

Science

Across the school, we teach Science using the CUSP curriculum, which pays close attention to guidance provided by the National Curriculum sequence and content. Our ambitious Science curriculum has the intention of increasing children's ability to think scientifically, enriching children's vocabulary and wider view of the world, and putting what they learn into practice.

The following core concepts underpin our teaching of Science and we strive to weave these concepts into each unit we teach:

- Identifying and classifying
- Pattern making
- Research
- Observing over time
- Fair and comparative testing

At Woodhall we aim to provide a rich experience of Science that enables our children to experience both **depth and breadth** in the units they cover. This is achieved through our "revisit" units where we revise units from earlier parts of the year to consolidate learning.

The methodology for teaching Science at Woodhall is to provide opportunities for children to develop their **questioning skills, ignite curiosity** and to widen their **knowledge of the world and how it works**. We want our children to **respond proactively and positively** to problem solving challenges and **strive** to learn more about the "how" and "why" of the world around us and beyond. We recognise that 'our children are the **future**' and they need to be equipped with the necessary skills to take risks, become resourceful, innovative, and questioning in order to become **capable citizens**.

We also recognise that Science encompasses a broad range of subject knowledge and draws on disciplines from the **wider world** such as mathematics, engineering, computing and geography. We believe making these curriculum connections are essential components that help to **engage and connect our** children with the opportunities Science provide.

By the time our children leave Woodhall they will have the skills, knowledge and experience to have a level of **independent thinking** to carry through to their future education and into their lives beyond the classroom.

See below for a breakdown of the skills covered in the National Curriculum.



Subject concepts	Year 1 and 2 skills	Year 3 and 4 skills	Year 5 and 6 skills
Work scientifically	<ul style="list-style-type: none"> • Ask simple questions. • Observe closely, using simple testing equipment. • Use observations and ideas to find answers to questions. • Identify and classify, suggesting ideas for groups. • Carry out simple comparative tests. • Be able to suggest what to change and keep the same for a fair test. • Gather and record simple data to help in answering questions. 	<ul style="list-style-type: none"> • Set up practical enquiries that are comparative and fair tests. • Use accurate measurements using standard units, using a range of equipment, e.g. thermometers and measuring cylinders. • Gather, record, classify and present data in a variety of ways to help in answering questions. • Record findings in a variety of ways including drawings, labelled diagrams and tables. • Report on findings from enquiries that include results and conclusions. • Use results to suggest improvements, new questions and predictions for setting up further tests. • Identify differences, similarities or changes related to simple, scientific ideas and processes. • Use straightforward, scientific evidence to answer questions or to support their findings. 	<ul style="list-style-type: none"> • Plan enquiries, including identifying and controlling variables where necessary. • Use appropriate techniques, apparatus, and materials during investigations. • Take measurements, using a range of scientific equipment, with increasing accuracy. • Record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, bar and line graphs, and models. • Report findings from enquiries, which include explanations of results and conclusions. • Present findings in written form, displays and other presentations. • Use test results to make predictions to set up further comparative and fair tests. • Use simple models to describe scientific ideas, identifying evidence that supports or goes against your arguments.
Biology: Understand plants	<ul style="list-style-type: none"> • Identify and name a variety of common plants, including garden plants, wild plants and trees and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common flowering plants. • 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. 	<ul style="list-style-type: none"> • Identify and describe the functions of different parts of flowering plants. • 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 role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. 	<ul style="list-style-type: none"> • Relate knowledge of plants from previous year groups to studies of all living things. • Relate knowledge of plants from previous year groups to studies of evolution and inheritance.
Biology: understanding animals and humans	<ul style="list-style-type: none"> • Identify and name a variety of common animals that are birds, fish, amphibians, 	<ul style="list-style-type: none"> • Identify that animals, including humans, need the right types and amounts of nutrition. 	<ul style="list-style-type: none"> • Describe the changes as humans develop to old age. • Identify and name the main parts of the human circulatory



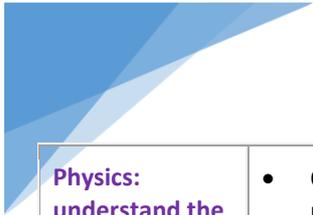
	<p>reptiles, mammals and invertebrates.</p> <ul style="list-style-type: none">• Identify and name a variety of common animals that are carnivores, herbivores and omnivores.• Describe and compare the structure of a variety of common animals (birds, fish, amphibians, reptiles, mammals and invertebrates, including pets).• Identify name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.• Notice that animals, including humans, have offspring, which grow into adults.• Investigate and describe the basic needs of animals, including humans, for survival (water, food and air).• Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene.	<ul style="list-style-type: none">• Construct and interpret a variety of food chains, identifying producers, predators and prey.• Identify that humans and some animals have skeletons and muscles for support, protection and movement.• Describe the simple functions of the basic parts of the digestive system in humans.• Identify the different types of teeth in humans and their simple functions.	<p>system, and describe the functions of the heart, blood vessels and blood.</p> <ul style="list-style-type: none">• Recognise the importance of diet, exercise, drugs and lifestyle on the way the human body functions.• Describe the ways in which nutrients and water are transported within animals, including humans.
<p>Biology: investigate living things</p>	<ul style="list-style-type: none">• Explore and compare the differences between things that are living, that are dead and that have never been alive.• 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.• Identify and name a variety of plants and animals in their habitats, including micro-habitats.• Describe how animals obtain their food from plants and other animals,	<ul style="list-style-type: none">• Recognise that living things can be grouped in a variety of ways.• Explore and use classification keys.• Recognise that environments can change and that this can sometimes pose dangers to specific habitats.	<ul style="list-style-type: none">• Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird.• Describe the life process of reproduction in some plants and animals.• Describe how living things are classified into broad groups according to common observable characteristics.• Give reasons for classifying plants and animals based on specific characteristics.



	using the idea of a simple food chain, and identify and name different sources of food.		
Biology: understanding evolution and inheritance	<ul style="list-style-type: none">Identify how humans resemble their parents in many features but not always all.	<ul style="list-style-type: none">Identify how plants and animals, including humans, resemble their parents in many features.Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.Identify how animals and plants are suited to and adapt to their environment in different ways.	<ul style="list-style-type: none">Recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago.Recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents.Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution.
Chemistry: investigate materials	<ul style="list-style-type: none">Distinguish between an object and the material from what it is made from.Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water and rock.Describe the simple physical properties of a variety of everyday materials.Compare and group together a variety of everyday materials on the basis of their simple physical properties.Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick/rock,	<p>Rocks and Soils</p> <ul style="list-style-type: none">Compare and group together different kinds of rocks on the basis of their simple, physical properties.Relate the simple physical properties of some rocks to their formation (igneous or sedimentary).Describe in simple terms how fossils are formed when things that have lived are trapped within sedimentary rock.Recognise that soils are made from rocks and organic matter. <p>States of Matter</p> <ul style="list-style-type: none">Compare and group materials together, according to whether they are solids, liquids or gases.Observe that some materials change state when they are heated or cooled, and measure the temperature at which this happens in	<ul style="list-style-type: none">Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, conductivity (electrical and thermal), and response to magnets.Understand how some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution.Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.Give reasons, based on evidence from comparative and fair tests, for the particular uses of

	and paper/cardboard for particular uses.	degrees Celsius (°C), building on their teaching in mathematics. <ul style="list-style-type: none"> Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. 	everyday materials, including metals, wood and plastic. <ul style="list-style-type: none"> Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible.
Physics: understand movement, forces and magnets	<ul style="list-style-type: none"> Notice and describe how things move, using simple comparisons such as faster and slower. Compare how different things move. 	<ul style="list-style-type: none"> Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces can act at a distance. Observe how magnets attract or repel each other and attract some materials and not others. 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. Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. 	<p>Magnets</p> <ul style="list-style-type: none"> Describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing. <p>Forces</p> <ul style="list-style-type: none"> Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effect of drag forces, such as air resistance, water resistance and friction that act between moving surfaces. Describe, in terms of drag forces, why moving objects that are not driven tend to slow down. Understand that force and motion can be transferred through mechanical devices such as gears, pulleys, levers and springs. Understand that some mechanisms including levers, pulleys and gears, allow a smaller force to have a greater effect.
Physics: understanding light and seeing.	<ul style="list-style-type: none"> Observe and name a variety of sources of light, including electric lights, flames and the Sun, explaining that we 	<ul style="list-style-type: none"> 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. 	<ul style="list-style-type: none"> Understand that light appears to travel in straight lines. Use the idea that light travels in straight lines to explain that objects are seen because

	<p>see things because light travels from them to our eyes.</p>	<ul style="list-style-type: none"> • 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 a solid object. • Find patterns in the way that the size of shadows change. 	<p>they give out or reflect light into the eyes.</p> <ul style="list-style-type: none"> • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them, and to predict the size of shadows when the position of the light source changes. • 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.
<p>Physics: investigate sound and hearing.</p>	<ul style="list-style-type: none"> • Observe and name a variety of sources of sound, noticing that we hear with our ears. 	<ul style="list-style-type: none"> • Identify how sounds are made, associating some of them with something vibrating. • Recognise that vibrations from sounds travel through a medium to the ear 	<ul style="list-style-type: none"> • 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.
<p>Physics: understand electrical circuits</p>	<ul style="list-style-type: none"> • Identify common appliances that run on electricity. • Construct a simple series electrical circuit. 	<ul style="list-style-type: none"> • 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. 	<ul style="list-style-type: none"> • 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.



**Physics:
understand the
Earth's
movement in
space**

- Observe the apparent movement of the Sun during the day.
- Observe changes across the four seasons.
- Observe and describe weather associated with the seasons and how day length varies.

- Describe the movement of the Earth relative to the Sun in the solar system.
- Describe the movement of the Moon relative to the Earth.

- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system.
- Describe the movement of the Moon relative to the Earth.
- Describe the Sun, Earth and Moon as approximately spherical bodies.
- Use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky.

Science Long-Term Sequence

Year	Unit 1	Unit 2	Unit 3	Unit 4	Unit 5	Unit 6
1	Seasonal changes and weather	Everyday materials	Animals, including humans	Plants	Revisit	Revisit
2	Living things and their habitats	Use of everyday materials	Animals, including humans	Revisit living things and their habitats/materials	Plants	Revisit living things and their habitats/animals, including humans
3	Rocks	Animals, including humans	Revisit rocks	Forces and magnets	Light	Plants
4	Living things and their habitats	Electricity	Animals, including humans	Sound	States of Matter	
5	Living things and their habitats	Animals, including humans	Earth in space	Forces	Properties and changes of materials	Forces continued
6	Living things and their habitats	Light	Animals, including humans	Animals, including humans (water transport)	Electricity	Evolution and inheritance

Science in KS1

Friday 25th January 2022

4. What do all animals need to stay alive?

Water
essential for animals
animals body made of water

$\frac{1}{2}$ to $\frac{3}{4}$
drink

about through skin

animals cannot make their own food like plants

keep animals healthy
energy
growth

carnevore
herbivore
omnivore

all animals need air (oxygen)
these animals breathe through their skin
these animals get oxygen from water
Amphibians get oxygen from water and their breathe

Sentence	True	False
Invertebrates do not have a backbone.	✓	
Vertebrates have a backbone.	✓	
A lion is a vertebrate.	✓	
Metamorphosis means change form or shape.	✓	

For animals to survive they need water, food and air.

Did you know that animals do not make their own food? Did you know that fish and frogs breathe through their skin? Food is important for animals because it keeps animals healthy and it keeps them growing. A animal drink water through their mouths. A animal drink a $\frac{3}{4}$ to a $\frac{1}{2}$ water. Some animals are carnevore, herbivore or omnivore. Did you know some animals breathe air. Did you know some animals get air from water?

1. What is a material?

Material is a very strong material balls

"Metal is a very strong material balls"

"Not some from a sharp" (Maxim)

"Fabric is like the same as what I wear - like clothes" (Liam)

"Cotton is a fabric" (Liam)

"Gloves are made out of rubber. My mum uses them to wash up" (Eugene)

Tuesday 23rd November 2021

Which materials do you think can be squashed?

	Always	Sometimes	Never
Doors are opaque.		✓	
Windows are translucent.		✓	
Drinks bottles are transparent.		✓	
Food packaging is opaque.		✓	

I predict that you can squish paper and cardboard. I predict that you can not bend wood. I predict you can not squish woolly.

	Bent	Twisted	Squashed	Stretched
fabric		✓	✓	✗
paperclip	✓		✓	✓
pencil	✗	✗	✗	✗
cardboard	✓	✗	✓	✓

lego brick x x x x. I found out that fabric can bend, twist, squish but not stretched. I found out that a pencil can not do any thing because a pencil is made of wood.

Friday 4th January 2022

Retrieve two things - show what you know

Connect - add one more thing to what you know

1. Knows what is an invertebrate

Invertebrates are animals with what do not have back bones. I remember worms, jellyfish and snails don't have back bones.

spider, ladybug, snail, jellyfish, worm

Recap - food chain?

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    graph TD
      A[grass] --> B[goats]
      B --> C[owl]
      D[plant] --> E[calculator]
      E --> F[bird]
    
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Investigation question

Which material will stop the leak?

What will not change?
The materials (balls)

What will be measure/observed?
"If all of the water will be sucked up and on left over" (Josh)

What will stay the same?
- The same size cups material (waterproof) (Liam)
- The materials are the same size (Fiona)
- The same amount of water. (Tina)

Our predictions:
(See pictures)

What my experiment will look like:
1 2 3 4 5

What will I need? What will I use?
"Cups"
"materials of different ones" (Mavis)
"water and a mini pump" (Josh M)

Science in KS2

Wednesday 10th November 2021

Liquids

Solids

Liquids

Gases

What is matter?
What does it look like?

Something that takes up space, depends on size or composition

ice melts or anything that melts is called matter

has a fixed shape

mass is the amount of matter in an object

milligrams (mg) grams (g) kilograms (kg)

occupies space

actual space material occupies

one of the 3 distinct ways matter exists

solid

Matter is anything around us a ruler, the pen, the notebook, your nose, and you are made of matter. All matter has shape and takes up space, you might think air doesn't take up space but it does, you can't see it but you can feel it. There are three common states of matter: solid, liquid, and gas. Solids are things that have a fixed shape and volume. Liquids have a fixed volume but no fixed shape. Gases have neither a fixed shape nor a fixed volume.

Science

What are the parts of the digestive system?
What does each part do?
How does digestion work? What is the process?

Small intestine
Oesophagus
gastroesophageal junction
abdominal cavity
Large intestine
Stomach
Rectum

Vocabulary Essentials Part Organizer KS2 Study Y5 Earth and Space

From vocabulary knowledge

Words I should know	flour, prefix, suffix and spelling rules
antidote	ant, vice
hermit	herm
engine	eng

T2 Multiple meaning or high frequency words

KNOW	LINK	ANALYSE	Use and apply in a sentence
luminescent	giving off light, bright or shining		
phenomenon	a thing is observed to occur or happen especially one which is in a question		
attraction	drawn together by force		
approximately	nearly about but not exact		
relative	involving being compared to something else		
apparent	seems to be true but may not be		

Friday 4th February 2022

What is a shadow?

It's light travels from a light source it gets hidden, it makes a shadow.

Opaque - no light passes through
Translucent - all the light passes through (windows)
Transparent - some light passes through plastic lid

What can you see in your shadow?
What can you see in your shadow?
What happens when you go in the sun?
What is your shadow attached to your body?
What is your shadow attached to your body?
What is your shadow attached to your body?

TRUE or FALSE?

A shadow is a reflection?

Edy 4th January 2022

Summary!

The moon orbits Earth when it's in a certain position, it gets smaller and gets closer to us. It's smaller to our solar system. The Earth only has one moon. The moon is pulled on by Earth and the Sun. It's a small moon in the solar system.

Factors: The moon's movement helps control our tides, weather, and climate.

In between you can see the United States of America and the Sun from London. The first people to land on the moon were Neil Armstrong, Michael Collins, and Buzz Aldrin. It took about 3-7 days to fly to the moon. Apollo 11 mission flying to the moon was 3 days, 3 hours and 13 minutes and 55 seconds with NASA.