Y3 Science – Animals, including Humans
Key Concept – Structures and Functions

Essential Knowledge

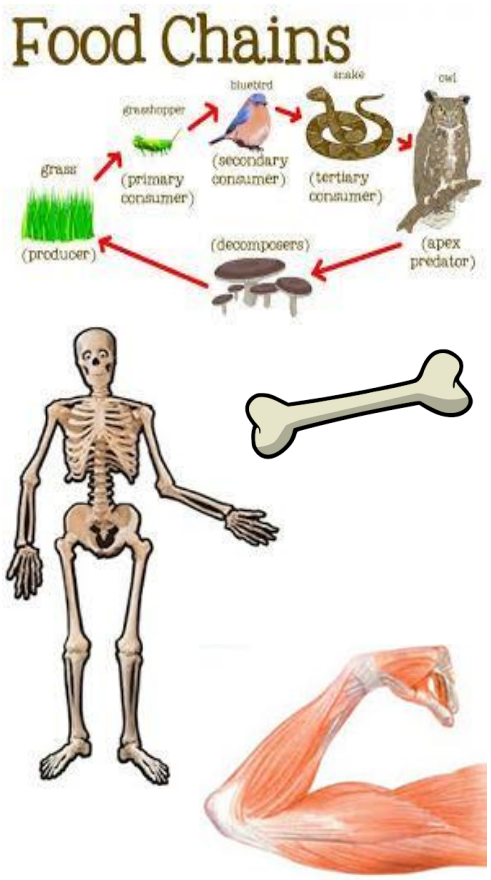
How could we group animals by what they eat?
A carnivore is an animal that gets food from killing and eating other animals.
Herbivores are animals that eat plants.
An omnivore is a kind of animal that eats either other animals or plants.

Why is it important that animals (including humans) eat the right types and amounts of nutrition?
The human body needs a balanced diet to work properly. Good health involves drinking water and eating the right number of foods from the different food groups.

What different types of skeletons do animals have?
An endoskeleton is formed on the inside of an animal's body, while an exoskeleton is formed on the outside of an animal's body.

Why do we need a skeleton?
A skeleton gives the body its shape and the bones protect the organs, help us to stay upright, move and store essential minerals. Bones grow when we grow and can repair themselves but need nutrients and exercise to stay strong.

How do muscles and bones help us to move?
Muscles are attached to bones by tendons and help them to move. When a muscle contracts (bunches up), it gets shorter and so pulls on the bone it is attached to. When a muscle relaxes, it goes back to its normal size.



Key Vocabulary

herbivore	an animal that eats plants
carnivore	an animal eats meat
omnivore	an animal that eats plants and meat
nutrition	a variety of foods providing necessary nutrients
food chain	a series of organisms that are dependent on the next as a source of food
skeleton	internal or external framework of bones
bones	hard whitish tissue making up the skeleton
muscle	a band or bundle of fibrous tissue in a human or animal body

Aspirational Knowledge

Bones are filled with a spongy tissue called **bone marrow**. Bone marrow contains cells that produce blood cells.
Your heart is a muscle that works all the time, even when you sleep.

Working Scientifically

Make careful observations.
Gather, record, classify and present data.
Ask relevant questions.
Use scientific evidence to answer questions.
Report on findings.

Y3 Science – Animals, including Humans
Key Concept – Structures and Functions

Key Knowledge

How could we group animals by what they eat?
Carnivores eat only meat, herbivores eat only plants and omnivores eat meat and plants.

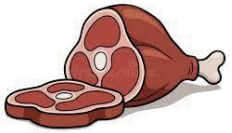
Why do animals (including humans) need different foods?
The human body needs a balanced diet to work properly. To keep healthy, humans need to drink water and eat the right number of foods from the different food groups.

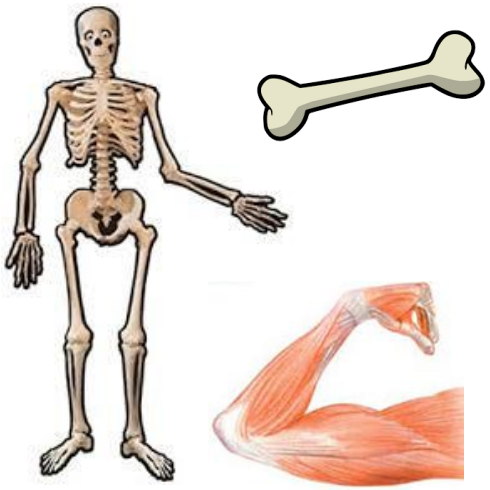
What different types of skeletons do animals have?
An endoskeleton is on the inside of an animal's body, while an exoskeleton is on the outside of an animal's body.

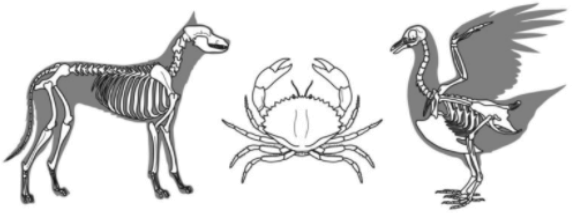
Why do we need a skeleton?
A skeleton is made up of bones and holds up the body, protects it and helps us to move.

How do muscles and bones help us to move?
Muscles attach to bones and help them to move.

Key Vocabulary

herbivore		an animal that only eats plants
carnivore		an animal that only eats meat
omnivore		an animal that eats meat and plants





Working Scientifically

Ask questions.
Set up investigations.
Observe.
Talk about what I have found out.

Y3 Science – Forces and Magnets
Key Concept – Cause and Effect

Essential Knowledge

How do we make objects move?
A force is just a push or a pull in any direction. If two forces are balanced, it means the forces are the same size but are acting in opposite directions. When two forces acting on an object are not equal in size, we say that they are unbalanced forces.

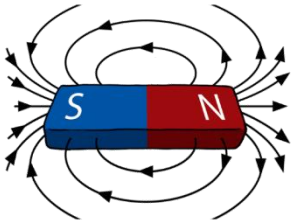
How will the surface affect the performance of a moving object?
If an object moves on a **rough surface:**

- It is **harder to move**.
- It will go **slower**.
- It may **stop more quickly**.
- It may **shake or wobble** because of the bumps.

On a **smooth surface**, it is easier to move, goes faster, and keeps moving longer.

How do objects move without a push or a pull?
Magnets attract (pull) and repel (push) but they do not need contact with something to do this.

What materials are magnetic?
Materials like plastic, wood, stone and many other common metals are not magnetic. You can test if a material is magnetic by bringing a magnet close to it – if it sticks, it's magnetic.



Magnets have two poles (a North pole and a South pole). Like poles repel and unlike poles attract.

Working Scientifically

To make careful observations.
To gather, record, classify and present data.
To ask relevant questions and use scientific evidence to answer questions.
To set up a simple, practical enquiry and report findings.

Key Vocabulary

force	to make or cause to do something by using strength or power.
friction	the resistance of a surface to motion, as of an object sliding or rolling over it.
gravity	the force by which all objects in the universe are attracted to each other.
push	to use pressure against to move.
pull	to take hold of (something) and use force to bring it nearer to oneself.
magnet	an object that has the power to pull items made of iron toward itself.
repel	to force back.
attract	to cause to come near.

Aspirational Knowledge

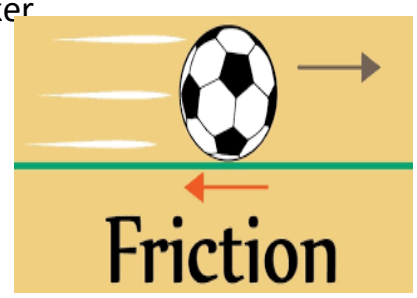
Unbalanced forces change the way something is moving. They can make objects start to move, speed up, slow down or change direction. Balanced forces will not change an object's motion. If it is still, the object will stay still or if it is moving, it will continue moving in the same direction and at the same speed.

Y3 Science – Forces and Magnets
Key Concept – Cause and Effect

Key Knowledge

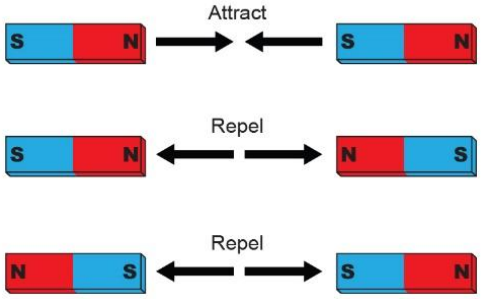
How do we make objects move?
A force is just a push or a pull in any direction.

How does an object move on different surfaces?
On rough surfaces an object moves slower.
On smooth surfaces it moves quicker.



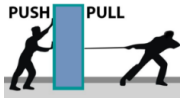
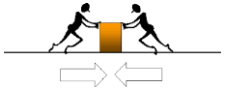
Key Knowledge

How do objects move without a push or a pull?



What materials are magnetic?
Some materials are not magnetic.
If a material sticks to a magnet, it is magnetic.

Key Vocabulary

force 	To make an object move
push 	To move by pushing away.
pull 	To move by pulling towards.
balanced	When opposite forces are equal.
unbalanced	When opposite forces are not equal.

Working Scientifically

To make observations.
To gather, record, classify and present data.
To ask some scientific questions.
To use scientific evidence to answer questions.
To share results.
To set up a simple, practical investigation.

Y3 Science – Light
Key Concept – Cause and Effect

Essential Knowledge

What is light?
Light is a form of energy needed for sight, travelling in straight lines from sources like the sun or artificial lamps. Light reflects off surfaces, enabling us to see.

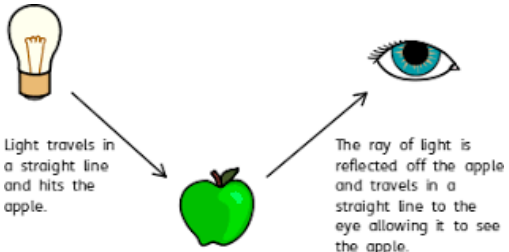
How do we see?
Everything that we see is either a light source or something that is reflecting light from a light source.

How does light reflect from different surfaces?
The best surfaces at reflecting light are smooth, shiny and flat surfaces.
Materials can be sorted into three groups – opaque, translucent or transparent.

How do we protect our eyes?
It is important that we protect our eyes. If our pupils let in too much light, the retina can be damaged. We should never look directly at the sun, even in sunglasses.

How are shadows formed?
A shadow is formed when light is blocked by an opaque object.

How do shadows change size?
A shadow is bigger when the object blocking the light is closer to the light source. It is smaller when the object blocking the light is further away from the source of light.



Aspirational Knowledge

Some surfaces and materials are better at reflecting light than others. Reflective materials can be useful for safety such as a hi-vis jacket and cat's eyes in roads.

Key Vocabulary

light source	An object that makes its own light.
dark	The absence of light.
reflect	To bounce off.
retina	A layer at the very back of the eye. The retina takes the light they eye receives. It then changes it into nerve signals to send to the brain.
pupil	The black part of our eye which lets light in.
translucent	Describes objects 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.
opaque	Describes objects that do not let any light pass through them.
shadow	An area of darkness where light has been blocked.

Working Scientifically

To ask relevant questions.
To make systematic and careful observations.
To set up simple practical enquiries.
To use my results to draw simple conclusions.
To take accurate measurements.

Y3 Science – Light
Key Concept – Cause and Effect

Key Knowledge

What is light?
Light is a form of energy.

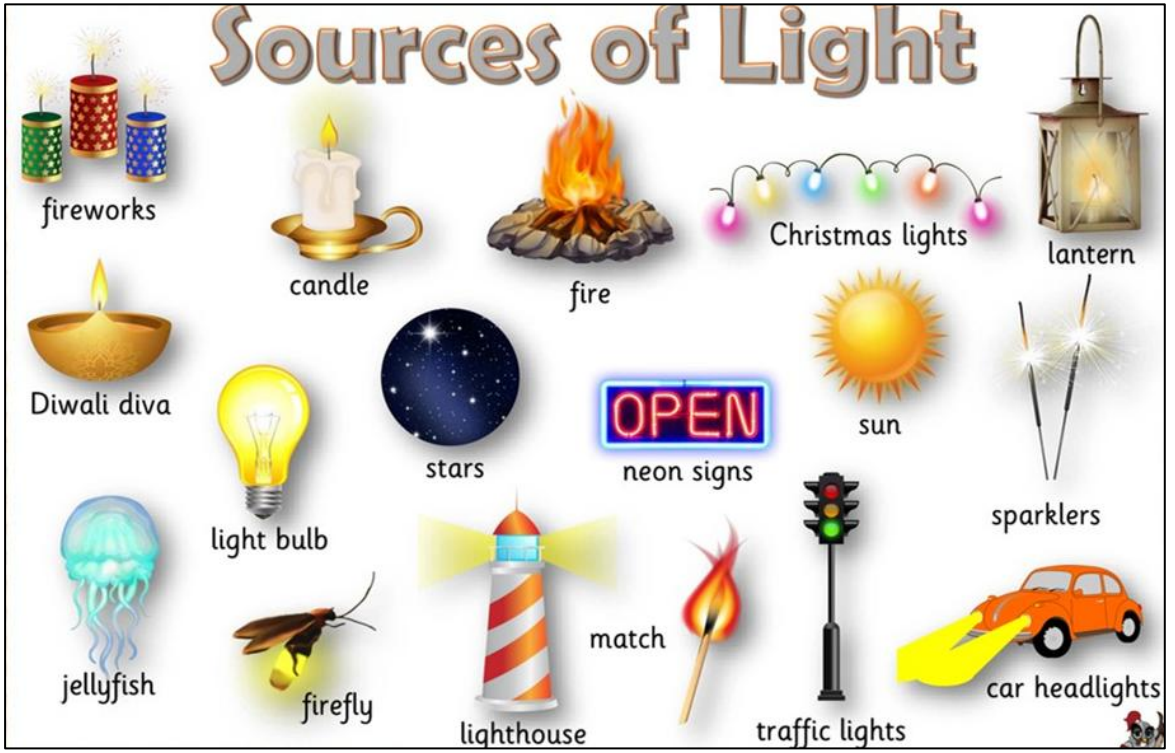
How do we see?
Darkness is when there is no light.
Light can only travel in straight lines.
We need light so that we can see things.

How does light reflect?
The best surfaces at reflecting light are smooth, shiny and flat surfaces.

How can we keep our eyes safe?
We protect our eyes from too much light. If our pupils let in too much light, the retina can be damaged. We should never look directly at the sun, even in sunglasses.

How are shadows made?
A shadow is made when an object blocks the light.

How do shadows change size?
A shadow is bigger when the object is closer to the light. It is smaller when the object is further away from the light source.



Working Scientifically

To ask questions.
To set up tests.
To write down what I found out.
To measure.

Y3 Science – Plants
Key Concepts – Change, Cause and Effect

Essential Knowledge

What do the different parts of a plant do?
Different parts of plants have one or more functions. The stem holds up the leaves so that they can gather light to make food and holds up the flowers so that they can receive pollen and disperse their fruits

How does water get transported through a plant?
Roots collect water and minerals from the soil and hold the plant firmly in the ground. The stem also transports water and minerals from the roots to the other parts of the plant.

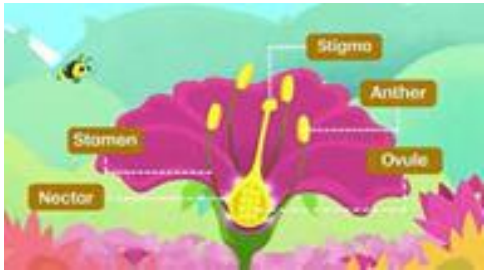
What is photosynthesis?
the leaves of a plant gather light to make food. This process is called photosynthesis.

What is the life cycle of a plant?
From a seed, to shoots and roots, to a fully grown plant, then it produces seed, disperses the seed and dies.

How do plants reproduce?
There are many ways seeds can be dispersed including by animals, water, wind and gravity.

Aspirational Knowledge

The leaves make food by trapping light and using its energy to turn carbon dioxide and water into carbohydrates.
The function of a flower is reproduction.



Key Vocabulary

transport	to carry something or move from one place to another
reproduction	the process by which living things produce offspring
life cycle	a series of stages a living thing goes through during its life
photosynthesis	the process in which green plants use sunlight to make their own food
pollination	the process that allows plants to reproduce
seed dispersal	the way seeds get away from the parent plant to a new place

Working Scientifically

Set up practical investigations and fair tests.
Make careful observations and, where appropriate, take accurate measurements using standard units, using a range of equipment.
Report on my findings.

Y3 Science – Plants
Key Concepts – Change, Cause and Effect

Key Knowledge

What do the different parts of a plant do?
Different parts of a plant have different jobs

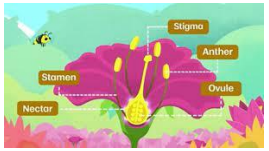
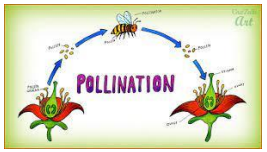
How does water travel through a plant?
Roots take water from the soil and hold a plant up. The stem holds up the leaves and the flowers and transports water around the plant.

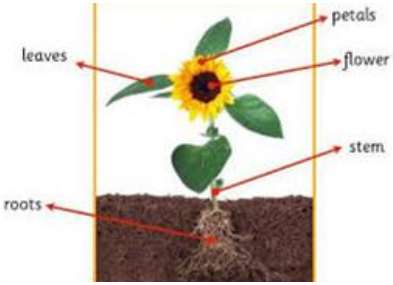
How do leaves make food?
Leaves gather light to make food from it for the plant.

What is the life cycle?
From a seed, to shoots and roots, to a fully grown plant, then it produces seed, disperses the seed and dies.

How do plants reproduce?
Seeds can travel in different ways such as by animals, water, wind and gravity.

Key Vocabulary

transport		to carry something or move from one place to another
life cycle		the stages a plant goes through in its life
reproduction		when living things make offspring
pollination		the way that plants reproduce



Working Scientifically

Set up investigations and fair tests.
Observe and measure using different equipment.
Talk about what I have found.

Y3 Science – Rocks
Key Concept – Change, Similarity and Difference

Essential Knowledge

What are the different types of rocks and their properties?
There are three kinds of rocks: igneous, sedimentary and metamorphic.

Where do rocks and soil come from?
Earth has a solid crust made up with molten rock beneath.
Rocks are made deep inside the Earth or from volcanoes. Soil is made from tiny bits of broken rocks and decayed plants or animals.

What are fossils and how are they formed?
Fossils form when a plant or animal dies and is quickly covered with silt or mud.
In time, layers of sediment build: squashing the mud and turning it to stone around the dead plant or animal.
The materials in the body are replaced by minerals that flow in water through the rock, leaving a rock in the shape of the animal or plant that was once there.

Working Scientifically

To make careful observations & report on findings.
To set up a simple, practical enquiry.

Key Vocabulary

igneous	Rock that has been formed from **magma** or **lava**.
sedimentary	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 that started out as **igneous** or **sedimentary** rock but changed due to being exposed to extreme heat or pressure.
sediment	Natural solid material that is moved and dropped off in a new place by water or wind, e.g. sand.
skeleton	An internal or external framework of bone, cartilage or other rigid material supporting or containing the body of an animal or plant.
decompose	Make or become rotten; decay or cause to decay.
fossils	The remains or impression of prehistoric plant or animal embedded in rock.

Aspirational Knowledge

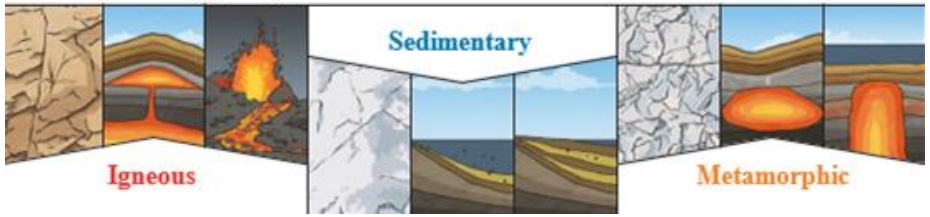
Permeable rocks are rocks that let water pass through them like a sponge.
Sandstone – water can soak through it because it has tiny holes in it.
Impermeable rocks are rocks that don't let water pass through them.
Granite – water can't go through it because it's very solid and tight.

Y3 Science – Rocks
Key Concept – Change, Similarity and Difference

Key Knowledge

What are the different types of rocks?

There are three types of natural rocks.



Where do rocks and soil come from?

Rocks are made deep inside the Earth or from volcanoes.
Soil is made from tiny bits of broken rocks.

What are fossils and how are they made?

Fossils form when a plant or animal dies.
In time layers of rock build.
The materials in the body change into rock.

Working Scientifically

To make careful observations.
To set up observations and fair tests.

Key Vocabulary

rocks		Hard stones that come in three types.
skeleton		A frame that holds up the body of an animal or plant.
decompose		To break down into bits and rot away to nothing.
fossil		A prehistoric plant or animal embedded in rock.