



Year 1 Science Knowledge Organiser

Plants

What I should already know?



Knowledge:

- I can talk about some of the things I have observed such as plants, animals, natural and found objects.' in Reception,
- I have an understanding of growth, decay and changes over time.
- I can show care and concern for living things and the environment.

Skills:

- Asking simple questions
- Observing plants and talking about changes
- Recognising the differences between the parts of a plant.

Famous in this field



Jane Colden- First female botanist. She discovered the plant which is now known as Hypericum virginicum.








Key Vocabulary



New Learning

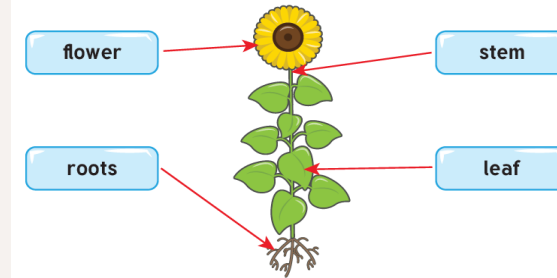


- To identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
- To identify and describe the basic structure of a variety of common flowering plants, including trees.

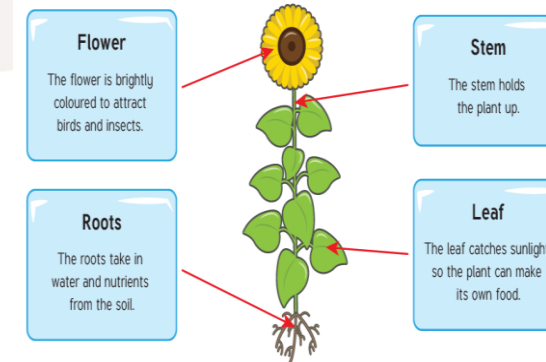
Vocabulary	Definition
 Leaves	A leaf is a part of a plant attached to a stem resembling a flat structure.
 Flower	A flower is the bloom or blossom of a plant.
 Roots	The roots are the part of a plant which attaches it to the ground or to a support
 Seeds	The seed is the part of a seed plant which can grow into a new plant
 Bulbs	The name given to the underground bud or stem of a seed plant at resting stage.

Sticky Knowledge

Parts of a plant



What do they do?



Trees are Plants!

They grow.
They have roots.
They have leaves.
Some have flowers and fruits.
They have a big thick 'stem' called a trunk.
They have smaller branches and twigs that grow from the trunk.



Year 2 Science Knowledge Organiser

Living Things and their habitats

What I should already know?



Knowledge:

- I can talk about some of the things I have observed such as plants, animals, natural and found objects.' in Reception,
- I have an understanding of growth, decay and changes over time.
- I can show care and concern for living things and the environment.

Skills:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.

New Learning



- To explore and compare the differences between things that are living, dead, and things that have never been alive.
- To identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other.
- To identify and name a variety of plants and animals in their habitats, including microhabitats.
- To describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food.

Famous in this field



Jane Goodall is a British scientist who has studied chimpanzees for many years. She is considered to be the world expert on chimpanzees and their behaviour.



Key Vocabulary



Vocabulary	Definition
<p>Life Process</p>	7 processes all living things do - movement, reproduction, sensitivity, nutrition, excretion, respiration and growth.
<p>Habitat</p>	Habitats are places where animals and plants live.
<p>Food Chain</p>	A food chain is a sequence of events in an ecosystem, where one organism eats another.
<p>Food Source</p>	Plants and animals are the main source of food for all the organisms on earth.
<p>Microhabitat</p>	A microhabitat is a very small part of a habitat, such as a clump of grass or a space between rocks.

Sticky Knowledge

Habitat

A habitat is the natural home of an animal, plant, or community. In short, it's where something lives. There are lots of different kinds of habitat: they might be very warm or very cold; in the land or in the sea; lots of other plants may live there, or there might only be a few.

Microhabitats:

A microhabitat is a very small part of a habitat, such as a clump of grass or a space between rocks. It is a habitat for extremely small creatures.

Food Chains

Producer- they make their own food.

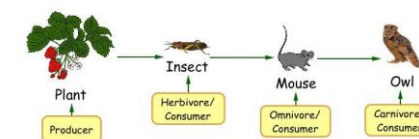
Consumer - organisms that feed on plants or other animals for energy.

Herbivore- only feeds on plants.

Omnivore- animals that eat both plants and other animals.

Carnivore- an animal that mostly eats other animals.

The Food Chain Of An Owl



A food chain shows the path of energy from one living thing to another. Decomposers like bacteria, are necessary for all food chains.



What I should already know?



Knowledge:

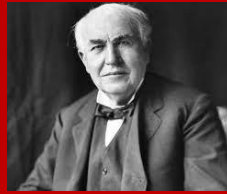
- I can look closely at similarities, differences, patterns and change.
- I can explain the difference between day and night.
- I can make comments and asks questions about aspects of their familiar world such as the place where they live or the natural world.
- **Skills:**
- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.

New Learning



- To recognise that they need light in order to see things and that dark is the absence of light.
- To notice that light is reflected from surface, recognise that light from the sun can be dangerous and that there are ways to protect their eyes.
- To recognise that shadows are formed when the light from a light source is blocked by an opaque object.
- To find patterns in the way that the size of shadows change.

Famous in this field








Thomas Edison as a famous American inventor. He is best known for inventing 'domestic' lightbulbs to go in houses, and the electric power system that allows them to work. He came up with over 1000 successful inventions in his lifetime.



Key Vocabulary



Vocabulary	Definition
 Shadow	A shadow is created when an opaque material or object is placed in front of a light source and prevents the light from passing through.
 Reflect	When light from an object is reflected by a surface, it changes direction.
 Retract	The To change direction as a result of entering a different medium.
 Artificial	Any light source that is not naturally occurring.
 Protect	The act of keeping something safe from harm or the condition of being protected.

Sticky Knowledge

Light

Light is a form of energy that enables us to see the world around us. Light comes from different sources. Our main source of natural light is the Sun. Even at night, the moon reflects the Sun's light creating moonlight.

Reflection of Light

When a ray of light approaches a smooth polished surface and the light ray bounces back, it is called the reflection of light.

Light from the Sun

Sunlight is a crucial part of life on Earth. Sunlight, also known as solar radiation, refers to the incoming light to the Earth that originated from the Sun.

Shadows

A shadow is created when an opaque material or object is placed in front of a light source and prevents the light from passing through. It creates a dark area or shape on a surface as a result. Light can only travel in a straight line. A shadow is formed when something blocks light.

Mirrors

Mirrors work by reflecting light at the same angle that it hits it. Because the surface of a mirror is so smooth, it reflects light without disrupting the image that is being reflected and creates a specular reflection.



Year 3 Science Knowledge Organiser

Forces and Magnets

What I should already know?



Knowledge:

- I can talk about different forces I can feel.
- I know about the forces of push, pull, up, down, spin, twist, stretch, rub, slide, sink, float

Skills:

- Asking simple questions and recognising that they can be answered in different ways.
- Observing closely, using simple equipment
- Performing simple tests.
- Identifying and classifying.
- Using their observations and ideas to suggest answers to questions.

Famous in this field



Isaac Newton- was a scientist best known for discovering gravity. He described it as a 'pulling force'.







Key Vocabulary



New Learning



- To compare how things move on different surfaces
- To understand some forces need contact between two objects, but magnetic forces can act at a distance.
- To compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials.
- To observe how magnets attract or repel each other and attract some materials and not others.
- To describe magnets as having two poles.
- To predict whether two magnets will attract or repel watch other, depending on which poles are facing.

Vocabulary	Definition
 Magnet	A magnet is a metal which attracts or repels other materials. A magnet is made from magnetic materials such as iron, nickel, steel, or cobalt.
 Repel	To push away.
 Attract	To pull together.
 Poles	A magnet has two ends, called poles. One end is the north pole, and the other is the south pole.

Sticky Knowledge

All magnets have two ends - a north pole and a south pole.

Magnetism is a force.

Magnetism either attracts magnetic objects or pushes them away.

If the same poles of two magnets are placed near each other they push away and repel.

If two different poles are placed near each other they attract and pull together.

If an object is attracted to a magnet it is classified as magnetic.

If an object is not attracted to a magnet is classified as not magnetic.

Friction is a force between two surfaces that are sliding, or trying to slide, across each other.





Year 4 Science Knowledge Organiser

Animals including Humans

What I should already know?



Knowledge:

- I notice that animals, including humans, have offspring which grow into adults.
- I can find out about and describe the basic needs of animals and humans.
- I can describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.
- I can identify that humans and some other animals have skeletons and muscles for support, protection and movement

Skills:

- Asking relevant questions and using different types of scientific enquiries to answer them
- Setting up simple practical enquiries, comparative and fair tests.

New Learning



- To describe the simple functions of the basic parts of the digestive system in humans.
- To identify the different types of teeth in humans and their simple functions.
- To construct and interpret a variety of food chains, identifying producers, predators and prey.





Famous in this field



Pierre Fauchard - the development of the modern practice of dentistry. Fauchard dispelled that myth, and instead said sugar caused cavities. He invented dental prosthetics to replace missing teeth and was the first inventor of bridges that held artificial teeth to real teeth via binding wires.

Key Vocabulary

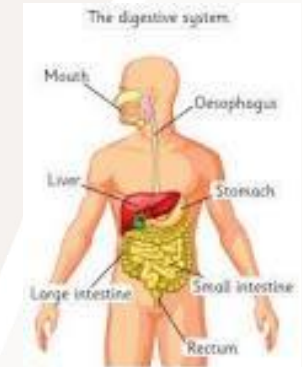


Vocabulary	Definition
 Incisor	A narrow-edged tooth at the front of the mouth, adapted for cutting. In humans there are four incisors in each jaw.
 Canine	A pointed tooth between the incisors and premolars of a mammal, often greatly enlarged in carnivores.
 Molar	A grinding tooth at the back of a mammal's mouth..
 Pre-Molar	A tooth situated between the canine and the molar teeth. An adult human normally has eight, two in each jaw on each side.

Sticky Knowledge

The Digestive System

Digestion is the how the body breaks down food so it can be taken in and used. There are many organs in the digestive system each with a particular job to do.



Teeth Types and Functions

Humans have three main types of teeth:
Incisors- Incisors help you bite off and chew pieces of food.

Canines- these teeth are used for tearing and ripping food.

Molars- these help you crush and grind food. Our teeth will change with age.

Food Chains

Food chains show how energy from the sun is used by animals in a chain from plants through to animals and even humans. All food chains start with a producer which is always a green plant that converts the sun's energy into food. Animals then eat the producer and are called consumers.



Year 5 Science Knowledge Organiser

Living Things and their Habitats

What I should already know?



Knowledge:

- I can describe features of plants and animal and compare similarities and differences between sub-groups, recognising that all living things can be grouped in different ways.
- I can use a simple key to represent and identify animals and plants in local habitats.
- I can construct and interpret a variety of food chains, identifying producers, predators and prey.
- I can recognise that environments can change and that this can pose dangers to living things.

Skills:

- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.


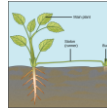

Famous in this field



Sir David Attenborough is a natural historian and broadcaster who has introduced millions of people to a variety of animals from around the world.

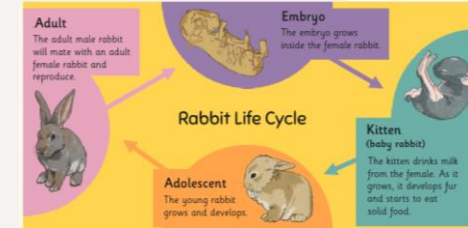
Key Vocabulary



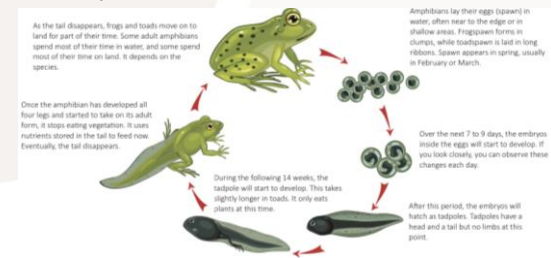
Vocabulary	Definition
 Reproduction	Sexual reproduction requires two parents to reproduce to create offspring. It involves a male gamete (sex cell) and a female gamete (sex cell) from two parents.
 Asexual Reproduction	Some plants can also reproduce without an egg cell being fertilised to produce a seed. Instead, these plants produce an identical copy of themselves. This type of reproduction is known as asexual reproduction.
 Metamorphosis	Metamorphosis is a process some animals go through to become adults.

Sticky Knowledge

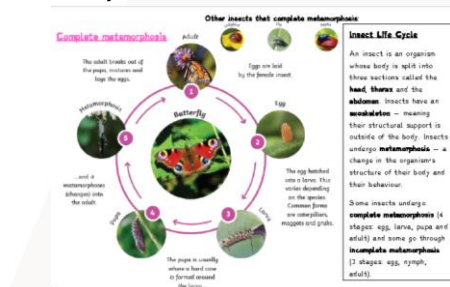
Life Cycle of a Mammal:



Life cycle of an Amphibian:



Life cycle of an Insect:



New Learning



- To describe and explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- To describe using scientific vocabulary the key functions of a plant, including reproduction.
- To describe the features and function of the stigma, root and leaf.
- To describe the life process of reproduction in some plants and animals.
- To use keys based on external features to help identify and group living things systematically.

Plants are able to reproduce in two different ways - sexual reproduction and asexual reproduction.

Sexual reproduction involves pollen from one flower fertilising the egg of another to produce a seed. Only one parent is needed in asexual reproduction and the offspring are exact copies.



Year 6 Science Knowledge Organiser

Evolution & Inheritance

What I should already know?



Knowledge:

- I can notice that animals, including humans, have offspring which grow into adults.
- I can find out about and describe the basic needs of animals, including humans, for survival (water, food and air).
- I can identify that humans and some other animals have skeletons and muscles for support, protection and movement.
- I can describe features of plants and animal and compare similarities and differences between sub-groups, recognising that all living things can be grouped in different ways.

Skills:

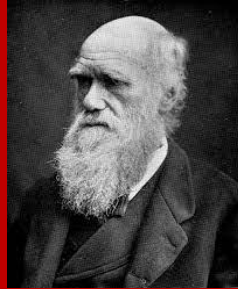
- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- identifying scientific evidence that has been used to support or refute ideas or arguments.

New Learning



- To recognise that living things have changed over time and that fossils provide information about living things that inhabited the earth millions of years ago.
- To recognise that living things produce offspring of the same kind, but normally offspring vary and are not be identical to their parents.
- To identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution



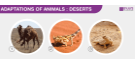
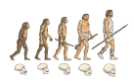
Famous in this field



Charles Darwin was an English scientist who studied nature. He is known for his theory of evolution by natural selection. According to this theory, all living things are struggling to survive. The living things that have the most helpful traits for their environment tend to survive. These living things then pass along their helpful traits to their young. In this way, animals change, or evolve, over hundreds of years.

Key Vocabulary



Vocabulary	Definition
 Inheritance	When living things reproduce they pass on characteristics to their offspring. This is known as inheritance.
 Natural Selection	Natural selection is the process through which populations of living organisms adapt and change.
 Adaption	Adaptations are any physical or behavioural characteristics of an animal that help it to survive in its environment.
 Evolution	Evolution is the way that living things change over time.

Sticky Knowledge

Adaptation is when a plant or animal has changed in some way, usually over a long period of time, to be better suited to the environment in which they live.

Evolution is the process by which different kinds of living organisms are believed to have developed from earlier forms during the history of the Earth.

Natural selection is when the fittest, most adapted organisms survive and multiply whilst the least adapted die out.

Inheritance is the reception of genetic qualities by transmission from parent to offspring.

There are some key characteristics that we inherit from our birth parents. These include your eye colour, skin colour, shape of your ears and whether you can roll your tongue or not.

Species are a group of similar organisms that are able to reproduce.

Fossils are the preserved remains or traces of dead organisms. They show us how living things and the environment have changed since the time they were alive.



Year 6 Science Knowledge Organiser

Living Things and their Habitats

What I should already know?



Knowledge:

- I can describe and explain the differences in the life cycles of a mammal, an amphibian, an insect and a bird.
- I can describe using scientific vocabulary the key functions of a plant, including reproduction.
- I can describe the features and function of the stigma, root and leaf.
- I can describe the life process of reproduction in some plants and animals.
- I can use keys based on external features to help identify and group living things systematically

Skills:

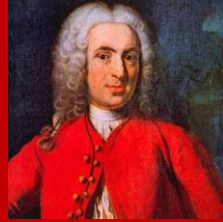
- Planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.
- identifying scientific evidence that has been used to support or refute ideas or arguments.

New Learning



- To describe the feeding relationships between plants and animals in a range of habitats.
- I can describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences including micro-organisms, plants and animals.
- I can give reasons for classification of plants and animals based on specific characteristics





Famous in this field



Carolus Linnaeus was a Swedish naturalist. He created two scientific systems: the system for classifying plants and animals and the system for naming all living things.

Key Vocabulary



Vocabulary	Definition
 Micro Organism	Microorganisms are living things that are too small to be seen with the naked eye.
 Classification	Animals can be divided into groups or 'classified' by looking at the similarities and differences between them.
 Bacterium	Bacteria are among the smallest living things. A single bacterium consists of just one cell
 Species	Species refers to a group of similar organisms that are able to reproduce.

Sticky Knowledge

Classification is putting things into groups. Living things can be divided into these groups or 'classified' by looking at similarities and differences between the way they look and behave.

Animals are divided into two main groups. Animals that have a backbone (spine) are called vertebrates. Animals that don't have a backbone are called invertebrates.

Vertebrates and invertebrates are divided into smaller groups.

A key is a set of questions about the characteristics of living things. The answer to the first question gives you another question to answer and so on. As you answer more questions you narrow down your living thing until eventually the last question tells you what it is.

There are 5 main types of micro organism: **Bacteria, viruses, fungi, algae and protozoa.**

Different habitats have a different feeding relationship between plants and animals. These are called **food chains.**