Science @ Chacewater

Knowledge Organisers

Working scientifically skills are embedded into lessons to ensure these are being developed throughout the children's school career, and new vocabulary and challenging concepts are introduced through direct teaching. This is developed through the years, in keeping with the themes. Each skill is taught through a line of enquiry. Symbols accompany each skill and enquiry, and are used throughout the school as a hook and reference. The progression of skills for working scientifically are developed through the year groups as shown on the planner with scientific enquiry skills being of key importance within lessons.

We have developed knowledge organisers to enable children to learn and retain the important, useful and powerful vocabulary and knowledge contained within each unit. We also start each unit with some form of concept map or prior knowledge task, so that the children can build upon previous learning and also make fundamental connections. (identifying vertical links as well as horizontal) Misconceptions can also be picked up on and addressed.

Our Knowledge Organisers

- Knowledge Organisers are written for children not teachers.
- They are not about coverage, but they should help in focusing learning to support development of key concepts.
- They support pupils in building on previous learning
- We are in the process of refining and improving these.
- Knowledge Organisers support low-stakes quizzing as part of daily, weekly, termly review and our approach to retrieval practice.
- They involve **all** students actively involved in checking their knowledge.
- We mix up techniques used, including: individual, pair, group; verbal, written;

Autumn Term

Chacewater School – LEAP into Learning – Autumn 1 – Seedlings

Science: Everyday materials

Our enquiry: Which materials should the Three Little Pigs have used to build their houses?

What I might already know: I can name some materials and explain why they are used.

Everyday materials and their properties

Wood:

Hard, strong

Metal:

Hard, strong, shiny

Plastic:

Strong, shiny, bendy

Glass:

Transparent, smooth, brittle

Rock:

Hard, strong, rigid

Water:

Runny, wet, clear

Vocabulary

Hard
Not easy to break

Soft
Easy to fold, cut or change shape

Stretchy
Can be made longer or wider without breaking

Brittle
Hard, but may break easily

Shiny
Reflects light easily

Dull
Not very shiny or bright

Squashy
Easily crushed or squeezed

Rough
Has an uneven surface

Smooth
An even surface with no lumps or bumps

Bendy
Can be bent easily

Waterproof
Keeps water out

Absorbent
Easily soaks up liquid

Transparent
Easy to see through

Opaque
Cannot be seen through

Key facts!

- You can tell different materials apart by feeling them. Are they hard or soft, flexible or stiff?
- Materials are used for different reasons. Some materials are better than others for certain objects; for example, metal shoes wouldn't be very comfortable to wear and a cardboard door wouldn't be very strong!
- An object can be made out of different materials used together; for example, a chair can be made from metal and wood. A pencil is made from wood and lead.

What we will be learning:

- How to carry out an investigation to find out which materials would be the most suitable to build a strong house.
- Testing materials to find out which ones are waterproof.
- Observation overtime – what happens to ice if we leave it on the window sill?

Chacewater School – LEAP Into Learning – Autumn 1 – Buds

SCIENCE: Animals Including Humans

What I might already know: Vocab - Birds, Reptiles, Amphibians, Mammals and Fish
Animal body parts. Parts of the human body and the senses

KEY QUESTIONS:

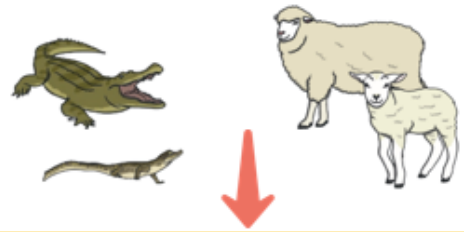
Key Vocabulary:

Develop - to grow bigger and become stronger.
Life cycle - changes that living things go through as they grow and become an adult.
Offspring - the child of an animal.
Young - offspring that has not reached adulthood.
Healthy - to be free from sickness, well and fit.
Survive - to remain alive.
Germs - tiny living things that can cause disease
Hygiene - how to keep ourselves and the world around us clean to stay healthy and limit the spread of disease.
Diet - the food and water and animal needs.
Exercise - physical activity to stay fit and keep the body healthy.
Nutrition - food needed to live.

Key Knowledge:

Some animals give birth to live young.

Some offspring look like their adults when they are born.

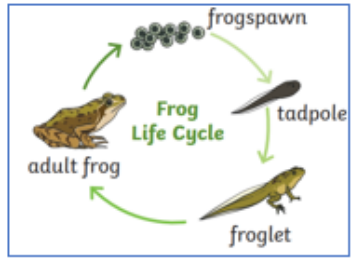


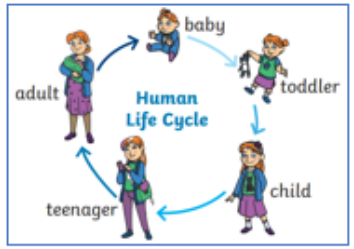
Some animals lay eggs which the young then hatch from.

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

All young animals change as they go through the life cycle to become an adult.

Both humans and animals go through a life cycle.





To stay alive, all animals have 3 basic needs: **Air, water and food.**

To grow into healthy adults, we need to eat the right kinds of foods in the right amounts.

Chacewater School – LEAP Into Learning – Autumn 1 – Young Oaks

SCIENCE: Skeletons:Humans and Animals

What I might already know: Basic body part names, nutrients and the importance of them to help us grow.

KEY QUESTIONS:

How do the skeletons of different animals compare?

Do faster runners have longer legs?

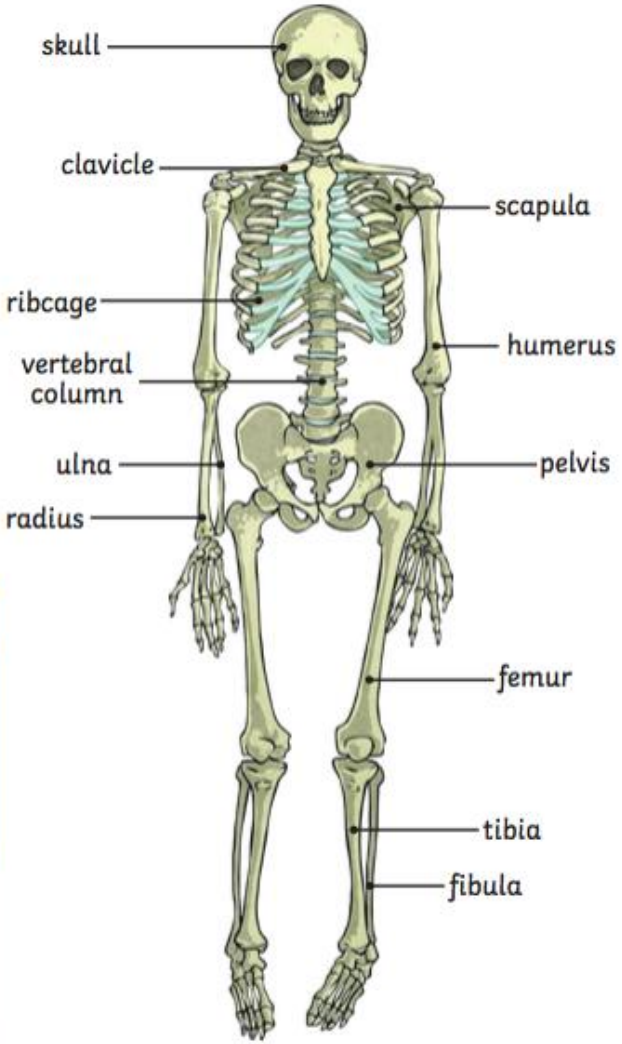
Key Vocabulary:

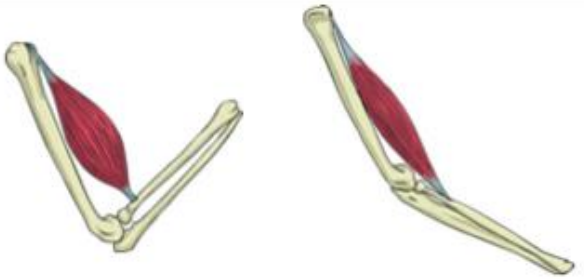
Vertebrate, Invertebrate, muscles, tendons, joints, movement, nutrients, carbohydrates, protein, fibre, fats, vitamins, minerals, water, healthy.

Vertebrates are animals that have a backbone inside their body. The major groups include fish, amphibians, reptiles, birds and mammals.

Invertebrates don't have a backbone. They either have a soft body, like worms or jellyfish. Or they have a hard outer casing, like spiders called an exoskeleton.

What we will be learning:





contract relax

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

Skeletons do three important jobs:

- Protect organs inside the body;
- Allow movement
- Support the body and stop it from falling on the floor

To stay healthy, humans need to exercise, and eat a healthy diet.

Chacewater School – LEAP Into Learning – Autumn 1 – Bur Oaks

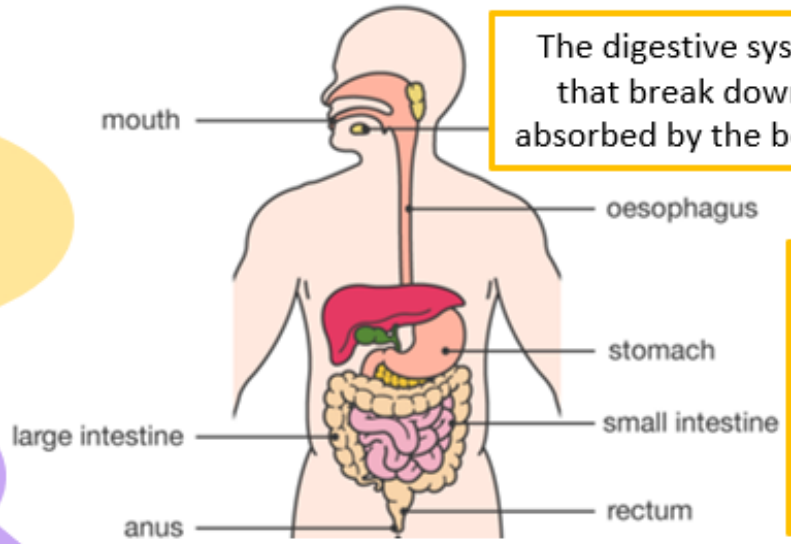
SCIENCE: Animals including humans. Digestion, teeth and food chains.

What I might already know: Animals and humans need to eat food for energy.
Humans and animals have a skeleton to support their body. Muscles help the body to move.

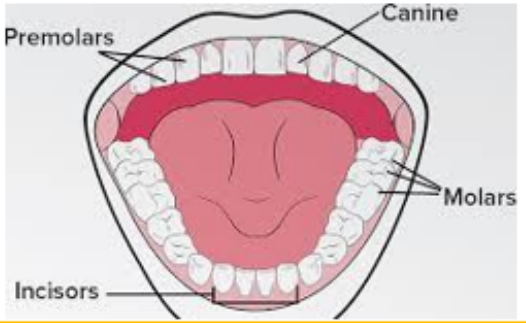
Key Questions:

- Where does my food go?
- What is a food chain ?
- Why do we have different types of teeth?
- How do sugary drinks affect our teeth?

Key Knowledge:



The digestive system is a series of organs that break down food so that it can be absorbed by the body and gets rid of waste.



Humans have up to 32 teeth in the jaw made of 4 different types:

1. At the front are incisors which are used to cut food.
2. Canines are used to tear food.
3. Pre-molars are used to crush food.
4. At the back are molars used to grind food.

Care for teeth: Regular brushing, dentist visits, diet low in sugar.

Key Vocabulary:

The digestive system: mouth, tongue, teeth, saliva, stomach, stomach acid, oesophagus, small intestine, large intestine, anus, rectum, nutrients, waste.

Teeth: canine, incisor, molar,

Food chains: producers, predator, prey, consumer, herbivore, carnivore, omnivore, energy,

Sun gives energy

Green plants are producers - convert the sun's energy into food

Primary consumers (prey)

Secondary consumers. If animals eat other animals, these are called **predators**.

- In a food chain, energy is transferred from the sun to animals through consumption.
- Producers are green plants which can make energy from the sun.
- Primary consumers are animals that eat producers (herbivores).
- Primary consumers are prey to secondary consumer animals (carnivores).
- At the top of the food chain are animals with no natural predators themselves.

Chacewater School – LEAP Into Learning – Autumn 1 – Red Oaks

SCIENCE: THE CIRCLE OF LIFE

What I might already know: The different types of animals and the lifecycle of a butterfly / frog (Reception / Year 1)

KEY QUESTIONS:

What are the similarities and differences in the life cycles of different animals?

What changes do humans go through during their life?

How do plants reproduce?

Key Vocabulary:

- offspring,
- reproduction,
- species,
- metamorphosis,
- stamen, stigma, filament, style, ovary, pollination,
- sexual/asexual reproduction,
- gestation,
- puberty

Key Knowledge:

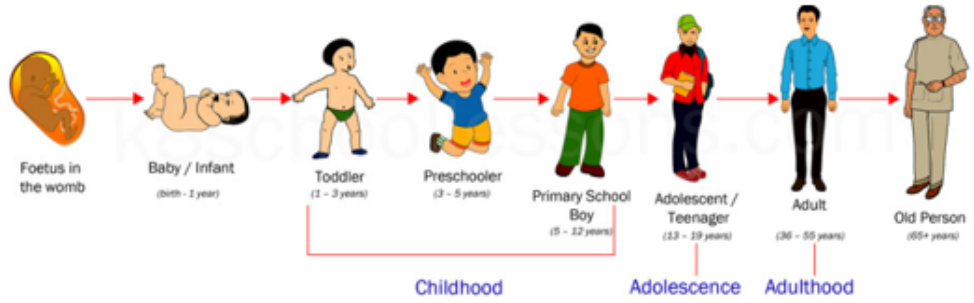
Mammal –
- female gives birth to the young
- live young are born
- young looks like adult
- female **provides** milk for the young

Birds –
- eggs laid in a nest
- young **hatches** from an egg
- grow to adult
- parental care after hatching

Amphibian –
- eggs laid in water

- young **change form** as the develop from young to adult
- no parental care

Insect –
- eggs laid and then hatch
- some grow to adults but most go through **metamorphosis** before becoming an adult

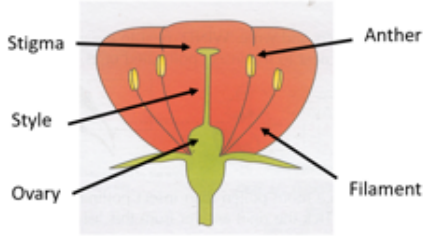


Plants –

Plants **reproduce** both **sexually** and **asexually**

- Sexual reproduction – occurs through **pollination** usually involving wind or insects.

- Asexual reproduction – Only one parent (plant) is needed in asexual **reproduction** and the offspring are exact copies.



Chacewater School – LEAP Into Learning – Autumn 1 – Mighty Oaks

SCIENCE: HAVE A HEART - The Circulatory System

What I might already know - Other systems of the body: skeletal, muscular and digestive

KEY QUESTIONS:

What are the main parts and functions of the circulatory system?

Why is it important to exercise and maintain a healthy diet?

Key Vocabulary:

heart, blood, oxygen

vessels, veins, arteries, valve, respiration, circulatory, platelets, white and red blood cells, plasma

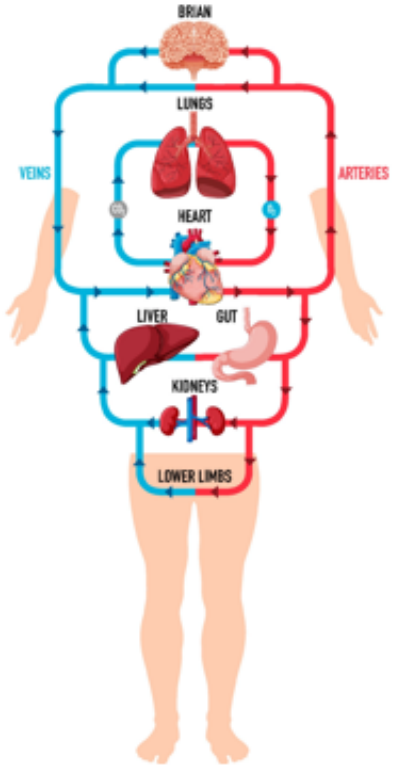
oxygenated, deoxygenated, diffusion, osmosis

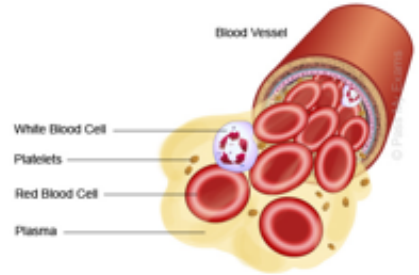
Did you know...

...diet, exercise and lifestyle impact on the way bodies function? Can you explain why?

What we will be learning:

HUMAN CIRCULATORY SYSTEM





What is blood made up of?

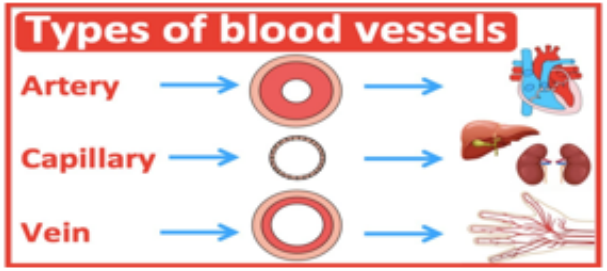
Key Facts

The heart has 4 chambers. The heart pumps blood around the body.

Blood which carries oxygen from the lungs into the heart is **oxygenated**.

Blood which has delivered the oxygen to the muscles and goes back into the heart and then lungs, is **deoxygenated**

The oxygen in the blood provides energy for our bodies. The blood also carries nutrients throughout the body.



Spring Term 1

Chacewater School – LEAP Into Learning – Spring 1 – knowledge organiser - Seedlings

Science: Animals, including humans

What I might already know: I can recognise my five senses and that they are used for. I can label some basic body parts and name some common animals.

KEY QUESTIONS:

What do we use our senses for?

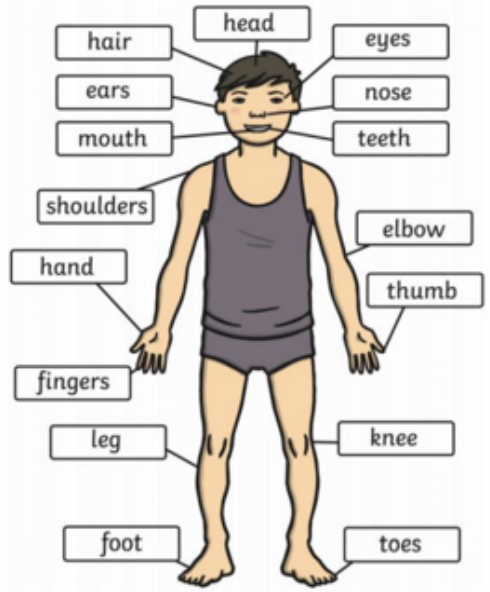
Why do animals have different habitats?

What are the features of different animals?

There are six main groups of animals. These are: invertebrates, mammals, birds, amphibians, reptiles and fish.

Key Knowledge:

Parts of the Body



Our 5 senses

We **smell** using our **nose**.

We **taste** using our **tongue**.

We **touch** using **parts of our body**, like our hands.

We **see** using our **eyes**.

We **hear** using our **ears.**

Key vocabulary

Senses

Carnivore

Herbivore

Omnivore

Some Common Fish


salmon


cod


tuna

Some Common Birds


ducks


chickens


penguins

Some Common Amphibians


frogs


toads

Some Common Mammals

Pets...


dogs


cats


hamsters

Some common Reptiles


snakes


lizards

Chacewater School – LEAP Into Learning - Spring 1 – Buds

Science – Living Things and Their Habitat?

What I might already know: Names of a variety of common animals including fish, amphibians, reptiles, birds and mammals. Able to identify and name a variety of common animals that are carnivores, herbivores and omnivores.

KEY QUESTIONS:

- Can we group things to show which are living, dead or have never been alive?
- Which conditions do different animals prefer to live in?
- What is a habitat?
- What are herbivores, carnivores and omnivores?

What we will be learning:

HABITATS


Forest


Pond


Arctic


Coast


Ocean


Micro


Under a log


Under a leaf


In a bush

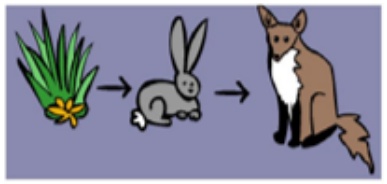

Around a pond

Key Vocabulary:

habitat	food chain	energy	predator	prey
herbivore	carnivore	omnivore	micro	producer
consumer	adaptation			

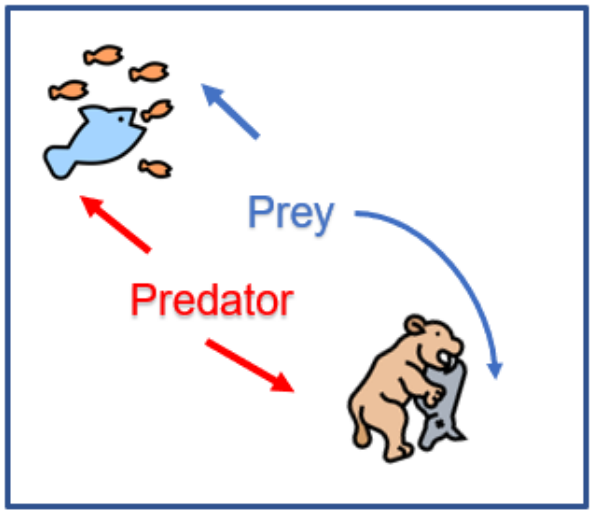
Food chain

A food chain is a diagram that shows us how animals are linked by what they eat.



The grass is eaten by the rabbit.

The rabbit is eaten by the fox.



Chacewater School – LEAP Into Learning – Spring 1 – Young Oaks

SCIENCE: Forces and Magnets

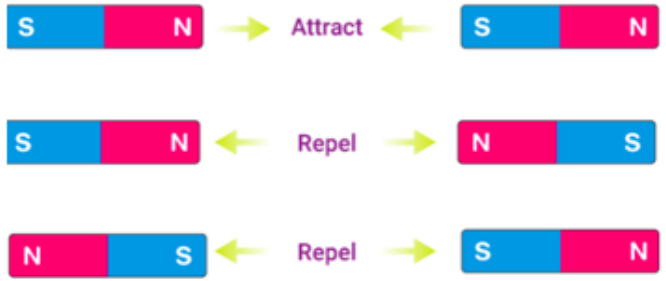
What I might already know: Different type of materials (Y1 & Y2)

KEY QUESTIONS:

Which magnet is stronger, and how do you know?

What surface creates the most friction and why?

What we will be learning:



These objects are magnetic. These objects contain iron, nickel or cobalt. Not all metals are magnetic.

These objects are Non-magnetic. These objects **do not** contain iron, nickel or cobalt.

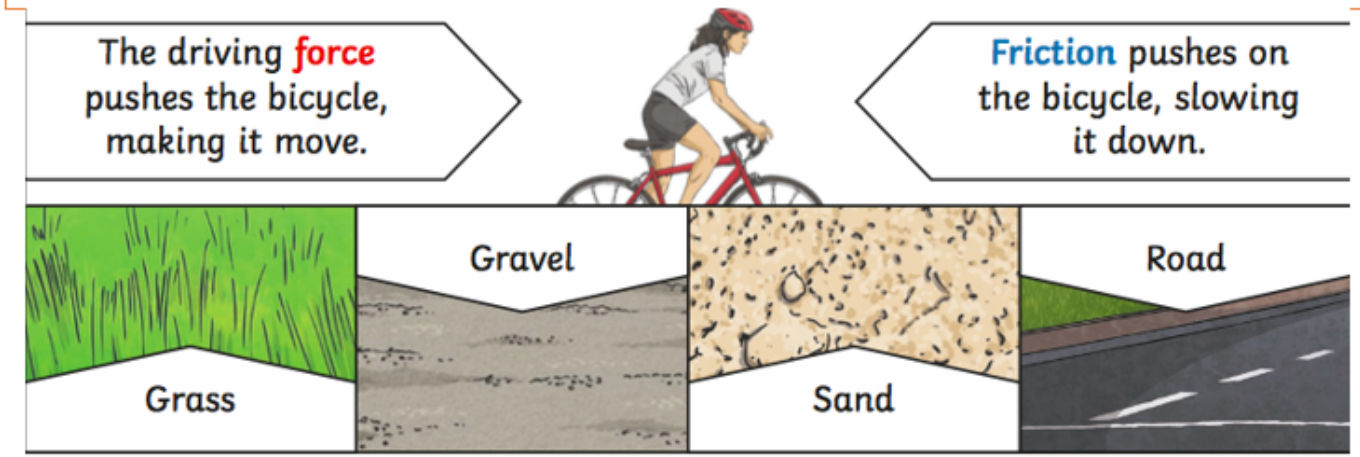
Key Vocabulary:

Push, Pull, force, frictions

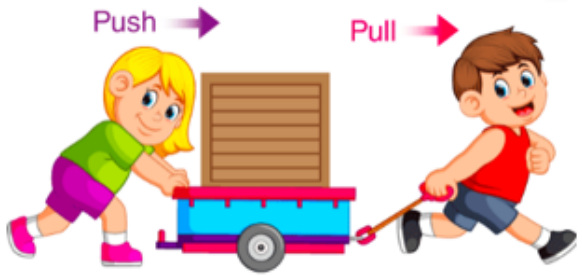
Magnetic, magnet, attract, repel, friction, poles

Magnetic poles - Opposite poles attract and the same poles repel each other.

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.



Forces will change the motion of an object. They will either make it start to move, speed up, slow it down or even make it stop.



Chacewater School – LEAP Into Learning — Bur Oaks
Science: States of Matter

What I might already know:

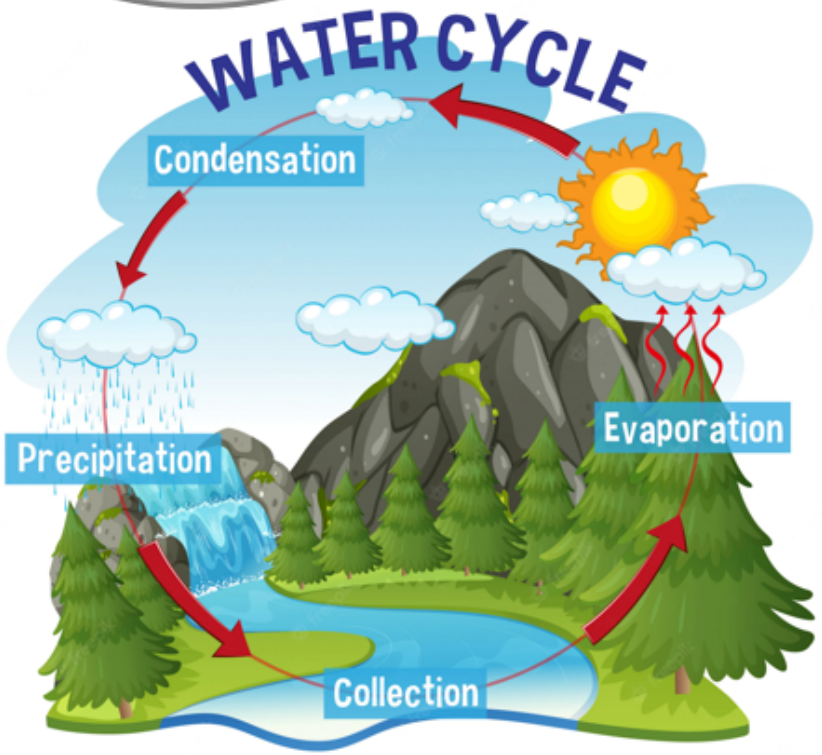
The shapes of some solid objects made from some materials can be changed by squashing, bending, twisting and stretching

KEY QUESTIONS:

What are the three states of matter?

Do gases weigh anything?

What are the changes of state?



What we will be learning:

Temperature

A measure of how hot or cold it is. Measured with a thermometer in degrees.

Particles

The tiny pieces of matter that make up everything in the universe.

The states of matter

Solid

A solid is rigid and keeps its shape. It does not spread or flow.

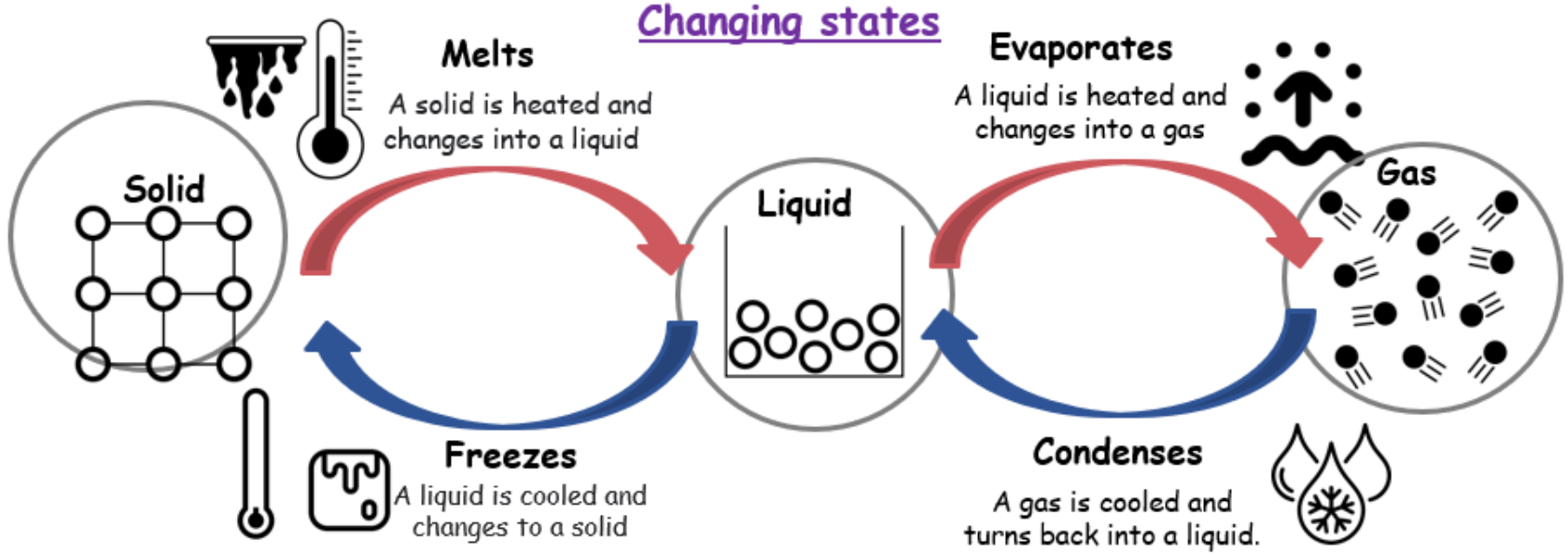
Liquid

A liquid will take the shape of its container. It can be poured and flows.

Gas

A gas will spread out and does not have a fixed shape. It is often invisible.

Changing states



Chacewater School – LEAP Into Learning – Spring 1– Red Oaks

SCIENCE: Properties and changes of materials

What we might already know:
To identify and compare the suitability of a variety of everyday materials (Y1&2)
The difference between solid, liquids and gases (Y4)

Key Knowledge:

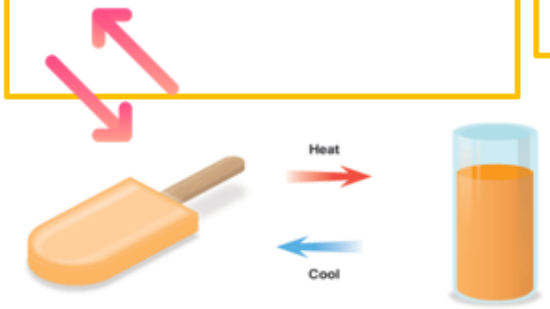
Different materials are suitable for different jobs because of their **qualities** and **properties**.

How could you describe different materials?

- hard
- soft
- durable
- flexible
- transparent
- absorbent
- waterproof
- magnetic
- translucent
- opaque

Reversible changes are when you can get the original materials back.

For example: when ice melts to form water. It could be frozen back to ice again.



Irreversible changes are when you cannot get the original materials back again.

Heating and **chemical reactions** can both cause irreversible changes.

For example: when a piece of wood is burned to form ash. It cannot be made wood again.

Can all changes be reversed?

What is a solution?

A **solution** is made when a material **dissolve**s in a liquid.

Sugar and water are **soluble** materials.

An **insoluble** material does not dissolve in liquid, such as sand.

Can you identify the best methods to separate mixtures?

evaporation – used for separating a soluble solid and a liquid

sieving – used for separating two solids

magnets – used for separating magnetic and non-magnetic materials

filtration – used for separating a liquid and a solid

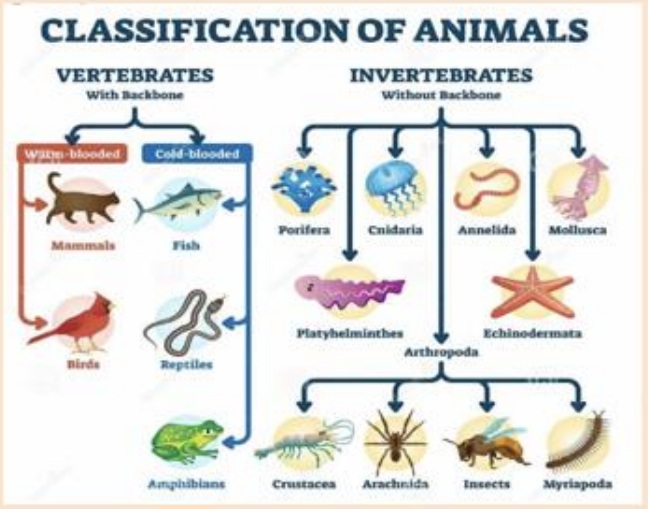
Chacewater School – LEAP into Learning Spring 1 and 2 Mighty Oaks

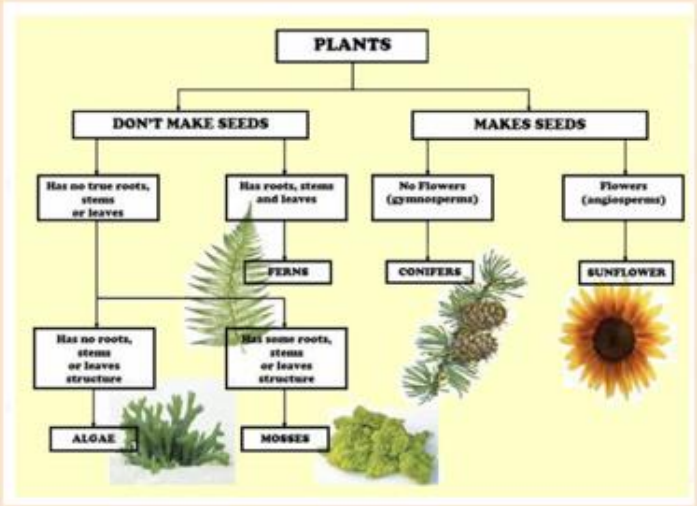
SCIENCE: LIVING THINGS AND THEIR HABITATS

What I might already know:

Animals are groups into vertebrates **and** invertebrates**.**

Vertebrates are further grouped into: mammals, birds, fish, amphibians and reptiles.





	BACTERIA
	VIRUS
	FUNGI
	PROTOZOA

What we will be learning:

- Living things can be classified into groups based on characteristics and similarities and differences.
- Broad groupings can be subdivided . This can become more and more specific.

Key Vocabulary

Organisms	Classification	Characteristics	Environment
Vertebrates	Invertebrate	Bacteria	
Microorganism	Linnaeus	Taxonomy	

Key Knowledge

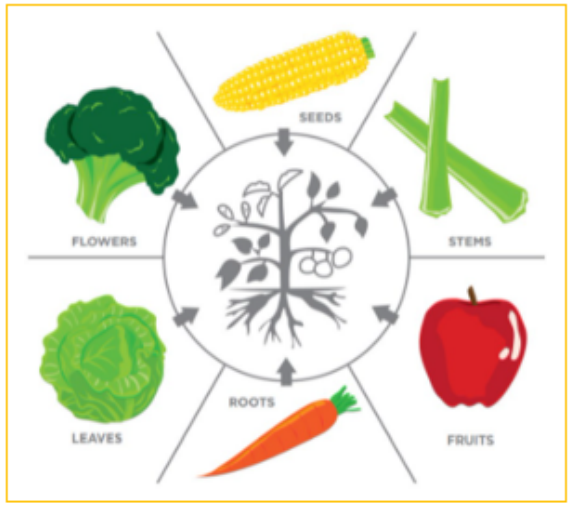
- 3 broad groups: micro-organisms, plants, animals, all of which can be subdivided.
- Variation exists within a population
- Organisms best suited to their environment are more likely to survive long enough to reproduce.

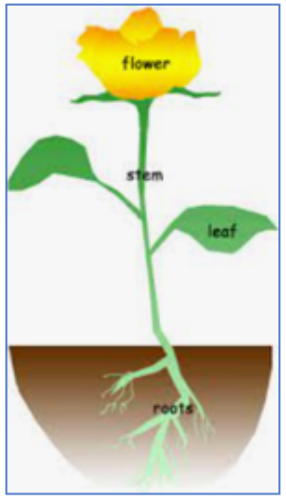
Spring Term 2

Chacewater School – LEAP Into Learning - Spring 2 – Seedlings

SCIENCE: PLANTS

What I might already know: the terms flower, tree, leaf and garden. I might know some common flower names.





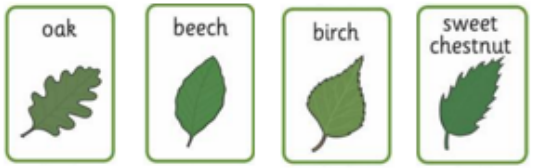
Key Vocabulary:

- Deciduous
- Evergreen
- Trees
- Leaves, trunk, branch
- Flowers, petals, stem, roots, fruit
- Wild plant
- Garden plant
- Weed
- Bulb
- Blossom

What we will be learning:

Names of some common plants and trees and identify them in the school grounds and community garden. We will learn about what parts of a plant we can eat.

Deciduous trees lose their leaves in the winter



Evergreen trees keep their leaves all year round.

We eat different part of plants

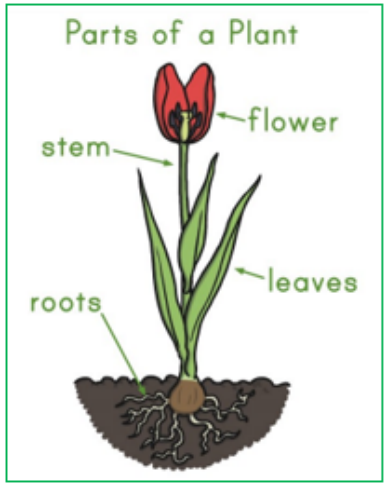
Key Questions

What are the most common plants at school?
How can we sort the leaves we've collected?
Do all plants have the same features?

Chacewater School – LEAP Into Learning - Spring 2 – Buds

SCIENCE: PLANTS

What I might already know: names of common wild and garden plants, including deciduous and evergreen trees.

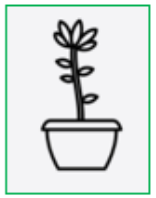


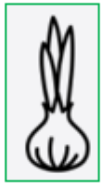
Key Vocabulary:

- Temperature
- Bulbs
- Seedling
- Shoot
- Wither
- Suitable
- Bud
- Condition
- Nutrients
- Seed dispersal

What we will be learning:

Plants need light, water and warmth to grow and stay healthy.





Flowers make seeds to make more plants (reproduce). Plants grow from bulbs or seeds.

Germination is the name for when a plant starts to grow.
Warmth, water and no sunlight is needed in order for germination to begin.

Bulbs and seeds have a store of food so do not need light to grow.

Seeds have a tough layer on the outside to protect the plant (the seed coat).

Key Questions

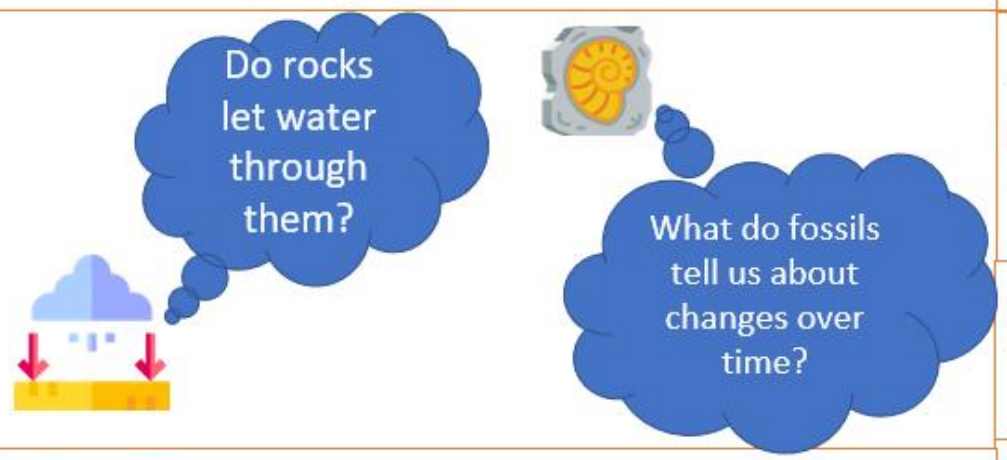
What happens to my bean after I have planted it?
Do cress seeds grow quicker inside or outside?
What are the similarities and differences between seeds and bulb?

Chacewater School – LEAP Into Learning – Spring 2 – Young Oaks

SCIENCE: Rocks and Fossils

What I might already know: There are different types of rock with different properties (Year 1 & 2)

KEY QUESTIONS:



Key Vocabulary:

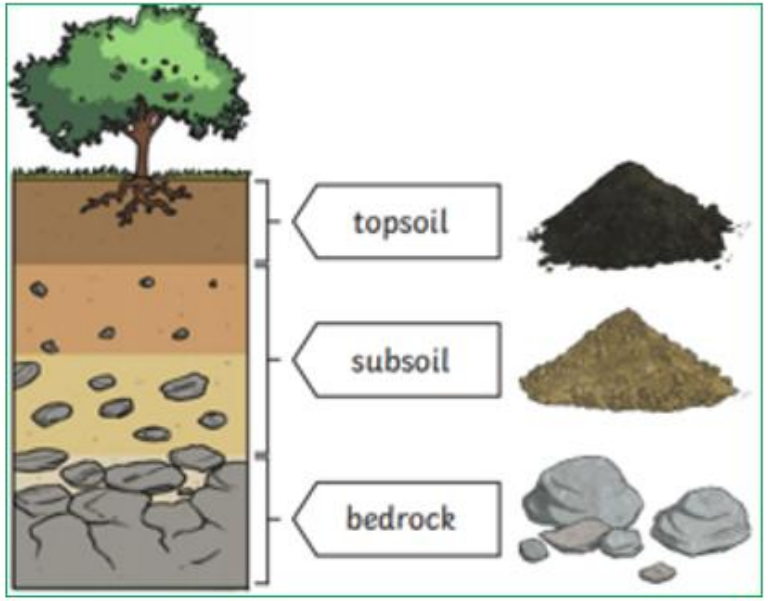
- Organic matter
- Bedrock
- Magma
- Pressure
- Fossils
- Permeable
- Sedimentary
- Igneous
- Metamorphic.

What we will be learning:

Different kinds of rocks (including those in the locality) can be compared and grouped on the basis of appearance and simple physical properties.

Fossils are formed when things that have lived are trapped within rock

Soils are made from rocks and organic matter. Soil is the uppermost layer of the Earth. It is a mixture of different things: minerals, air, water and organic matter.



Key knowledge:

There are three types of naturally occurring rock.

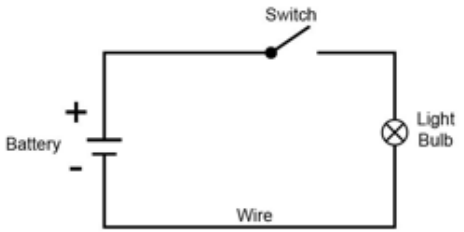
Chacewater School – LEAP Into Learning – Spring 2 – Bur Oaks

SCIENCE: Electricity

What I might already know: Different materials have different properties.

Key Knowledge and Key Vocabulary

Circuit - the closed path followed by an electric current	**Volt** - a unit of force for measuring electric current	**Voltage** - the force of an electric current as measured in volts
Electricity sources (**Cells**) push electricity round a circuit.	**Switch** - controls the flow of the electrical current around the circuit.	**Conductors** - allow electricity to flow easily
Wire - a thin rod or thread of metal	**Bulb** - a device made of rounded glass used to create electric light	**Insulators** - don't allow electricity to flow easily
Buzzer - an electrical device that signals by buzzing	**Motor** - a machine that causes motion or power	**Series circuit** – the current flows through each component



Appliance: a device used for a particular purpose

Battery

Wire

Bulb

Buzzer

Motor

Switch (off)

Switch (on)

Danger!

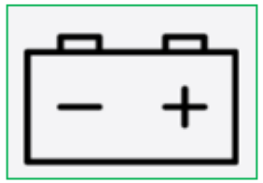
Mains electricity can be dangerous

Main Electricity

Kettles, lamps and televisions all use mains electricity.

Battery (Cell)

Mobile phones, tablets and torches use batteries.



Chacewater School – LEAP Into Learning – Spring 2 – Red Oaks

SCIENCE: Space and Earth

What I might already know: The sun doesn't move across the sky (year 3 – light)

KEY QUESTIONS:

How do the Earth, Sun and Moon move in relation to each other?

How have our ideas about the solar system changed over time?

Is there a pattern between the size of a planet and the time it takes to travel around the Sun?

Key Vocabulary:

- Sphere
- Axis
- Orbit
- Universe
- Rotation
- Rotate
- Constellation
- Celestial body
- Asteroids
- Satellite

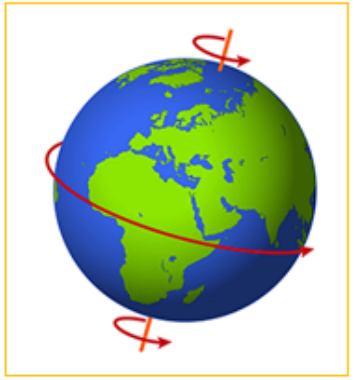
What we will be learning:

Earth rotates (spins) on its *axis*.

1 full spin = 24 hours

Daytime occurs when the side of the Earth is facing the sun

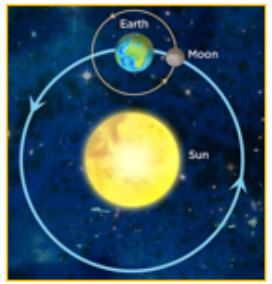
Night occurs when the side of the Earth is facing away from the sun.



The Sun doesn't move.

The solar system is heliocentric but in the past we thought it was geocentric.

Because the Earth is *rotating*, the sun appears to move across the sky as the day goes on.



The moon orbits Earth in an oval-shaped path whilst it spins on its axis.

At different times in the month the moon appears to be different shapes.

Key knowledge:

- ✓ The sun is a <u>star</u> at the centre of our solar system.
- ✓ The solar system has 8 planets which orbit the sun.
- ✓ It takes the Earth 1 year to complete its orbit of the Sun.
- ✓ The moon reflects light and does not produce its own light.
- ✓ The moon orbits the Earth which takes about 28 days.

Chacewater School – LEAP Into Learning - Spring 1 and 2 – Mighty Oaks

SCIENCE: EVOLUTION AND INHERITANCE

What I might already know: Fossils are formed when things that have lived are trapped within rock.

How have living things changed over time?

When does evolution occur?

How are offspring similar to their parents and how may they differ?

Why are fossils important? What do they tell us?

What we will be learning:

Over time the characteristics that are most suited to the environment become increasingly common. Animals and plants are adapted to suit their environment. Adaptation may lead to evolution.

Living things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago.

Key knowledge:

- ✔ Variation exists within a population (and between offspring of some plants)
- ✔ Organisms best suited to their environment are more likely to survive long enough to reproduce.
- ✔ Organisms that are best adapted to reproduce are more likely to do so.
- ✔ Organisms reproduce and offspring have similar characteristic patterns.

Key Vocabulary			
Evolution	The process by which living things are believed to have developed from earlier forms during the history of the earth.	**Offspring**	Children or an animal's young.
Natural selection	The process whereby organisms better adapted/suited to their environment tend to survive and produce more offspring.	**Genetic**	Related to or belonging to genes; characteristics that are inherited from genetic parents.
Variation	Differences between individuals in a species.	**Environmental**	All the physical surroundings on earth; characteristics that are caused by surroundings.
Advantageous	A benefit; something that is better than most.	**Characteristics**	A feature or quality belonging to a living thing.

Summer Term

Chacewater School – LEAP Into Learning - Spring 2 – Seedlings

SCIENCE: SEASONAL CHANGES

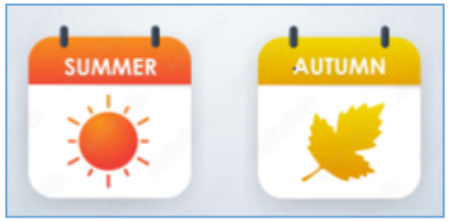
What I might already know: I might already know the names of the seasons and notice the changing cycle of day and night.

Key Vocabulary:

- Season: Summer, Winter, Autumn, Spring
- Daylight
- Forecast
- Shadow
- Wind direction
- Weather patterns
- Rainfall
- Precipitation
- Gauge
- Data

What we will be learning:

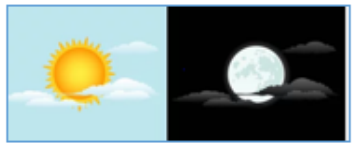
We'll learn about **changing seasons** and be able to describe **weather** associated with the different seasons. **Day lengths** also change in different seasons.



There are four seasons

The weather changes across the seasons .

The length of days vary across the year.



Key Questions

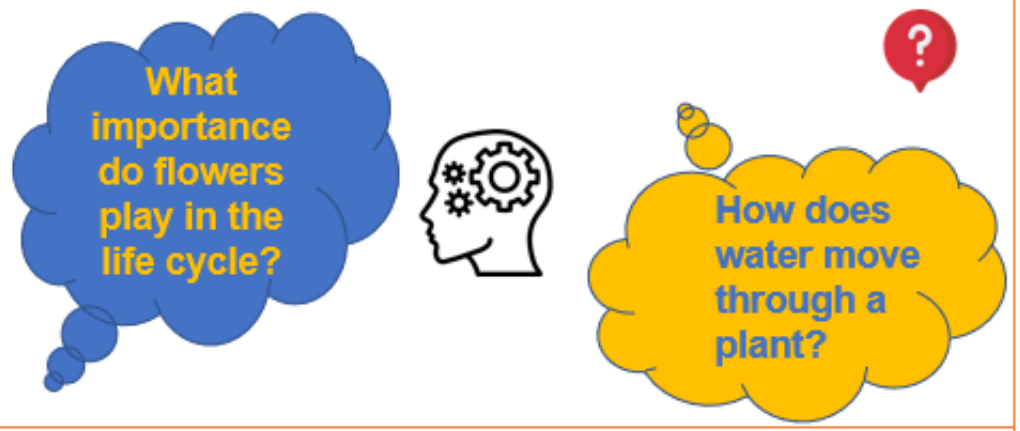
How do you know what season it is?
Are there patterns in our weather?

Chacewater School – LEAP Into Learning – Summer 1 – Young Oaks

SCIENCE: Fabulous Plants

What I might already know: Identify and name the key parts of a plant and name the main elements of what plants needs to grow (Y1 & Y2)

KEY QUESTIONS:



Key Vocabulary:

- Roots
- Stem/trunk
- Leaves
- Flowers
- Soil
- Seed
- Bulb
- Petal
- Reproduction
- Function
- Transportation
- Dispersal
- Pollination
- Nutrients
- Investigation
- Pollen

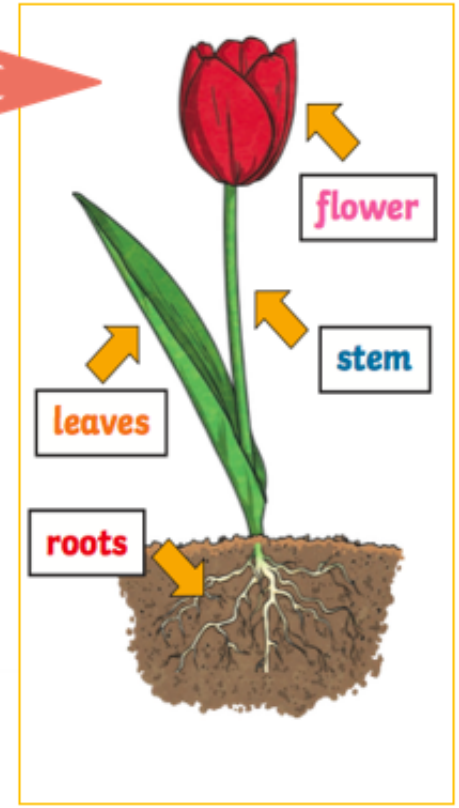
What we will be learning:

Different parts of flowering plants: roots, stem/trunk, leaves and flowers all have different functions.

Plants need air, light, water, nutrients from soil, and room to grow. This is different from plant to plant.

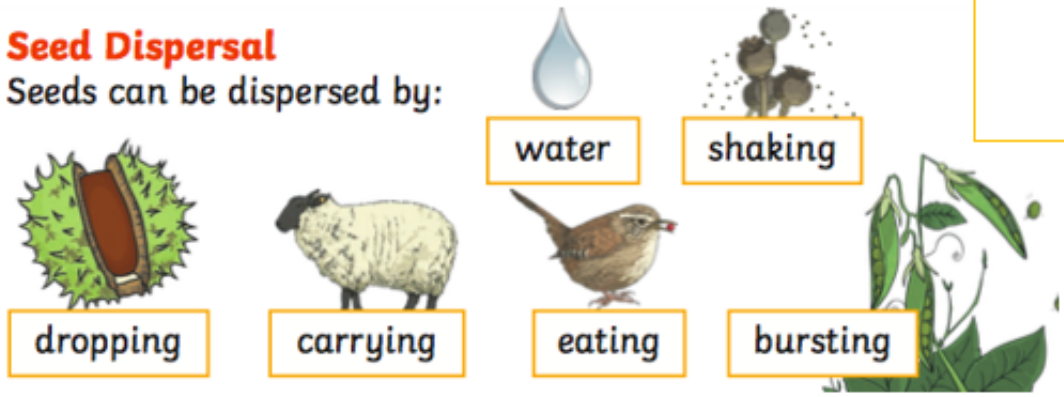
Water is transported within plants – starting form the roots.

Flowers play an important part in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.



Seed Dispersal

Seeds can be dispersed by:

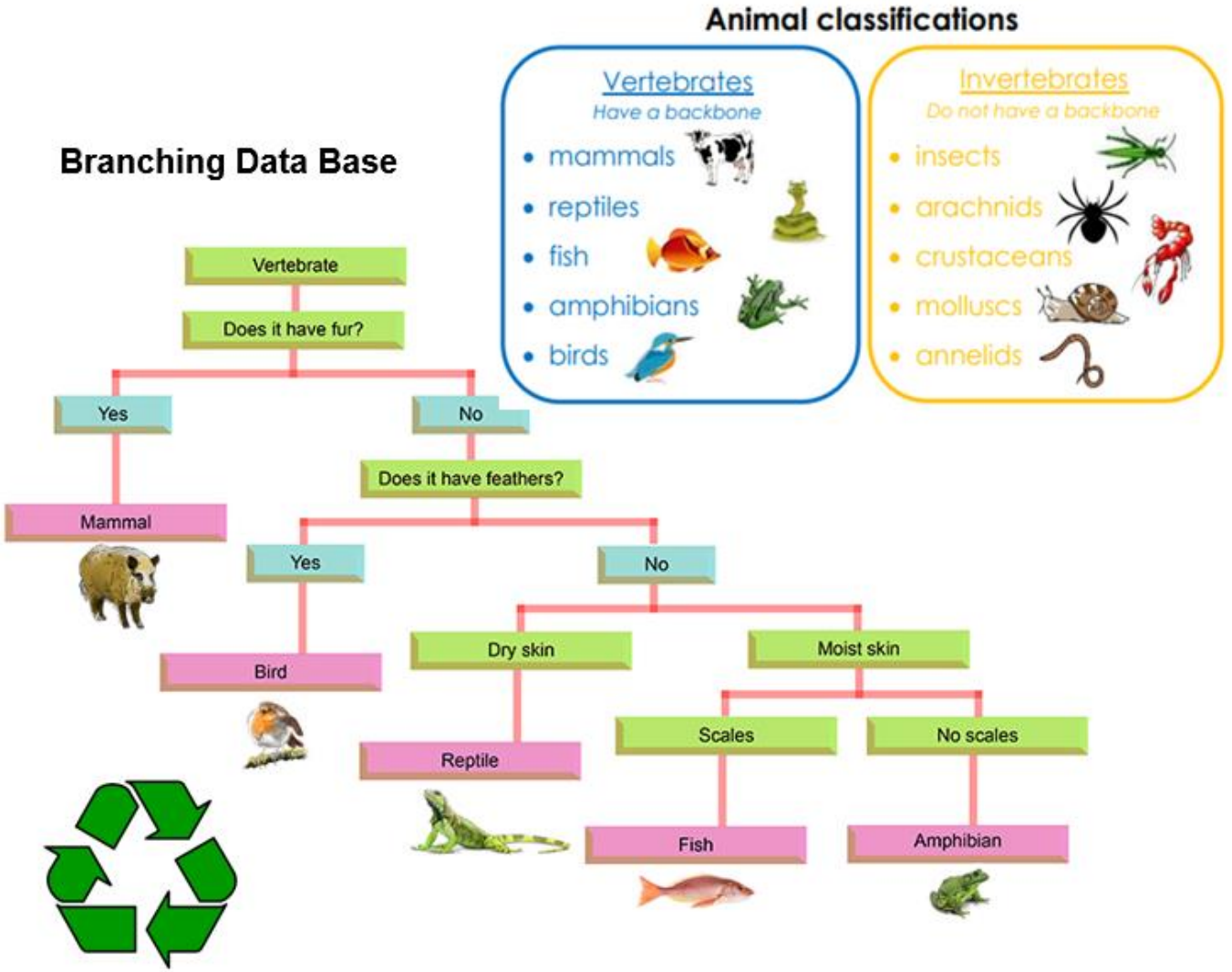


Chacewater School – LEAP Into Learning – Summer 1 – Bur Oaks

SCIENCE: Living Things and Their Habitats

What I might already know: *All living things have characteristics that are essential for keeping them alive (moving, growing, link to senses (y1), getting rid of waste, having babies, breathing, taking in food and water) Vertebrates (backbone)*

classify - sorting people / things according to a chosen criteria	classification key - a set of questions about the characteristics of living things
habitat –the natural home or environment of an animal, plant or other organism	environment - the air, water and land in/on which people, animals and plants live
mammals: - live young, hair/fur, lungs, provide milk for young, warm bloodied	birds: - lay eggs with hard shells, feather, lungs, warm blooded
fish: - lay eggs, scales, gills, cold blooded	reptiles: - scales, usually lay eggs (leathery shells), cold blooded
amphibians: - live young, hair/fur, lungs, smooth or bumpy, moist skin, lay eggs with soft shells, cold blooded	human activity –significantly affects the environment both positively and negatively: littering, deforestation, pollution



Chacewater School – LEAP Into Learning – Summer 2 – Buds

SCIENCE: Uses of everyday materials

What I might already know: Name everyday materials and describe some of their properties.

KEY QUESTIONS:

Which material would be best for ….?

Can you group these items according to their properties and uses?

Comparative and Fair Testing

Identifying, Classifying and Grouping

What we will be learning:

Changing materials

squashing

Clay can easily be pushed and pulled.

bending

Foil is bendy and waterproof.

twisting

This plastic bottle's shape can be changed.

stretching

A balloon is very flexible.

Key Vocabulary:

- **squashing, twisting stretching, stiff, bending**
- **Absorbent:** *able to soak up liquid easily.*
- **Opaque:** *Not able to be seen through.*
- **Transparent:** *completely see-through.*
- **Translucent***: let some light through but not completely see through.*
- **Reflective:** *reflects light easily.*

Material	Properties	Uses
wood 	opaque hard strong	table 
metal 	shiny smooth reflective	fork 
plastic 	waterproof bendy translucent	water bottle 
glass 	transparent waterpoof hard	window 
brick 	hard rough dull	wall 
rock 	strong hard rigid	fireplace 
paper 	tears easily translucent flexible	book 
cardboard 	dull non-reflective opaque	boxes 
fabric 	flexible Soft absorbent	clothes 

Chacewater School – LEAP Into Learning – Summer 2 – Young Oaks

SCIENCE: Light

What I might already know: Use of mirrors and glasses - reflection (Y2)

KEY QUESTIONS:

Can you identify light sources and reflectors?

How does my shadow change over the day?

A shadow is caused when light is blocked by an opaque object. A shadow is larger when an object is closer to the light source. This is because it blocks more of the light.

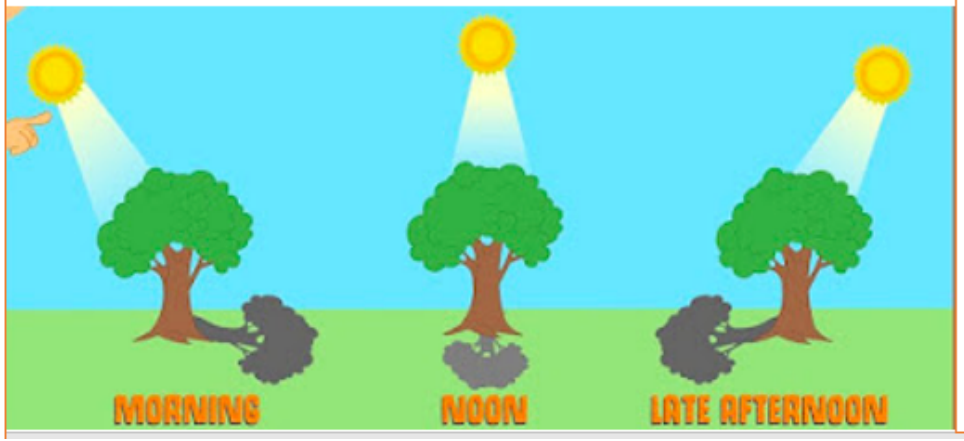
When the light source is directly above the object, the shadow will be directly underneath.

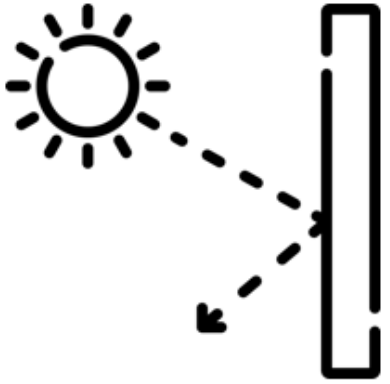
When a light source is to one side of an object, the shadow will appear on the opposite side. The shadow will also be longer.

What we will be learning:

We need light to be able to see things. Light travels in a straight line. When light hits an object, it is reflected (bounces off). If the reflected light hits our eyes, we can see the object.

The pupils control the amount of light entering the eyes. If too much light enters, then it can damage the retina. To help protect the eyes, you can wear a hat with a wide brim and sunglasses with a UV rating.





Key Vocabulary:

- **Light**
- **Shadows**
- **Pattern**
- **Sun**
- **Reflection**
- **Protection**
- **Spectrum**
- **Refraction**
- **Retina**
- **Pupils**
- **Opaque**
- UV

Chacewater School – LEAP Into Learning – Summer 2 – Red Oaks

SCIENCE: Forces

What I might already know:

The planets and the Sun do not touch and the planets stay in orbit around the Sun

KEY QUESTIONS:

How does the surface area of an object affect the speed of a toy car?

Comparative and Fair Testing

How does the surface area of a parachute affect the time it takes to fall?

Pattern Seeking

How do submarines sink if they are full of air?

Research Using Secondary Resources

Key Vocabulary:

Attract
Contact
Distance
Force
Friction
Gravity
Pull
Push
Repel
Resistance

What we will be learning:

Forces make things begin to move, get faster or slow down.

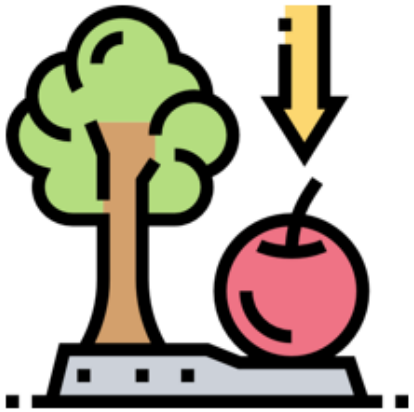
Air resistance *is a force that acts in the opposite direction to gravity.*

It acts between a moving object and the air molecules around it, slowing the object down.

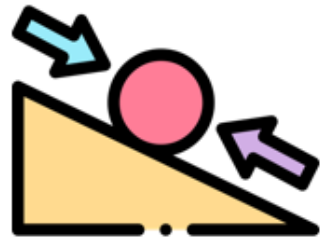
Water resistance *is the force responsible for making it difficult for us to move through the water.*

It acts between a moving object and the water molecules around it, slowing the object down

Unsupported objects fall towards the Earth because of the force of ***gravity*** *acting between the Earth and the falling object. (link back to earth and space)*



Some objects require large forces to make them move; ***gears, pulley and levers*** *can reduce the force needed to make things move. They allow a smaller force to have a greater effect.*



Friction *is a force that slows or stops moving objects and is caused by two surfaces rubbing against each other.*

Chacewater School – LEAP Into Learning – Summer 2 – Mighty Oaks
SCIENCE: Electricity & Light

What I might already know:

Electricity requires a power source. Light can only travel in a straight line.

KEY QUESTIONS:

Electricity: What is static electricity? How can you generate electrical power?

Comparative and Fair Testing

Light: How fast does light travel?

Observing Over Time

Can animals see in colour? What happens to the image in our eyes?

Research Using Secondary Resources

Key Vocabulary:

Electricity:	Light:
Mains	Angle
Battery	Lamp
Circuit	Source
Motor	Reflect
Cell	Shadow
Conductor	Mirror
Insulator	Flame
Source	Transparent
Power	Translucent
Complete	Opaque

What we will be learning:

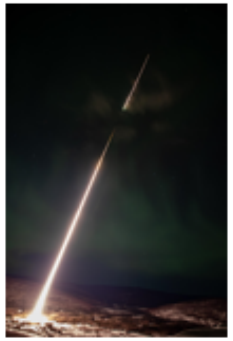
Light

L1 recognise that light appears to travel in straight lines

L2 use the idea that light travels in straight lines to explain that objects are seen because they give out or reflect light into the eye

L3 explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes

L4 use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.



Elecricity

E1 associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit

E2 compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches

E3 use recognised symbols when representing a simple circuit in a diagram.