

Hanslope Primary School

Science Knowledge Organiser

Year One - Plants

What key vocabulary will I learn:

Plants are made up of many different parts.

Roots – Roots absorb water and minerals from the ground. They also help the plant to stay standing in the ground.

Stem – The stem supports the plant above the ground. It also helps to carry water and minerals from the roots to the leaves.

Leaves – Leaves collect energy from the Sun and turn this into food for the plant (photosynthesis).

Flowers and Fruits – Flowers and fruits help the plant to reproduce (to make more plants).

Seed – Flowering plants begin life as seeds. They need soil, air and water to grow.

Seedling – When the plant first starts to grow, it is called a seedling.

Flowering – When the plant is fully grown, it will produce its own flowers. These flowers will eventually produce seeds. When the seed gets to the ground, the cycle starts again.

Tree - Trees are tall, woody plants. They usually have a stem called a trunk.

Bushes and shrubs - Bushes and shrubs are quite low plants that have lots of branches.

Moss - Mosses are small, seedless plants that grow in moist places.

Vegetables - Vegetables normally come from a type of plant called a herbaceous plant. Vegetables can be eaten.

Deciduous - trees which lose their leaves in the winter

Evergreen – Trees which keep their leaves through the year

National Curriculum Links:

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

How does this link to my future learning?

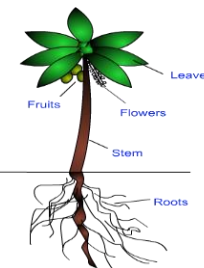
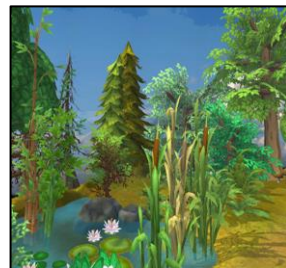
- Observe and describe how seeds and bulbs grow into mature plants
- Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

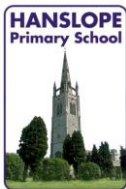
What will I know by the end of this unit:

- Plants are a large group of living things that use sunlight to make their own food.
- There are many, many different kinds of plants, including trees, vines and grasses.
- Plants have lots of different parts, for example stems, leaves and roots.
- Some plants are 'flowering plants' – they grow flowers sometimes.
- Flowering plants produce flowers to help them reproduce. They follow a life cycle.

Examples of deciduous trees are oak, maple, elm, beech, sycamore

Examples of evergreen trees are pine, fir, holly





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Year Two - Plants

How does this link to my previous learning?

Plants are a large group of living things that use sunlight to make their own food. There are many, many different kinds of plants, including trees, vines and grasses. Plants have lots of different parts, for example stems, leaves and roots. Some trees lose their leaves in the winter (deciduous). Some keep their leaves through the year (evergreen). Some plants are 'flowering plants' – they grow flowers on them.

What key vocabulary will I learn:

Plants have a clear life cycle that helps them to keep reproducing:

Seeds/bulbs – Plants begin life as seeds or bulbs. They need soil, air and water to grow.

Seedling – Plants grow into young plants. They now need light, temperature, water, space and time to keep growing.

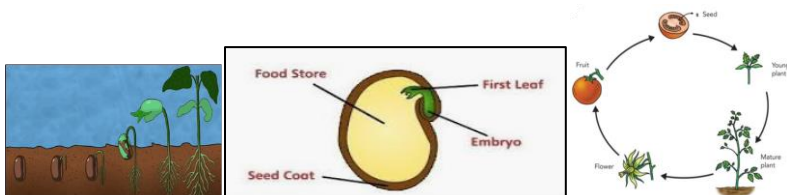
Flowering/Fruit – Plants grow flowers and fruits. These produce seeds. When the plant dies or is pollinated, the seeds find their way to the soil. The process starts again!

Germination is the name for when a plant starts to grow. A plant is germinating when its seed begins to sprout.

Inside a seed/bulb is the baby plant (an embryo). Seeds have a tough layer on the outside to protect the plant (the seed coat).

Seeds and bulbs do not need sunlight in order to grow. They already have their own food store inside them!

However, they do need the right conditions to grow. Normally, they need water, air and the right temperature. This can often be found in well-watered soil!



National Curriculum Links:

Observe and describe how seeds and bulbs grow into mature plants

Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy.

How does this link to my future learning?

Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers

Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant

Investigate the way in which water is transported within plants

Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.

What will I know by the end of this unit:

What plants need to grow

Water and Nutrients:

Like animals and humans, plants need water and nutrients to survive.

Plants are able to get water from the soil through their roots.

They can also catch water on their leaves.

Light:

Plants need lots of sunlight to help them grow.

Plants do not eat food. They instead use sunlight to make their own food.

Too little light will leave plants weak.

Temperature:

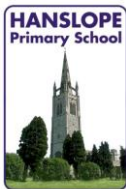
Plants need the temperature to be just right for them to grow properly.

If it is too hot, they may burn and wilt. If it is too cold, they may freeze and die. This is why there are less plants at the poles and the deserts.

Space and Time:

Plants need room for their roots and stems to be able to grow. Without enough room, they may not grow large enough.

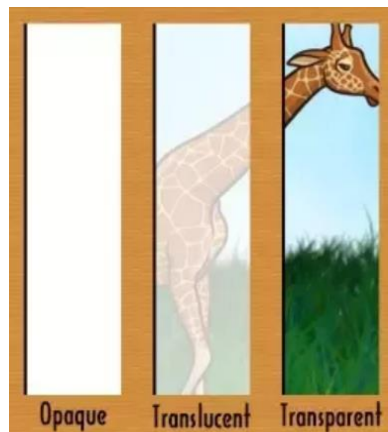
Plants also need time – it can take days, months or even years for them to grow.



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Year Three - Light



National Curriculum Links:

Recognise that they need light in order to see things and that dark is the absence of light
Notice that light is reflected from surfaces
Recognise that light from the sun can be dangerous and that there are ways to protect their eyes
Recognise that shadows are formed when the light from a light source is blocked by an opaque object
Find patterns in the way that the size of shadows changes.

How does this link to my future learning?

Recognise that light appears to travel in straight lines
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
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
Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them.

What key vocabulary will I learn:

- Light is a **form of energy** that makes it possible to see.
- Light is **given off some objects** (for example the Sun). Darkness is when there is no light.
- Light can **reflect** off surfaces (e.g. mirrors)
- Objects can be labelled as **transparent, translucent, or opaque**, depending on the amount of light that they let through.
- **Shadows** are formed when light is blocked by an opaque object.
- When light hits an object, it can be **absorbed** by the object, **reflect** (bounce off) the object, or **transmit** (pass through) an object.
- The three key terms below tell us how much light objects let through them.
- **Transparent** – Transparent objects allow all of the light to pass through them. This means that we can clearly see through them.
- **Translucent** – Translucent objects only allow some light to pass through them. This means that we can partially see through them.
- **Opaque** – Opaque objects do not allow any light to pass through them. This means cannot see through them at all.

What will I know by the end of this unit:

Dark

Darkness is the absence of light. In other words, where there is no light, it is dark!
Human vision is unable to see colours when there is high levels of darkness (too little light).
At night, the sky is darker because there is a lack of light from the sun.

Reflection

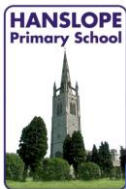
Light may also reflect off the surface of an object.
This means that light bounces off the object, sending it in another direction.
Some examples of materials/objects that reflect light include mirrors or polished metal surfaces.

Absorption

When light hits an object, it may be absorbed into the object.
This means that it doesn't bounce off or pass through the object.
Some examples of materials/objects that absorb light include wood, brick and stone.

Transmission

Light can also be transmitted through certain objects.
This means that it passes through the object. It can be seen from the other side of the object.
Some examples of materials/objects that transmit light include windows and clean water.
*Some types of light (e.g. light from the sun) can be dangerous for our eyes and skin. This is because they contain **UV rays** that can cause damage. There are several things that we can do to protect ourselves in the sun.*



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Year Four - Sound



National Curriculum Links:

- Identify how sounds are made, associating some of them with something vibrating
- Recognise that vibrations from sounds travel through a medium to the ear
- Find patterns between the pitch of a sound and features of the object that produced it
- Find patterns between the volume of a sound and the strength of the vibrations that produced it
- Recognise that sounds get fainter as the distance from the sound source increases.

What key vocabulary will I learn:

Pitch is the highness or lowness of sounds.

Pitch is caused by the frequency of vibrations (how many times vibrations go back and forth per second).

The higher the rate of vibrations, the higher the pitch.

Lower pitch sounds have a lower rate of vibrations.

Humans can hear a large range of pitches, high-pitch sounds e.g. a mouse squeak to low-pitch sounds e.g. the rumble of an earthquake.

However, some sounds are too high or low-pitched for us to hear.

Volume is the loudness of a sound.

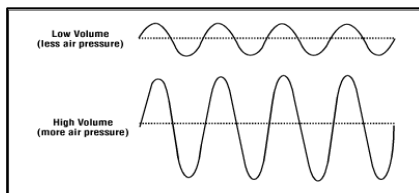
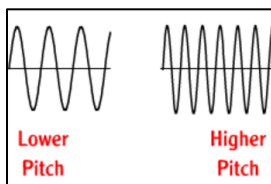
The volume of a sound depends on the amount of energy that the vibrations contain.

Vibrations with lots of energy create large soundwaves.

When these large soundwaves arrive at your ears, they push harder on your eardrums.

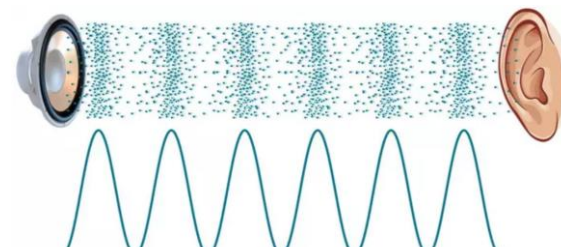
This is why when we strike a drum harder (with more energy) it is louder than when we strike it more softly.

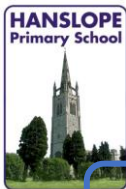
-Our ears can detect a wide range of loud and quiet sounds, from rumbling jet engines to leaves rustling.



What will I know by the end of this unit:

- Sounds are made when objects vibrate (shakes back and forth).
- Vibrations travel from objects in waves to our ears, allowing us to hear sound.
- When a bell is struck, the metal of the bell vibrates. These vibrations create waves in the air (sound waves). When they reach our ears, they make our eardrums vibrate, and we hear the sound of the bell ringing.
- Weak vibrations make a gentle soundwave which do not travel as far as strong vibrations. This is why sounds have different volumes.
- Sounds can be high pitched or low pitched. Tight, short frequency waves make a high-pitched sound, while more loose waves make low-pitched sounds.





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Year Five - Forces

How does this link to my previous learning?

Compare how things move on different surfaces
Notice that some forces need contact between two objects, but magnetic forces can act at a distance

What key vocabulary will I learn:

There are a number of different forces that affect us in our daily lives:

Gravity attracts all matter towards each other.

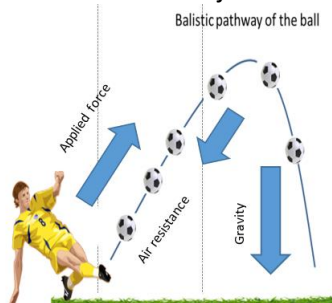
Applied force: The force placed on an object by a living creature.

Friction: the 'sticking' force that occurs when an object moves over another.

Air resistance is a type of friction force that pulls against an object travelling through the air. Some objects are more 'streamlined', meaning that the air pulls on them less, and they travel faster.

Water resistance is the friction force on objects floating or moving in water.

Surface resistance is the friction force of objects moving across a surface.



National Curriculum Links:

Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

Identify the effects of air resistance, water resistance and friction, that act between moving surfaces

Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect.

What will I know by the end of this unit:

Gravity has been around since the beginning of the Universe, and applies to all matter in the Universe.

-The bigger an object's mass, the more gravity it will have. The smaller the mass of an object, the less gravity it will be subject to.

-Without gravity we would fly right off the planet! The moon's gravity causes our ocean tides on Earth. The Sun's gravity keeps Earth in orbit around the Sun.

-We don't actually "feel" gravity. We only feel the effects of trying to overcome it by jumping or when we fall.

-Sir Isaac Newton discovered gravity around 300 years ago. The tale is that he saw an apple fall from a tree, and wondered what force made it fall to the ground.

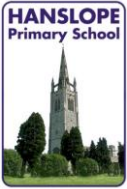
Simple machines and mechanisms include pulleys, gears and levers. They can be used to turn a small force into larger forces. This means that we can use these machines to accomplish things more easily.

-Levers give us extra pushing or pulling force and help us lift greater weights.

-Gears are different sized cogs which work together to give a machine extra force.

-Pulleys are wheels and ropes that work together to lift heavy objects.





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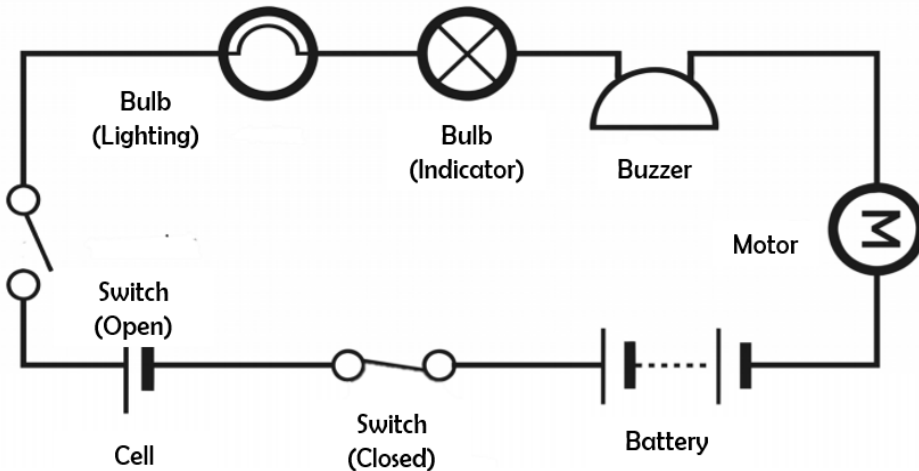
Science Knowledge Organiser

Year Six - Electricity

How does this link to my previous learning?

Identify common appliances that run on electricity
Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers
Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery
Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit
Recognise some common conductors and insulators, and associate metals with being good conductors

What key vocabulary will I learn:

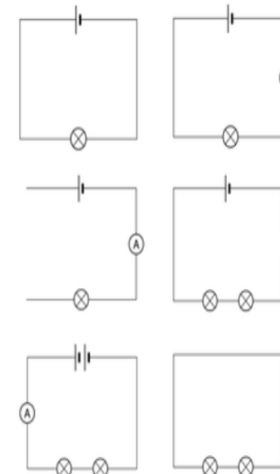


When drawing electrical circuits, you should use the standard symbols to show the different components.

National Curriculum Links:

Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit
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
Use recognised symbols when representing a simple circuit in a diagram.

What will I know by the end of this unit:



When changes are made to circuits, components can function differently:
-When switches are open or wires are removed from a circuit (so that it is no longer a closed circuit), bulbs and buzzers will turn off. You can use crocodile clips to investigate adding and removing wires.
-When more batteries or cells are added (or batteries or cells are included with a higher voltage) the brightness of bulbs and the volume of buzzers will increase.
-When more bulbs are added to a simple circuit, they will be dimmer than if there were one bulb. This is because the electricity is shared between the two bulbs. More voltage would be needed to make them brighter.
You should be able to look at circuits like those on the left, and work out what would happen.