	
record 	To put in writing (or drawing).	conclusions 	A judgement or decision reached.
findings 	The information you get as a result of your test/ experiment.	predictions 	What someone thinks may happen based on their knowledge.

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Year 3: Science – Light (1/3)

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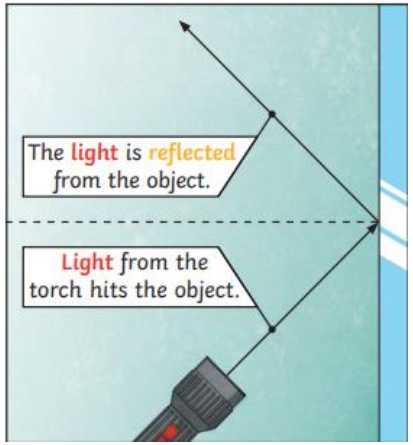
Prior Learning

- The sun gives us light
- The moon reflects light

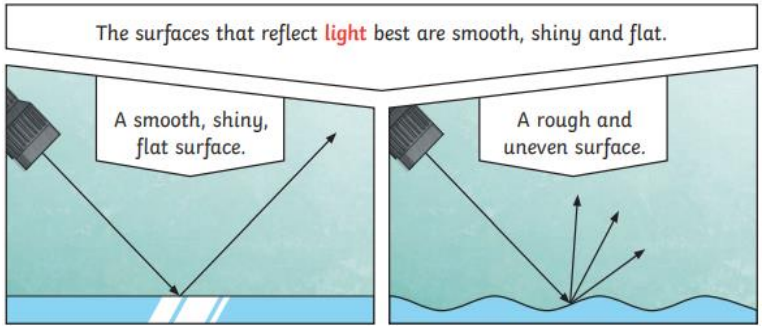
Key knowledge

I know that there are patterns in the way shadows change size. Including objects getting closer and further away from a light source; differing angles and object size.
I know that we need light to see things and that dark is the absence of light.
I know that shadows are formed when the light from a light source is blocked by a solid object.
I know that light from the sun can be dangerous and that there are ways to protect their eyes. I know I should not look directly at the sun, even when wearing dark glasses.
I know that light is reflected from surfaces. All surface reflect light – some reflect light well. Other materials do not. If an object is smooth enough and reflects light very well, we can see our reflection in it – like a mirror.

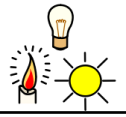
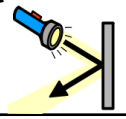
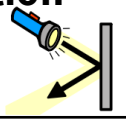
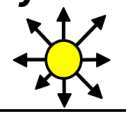


Key Questions

What is a light source?
How can we change the direction of light?
Do all objects reflect light?
What objects reflect light well?
Why can we see our reflection in some objects and not others?



Key Vocabulary

light 	A form of energy that travels in a wave from a source
light source 	An object that makes its own **light**
dark 	The absence of **light**
reflect 	The process where **light** hits the surface of an object and bounces back into our eye
reflection 	When **light** bounces off an object
reflective	A word to describe something which **reflects** light well
light ray and beam 	Waves of **light** are called **light rays** or a **beam**

Year 3: Science – Light (2/3)

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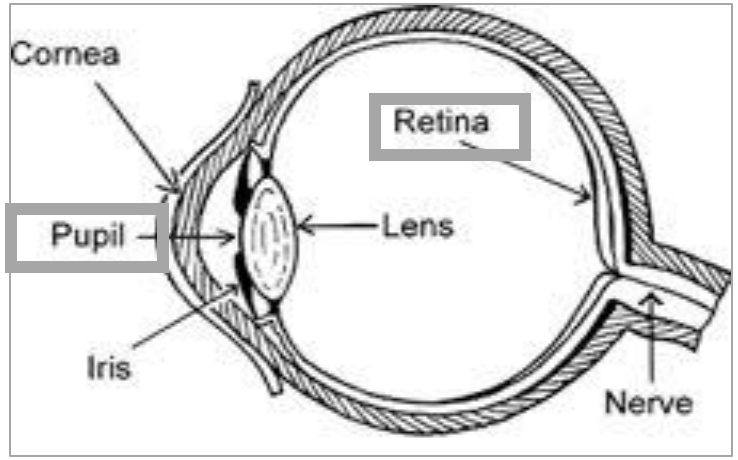
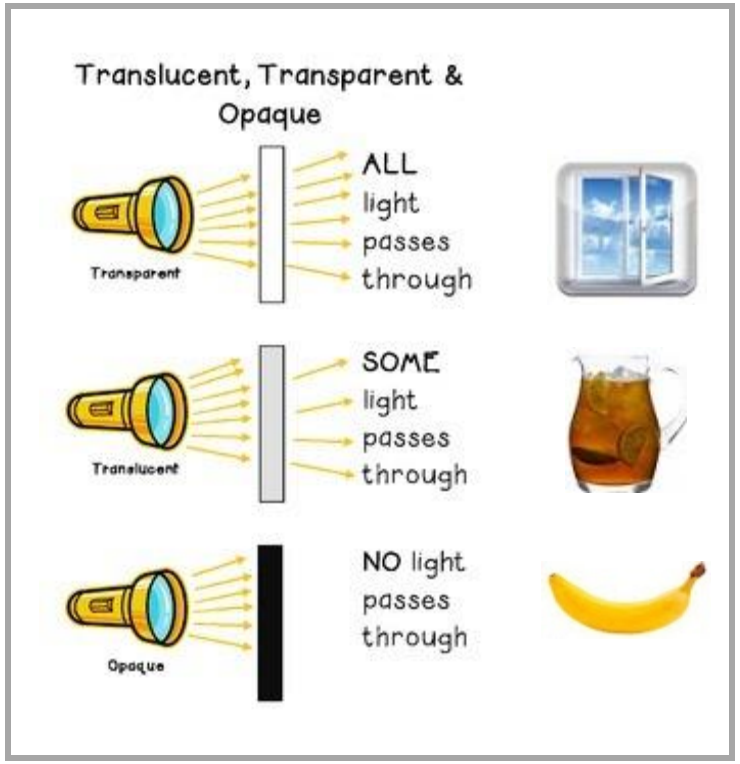




Key knowledge

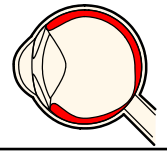
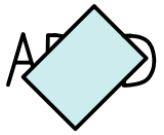
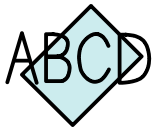
I know that the pupil limits the amount of light that enters the eye. If too much enters the eye it could damage the retina.

Key knowledge

I know that shadows are longer in the morning and evening and shortest at noon (midday). This is because of the angle the beam of light hits the object.

Key Questions

Name an object that is transparent.
Name an object that is translucent.
Name an object that is opaque
How can you make a shadow shorter?
How can you make a shadow longer?

Key Vocabulary	
pupil 	The black part of the eye which lets light in.
retina 	A layer at the very back of the eye, retina takes the light the eye receives. It then changes it into nerve signals to send to the brain.
shadow 	An area of darkness where light has been blocked
opaque 	Describes object that do not let any light pass through them
translucent 	Describe object that let some light through but scatter the light so we can't see through them properly.
transparent 	Describes objects that let light travel through them easily, meaning that you can see through the object.

Year 3: Science – Light (3/3)

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Working Scientifically Focus

To record findings using tables.		**To report on findings from enquiries, including oral explanations and presentations of results and conclusions.**	
record 	To put in writing (or drawing).	conclusions 	A judgement or decision reached.
findings 	The information you get as a result of your test/ experiment.	enquiries 	The process of trying to find out information.
tables 	A way to show data. Data goes into the different boxes. Tables have columns and rows. A **table** can be used to display pieces of data about different things.	presentations 	A speech or talk given about some information.

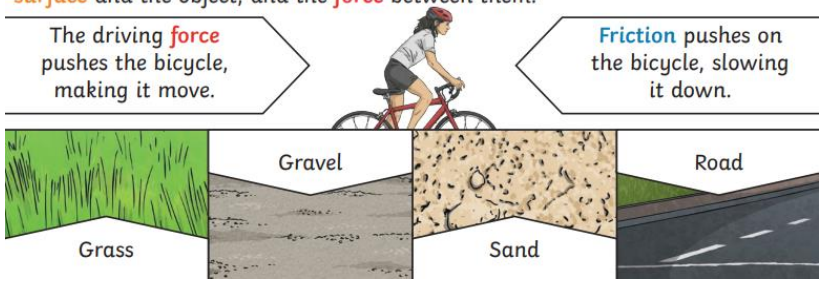
Year 3: Science – Forces (1/2)

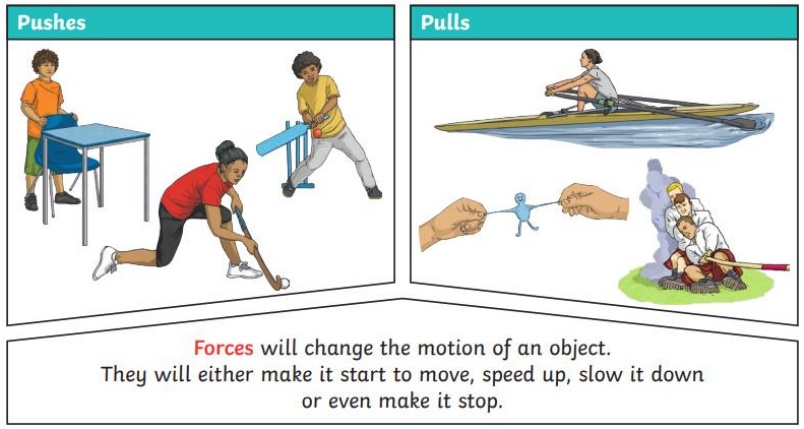
Prior Learning

Children are aware of different properties of materials and ways to sort them. They have experimented with the feel of different materials and defined them using adjectives such as rough and smooth.

Key Knowledge-Forces

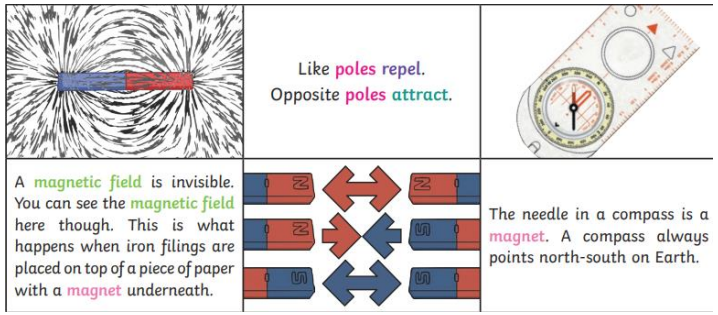
Different surfaces create different amounts of friction. The amount of friction created by an object moving over a surface depends on the roughness of the surface and the object, and the force between them.

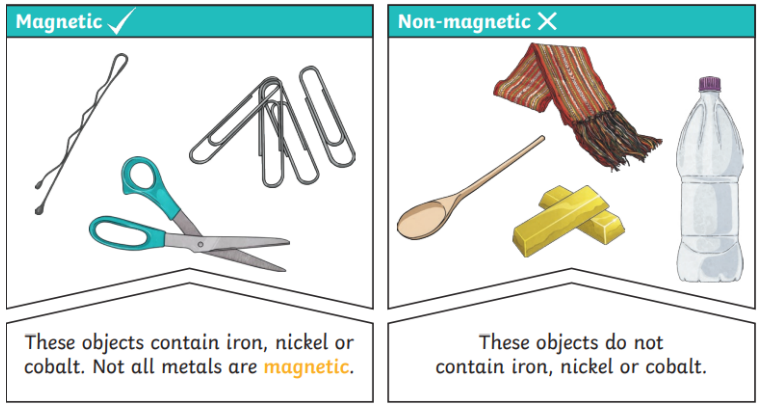




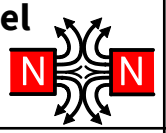
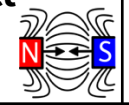
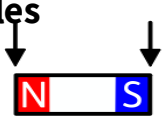
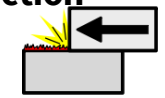
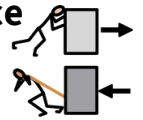
Key Knowledge-Magnets

A magnet is a material or object that produces a magnetic field.





Key Vocabulary

repel 	To push away (opposite of attract).
attract 	To pull towards (opposite of repel).
magnetism 	The force of attraction and repelling caused by a magnet.
poles 	North and South poles are found at opposite ends of a magnet.
friction 	A force that acts between 2 surfaces or objects that are moving across each other.
force 	A push or pull.
surface 	The top layer of something.

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Year 3: Science – Forces (2/2)

Working Scientifically Focus			
To identify differences or similarities		**To set up comparative tests**	
identify 	To know or say who someone is or what something is. To say what something may need.	Testing 	Finding out information through a practical enquiry.
similarity 	Having a resemblance or being alike to something else.	Comparing 	To in some way note or notice the ways in which things may be similar or different.
difference 	A point in way people or things are not similar.		
Examples: A similarity between paperclips and tinfoil is that they are both made of metal. A difference between ice cream and soup is the temperature we usually eat them at.		Example: Are all arms the same length? Do taller people have longer arms?	

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Year 3: Science – Rocks and Fossils

Prior Learning

Children are aware of the different natural materials around them and have learnt about how materials have different properties.

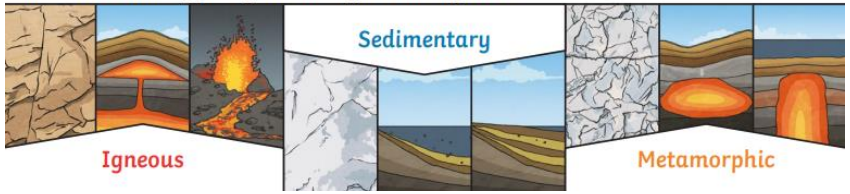
Key Knowledge

Igneous rock is a rock that has been formed from magma or lava.

Sedimentary rock is a rock that has been formed by layers of sediment being pressed down hard and sticking together. You can see the layers of sediment in the rock.

Metamorphic rock is a rock that started out as igneous or sedimentary rock but changed due to being exposed to extreme heat or pressure.

There are three types of naturally occurring rock.



Natural Rocks			Human-Made Rocks
Igneous	Sedimentary	Metamorphic	
Obsidian	Chalk	Marble	Brick
Granite	Sandstone	Quartzite	Concrete
Basalt	Limestone	Slate	Coade Stone

Key Vocabulary

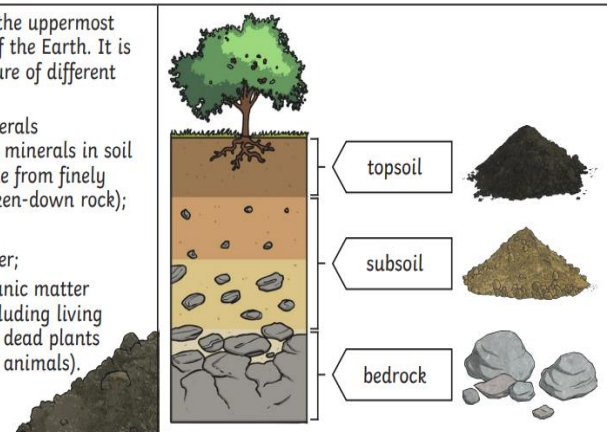
permeable	Allows liquids to pass through it.
impermeable	Does not allow liquids to pass through it.
fossilisation	The process by which fossils are made.
sediment	Natural solid material that is moved and dropped off in a new place by water or wind, e.g. sand.
erosion	When water, wind or ice wears away land.

Key Knowledge

Soil

Soil is the uppermost layer of the Earth. It is a mixture of different things:

- minerals (the minerals in soil come from finely broken-down rock);
- air;
- water;
- organic matter (including living and dead plants and animals).



Working Scientifically Focus

Using scientific evidence to answer questions or support findings.

scientific evidence	Evidence used to either prove or disprove an idea.
findings	The information you get as a result of your test/ experiment.

Key Knowledge

Fossilisation

An animal dies. It gets covered with sediments which eventually become rock.	More layers of rock cover it. Only hard parts of the creature remain, e.g. bones, shells and teeth.	Over thousands of years, sediment might enter the mould to make a **cast fossil**. Bones may change to mineral but will stay the same shape.	Changes in sea level take place over a long period.	As erosion and weathering take place, eventually the fossil becomes exposed.

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Year 4

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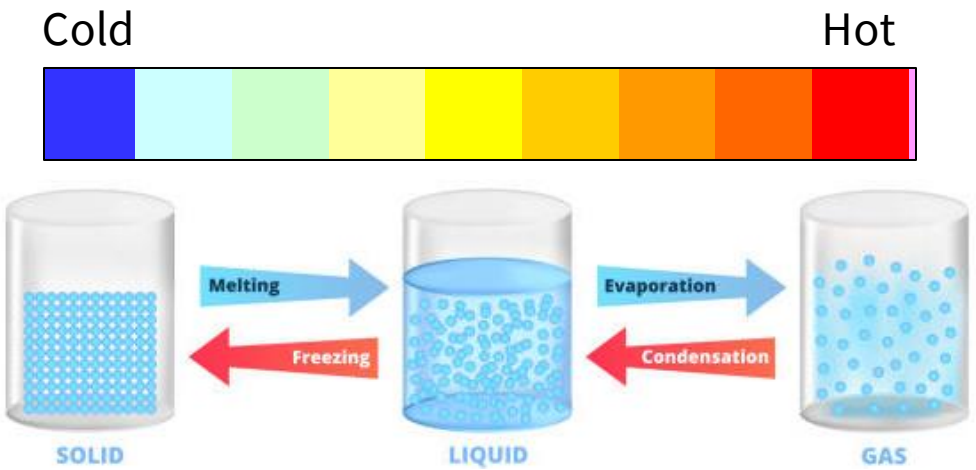
Year 4: Science – States of Matter (1/3)

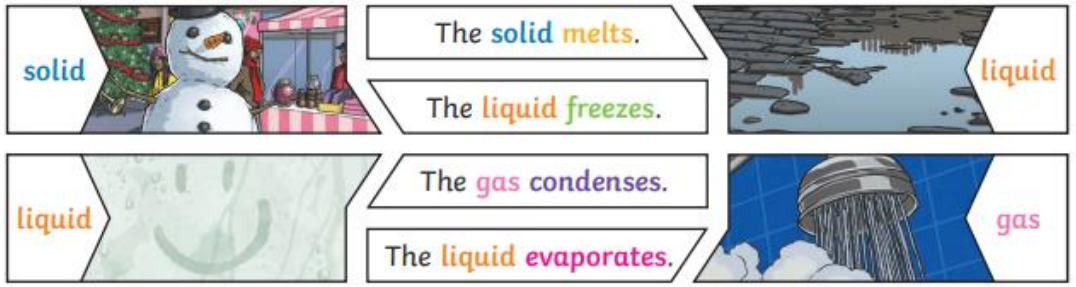
Prior Learning

I know what materials objects are made from.

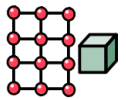
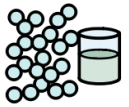
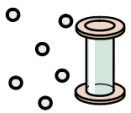
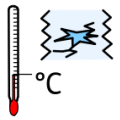
Key Knowledge

When water and other liquids reach a certain temperature, they change state into a solid or a gas. The temperatures that these changes happen at are called the boiling, melting or freezing point.





Recapped Key Vocabulary

materials 	The substance that something is made out of, e.g. wood, plastic, metal.
solids 	One of the three states of matter. Solid particles are very close together, meaning solids, such as wood and glass, hold their shape.
liquids 	This state of matter can flow and take the shape of the container because the particles are more loosely packed than solids and can move around each other. Examples of liquids include water and milk.
gases 	One of the three states of matter. Gas particles are further apart than solid or liquid particles and they are free to move around. A gas fills its container, taking both the shape and the volume of the container. Examples of gases are oxygen and helium.
melting 	The process of heating a solid until it changes into a liquid.
freezing 	When a liquid cools and turns into a solid.

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Year 4: Science & Geography – States of Matter (2/3)

Year 4: Geography & Science – Human and Physical (The Water Cycle)

Key Knowledge

How Does the Water Cycle Work?

Evaporation:
- The Sun causes the water from the Earth to evaporate.
- This water evaporates from seas, lakes, streams and even puddles.
- When it evaporates, water turns into water vapour.

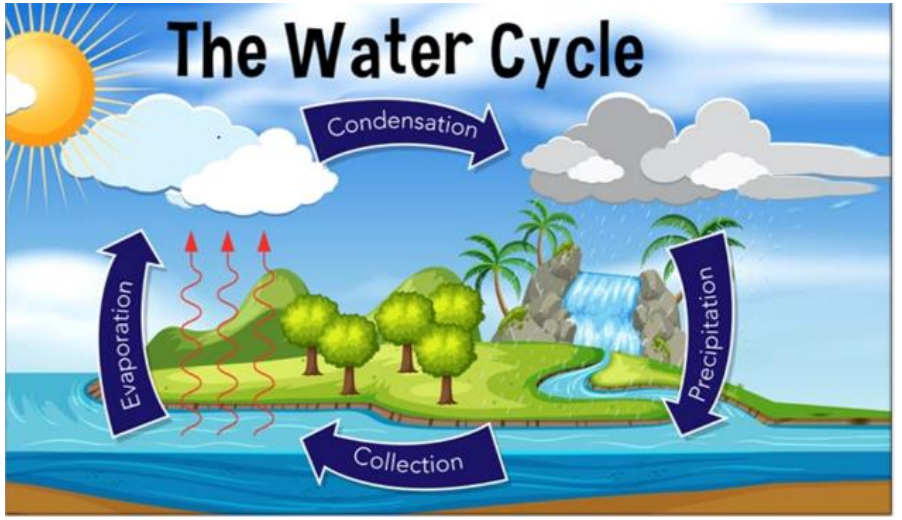
Condensation:
- As the water vapour rises, it cools down.
- As it cools down, condensation happens and water vapour condenses to small droplets of water.
- Clouds are made from a mix of dry air and small droplets of water.

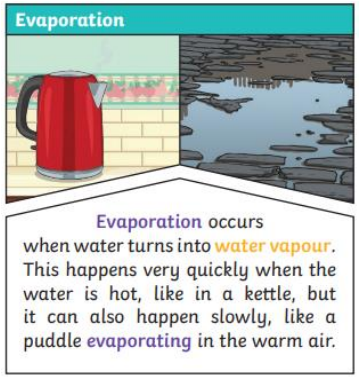
Precipitation:
- As condensation continues to happen, more droplets of water vapour are formed.
- When the droplets become heavy and large enough, they fall back to the Earth's surface in the form of rain or snow.

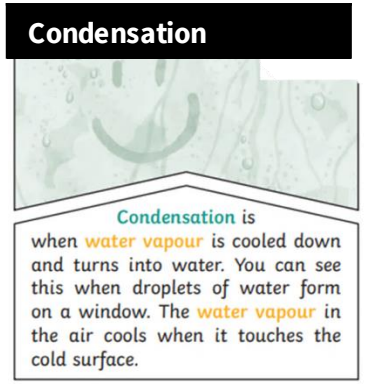
Collection:
- As precipitation happens in the form of rain or snow falling back to Earth, water is absorbed into the soil.
- This water is used by plants to grow - when water from plant leaves evaporates back into the atmosphere, this is called transpiration.
- Water may also run off and enter oceans, seas and rivers.
- Water then evaporates again and the water cycle begins again

Key Vocabulary

evaporation 	The turning of liquid to gas.
condensation 	Small drops of water that collect and gather from evaporated water.
precipitation 	The way in which the water travels back to the ground – rain and snow.
collection 	The water gathering and being collected in rivers, streams, oceans, lakes and other bodies of water, ready to start the cycle again.
cycle 	A series of events repeated in the same order.







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Year 4: Science & Geography – States of Matter (3/3)

Working Scientifically Focus

To record findings using bar charts.		Setting up fair tests		Taking accurate measurements using a thermometer	
record 	To put in writing (or drawing).	variable 	Something that can be changed or vary.	accurate measurements  	How close to the true value a measurement is.
findings 	The information you get as a result of your test/ experiment.	fair test 	A scientific test where only one variable is changes.	thermometer 	A piece of equipment used to measure temperature.
bar charts  bar chart	A **bar chart** displays data by using rectangular bars of different heights.	**Example:**	I am looking at how quickly an ice cube melts at different temperatures. The only variable I will change is the temperature so that it is a fair test.		

Working Scientifically Focus

Comparing and grouping

grouping 	Putting things together due to their similar characteristics/ properties.
comparing 	To in some way note or notice the ways in which things may be similar or different.

Example:

Comparing: particles in a solid object do not move freely BUT particles in gas do.

Grouping: wood, plastic and glass can be grouped together as solids.

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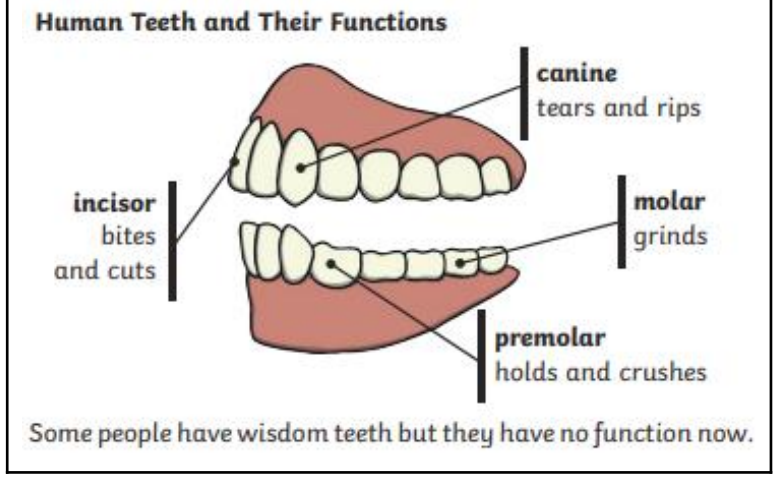
Year 4: Science – Animals including Humans (1/3)

Prior Learning

- Herbivores, omnivores, carnivores have different jaws that have adapted to eat different foods (Yr3).
- Animals get their nutrition from the animals they eat (yr3).

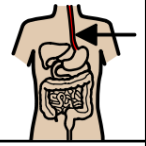
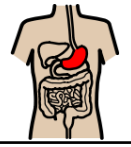
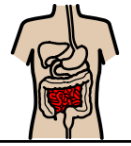
Key knowledge

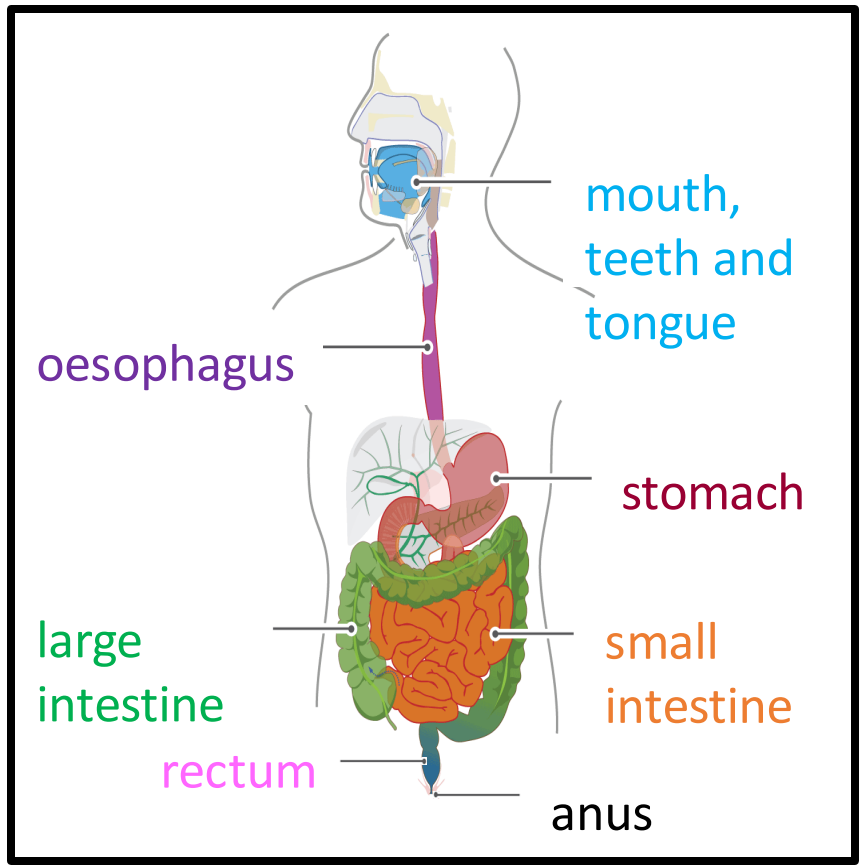


To help prevent tooth decay:

- limit sugary food and drink;
- brush teeth at least twice a day using a fluoride toothpaste;
- visit your dentist regularly.

Key Vocabulary

digest	Break down food so it can be used by the body.
oesophagus 	A muscular tube which moves food from the mouth to the stomach.
stomach 	An organ in the digestive system where food is broken down with stomach acid and by being churned around.
small intestine 	Part of the intestine where nutrients are absorbed into the body.
large intestine 	Part of the intestine where water is absorbed from remaining waste food. Faeces are formed in the large intestine.
rectum	Part of the digestive system where faeces are stored before leaving the body through the anus.



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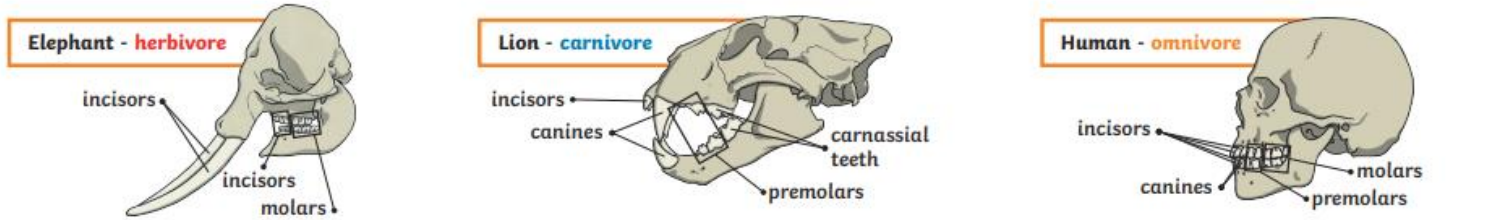
Year 4: Science – Animals including Humans (2/3)

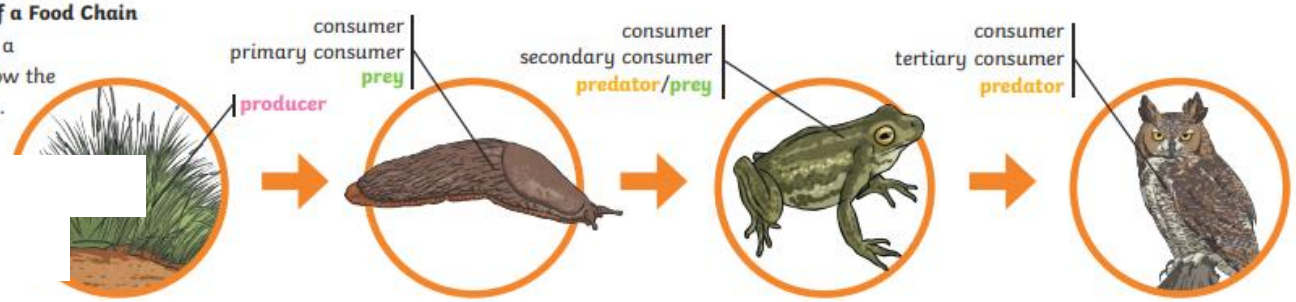
Key knowledge

The teeth of an animal are designed to eat different foods depending on the diet of the animal. Examples of a **herbivore**, a **carnivore** and an **omnivore** skull:

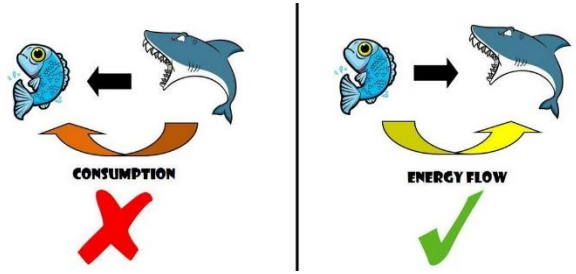


An Example of a Food Chain

The arrows in a food chain show the flow of energy.



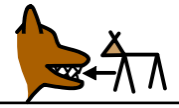
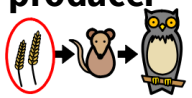
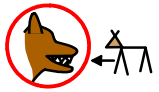
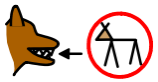
The arrows in a food chain show the flow of energy:



Prior Learning

Food chains (Yr2 – Living things and their habitats).

Key Vocabulary

herbivore 	An animal that eats plants
Carnivore 	An animal that feeds on other animals
omnivore 	An animal that eats plants and animals
producer 	An organism, such as a plant, that produces its own food
predator 	An animal that hunts and eats other animals
prey 	An animal that gets hunted and eaten by another animal

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Year 4: Science – Animals including Humans (3/3)

Working Scientifically Focus

To record findings using written explanations		To report on findings from enquiries- displays or presentations of results and conclusions.	
record 	To put in writing (or drawing).	conclusions 	A judgement or decision reached.
findings 	The information you get as a result of your test/ experiment.	enquiries ?	The process of trying to find out information.
written explanations  	The sharing of findings/ information through a written record.	presentations 	A speech or talk given about some information.
		displays 	A visual presentation of information.

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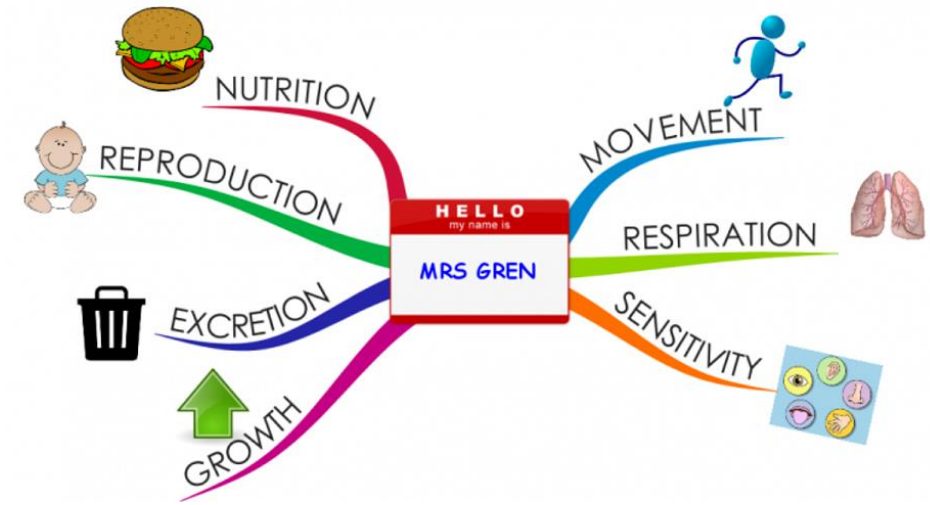
Year 4: Science – Living Things and their Habitats (Page 1/3)

Prior Learning

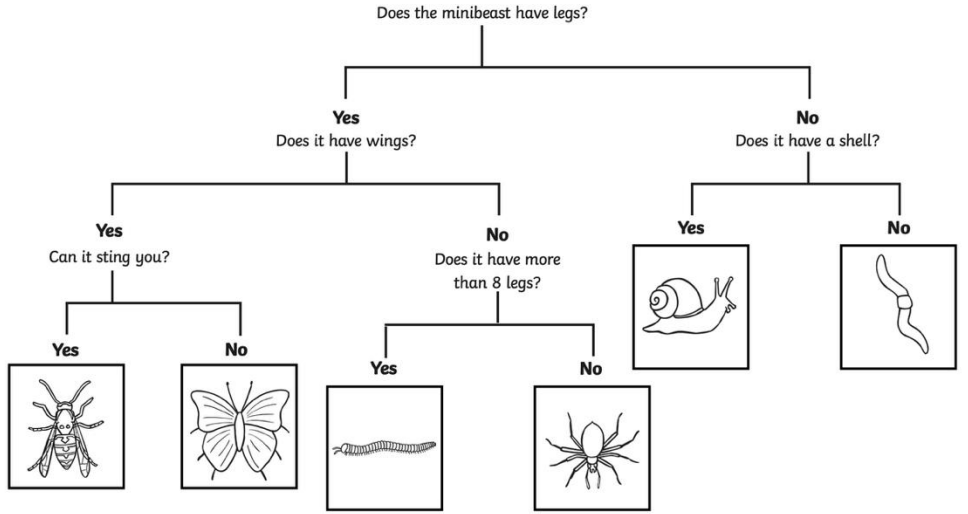
Different types of habitats (Yr2)

Key Knowledge

To stay alive and healthy, all living things need certain conditions that let them carry out the seven life processes:



Plants and animals rely on the environment to give them everything they need. Therefore, when habitats change, it can be very dangerous to the plants and animals that live there.

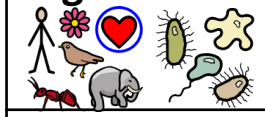
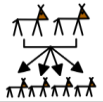


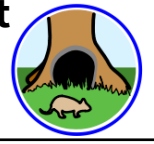
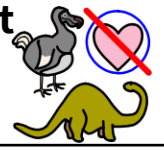
Working Scientifically Focus

To draw simple conclusions, suggest improvements and raise further questions.		Using classification keys to group, identify and name living things.	
conclusions 	A judgement or decision reached.	classification key 	A set of traits/ characteristics used for grouping.
improvements 	The action of something being made better.	group 	Putting things together due to their similar characteristics/ properties.
(scientific) questions 	A question that can be answered through testing and/ or research.	identify 	To know or say who someone is or what something is. To say what something may need.

Year 4: Science – Living Things and their Habitats (Page 2/3)

Prior Learning
Different types of habitats (Yr2)

Key Vocabulary	
organisms 	This is another word that can be used to mean 'living things'.
life processes	The things living things do to stay alive.
respiration	A process where plants and animals use oxygen gas from the air to help turn their food into energy.
sensitivity	The way living things react to changes in their environment.
reproduction 	The process through which young are produced.
excretion	The process by which living things get rid of waste products
nutrition 	The process of obtaining food to provide living things with energy to live and stay healthy.

Key Vocabulary	
habitat 	The specific area or place in which particular animals or plants may live.
environment 	An environment contains many habitats and these include areas where there are both living and non-living things.
endangered species 	A plant or animal where there are not many of their species left and scientists are concerned that the species may become extinct.
extinct 	When a species has no more members alive on the planet, it is extinct.

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Year 4: Science – Living Things and their Habitats (Page 3/3)

Prior Learning

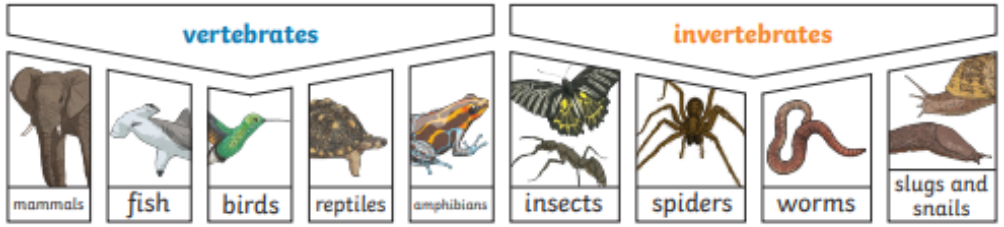
Different types of habitats (Yr2)

Key questions

How are earwigs and ants different?
What is an invertebrate?

Key Knowledge

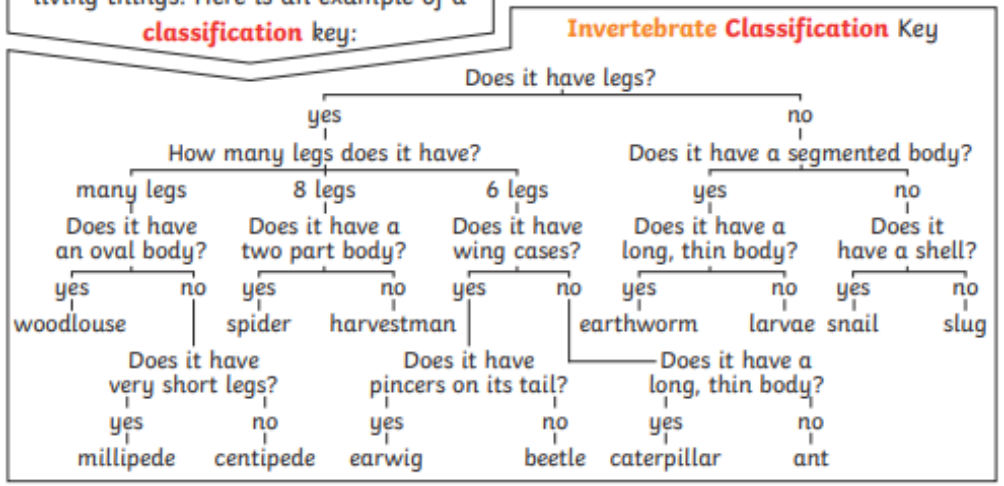
Animals can be grouped in lots of different ways based upon their **characteristics**.



Vertebrates can be separated into five broad groups.

You could sort **invertebrates** you might see around school in different ways, such as in this example. The vast majority of living things on the planet are **invertebrates**.

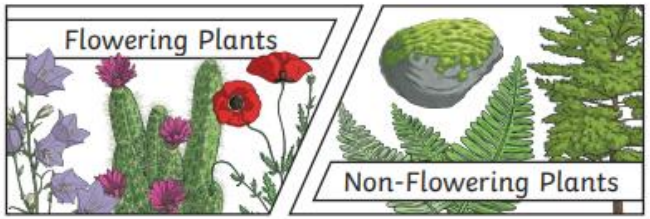
You can use **classification** keys to help group, identify and name a variety of living things. Here is an example of a **classification** key:



Key Vocabulary

classification 	This is where plants or animals are placed into groups according to their similarities.
vertebrates 	Animals with a backbone.
invertebrates 	Animals without a backbone.
specimen	A particular plant or animal that scientists study to find out about its species.
characteristics	The distinguishing features or qualities that are specific to a species.

Plants can be sorted into many different groups.
For example:



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Year 4: Science – Sound (1/2)

Prior Learning

I know that there are different types of sounds. Some high and some low. I know that we use phones to communicate over long distances.
I know that I can turn volume up and down on different technology.

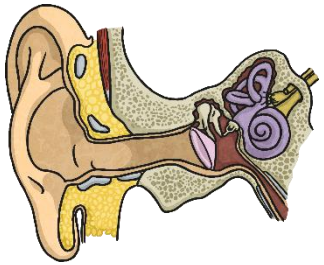
Key knowledge

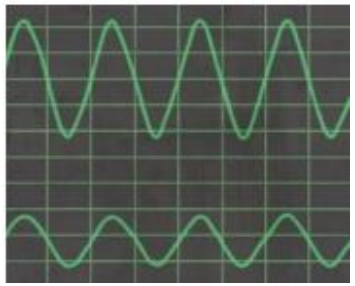
Key scientist: Alexander Graham Bell
Scottish born scientist (1847) who invented the telephone in 1876 at the age of 29. He formed the Bell Telephone Company in 1887.

Key knowledge

Sound travels to the ear
Sound is a type of energy. Sounds are made when objects vibrate. The **vibration** makes the air around vibrate, and the air vibrations enter your ear. Our brain hears the vibrations and turns this into sound.

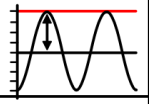
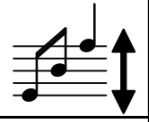
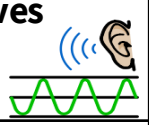
How sound is made
Sound travels through the air in **waves**.
When you clap your hands, the air around your hands shakes. This is the air molecules vibrating





Inside your ear, the vibrations hit the eardrum and are then passed to the middle and then the inner ear. They are then changed into electrical signals and sent to your brain. Your brain tells you that you are hearing a sound.

Key Vocabulary

amplitude 	A measure of the strength of a soundwave.
decibel  dB	A measure of how loud a sound is .
pitch 	How high or low a sound is.
sound waves 	Invisible waves that travel through air, water and solid objects as vibrations.
vibrations	Invisible waves that move quickly .
volume 	How loud or quiet a sound is.
air molecules 	The molecules that make up air, which include particles of oxygen and nitrogen.
soundproofing	make (a room or building) resistant to the passage of sound.

Key knowledge

How does sound travel?
Sound can travel through solids, liquids and gases. Sound travels as a wave, vibrating the particles in the medium it is travelling in.
Sound travels much slower than light, whether in air or in water. You can often hear things after you see them, for example, you see lightning before you hear thunder.

Volume of sound
The **louder** the sound, the **bigger** the **vibration**.
The closer you are to the source of a sound, the louder the sound will be.
The further away you are from the source of a sound the quieter the sound will be.
The **size of a vibration** is called the **amplitude.**
Quieter sounds have a smaller amplitude, and louder sounds have a bigger amplitude.
Pitch is a measure of how high or low a sound is.
Faster vibrations = higher pitch
Slower vibrations = lower pitch

Absorbing sounds
If you lived near a noisy building site, you would not want to hear the sounds of the machines! You would need to find a way to **absorb** the sounds so your house remained quiet and peaceful. This is called **soundproofing,** insulating the sound.

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Year 4: Science – Sound (2/2)

Working Scientifically Focus	
To draw simple conclusions, suggest improvements and raise further questions.	
conclusions 	A judgement or decision reached.

Working Scientifically Focus	
Taking accurate measurements using a data logger	
accurate measurements  	How close to the true value a measurement is.
data logger 	**A** device that records **data** over time. They usually have **a** built-in instrument or sensor.

Working Scientifically Focus	
To record findings using bar charts.	
record 	To put in writing (or drawing).
findings 	The information you get as a result of your test/ experiment.
labelled diagrams 	a simplified drawing that shows the workings/ part of something and has annotations to offer explanation.

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Year 4: Science – Electricity (1/3)

Prior Learning
Light sources Yr3

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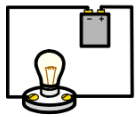
Components (Parts) Vocabulary

cell: Normally, we would call this a battery but scientifically, this is a cell. Two or more cells joined together form a battery. 	**bulb:** Lights up in a complete circuit. 	**buzzer:** Makes a noise in a complete circuit. 
wires: Used to connect the different components in the circuit together. 	**motor:** Produces movement in a complete circuit. 	**switch:** Used to turn other components in the circuit on or off. 

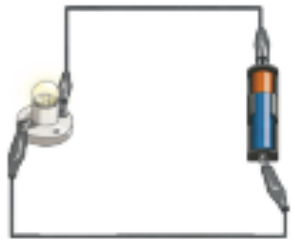
Key Vocabulary

electricity 	The flow of an electric current through a material, e.g. from a power source through wires to an appliance.
appliances 	A piece of equipment or a device designed to perform a particular job, such as a washing machine or mobile phone.
battery 	A device that stores electrical energy as a chemical. Two or more cells joined together form a battery.
circuit 	A pathway that electricity can flow around. It is based around wires and a power supply. Examples of components (parts) you can add in to a circuit are bulbs, switches, buzzers and motors.

Series Circuit

A circuit where the components are connected in a loop. Electricity flows through each component in a single pathway.

Complete Circuit



Electricity can flow. The components will work.

Incomplete Circuit

There is a break in the circuit that prevents the electricity from flowing. The components will not work.

Switches can be used to open or close a circuit. When off, a switch 'breaks' the circuit to stop the flow of electricity. When on, a switch 'completes' the circuit and allows the electricity to flow.

push button switch

slide switch

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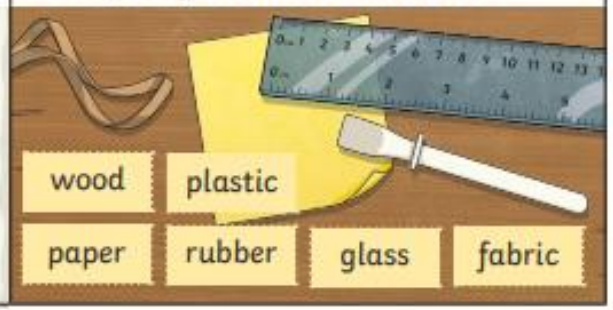
Year 4: Science – Electricity (2/3)

Key Knowledge

Examples of Electrical Conductors

Examples of Electrical Insulators



To work safely with circuit components in the classroom:

- None of the equipment needs to use mains power, so do not put any of it in or near plugs.
- Report any damaged or broken equipment to your teacher. Do not use it.

- Only use equipment as instructed.
- Connect equipment correctly.
- Disconnect equipment after use and put it away neatly.

Materials can be tested in a circuit to see if they are **electrical conductors** or **electrical insulators**.

10p = metal = **electrical conductors**

test circuit

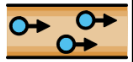
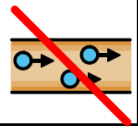
ruler = plastic = **electrical insulators**

Appliances

Many everyday appliances rely on electricity for them to work. Some appliances use mains electricity (are plugged into a socket) and others have a battery to make them work. Examples of mains-powered appliances include toasters and televisions. Battery-powered appliances can include mobile phones and torches.

mains-powered

battery-powered

Key Vocabulary	
mains electricity 	Electricity supplied through wires to a building.
electrical conductor 	A conductor of electricity is a material that will allow electricity to flow through it.
electrical insulator 	Materials that are electrical insulators do not allow electricity to flow through them.

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Year 4: Science – Electricity (3/3)

Working Scientifically Focus	
To set up comparative tests	
Testing 	Finding out information through a practical enquiry.
Comparing 	To in some way note or notice the ways in which things may be similar or different.
Example: Are all arms the same length? Do taller people have longer arms?	

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Year 5

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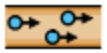
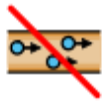
Year 5: Science - Properties and Changes of Materials (Page 1/3)

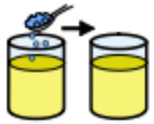
Prior Learning

Water can change from a solid (ice) to a liquid (water) to a gas (water vapour). When this happens, the particles become more or less closely packed and move around more or less depending on the state they are in.
I can explain and use the key vocabulary melts, freeze, evaporate and condense.

Recapped Key Vocabulary

 conductor	A conductor is a material that heat or electricity can easily travel through. Most metals are both thermal conductors (they conduct heat) and electrical conductors (they conduct electricity).
 insulator	An insulator is a material that does not let heat or electricity travel through them. Wood and plastic are both thermal and electrical insulators.
 transparency	A transparent object lets light through so the object can be looked through, for example glass or some plastics
 dissolve	the process that occurs when a solute (example: salt) is added to a solvent (example: water) and the solute disappears creating a solution (example: salty water)

New Key Vocabulary

 reversible	such as mixing and dissolving **solids** and **liquids** together can be reversed by:
 irreversible	are changes that are permanent – they cannot change back.
 soluble	Something that dissolves in liquid – like sugar
 insoluble	Something that does not dissolve in liquid – like a rock

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Year 5: Science - Properties and Changes of Materials (Page 2/3)

Key Knowledge

Sieving

Smaller **materials** are able to fall through the holes in the sieve, separating them from larger particles.

Filtering

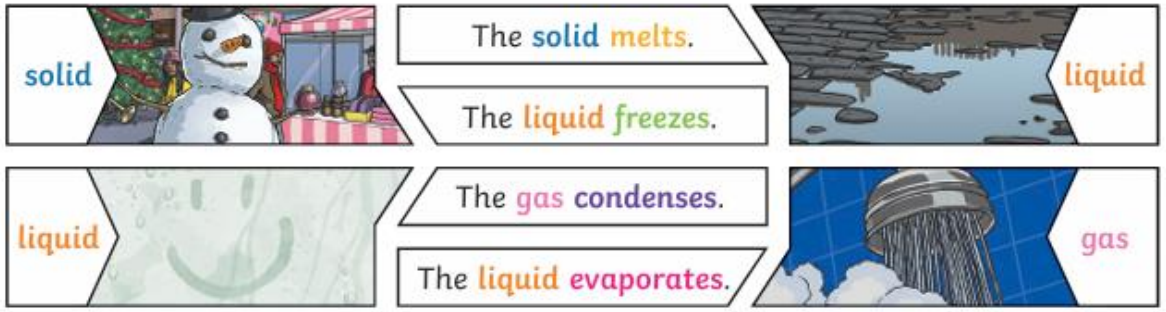
The **solid** particles will get caught in the filter paper but the **liquid** will be able to get through.

Evaporating

The **liquid** changes into a **gas**, leaving the **solid** particles behind.

Irreversible changes often result in a new product being made from the old **materials** (reactants). For example, burning wood produces ash. Mixing vinegar and milk produces casein plastic.

Changes of State



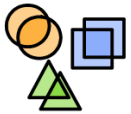
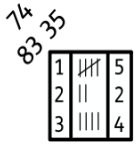
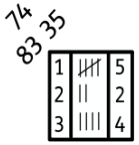
Wood Burning

Bread Toasting

Rusting of Iron

Year 5: Science – Properties and Changes of Materials (Page 3/3)

Working Scientifically Focus

Compare and group together everyday materials on the basis of their properties		**To record data and results of increasing complexity using scientific diagrams and labels.**		**To record data and results of increasing complexity using tables.**		**To record and present findings from enquiries in written form - conclusions**		**To report and present findings from enquires orally – conclusions.**	
compare 	To in some way note or notice the ways in which things may be similar or different.	record 	To put in writing (or drawing)	record 	To put in drawing (or writing)	findings 	The information you get as a result of your test/ experiment.	findings 	The information you get as a result of your test/ experiment.
group 	Putting things together due to their similar characteristics/ properties.	data 	Information (facts or numbers) that has been collected.	data 	Information (facts or numbers) that has been collected	written form 	In writing	orally 	through speech and discussion i.e. verbally
properties 	What a material is like and how it behaves	labelled diagram 	a simplified drawing that shows the workings/ part of something and has annotations to offer explanation.	tables 	A way to show data. Data goes into the different boxes. Tables have columns and rows.	conclusions 	a judgement or decision reached	conclusions 	a judgement or decision reached
Example: Is it soluble/insoluble? Is this change reversible/irreversible				Example: Constructing tables independently, choosing own headings, number of tests and intervals.		Example: Using what you have found, fully explain the answer to your original question. How can you apply your findings to…?		Example: Using what you have found, fully explain the answer to your original question. How can you apply your findings to…?	

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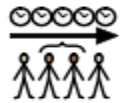
Year 5: Science - Animals including Humans(Page 1/3)

Key Vocabulary			
 fertilisation	The process of the male and female sex cells fusing together.	 adolescence	The social and emotional stage of development between childhood and adulthood.
prenatal	The stage of development from the time of fertilisation to the time of birth.	 puberty	The physical stage of development between childhood and adulthood.
 gestation	The process or time when prenatal development takes place before birth.	menstruation	When the female body discharges the lining of the uterus. This happens approximately once a month or every 28 days.
 reproduce	To produce young.	 adulthood	The stage of development when a human is fully grown and mature.
asexual reproduction	A process where one parent produces new life.	 life expectancy	The length of time, on average, that a particular animal is expected to live.
sexual reproduction	A process where two parents – one male and one female – are required to produce new life.	 life cycle	The changes a living thing goes through, including reproduction.

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Year 5: Science - Animals including Humans (Page 2/3)

Prior Learning

- Basic needs for humans to survive are food, oxygen, water, shelter.
- Animals, including humans, have offspring which grow into adults.

Key Questions

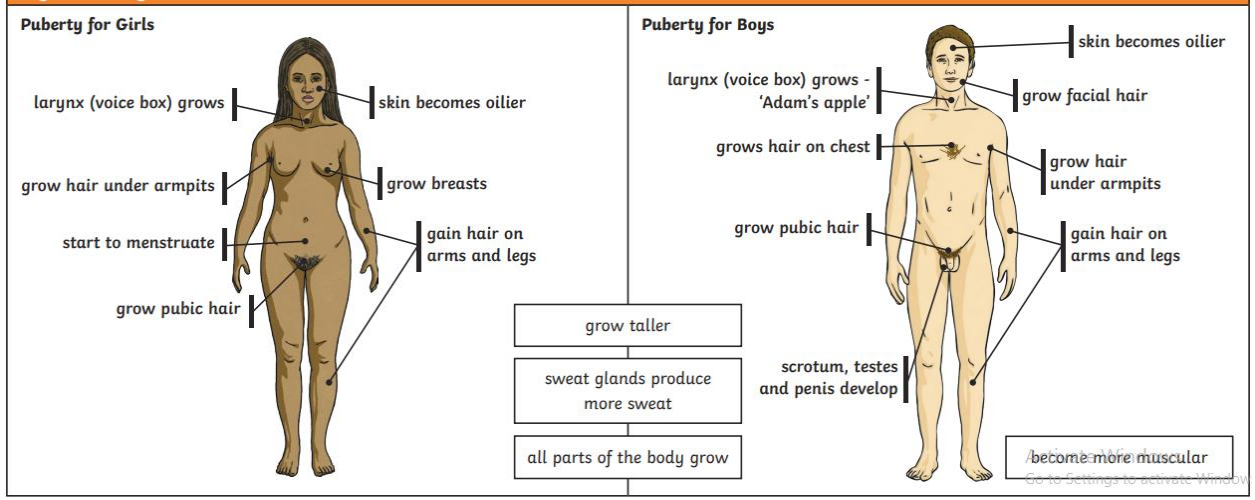
What are the 6 stages of human development?
Can you label a puberty diagram of a male and female?
What are the main changes that occur during puberty for a man/woman?

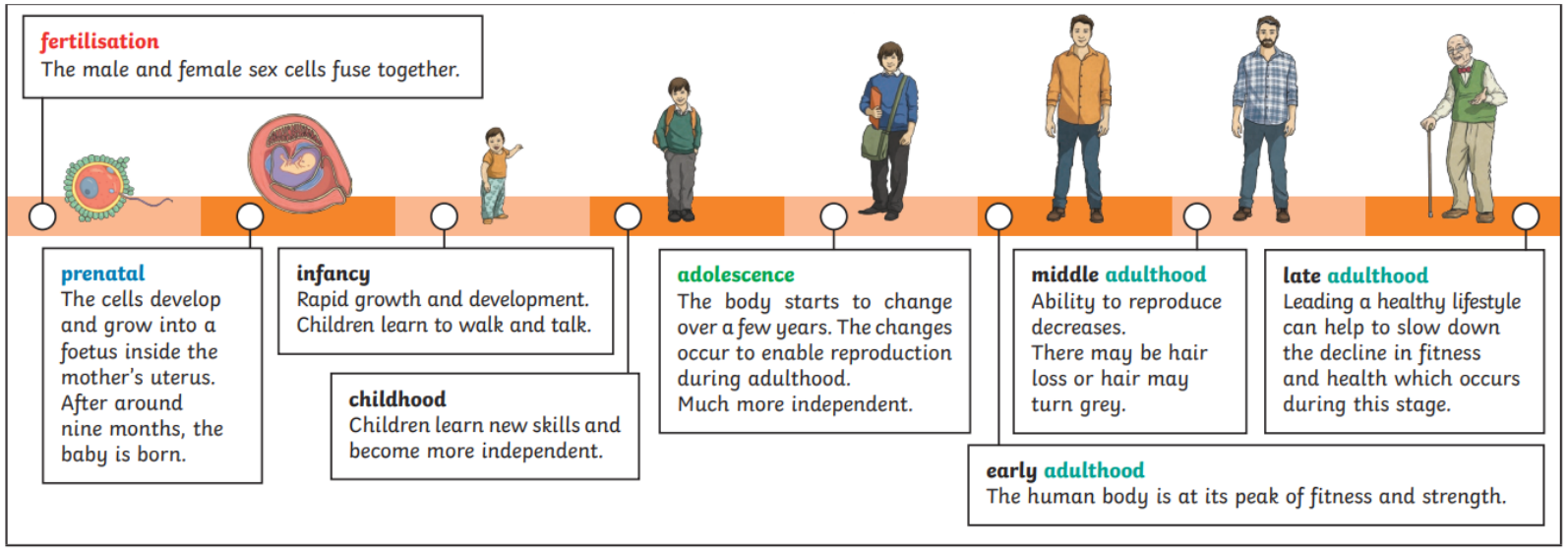
Key Knowledge

I know that:

- babies grow in height
- there are 6 stages of human development
- changes occur during puberty due to hormones
- there are similarities and differences between how boys and girls experience puberty.

Key Knowledge





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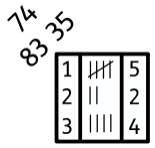
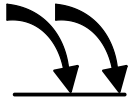
Year 5: Science - Animals including Humans(Page 3/3)

Working Scientifically Focus

To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.		To record data and results of increasing complexity using scatter graphs.	
accurate measurements 	How close to the true value a measurement is.	record 	To put in writing (or drawing)
scientific equipment 	equipment intended for scientific research e.g. instruments, apparatus and machines.	data 	Information (facts or numbers) that you collected
repeat readings 	taking measurements more than once to make sure they are accurate and reliable.	Scatter graph 	A scatter graph uses dots to represent values for two different numeric variables.

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Year 5: Science – Living Things and their Habitats (Page 1/4)

Prior Learning
I know to stay alive and healthy, all living things need certain conditions that let them carry out the seven life processes. (Yr4) I know that environment plays a big part on how well a living thing develops and grows. (Yr4)

Key Vocabulary	
asexual reproduction	One parent is needed to create an offspring, which is an exact copy of the parent.
fertilise	The action of fusing the male and female sex cells in order to develop an egg
gestation	The length of a pregnancy
life cycle	The journey of changes that take place throughout the life of living thing including birth, growing up and preproduction
metamorphosis	An abrupt and obvious change in the structure of an animal's body and their behaviour
pollination	The transfer of pollen to a stigma to allow fertilisation
reproduction	The process of new living things being made
sexual reproduction	Two parents are needed to make offspring which are similar but not identical to either parent.

Key Knowledge

Humans develop inside their mothers and are dependent on their parents for many years until they are old enough to look after themselves.

Amphibians such as frogs are laid in eggs then, once hatched, go through many changes until they become an adult.

Some animals, such as butterflies, go through metamorphosis to become an adult.

Birds are hatched from eggs and are looked after by their parents until they are able to live independently.

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Year 5: Science – Living Things and their Habitats (Page 2/4)

Key Knowledge

Mammals use sexual reproduction to produce their offspring.

- The male sex cell, called the sperm, fertilises the female sex cells.
- The fertilised cell divides into different cells and will form a baby with a beating heart.
- The baby will grow inside the female until the end of the gestation period when the baby is born.

Echidnas and platypus are mammals but they lay eggs rather than giving birth to live young.

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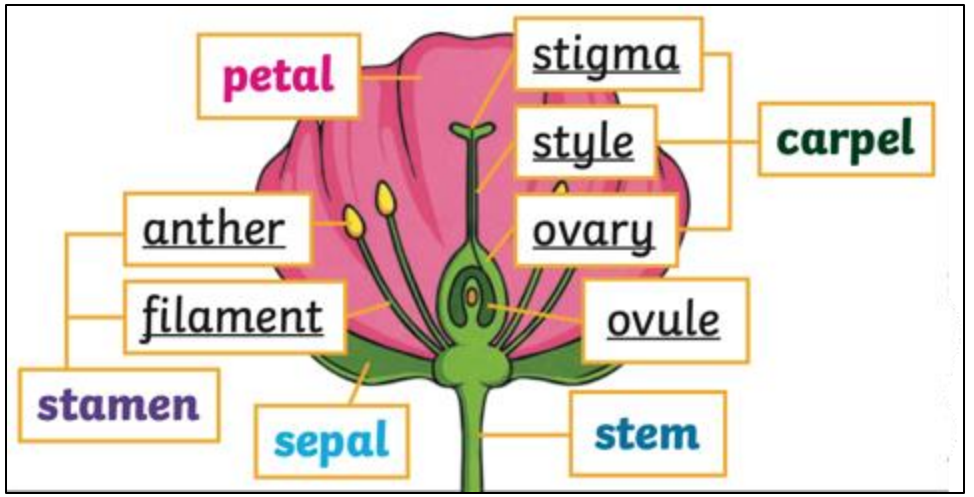
Year 5: Science – Living Things and their Habitats (Page 3/4)

Key Knowledge

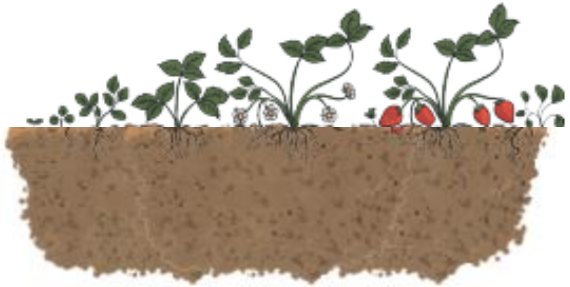
Plants

Most plants contain both the male sex cell (pollen) and female sex cell (ovules), but most plants can't fertilise themselves. Wind and insects help to transfer pollen to a different plant. The pollen from the stamen of one plant is transferred to the stigma of another. The pollen then travels down a tube through the style and fuses with an ovule.



	pollen (male sex cell)
	ovules (female sex cell)
	stamen
	stigma
	style

Some plants, such as strawberry plants, potatoes, spider plants and daffodils use asexual reproduction to create a new plant. They are identical to the parent plant.



Key Vocabulary	
asexual reproduction	One parent is needed to create an offspring, which is an exact copy of the parent.
fertilise	The action of fusing the male and female sex cells in order to develop an egg
pollination	The transfer of pollen to a stigma to allow fertilisation
reproduction	The process of new living things being made
sexual reproduction	Two parents are needed to make offspring which are similar but not identical to either parent.

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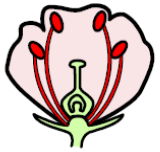
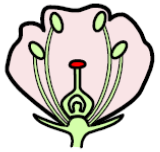
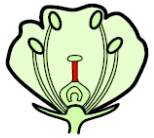
Year 5: Science – Living Things and their Habitats (Page 4/4)

Key Vocabulary	
asexual reproduction	One parent is needed to create an offspring, which is an exact copy of the parent.
fertilise	The action of fusing the male and female sex cells in order to develop an egg
 pollination	The transfer of pollen to a stigma to allow fertilisation
 reproduction	The process of new living things being made
sexual reproduction	is the process by which new plants are produced through the fusion of male and female parts, resulting in the formation of seeds.

	pollen (male sex cell)
	ovules (female sex cell)
	stamen
	stigma
	style

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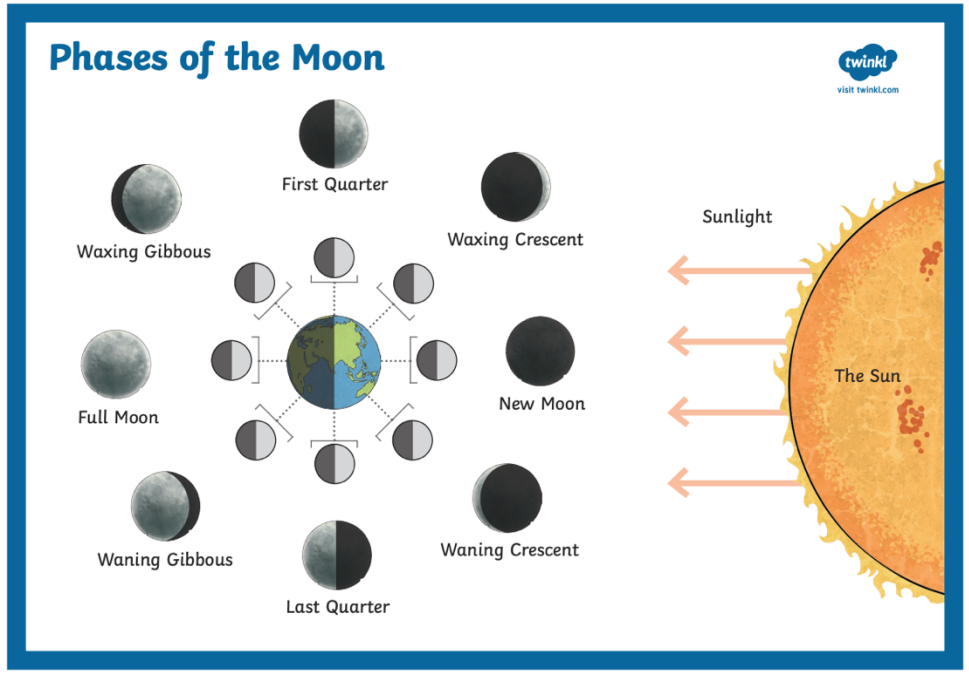
Year 5: Science – Earth & Space(Page 1/3)

Prior Learning

- The planet we live on is Earth.
- We are part of a solar system.
- The sun is a light source.
- The moon reflects light.

Key Knowledge – The Moon

- The Moon orbits Earth in an oval-shaped path while spinning on its axis.
- At various times in a month, the Moon appears to be different shapes. This is because as the Moon rotates round Earth, the Sun lights up different parts of it.



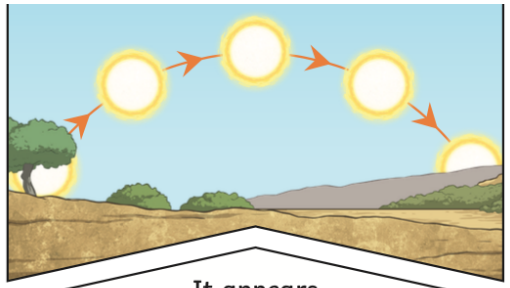
Key Knowledge – The Planets

- The rocky planets are Mercury, Venus, Earth and Mars. They are mostly made up of metal and rock.
- The gassy planets are Jupiter, Saturn, Uranus and Neptune. They are mostly made up of gases (helium and hydrogen) although they do have cores made up of rock and metal.
- The planets all orbit the Sun in the same direction (anti-clockwise).
- All the planets, except Venus and Uranus, rotate on their axes in the same direction (anti-clockwise).
- The giant gas planets spin more rapidly on their axes than the inner planets do.
- The gravity of the Sun is what keeps the planets in their orbits.

Key Knowledge – The Earth

- Earth rotates (spins) on its axis. It does a full rotation once in every 24 hours. This causes night and day.
- At the same time that Earth is rotating, it is also orbiting (revolving) around the Sun. It takes a little more than 365 days to orbit the Sun. This causes the seasons.

Key Knowledge – The Sun



It appears to us that the **Sun** moves across the sky during the day but the **Sun** does not move at all. It seems to us that the **Sun** moves because of the movements of Earth.

Key Knowledge – Day & Night

- Day and night is due to the rotation of the Earth.
- Daytime occurs when the side of Earth is facing towards the Sun. Night occurs when the side of Earth is facing away from the Sun.
- The rotation of Earth creates different time zones across the world.

Key Knowledge - Spherical Bodies

- A spherical body is something shaped like a sphere.
- The Sun, Earth and Moon are all approximately spherical bodies. We know this because of a range of evidence e.g. pictures taken from space.
- From early times to around the time of the Ancient Greeks, people believed that the Earth was flat. There are still some people who believe this today.

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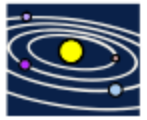
Year 5: Science – Earth & Space (Page 2/3)

Key Vocabulary	
 sun	A huge star that Earth and the other planets in our solar system orbit around.
 star	A giant ball of gas held together by its own gravity.
 moon	A natural satellite which orbits Earth or other planets.
 planet	A large object, round or nearly round, that orbits a star.
spherical bodies	Astronomical objects shapes like spheres (the shape of a ball).

 satellite	Any object or body in space that orbits something else, for example: the Moon is a satellite of Earth.
 axis	An imaginary line that a body rotates around. E.g. Earth's axis (imaginary line) runs from the North Pole to the South Pole.
 astronomer	Someone who studies or is an expert in astronomy (space science).
 solar system	Consists of the Sun and everything that orbits or travels around the Sun, including planets, moons, dwarf planets, asteroids, comets and other small icy objects.

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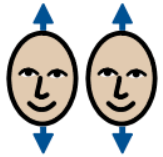
Year 5: Science – Earth & Space (Page 3/3)

Working Scientifically Focus

To identify scientific evidence that has been used to support or refute ideas or arguments.

scientific evidence 	Previous research which either supports or counters a **scientific** idea
support 	Evidence which agrees with or proves an idea
refute 	Evidence which disagrees with or disproves an idea

Examples:

- ____ thinks _____. Use your results to explain whether they are right or wrong.
- How did ___ prove ___?
- Use your learning to explain…
- How could you prove…. Is right or wrong?
- Is one piece of evidence enough to justify an idea? Explain your thinking.

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Year 5: Science – Forces (Page 1/3)

Prior Learning

Children know that a force is a push or a pull. Children have been taught that friction is a force which acts between two surfaces or objects which are moving across each other. They know that magnetism is a force of attraction and repelling.

Key Knowledge-

Forces

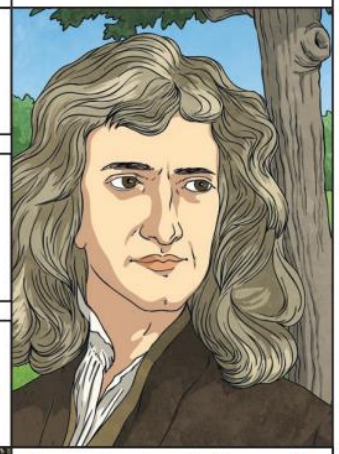
Forces can make an object...

- start to move.
- stop moving.
- change direction.
- move faster.
- change its shape.
- move more slowly.

Mass is how much matter is inside an object. It is measured in kilograms (kg).

Weight is how strongly **gravity** is pulling an object down. It is measured in newtons (N).

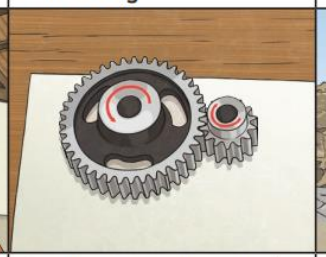
Isaac Newton



Isaac Newton is famously thought to have developed his theory of **gravity** when he saw an apple fall to the ground from an apple tree.

Examples of forces in action:

Water resistance and **air resistance** are forms of **friction**. **Friction** is sometimes helpful and sometimes unhelpful. For example, **air resistance** is helpful as it stops the skydiver hitting the ground at high speed. **Friction** on a bike chain can make the bike harder to pedal so it is unhelpful.

Pulleys	Gears/Cogs	Levers
		
Pulleys can be used to make a small **force** lift a heavier load. The more wheels in a pulley, the less **force** is needed to lift a **weight**.	Gears or cogs can be used to change the speed, **force** or direction of a motion. When two gears are connected, they always turn in the opposite direction to each other.	Levers can be used to make a small **force** lift a heavier load. A lever always rests on a pivot.

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Year 5: Science – Forces (Page 2/3)

Key Knowledge-

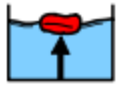
The Moon has a smaller mass than Earth so the gravitational pull on the Moon is smaller than it is on Earth.

Jupiter has a greater mass than Earth so the gravitational pull on Jupiter is stronger than on Earth.

It has a pointed nose to cut through the water, and a smooth, low, curved back to allow the water to flow over and around it.

This shark is **streamlined**.

It does not create much water resistance so it can move through the water quickly.

Key Vocabulary	
 air resistance	A type of friction caused by air pushing against any moving object.
 water resistance	A type of friction caused by water pushing against any moving object.
streamlined	When an object is shaped to minimise the effects of air or water resistance.
 upthrust	A force that pushes objects up, usually in water.
mechanism	Mechanisms are simple machines with moving parts that change input forces and movement into a set of useful output forces. Examples of mechanisms are pulleys, gears and levers.

Key Vocabulary	
 gravity	A pulling force exerted by the Earth (or anything else which has mass).
Earth's gravitational pull	The pull that Earth exerts on an object, pulling it towards Earth's centre. It is the Earth's gravitational pull which keeps us on the ground.
 weight	The measure of the force of gravity on an object.
 mass	A measure of how much matter (or 'stuff') is inside an object.

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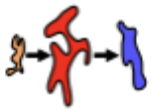
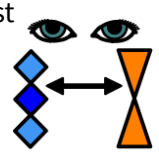
Year 5: Science – Forces (Page 3/3)

Working Scientifically Focus

To plan a range of science enquiries to answer questions, including recognising and controlling variables where necessary.		**To use test results to make predictions to set up further comparative and fair tests.**	
variable 	Something that can be changed and be measured	prediction 	What someone thinks may happen based on their knowledge.
independent variable	The variable that is being changed during the experiment.	comparative test 	a test designed to notice the ways in which things may be similar or different.
dependent variable	The variable being tested or measured during the experiment.	fair test 	A scientific test where only one variable is changes.
Examples: • What would happen if…? • Why did you choose to…? • How could you limit the effect of other variables on your results? • How could you make your results more accurate? • What would you do if you found an anomalous result?		Examples: • How would you improve the test to make sure your results are accurate? • What questions have arisen from this enquiry? How would you answer/test them? • I know want to know____. How could I prove this right or wrong?	

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Year 6

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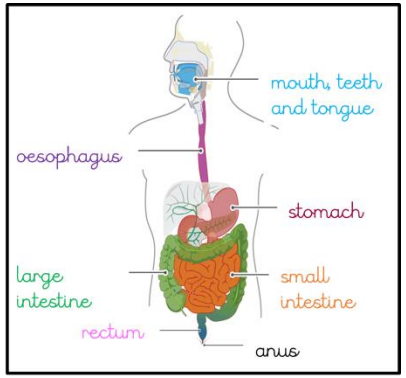
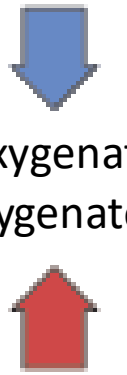
Year 6: Science – Animals including Humans (page 1/4)

Prior Learning

Facts you have learned before

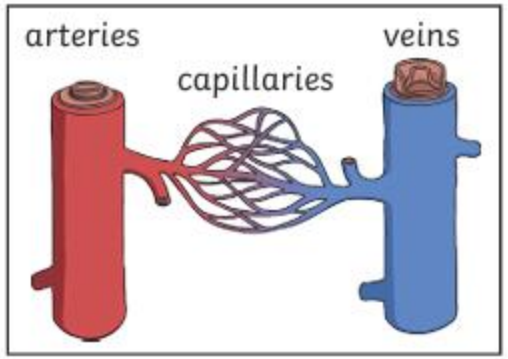


Key Knowledge



deoxygenated

oxygenated

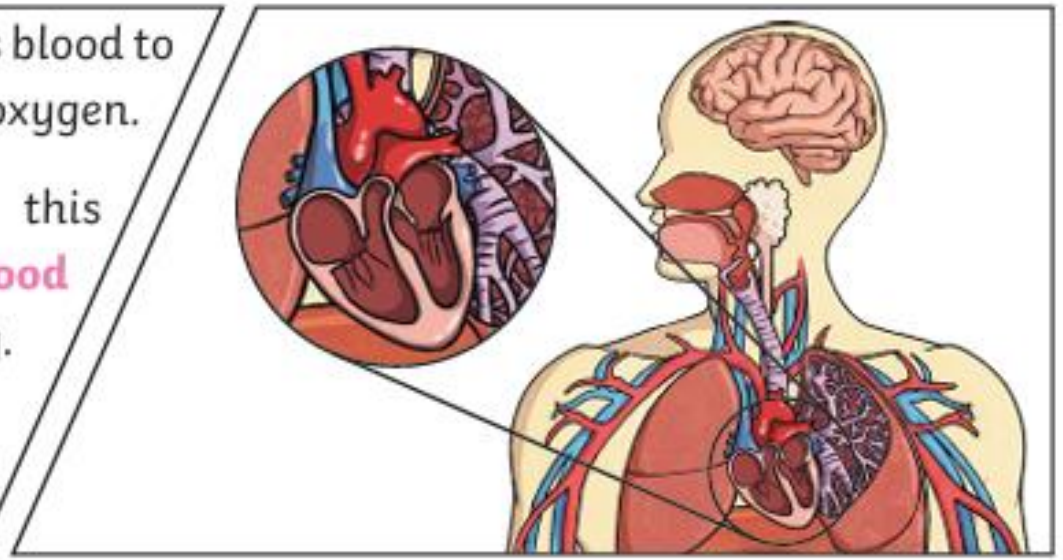


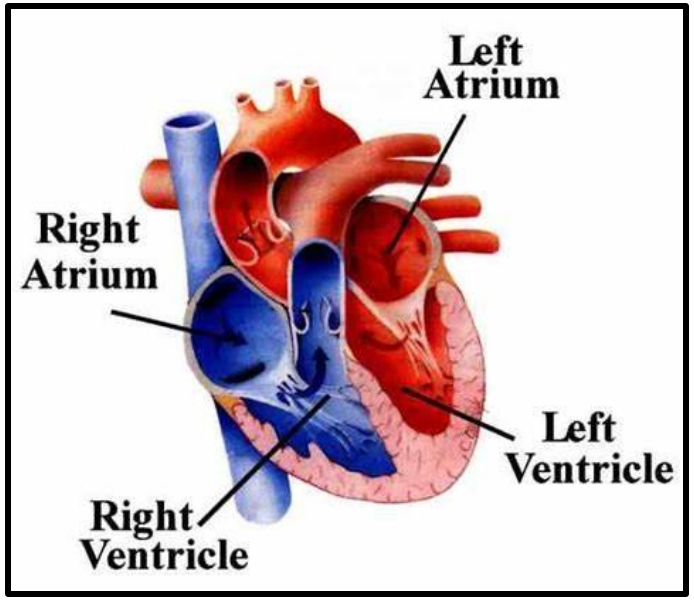
Key Questions

How does oxygen travel around our body?
What is the role of the heart?
Which blood vessel carries oxygenated blood?
Which blood vessel carries deoxygenated blood?

The **heart** pumps blood to the lungs to get oxygen.

It then pumps this **oxygenated blood** around the body.





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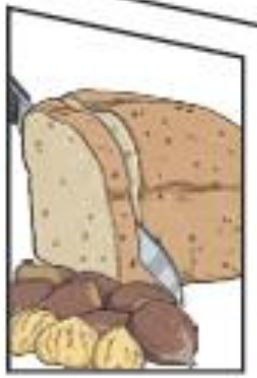
Year 6: Science – Animals including Humans (page 2/4)

Key Knowledge

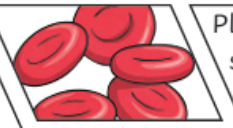
Drugs, **alcohol** and smoking have negative effects on the body.

A healthy diet involves eating the right types of **nutrients** in the right amounts.



Key Vocabulary

Plasma is liquid. The other parts of your blood are solid.



Platelets help you stop bleeding when you get hurt.

Red blood cells carry oxygen through your body.

White blood cells fight infection when you're sick.

Key Questions

What is the role of red blood cells?
What is the role of white blood cells?
What helps you stop bleeding when you have a cut or a graze?
What 3 things can have an effect on the body?

Regular exercise:

- strengthens muscles including the heart muscle;
- improves circulation;
- increases the amount of oxygen around the body;
- releases brain chemicals which help you feel calm and relaxed;
- helps you sleep more easily;
- strengthens bones.

It can even help to stop us from getting ill.

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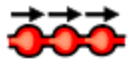
Year 6: Science – Animals including Humans (page 3/4)

Key Vocabulary	
 circulatory system	A system which includes the heart, veins, arteries and blood transporting substances around the body.
 heart	An organ which constantly pumps blood around the circulatory system
 blood vessel	The tube-like structures that carry blood through the tissues and organs. Veins, arteries and capillaries are the three types of blood vessels.
 arteries	carry oxygenated blood away from the heart.
 veins	carry deoxygenated blood toward the heart.

Key Vocabulary	
oxygenated blood	Oxygenated blood has more oxygen. It is pumped from the heart to the rest of the body.
deoxygenated blood	Deoxygenated blood is blood where most of the oxygen has already been transferred to the rest of the body.
 drug	A substance containing natural or man-made chemicals that has an effect on your body when it enters your system.
 alcohol	A drug produced from grains, fruits or vegetables when they are put through a process called fermentation.
 nutrients	Substances that animals need to stay alive and healthy.

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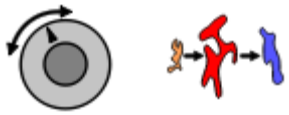
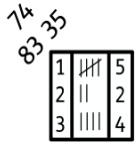
Year 6: Science – Animals including Humans (page 3/4)

Working Scientifically Focus

To plan a range of science enquiries to answer questions, including recognising and controlling variables where necessary.		To record data and results of increasing complexity using line graphs.		To report and present findings – explanations of and degree of trust in results.	
plan 	a list or set of steps you follow to get something done.	record 	to put in drawing (or writing)	report 	a way of sharing information.
control variable 	is something you keep the same in an experiment so that the results are fair.	data 	information (facts or numbers) that has been collected	present 	means to show or share something with others.
		line graph 	a chart with a line that goes up, down, or stays the same to show numbers or amounts.	conclusions 	a judgement or decision reached
Example: What variables would need to be controlled in an experiment to test how exercise affects heart rate in humans?		Example: How could you collect and represent data on the daily activity levels of humans and animals (e.g., steps taken or distance traveled) using a line graph to show variations throughout the day or week?		Example: How would you explain the findings of an investigation into the effect of exercise on heart rate in humans, and how confident are you in the reliability of your results? What factors might affect the degree of trust in your conclusions?	

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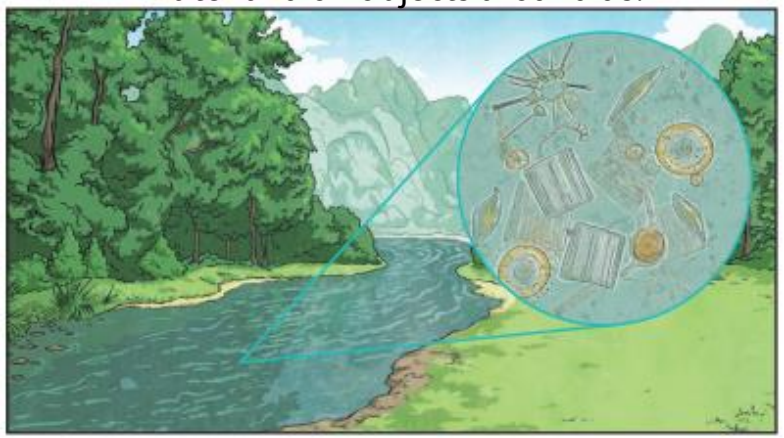
Year 6: Science – Living Things and their Habitats (Page 2/4)

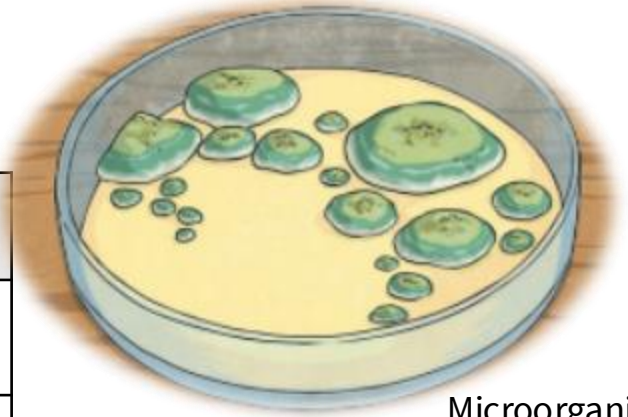
Key Knowledge

Microorganisms are very tiny living things that can only be seen using a microscope. They can be found in and on our bodies, in the air, in water and on objects around us.



Helpful Microbes	Harmful Microbes
Bacteria –cheese	Bacteria – salmonella is a bacterium that can lead to food poisoning
Yeast – wine	Virus – chicken pox and flu are examples of viral diseases
Bacteria – yoghurt	Fungi – athlete's foot
Yeast – bread dough	Bacteria – plaque
Penicillium fungi - antibiotics	Fungi - mould

There are many good bacteria in our bodies. A primary use of bacteria is to help us digest and breakdown our food. Some bacteria can also help assist our immune system.



Microorganisms are viruses, bacteria, moulds and yeast. Some animals (dust mites) and plants (phytoplankton) are also microorganisms.

Key questions

What is a helpful microbe?
How can we see microbes?
Are all bacteria harmful?

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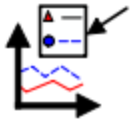
Year 6: Science – Living Things and their Habitats (Page 3/4)

Key Vocabulary	
 characteristics	Special qualities or appearances that make an individual or group of things different to others.
 classify	To sort things into different groups.
taxonomist	A scientist who classifies different living things into categories.
 key	A key is a series of questions about the characteristics of living things. A key is used to identify a living thing or decide which group it belongs to by answering 'yes' or 'no' questions.

 bacteria	A single-celled microorganism
microorganism	An organism that can only be seen using a microscope, e.g. bacteria, mould and yeast.
 microscope	A piece of equipment that is used to view very tiny (microscopic) things by magnifying their appearance.
 species	A group of animals that can reproduce to produce fertile offspring.

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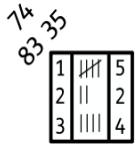
Working Scientifically Focus

To record data and results of increasing complexity using classification keys.

record 	to put in drawing (or writing)	classification	when you put things into groups based on how they are alike.
data 	information (facts or numbers) that has been collected	classification key 	a tool that helps you figure out which group something belongs to. It usually asks a series of questions that lead you step by step to the correct group.
results 	are what you find out after doing an activity, experiment, or test.		

Example:
How could you use a classification key to identify different species of plants in various habitats, and what data would you record to show the diversity in each habitat?

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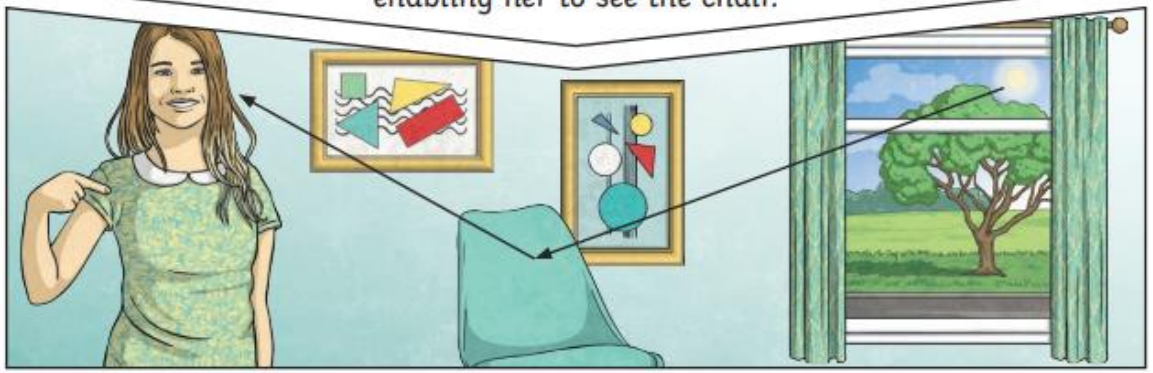
Year 6: Science – Light (1/4)

Key Knowledge

We need **light** to be able to see things. **Light** waves travel out from sources of **light** in straight lines. These lines are often called rays or beams of **light**.

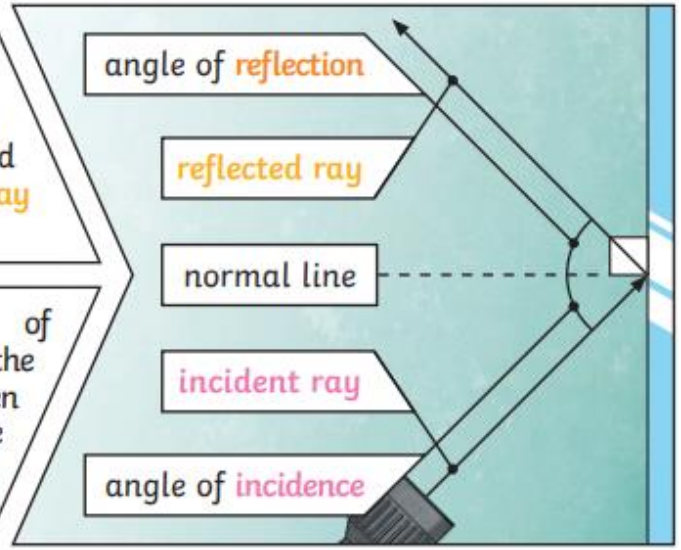
Light from the sun travels in a straight line and hits the chair. The **light** ray is then **reflected** off the chair and travels in a straight line to the girl's eye, enabling her to see the chair.



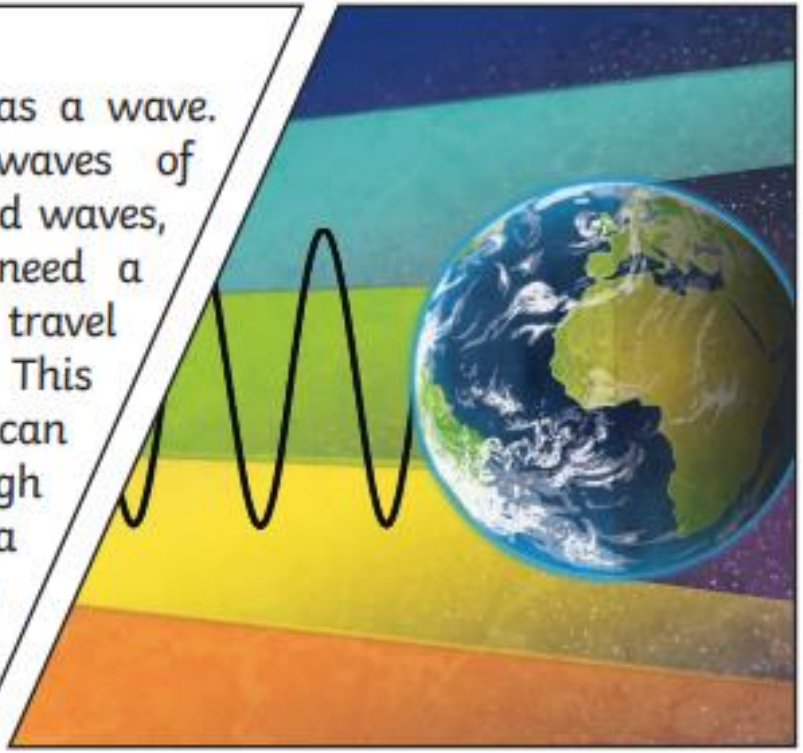
The law of **reflection** states that the angle of **incidence** is equal to the angle of **reflection**. Whenever **light** is **reflected** from a surface, it obeys this law.

The angle of **reflection** is the angle between the normal line and the **reflected ray** of **light**.

The angle of **incidence** is the angle between the normal line and the **incident ray** of **light**.



Light travels as a wave. But unlike waves of water or sound waves, it does not need a medium to travel through. This means **light** can travel through a vacuum - a completely airless space.



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Year 6: Science – Light (2/4)

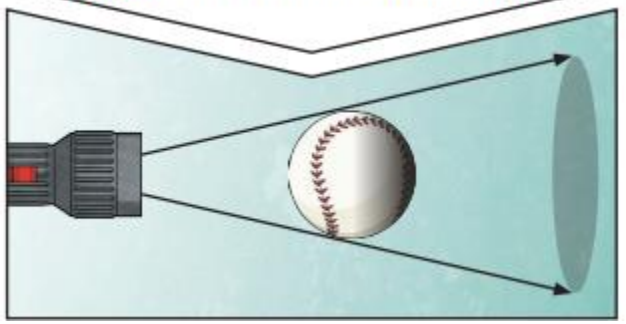
Key Knowledge

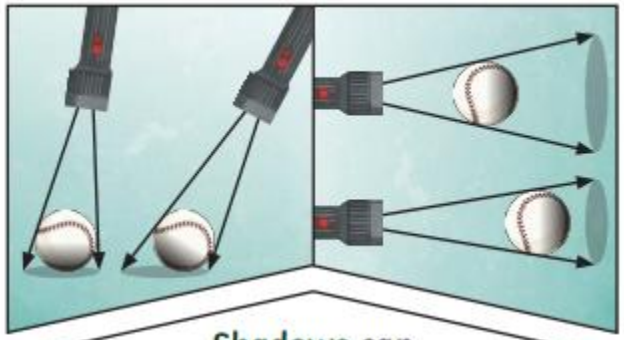
Key Knowledge

The spoon in this water looks as if it is bent. This is because light bends when it moves from air to water. When light bends in this way, it is called refraction.

Isaac Newton shone a light through a transparent prism, separating out light into the colours of the rainbow (red, orange, yellow, green, blue, indigo and violet) - the colours of the spectrum. All the colours together merge and make visible light.

A **shadow** is always the same shape as the object that casts it. This is because when an opaque object is in the path of light travelling from a light source, it will block the light rays that hit it, while the rest of the light can continue travelling.





Shadows can also be elongated or shortened depending on the angle of the light source. A **shadow** is also larger when the object is closer to the light source. This is because it blocks more of the light.

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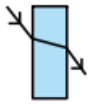
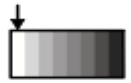
Year 6: Science – Light (3/4)

Key Vocabulary	
 refraction	This is when light bends as it passes from one medium to another. E.g. Light bends when it moves from air into water.
 visible spectrum	Light that is visible to the human eye. It is made up of a colour spectrum.
 prism	A prism is a solid 3D shape with flat sides. The two ends are an equal shape and size. A transparent prism separates out visible light into all the colours of the spectrum.
 shadow	An area of darkness where light has been blocked.
 transparent	Describes objects that let light travel through them easily, meaning you can see through the object.
 translucent	Describes objects that things let some light through, but scatters the light so we can't see through them properly.
 opaque	Describes objects that do not let any light pass through them.

Key Vocabulary	
 light	A form of energy that travels in a wave from a source
 light source	An object that makes its own **light**
 reflect	The process where **light** hits the surface of an object and bounces back into our eye
reflection ray	When **light** bounces off an object
incident ray	A ray of light that hits a surface
The law of reflection	The law states that the angle of the incident ray is equal to the angle of the reflected ray.

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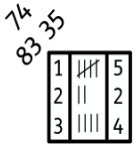
Year 6: Science – Light (4/4)

Working scientifically

To record data and results of increasing complexity using line graphs – decimals

record 	to put in drawing (or writing)
data 	information (facts or numbers) that has been collected
decimal .	a way of writing numbers that are not whole numbers.
line graph 	a chart with a line that goes up, down, or stays the same to show numbers or amounts.

Example:
In an investigation studying how the angle of light affects the length of shadows, how would you collect and record the data with decimal precision and use a line graph to show the relationship between angle and shadow length?

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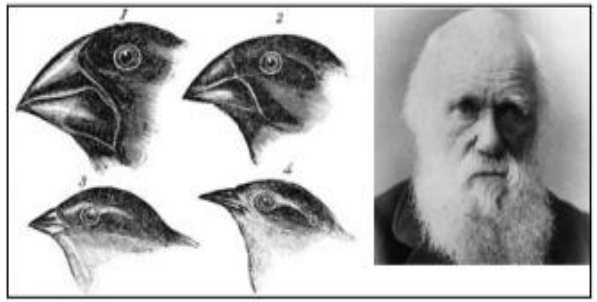
Year 6: Science – Evolution and Inheritance (1/2)

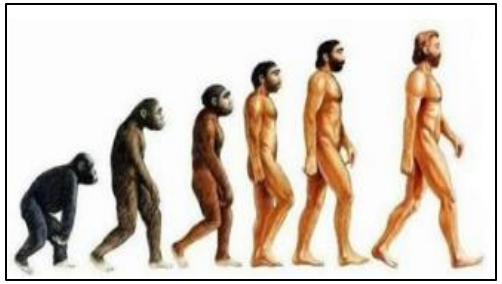
Prior Learning
Ask children what fossils are and the process of fossilisation. (Link to Rocks & Fossils KO in Y3)

Key questions	
What are the two different types of traits animals and humans can have? What is variation?	Who was Charles Darwin? What is an example of natural selection?

Key Knowledge

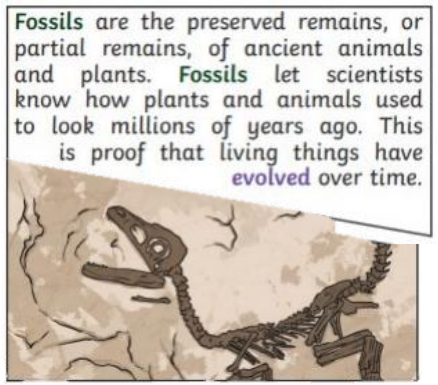
Charles Darwin, an evolutionary scientist, studied different animal and plant species, which allowed him to see how adaptations could come about. His work on the finches was some of his most famous.



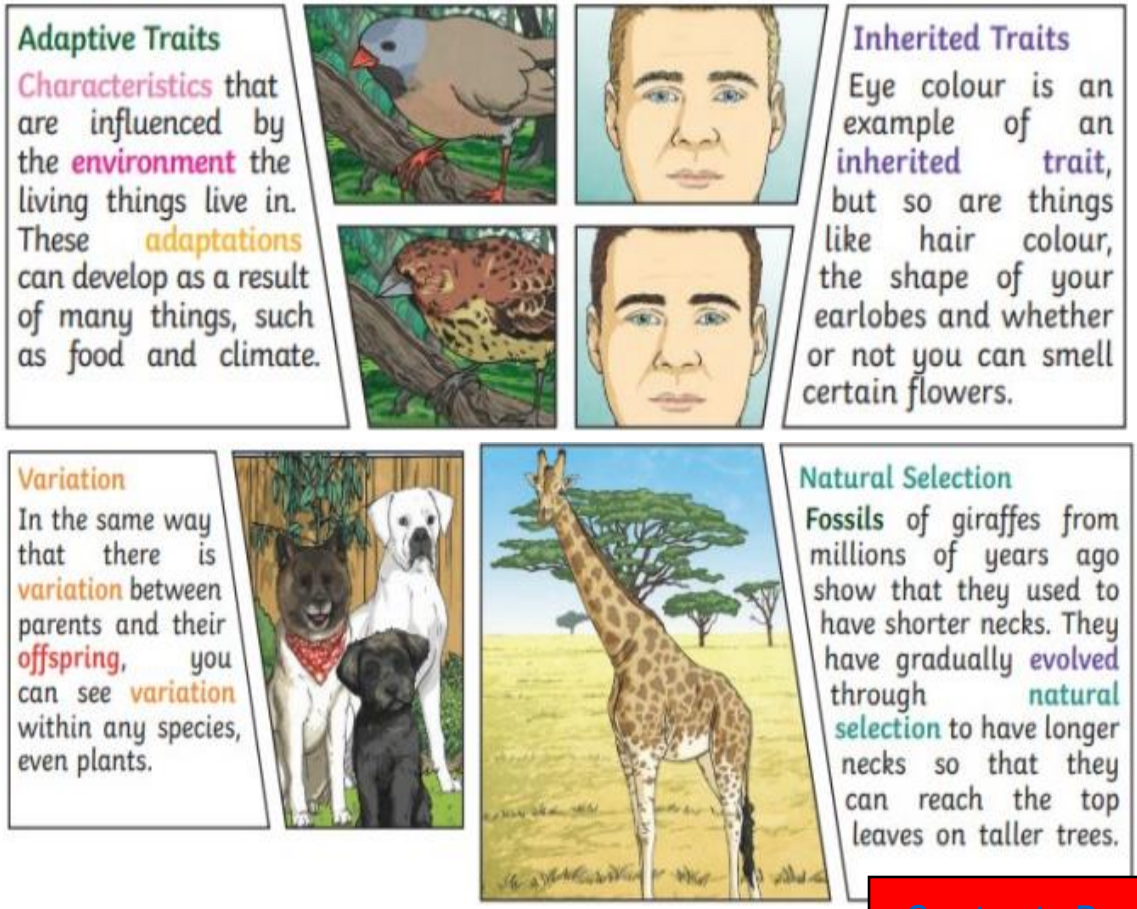


Key Knowledge

Environment – Evolution and Inheritance
Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.
Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.
Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.



Key Knowledge



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Year 6: Science – Evolution and Inheritance (2/2)

Key Vocabulary	
 adaptation	a change in structure or function that improves the chance of survival for an animal or plant within a given environment
 characteristics	the qualities or features that belong to them and make them recognisable
 evolution	a process of change that takes place over many generations, during which species of animals, plants, or insects slowly change some of their physical characteristics
 species	a class of plants or animals whose members have the same main characteristics and are able to breed with each other
mutation	characteristics that are not inherited from the parents or ancestors and appear as new characteristics.
 inherit	If you inherit a characteristic you are born with it, because your parents or ancestors also had I
natural selection	a process by which species of animals and plants that are best adapted to their environment survive and reproduce, while those that are less well adapted die out

Key Vocabulary	
 extinct	no longer has any living members, either in the world or in a particular place
ancestor	an early type of animal or plant from which a later, usually dissimilar, type has evolved
 offspring	a person's children or an animal's young
 reproduction	when an animal or plant produces one or more individuals similar to itself
 variation	a change or slight difference
 biodiversity	a wide variety of plant and animal species living in their natural environment
 fossil	The remains or traces of plants and animals that lived long ago. Fossils give scientists clues about the past.
traits	distinguishing characteristic or quality

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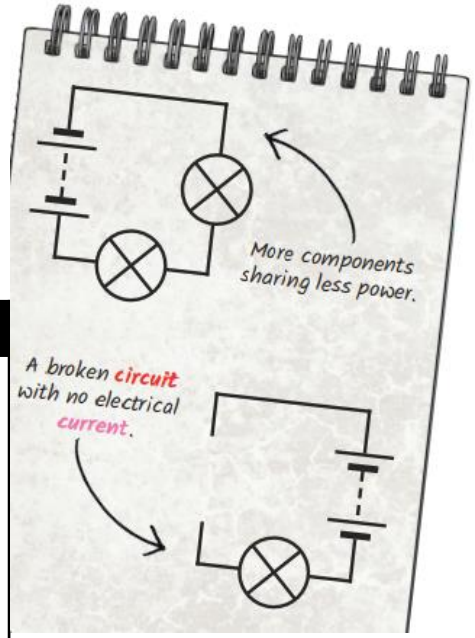
Year 6: Science – Electricity (1/3)

Prior Learning

I know key vocabulary: bulb, cell, wire, motor, switch and buzzer.
I know how to make a simple circuit.
I know the difference between a complete and incomplete circuit.
I know examples of electrical conductors and insulators.

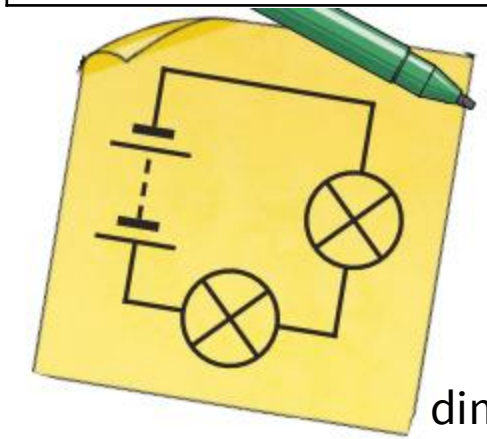


Key Knowledge

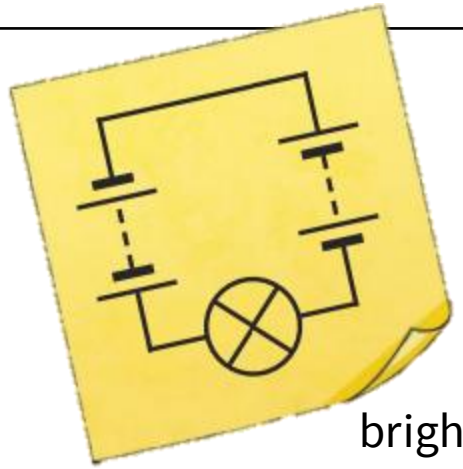
What will make a bulb brighter or a buzzer louder?
- More batteries or a higher voltage create more power to flow through the circuit.
- Shortening the wires means the electrons have less resistance to flow through.

What will make a bulb dimmer or a buzzer quieter?
- Fewer batteries or a lower voltage give less power to the circuit.
- More buzzers or bulbs mean the power is shared by more components.
- Lengthening the wires means the electrons have to travel through more resistance.

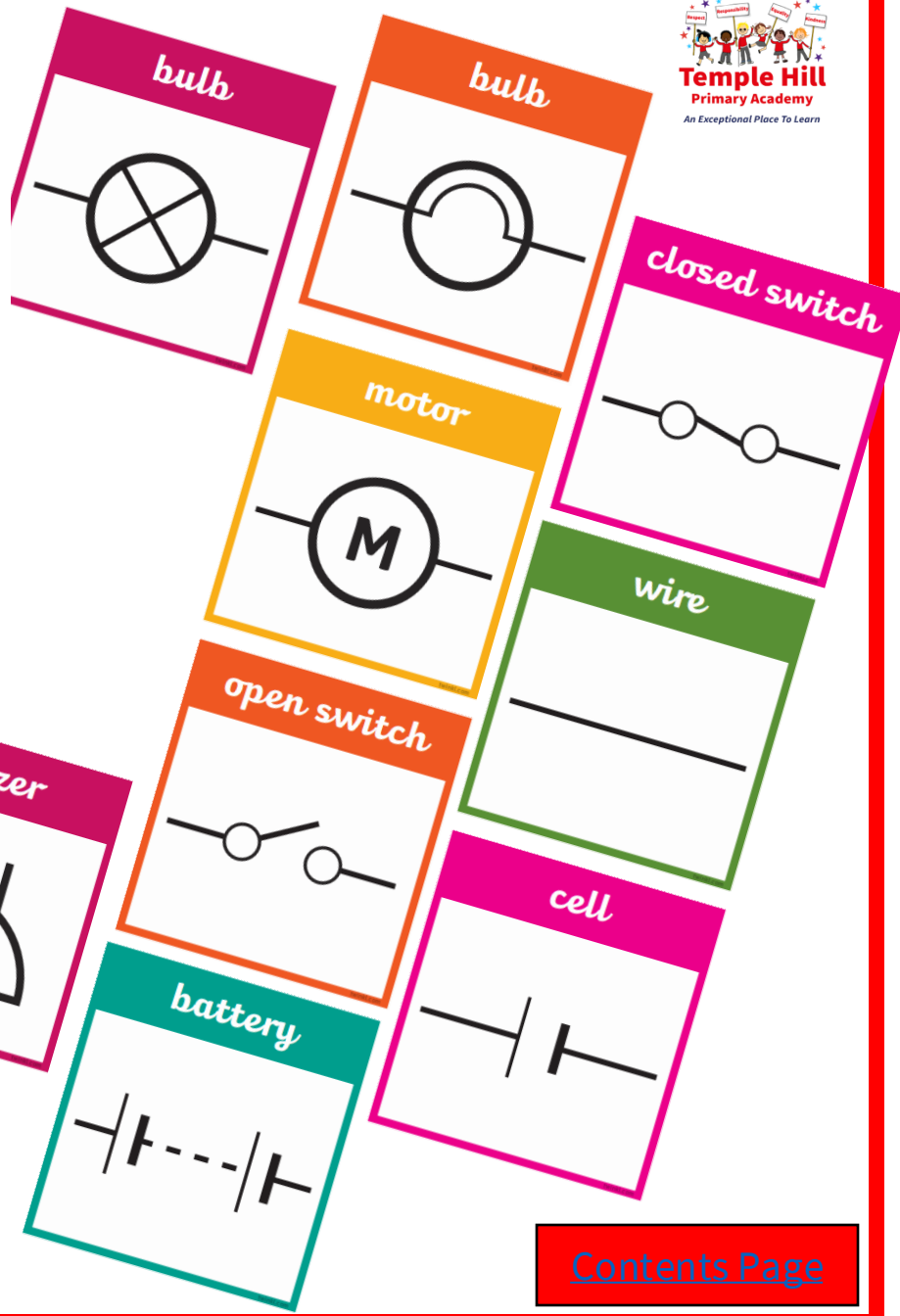
Series Circuit A circuit that has only one route for the current to take. If more bulbs or buzzers are added, the power has to be shared and so they will be dimmer or quieter. If just one part of this series circuit breaks, the circuit is broken and the flow of current stops.



dimmer



brighter



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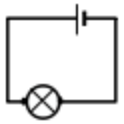
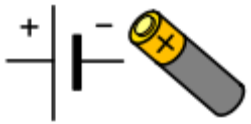
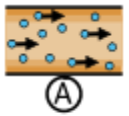
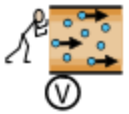
Year 6: Science – Electricity (2/3)

Key Vocabulary	
 circuit	A path that an electrical **current** can flow around.
x + - = ÷ symbol	A visual picture that stands for something else.
 cell/battery	A device that stores chemical energy until it is needed. A **cell** is a single unit. A **battery** is a collection of **cells**.
 current	The flow of **electrons**, measured in **amps**.

amps	How electric current is measured.
 voltage	The force that makes the electric current move through the wires. The greater the voltage, the more current will flow
 resistance	The difficulty that the electric current has when flowing around a circuit.
 electrons	Very small particles that travel around an electrical **circuit**.

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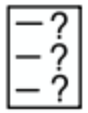
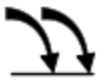
Year 6: Science – Electricity (3/3)

Working scientifically

To take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.		To report and present findings from enquiries – causal relationships.	
measurement 	is the process of finding out the size, amount, or degree of something using tools or units.	report 	a way of sharing information.
range 	refers to the difference between the highest and lowest values in a set of data.	present 	means to show or share something with others.
accuracy	how close a measurement is to the true value or the correct answer.	enquiries 	are questions or investigations to find out more information about something.
precision 	how consistent and repeatable measurements are, even if they are not accurate.		
repeat 	means to do something again. In science, you might repeat an experiment to see if you get the same results each time.	casual relationship	means that one thing directly causes another thing to happen. For example, if you water a plant and it grows, the relationship is causal because the water causes the plant to grow.
Example: In an investigation studying how the angle of light affects the length of shadows, how would you collect and record the data with decimal precision and use a line graph to show the relationship between angle and shadow length?			

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