Building Ambition,
Resilience and Respect

Science Curriculum

Plymouth Science

Subject Lead: Miss Dutton

Haveley Hey Curriculum Statement for Science

Intent

The aim of Science teaching at Haveley Hey is to provide a high-quality education for all pupils to understand the world in which they live. Our science teaching ensures our pupils develop the necessary disciplinary knowledge as they progress through the school, enabling them to become the scientists of the future. As scientists, pupils work collaboratively to develop their research, communication and critical-thinking skills. We encourage our pupils to ask questions about the world around them. Science teaching is carefully sequenced to ensure a clear progression of substantive knowledge and disciplinary knowledge. Each lesson is designed to explore and build on children's prior knowledge, allowing for misconceptions to be addressed effectively. Where possible, real-life experiences and examples are used in lessons to give our children a deeper understanding of these concepts.

Implementation

<u>Curriculum</u>

At Haveley Hey we use the Plymouth Science scheme of work from EYFS to Year 6 to ensure careful sequencing and delivery of the Primary National Curriculum. The clear progression ensures that children are continually building on their prior learning as they systematically develop their understanding of key ideas and their scientific skills. Pupils have opportunities to ask their own questions and use scientific vocabulary to discuss and present their findings in a range of different ways.

<u>Key Concepts</u>

The substantive knowledge builds progressively to develop children's understanding of concepts, models, laws and theories.

The disciplinary knowledge builds progressively to enable children to work scientifically and covers the following aspects:

- Methods used to answer questions
- Using apparatus and techniques
- Data analysis
- Using evidence to develop explanations

<u>Subject-Specific Approach</u>

Enquiry approaches:

Observation over time: (observe changes that occur over a period of time ranging from minutes to months)
Identifying, grouping and classifying: (identifying and naming materials/living things and making observations or carrying out tests to organise them into groups)
Pattern-seeking: (identify patterns and look for relationships in enquiries where variables are difficult to control)
Comparative and fair testing: (observing or measuring the effect of changing one variable when controlling others)
Research: (use secondary sources of information to answer scientific questions)
Problem-solving: (apply prior scientific knowledge to find answers to problems)

Enquiry skills:

Asking questions: (ask questions that can be answered using a scientific enquiry)
Making predictions: (use prior knowledge to suggest what will happen in an enquiry)
Setting up tests: (decide on the method and equipment to use to carry out an enquiry)
Observing and measuring: (use senses and measuring equipment to make observations about the enquiry)
Recording data: (use tables, drawings and other means to note observations and measurements)
Interpreting and communicating Results: (use information from the data to say what you found out)
Evaluating: (reflect on the success of the enquiry approach and identify further questions for enquiry)

Impact	Pupil Voice Pupils are able to talk confidently about practical experiments they have done in science. They are able to discuss the topics that they are learning and discuss scientific vocabulary.		Evidence of Knowledge and Skills Children's learning is monitored through book looks, children assessments and conversations with the children. Retrieval practice is a strategy used in all science lessons across the school to assess how much prior learning is remembered and to inform misconceptions.
	Ambition The science curriculum promotes ambition by inspiring curiosity and encouraging students to ask questions, think creatively, and aim for deeper understanding of the world. It helps children see themselves as potential future scientists and problem-solvers who can make a positive impact.	Resilience Our curriculum builds resilience by encouraging students to experiment, embrace mistakes, and persevere through challenges as part of scientific enquiry. It also develops confidence, problem-solving, and teamwork skills through practical investigations.	Respect The science curriculum encourages respect for living things, the environment, and scientific evidence when making decisions. It teaches students to listen to others' ideas, work collaboratively, and value different perspectives during investigations.

Science Long Term Plan

Subject content EYFS

ELG: Developmental Matters: Areas of development (Linked to science aspects of learning)

The World	The World	Technology	People and Communities	Health and self-care	Communication and Language: Understanding
Children know about similarities and differences in relation to places, objects, materials and living things.	Children talk about the features of their own immediate environment and how environments might vary from one another. They make observations of animals and plants and explain why some things occur, and talk about changes.	Early Learning Goal Children recognise that a range of technology is used in places such as homes and schools. They select and use technology for particular purposes.	Children talk about past and present events in their own lives and in the lives of family members. They know that other children don't always enjoy the same things, and are sensitive to this. They know about similarities and differences between themselves and others, and among families, communities and traditions.	Children know the importance for good health of physical exercise, and a healthy diet, and talk about ways to keep healthy and safe. They manage their own basic hygiene and personal needs successfully, including dressing and going to the toilet independently.	Children follow instructions involving several ideas or actions. They answer 'how' and 'why' questions about their experiences and in response to stories or events.

Nursery	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Ourselves/Colour	**Colour/ Fairy tales**	**People who help us**	**Animals**	**Science week Planting/living things**	**Seasons**
Main learning outcomes	To name basic body parts To know that we look different as we get older. To describe people who are familiar to them To know how to take care of themselves. To understand some of their senses. To name different colours To explore mixing colours To explore rainbows To explore shadows.	Can name the materials they are using and why. Can talk about the basic properties of materials and why it is suited for a purpose. Can observe changes in their natural world and say why it is different now or will change in the future Can compare and describe how materials change over time. .	- Can children identify the people that can help them? - Can children identify ways to and why they need to keep their teeth clean? - Can children identify what is needed to cause a fire and what to do in the event of one? - Can children discuss the role of the fire service? - Can children identify the skills/role of the police? - Can children use observational skills for a purpose?	Children can identify why habitats are important to animals Children can identify some animals from specific habitats Children understand hibernation and its purposes Children can discuss why some animals are suited for different habitats	New for 2026	Children will understand that there are four seasons -Children will be able to name the four seasons -Children will be able to use some scientific words to describe their environment and link it to the season they are in.

Trips and/or experiences				Wild Roadshow Animal Experience (visit)		
Reception	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Keeping Healthy	**Mini beasts**	**Animals**	**Animals**	**Science week**	**Under the sea**
Main learning outcomes	Children can identify ways to keep healthy. Children will understand why we need to stay clean Children will know how some germs can make them ill. Children will understand what a dentist's role is. Children will understand why it is important to have a clean environment. Children will understand that they need to eat different foods. Children will understand why it is important to exercise. Children will understand the importance of sleep and can identify different emotions.	Can children identify the various stages of the life cycle of a caterpillar/butterfly? Can children identify foods that are grown and come from plants? Can children identify any of the things a plant needs to grow? Can children identify parts of an insect? Can children use relevant scientific language? Can children identify mini-beast habitats and why they live there?	Children can identify why habitats are important to animals Children can identify some animals from specific habitats Children understand hibernation and its purposes Children can discuss why some animals are suited for different habitats	I can understand the similarities and differences *of animals* in this country and in other countries. I can recognise some environments that are different to the one in which they live. I can understand the effect of changing seasons on the natural world. I can engage in non-fiction books. I can revise and refine my fundamental movement skills.	New for 2026	Children will be able to identify animal habitats under the sea. -Group fish based on observations. -Children understand why things float or sink. -Children can make observations of plants and animals. -Children will be able to label basic fish anatomy
Trips and/or experiences				Incredible eggs experience (in school)	Smithill's Farm	

Subject content KS1

Year 1	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Plants	**Materials**	**British Science Week**	**Seasonal Change**	**Animals including humans (focus on animals)**	**Animals including humans (focus humans)**
Main learning outcomes	To identify and describe the basic structure of a variety of common flowering plants including trees. To identify and name a variety of common wild and garden plants including deciduous and evergreen trees	I can distinguish between an object and the material from which it is made. I can identify and name a variety of everyday materials including wood, plastic, glass, metal, water and rock. I can describe the simple properties of a variety of everyday materials. I can compare and group together a variety of	New for 2026	I can observe changes across four seasons. I can observe and describe weather associated with the seasons and how day length varies.	I can identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals I can identify and name a variety of common animals that are carnivores, herbivores and omnivores. I can describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds	I can identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.

		everyday materials on the basis of their simple properties.			and mammals including pets)	
Trips and/or experiences					Blackpool Zoo	
Cross curricular links/ opportunities	• **Geography**- Looking at different climates. • **Art and design**- making own plant using a range of materials and scientific knowledge of plants. • **Maths**- measurements of plant growth	• **History**- links with science in the past and how scientific developments have helped us. • **Maths**- measurements of materials. Link to Venn diagrams • **DT**- selecting and choosing materials, making a product for a purpose.		• **Maths-** measuring rain fall and size of puddles. Using basic UV scales. Use of measuring equipment. Reading scales. • **IT**- use of videos and time lapse to support scientific learning. Use of data loggers. • **Geography**- link to seasons and temperature linked to day and night in different parts of the world. . • **PSHE**- how to keep ourselves safe in the sun.	• **Geography**- exploring animals around the world and comparing. • **Maths-** comparing sizes of animals/mini-beasts, taking measurements.	• **PSHE**- links to health and hygiene and how our bodies grow.
Year 2	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Materials	**Living things and their habitat**	**Animals including Humans**	**Animals including Humans**	**Plants**	**British Science Week**
Main learning outcomes	To identify and compare the suitability of a variety of everyday materials including wood, metal, plastic, glass, brick, rock, paper, cardboard for particular uses. I can find out how the shape of solid objects made from materials can be changed by squashing, bending, twisting and stretching.	Explore and compare the differences between things that are living, dead and things that have never been alive. Identify most living things that live in habitats to which they are suited and describe how different habitats provide for 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 habitat, including microhabitats. 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.	I 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. Describe the importance for humans of exercise, eating the right amounts of different types of food and hygiene	Can sequence the stages of a baby. Observe these changes. Can describe how animals change as they get older. Develops understanding of how insects change (more than a butterfly) through lifecycle diagrams. Can explain what humans and other animals need to survive. Can describe how to keep clean and healthy. Has a good understanding of the food plate and understands 'a healthy balanced diet'. Can adopt a menu to substitute food from the eat well plate. Understands the effect of exercise on the body.	To observe and describe how seeds and bulbs grow into mature plants. Find and describe how plants need water, light and a suitable temperature to grow and stay healthy.	New for 2026

Trips and/or experiences						
Cross curricular links/ opportunities	• **ART/DT**- Suitability of materials, making houses. • **IT**- use of videos to support scientific learning. • **Maths-** completing tables and reading data • **PSHE**- how to keep ourselves safe in the dark using reflectors.	• **Geography**- Exploring biomes around the world and climates. • **Maths**- completing tables. • **DT**- creating biomes. • **Art-** drawing own animals from interpreting data.	• **History**- Exploring scientists in the past • **Maths-** reading tables. • **IT**- Using search engines to find information. Use of videos to explain scientific content. • **Art**- create own art piece using fruits- use artist Giuseppe Arcrimbolo.	• **PSHE**- links to health and hygiene and how our bodies grow. Links to offspring and growing up. Links to drugs and medicines and how to keep our bodies healthy. Links to healthy eating. • **DT**- Links to food technology to prepare foods using the food groups.	• **Maths**- sorting seeds using different criteria- Venn diagram. Collecting data in tables. Reading thermometers. Measuring. • **Art**- careful pencil drawings of leaves using observation skills- adding detail. • **Geography**- where do fruits come from. • **DT**- Food technology- tasting different fruits and vegetables.	

Subject content KS2

Year 3	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Light	**Animals including humans**	**Rocks and Soil**	**Forces and Magnets**	**Plants**	**British Science Week Activities**
Main learning outcomes	To recognise we need light in order to see things and that dark is the absence of light. Light is reflected from surfaces. Recognise that light from the sun can be dangerous and that there are ways to protect your eyes. Recognise that shadows are formed when light from a light source is blocked by an opaque object. Find pattens in the way that the shadows change.	I can identify that humans and some other animals have skeletons and muscles for support, protection and movement. I can identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat.	To compare and group together different kinds of rocks on the basis of their appearance and simple physical properties. To describe in simple terms how fossils are formed when things that have lived are trapped within rock. To recognise that soils are made from rock and organic matter.	I can compare how things move on different surfaces. I notice that some forces need contact between two objects, but magnetic forces can act at a distance. I can observe how magnets attract or repel each other and attract some materials and not others. I can 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. I can describe magnets as having two poles. Predict whether two magnets will attract or repel each other, depending on which poles are facing.	I can identify and describe the functions of different parts of a flowering plant. I can explore the requirements of plant life and growth. I can investigate the way in which water is transported within plants. I can explore the part that flowers play in the lifecycle of flowering plants including pollination, seed formation and seed dispersal.	New for 2026

Trips and/or experiences		Aut 1- Redhouse farm				
Cross curricular links/ opportunities	**Literacy**- interpreting results and using and spelling scientific words correctly. Darkest Dark book for stimulus. **Maths**- Using tables and Venn diagrams. Measuring accurately. Using angles. **DT**- evaluating the effectiveness of different materials. **PSHE**- Safety when in the sun. Protect eyes and skin. **IT**- Use of data loggers/apps to measure light.	**PSHE-** links to health and balanced diets. **Maths**- using tables to record and classify. Use bar charts to record results. Read scales. **DT-** to know how different foods help our bodies, use different materials to build models. **Literacy**- spelling scientific words correctly and writing ideas in a logical way. **PE-** skeleton relay. **IT**- using apps and ICT to research.	**Maths**- Using keys and grouping. Creating recording tables and looking for patterns. Recording using Venn and Carrol diagrams. **Literacy-** Drama, role play, improvisation. **Geography-** rocks around the world and in different places e.g. Jurassic coast. **IT**- links with gaming and children's interest of Minecraft. **History**- learning about historical figures and fossilisation. **ART**- Make your own fossil.	**Literacy**- Use of books to create a hook for the lesson. Children to write in full sentences when interpreting and use conjunctions to explain thinking. Spell scientific words correctly. **Maths**- to create tables, line graphs and sorting diagrams. Reading scales on force metres. Use measuring equipment accurately. **PSHE**- safety with ears and loud sounds. **History**- learning about historical scientists linked to friction.	**Literacy**- interpreting results and using and spelling scientific words correctly. Using connectives to add details to predictions. **Maths**- Using tables and Venn diagrams. Bar and line graphs. Reading scales. **Geography**- Links to the water cycle. **ART**- careful observational drawings. **IT**- use of videos and online research to support learning. **History**- learning about historical figures and famous botanists and horticulturalists.	
Year 4	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Electricity	**Living Things and their habitats**	**Animals including humans**	**States of matter**	**British Science Week**	**Sound**
Main learning outcomes	Identify common appliances that run on electricity. Construct 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 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	-To recognise that living things can be grouped in a variety of ways. -To explore and use classification keys to help group. -Identify and name a variety of living things in the environment. -Recognise that environments can change and this can sometimes pose dangers to living things.	- 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. Construct and interpret a variety of food chains, identifying producers, predators and prey.	-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 or research the temperature at which this happens in degrees Celsius. -Identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature.	New for 2026	-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 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.

	metals with being good conductors.					
Trips and/or experiences						
Cross curricular links/ opportunities	• **Maths**- Using tables and Venn diagrams. • **PSHE**- Safety when using electrical appliances. • **History**- learning about historical development of electricity and scientists of the past and present. • **Geography/sustainability**- learn about different types of renewable energy and how this may be used in the future.	• **PSHE**- Looking after the environment and animals. Safety when collecting mini beasts • **Maths**- Using keys and grouping. Creating recording tables and looking for patterns. • **Geography**- different climates and explore how animals are adapted to different climates. • **MFL**- Learn animal names in a different language.	• **PSHE-** links to oral hygiene, importance of visiting the dentist. • **Maths**- using tables to record and classify. • **DT-** to know how different foods are broken down. • **Geography-** how to look after our environment.	• **DT**- evaluating the effectiveness of different materials. • **Maths**- Using tables and Venn diagrams. Using scales to read thermometer. Bar and line graphs. • **PSHE**- Safety when using a naked flame. • **Geography**- Links to the water cycle.		• **Maths**- to create tables, line graphs and sorting diagrams. • **PSHE**- safety with ears and loud sounds.
Year 5	**Autumn 1**	**Autumn 2**	**Spring 1**	**Spring 2**	**Summer 1**	**Summer 2**
	Properties and changes of materials	**Forces**	**Space**	**British science week Activities**	**Living things and their habitats**	**Animals including Humans**
Main learning outcomes	Compare and group together everyday materials based on their properties, including hardness, solubility, transparency, conductivity and response to magnets. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solid, liquid and gas to decide how mixtures might be separated including	I can explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. I can identify the effects of air resistance, water resistance and friction, that act between moving surfaces I can recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	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 approximate spherical bodies. Use Earth rotation to explain day and night due to the apparent movement of the sun across the sky.	New for 2026	Describe the differences in life cycles of a mammal, an amphibian, an insect and a bird. Describe the life process of reproduction in some plants and animals.	Describe the changes as humans develop from birth to old age.

	through filtering, sieving and evaporation. Give reasons based on evidence from comparative tests for the particular uses of everyday materials including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials and this kind of change is not usually reversible including changes associated with burning and the action of acid on bicarbonate of soda.					
Trips and/or experiences						
Cross curricular links/ opportunities	• **Maths**- Using tables and Venn diagrams. • **DT**- evaluating the effectiveness of different materials. • **PSHE**- Safety when testing and making own glue. Safety when dealing with flames and heat.	• **Maths**- Using tables and Venn diagrams. Using scales to read force metres. Bar and line graphs. Learn about weight and mass. • **IT**- Use of video to show abstract concepts. • **History**- learning about historical development of electricity and scientists of the past and present.	• **Maths**- size and mass. Measuring using cms, reading tables. Link to fractions when folding paper. • **PSHE**- Dangers about looking at the sun.		• **PSHE**- growing up and reproduction. • **Geography-** different climates and explore how animals are adapted to different climates. • **MFL**- Learn animal names in a different language.	• **PSHE-** links to puberty, relationships and healthy relationships. • **Maths**- Plotting data on a line graph. Using a table to collect data. • **Art-** Designing a poster for an audience to give information.

Year 6	Autumn 1	Autumn 2	Spring 1	Spring 2	Summer 1	Summer 2
	Living things and their habitats	**Evolution and Inheritance**	**Light**	**Animals including humans**	**Electricity**	**British Science Week activities**
Main learning outcomes	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. Give reasons for classifying plants and animals based on specific characteristics.	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.	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.	I can identify the main parts of the human circulatory system and describe the function of the heart, blood vessels and blood. I can describe the ways in which nutrients and water and transported within animals including humans. I can recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function.	To 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. To associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit. To use recognised symbols when representing a simple circuit in a diagram.	New for 2026
Trips and/or experiences						
Cross curricular links/ opportunities	• **Literacy**- following instructions. • **PSHE**- Hygiene. • **IT**- Use of stopwatch, videos and apps. (optional) time lapse videos • **DT**- Making bread, food hygiene. • **Maths**- sorting and classification. • **Art**- creating own creatures using a sorting system. Being creative. **History**- learning about scientists in the past and present.	• **Literacy**- create information poster and leaflet. Write coherent and detailed explanations. • **History**- looking at how animals and plants have evolved over time. Study of scientists in the past. • **IT**- stop motion technology. Use of video clips to help understand concepts. **Maths**- measurements and timelines. Recording time.	• **History**- recap the history of light. • **PSHE**- health and safety about not looking at the sun or shining light in the eye. • **DT**- Creating shadow by making shadow puppets. • **Maths**- sequencing of dates. • **Literacy**- follow instructions, write detailed explanations. **IT**- use of video and IT.	• **Literacy**- following instructions and create instructions. Create poster. • **History**- looking at how the pulse metre was invented and people from the past. • **Maths**- calculating average and using a stop watch for measurement. • **IT**- watch video/clips/apps to help children with their explanations. Use of data loggers, pulse metres. • **PE**- Exercises to increase heart rate. • **DT**- Healthy foods and balanced diets. **PSHE**- Medicines, drugs and mental health.	• **PSHE-** Danger with electricity • **Literacy**- Can record explanations. Follow instructions. • **IT**- Use data loggers, apps to measure Lux. • **DT**- Investigating different fruits and their properties. Create a new product for the market. Choosing suitable materials. **History**- learning about scientists in the past and present.	

Science
Progression of Disciplinary and Substantive strands.

STRAND		EYFS	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Substantive Knowledge	**Plants (Biology)**	Make observations and drawings of plants. Know similarities and differences between the natural world and contrasting environments. Can plant seeds and care for growing plants. Understand basic plant lifecycle. Know leaf, stem, petals.	Can name common plants and describe the basic parts of flowering plants (deciduous/evergreen) Can describe key features of trees and plants e.g. shapes of leaves, colour of flower, blossom. Can use photos to talk about how plants change. Can talk about plant lifecycles. Know basic parts of plant e.g. leaf, stem, petal, flower, stalk, bud, roots, fruit, bark, blossom.	Can describe how plants have grown from seeds and bulbs and how they have developed over time. Know conditions for plant growth. Can spot similarities and differences in bulbs and seeds. Confident in ordering parts of the plant lifecycle. Know all parts of the plant and their function. Know terms: light, shade, sun, warm, grow, healthy, growth, germinate.	Can explain the function of the parts of a flowering plant. Can explain the life cycle of a flowering plant lifecycle including pollination, seed formation, seed dispersal and germination. Know different methods of seed dispersal. Know the requirements of plant growth and how water is transported through the plant. Know how the sun helps plants photosynthesis. Know terms: photosynthesis, pollen, pollination, absorb, nutrients, reproduce, germination, stamen and style.	Can classify plants in different ways (Living things)	Can explain the lifecycles and processes of a range of different plants and trees. Can use ID guides to identify plants. (Living things)	Can classify plants in different ways using observable characteristics/ similarities and differences. Give reasons for classifying plants based on characteristics (Living things)
	Animals including humans (Biology)	Can name a range of animals e.g. farm/jungle. Can group using basic characteristics e.g. land/sea, 4 legs, can fly/cant fly.	Can name a range of animals which include animals from each of the vertebrate groups. Understand and categorise animals who are herbivore, carnivore and omnivore.	Can describe how animals change as they get older. Know names of animals and their offspring e.g. goat-Kid.	Can name the main bones in the skeletal system such as skull, ribs, humerus, vertebrae, pelvis, ulna, carpals, radius, femur,	Can identify and label and draw main parts of the digestive system and explain the process. Know the different types of	Can explain the changes that take place in boys and girls during puberty. Can explain how a baby changes physically as it grows and	Can identify, label and draw parts of the circulatory system e.g. heart, blood vessels, capillaries, arteries, blood. Understand the

		Can name and point to different body parts e.g. head, body, tummy, knees, legs, arms, toes, eyes, ears, mouth, nose, hair, fingers. Know basic senses e.g. touch, taste, hear, see.	Describe and compare animals based on observable characteristics. Know terms: reptile, amphibian, mammal. Can name, draw and label parts of the human body and say what sense is associated. Can name the 5 senses.	Can order the lifecycle of different animals e.g. butterfly. Can explain what humans and animals need to survive e.g. food, sleep, exercise, water, shelter. Know about microorganisms and how to keep hygienic. Understand the term balanced diet and can identify some food groups. Understand the effects of exercise on the body. Know terms: offspring, nutrition, reproduce, exercise, hygiene, microorganism, germs.	phalanges, patella, tibia, tarsals, fibula, metatarsals. Know the function of the skeletal system. Can describe how muscles and joints help to move. See similarities and differences in skeletons can classify into endoskeleton, exoskeleton and hydrostatic skeleton. Can name different nutrients found in food. Know the different food groups and why we need to eat a balanced diet.	teeth in their mouth: molars, pre molars, canines and incisors and their function. Can identify animals and classify based on their teeth whether they are herbivore, omnivore and carnivore. Can order and draw a range of lifecycles and food chains. Can identify the producer, predators and prey.	what it is able to do at each stage. Understand that different animals have different gestation periods. Know the importance of physical and mental health.	function of the different parts. Understand how nutrients are transported around the body within animals and humans. Know the impact of a balanced diet, exercise and lifestyle on the way their body's function. Recognise the impact on all body systems learned so far.
	Living things/ Evolution and inheritance (biology)	Can name some plants and animals. Can explore habitats and know where some animals live. Can compare and describe plants and animals.	Know common plants and trees (plants) Identify and name common animals (animals) Know herbivore, carnivore and omnivore (animals) Describe and compare variety of animals (animals)	Can find a range of items which are dead, living and never been alive. Know what a habitat and micro habitat is and identify animals which live in different habitats. Can talk about features of animals and plants and how they are suited to live in particular habitats. Can construct a simple food chain using terms producer, prey, predator, energy.	Identify and describe functions of different plants. (Plants) Identify and describe different animals and how they are adapted to live in different environments. Understand the term climate (Animals) Can explain how a fossil is formed (Rocks).	Can name living things in a range of habitats, giving key features that helped identify them. Can give examples of how an environment might change both naturally and due to human impact. Explain how changes in environment can be dangerous to animals and lead to extinction. Know that some	Describe the lifecycles of mammals, amphibians and insects using diagrams. Can describe similarities and differences between them. Understand the term reproduction in plants and animals.	Can give examples in the five vertebrate groups and some in the invertebrate group. Can give key characteristics of these groups. Can give examples of flowering and non-flowering plants. Can identify unknown plants using ID and classification charts. Can explain why animals belong to groups. Know that Carl Linnaeus

				Can identify different sources of food and understand where food comes from.		animals hibernate.		classify plants and animals. Can explain the process of evolution and give examples of how plants and animals are suited/adapted to their environment. Give examples of how animals have evolved over time. Understand that fossils give us evidence of the past and know the process of fossilisation.
	Seasonal Changes (biology) Earth and Space (Physics) Light/Sound (physics)	Know the four seasons Can experience different seasons and describe how they feel. Can comment on the environment e.g. leaves on the ground. Can name some clothes they may wear. Know some weather e.g. rain, wind, sun, snow, cloud. Understand the terms night/day	Can name the four seasons and identify in the year when they occur. Can observe and describe the weather in different seasons. Can describe days being longer in summer and shorter in winter. Compare seasons.	Know that the sun rises and sets. Understand that we have night and day. Know why the sun helps plants grow. (plants) Know that it is dangerous to look at the sun (animals)	Light- Can describe how we see objects in light and describe dark as the absence of light. Know it is dangerous to look at the sun. Understand the term ultra violet. Know the terms transparent, translucent and opaque. Can describe how shadows are formed Predict which materials will be more/less visible. Know the term reflective and why reflective materials are useful.	Sound- Can describe different types of objects producing different sounds. Know that sound is caused by vibrations. Can describe how sound travels through different mediums e.g air, water, metal. Can find patterns between pitch and volume and the features of the objects producing it. Know that sounds get fainter as the distance from the sound increases.	Earth and space- Know how the earth and moon move. Know different planets in the solar system. Can understand night and day by explaining the rotation of the earth on its axis. Understand why shadows change using scientific vocabulary and the position of the sun. Can explain how a sundial works. Can explain why we have time zones.	Light- Can describe using diagrams how light travels in straight lines, either from sources or reflected from other objects into our eyes. Can explain how we see things and can label basic parts of the eye and explain their function. Can describe with diagrams how light travels past translucent or opaque objects to form shadows of the same shape. Know how to change the size of shadows by moving objects

								closer/further from light source.
	Materials (Chemistry) **Rocks (Chemistry)**	Can talk about the similarities and differences between materials. Can describe using basic words. They can group materials based on how they feel or look like.	Can label a picture of an object based on what it is made of. Can describe the properties of materials. Can sort materials using its properties. Know terms: wood, plastic, glass, metal, water and rock.	Compare the suitability of different materials including wood, metal, plastic , glass, brick, rock, paper, cardboard, water. Know that shapes of solid objects can be changed by squashing, bending, twisting and stretching. Can describe similarities and differences.	Compare and group types of rock and give physical features of each. Explain how a fossil is formed. Explain that soils are made from rocks and also contain living/dead matter. Classify rocks in a variety of ways using scientific vocabulary. Test properties of rocks. Describe materials using transparent, translucent and opaque.	Can name properties of solids, liquids and gasses. Can explain process of melting and freezing. Know the terms evaporation and condensation. Can describe the water cycle. Know materials have different melting points. Can test a variety of materials to answer questions.	Can explain every day uses of materials. Can explain what dissolving is. Can name equipment for filtering and sieving. Know how to recover substances from solutions or mixtures by evaporation, filtering or sieving. Can describe reversible and non-reversible changes to materials and give examples.	Recognise that things have changed over time and fossils provide information about living things that inhabited the Earth millions of years ago. (Evolution and Inheritance)
	Forces (Physics) **Electricity (Physics)**	Shows skills in making toys work by pressing parts or lifting flaps to achieve effects such as sound, movement or new images. Understand push and pull.	Understand the terms push and pull. Can move objects by applying a force such as pushing a car.	Know how different materials can be changed by applying a force such as squashing, bending, twisting and stretching.	Compare how things move on different surfaces. Can give examples of forces in everyday life. Name a range of magnets. Know that magnets have a north and south pole. Can show how the poles attract and repel. Can draw diagrams to show the attraction and repulsion between poles of magnets. Can name magnetic and non-magnetic materials.	Electricity- can name the components in a circuit. Can make a simple circuit. Can control a circuit using a switch. Can name some conductors and insulators. Can use drawings to represent their circuits. Can describe how a circuits works. Can name some appliances that run on battery/mains. Know how to make a bulb brighter.	Can explain the effects of gravity acting on an unsupported object. Can give examples of friction, water resistance and air resistance. Can give examples of the benefits of high/low friction, water resistance and air resistance. Can demonstrate how pulleys, levers and gears work. Know that these systems can make lifting heavy objects easier.	Understand different forces and can apply this knowledge across different subjects e.g. geography. Electricity- Understand voltage and amps. Know how to make bulbs brighter, buzzers louder. Can label and name components in a circuit. Can draw circuits using symbols. Make circuits to solve particular problems such as a quiet and a loud burglar alarm.

Disciplinary Knowledge	**Asking Questions**	Question why things happen. Ask questions to find out how things work.	Can ask simple questions. Can ask yes and no questions to sort and classify. Can raise own questions.	Can ask simple questions relevant to the topic. Know their questions can be answered in different ways. Can use a range of question stems.	Can raise questions can carry out tests with support to find things out. Can write a range of questions relevant to the topic. Can answer questions posed.	Can ask a range of questions to sort and classify. Can write a range of questions using own scientific knowledge. Can answer questions independently using secondary sources.	Use scientific experiences to explore ideas and raise different higher order questions. Can create further questions to investigate. Can raise questions and suggest reasons for similarities and differences	Can raise questions to further prove or disprove a scientific enquiry. Can raise questions about a range of phenomena.
	Make predictions	Can make simple predictions based on comparisons e.g. float or sink.	Can make basic predictions over things they can see or their own ideas. Use some scientific vocabulary.	Draws knowledge from observations to make predictions. Can begin to test predictions and later answer questions.	Draws on knowledge to make predictions. Can add detail to their predictions. Make further predictions based on what's observed or tested.	Predictions re detailed and explains their thinking, they link to tests, data and use scientific language. Raise further predictions from results based on patterns.	Use subject knowledge, observations or previous learning to make predictions. Add detail and explanations. Can identify a range of variables which could affect their investigations.	Use test results to make predictions to set up further comparative tests. Uses evidence to support predictions. Develop predictions based on research and scientific knowledge.
	Observation and Measurement	Observe and describe what they see using everyday language. Use equipment such as magnifying glasses and viewers. Take measurements by comparing and notice simple patterns e.g. bigger/smaller.	Can identify and group, compare and contrast using observations, video and photographs. Can observe changes over time and describe changes. Can use magnifying glasses, viewers and digital microscopes. Use simple measurement and equipment such as egg timers and stop watches. Use non-standard measures.	Observe closely and select the correct equipment. Can identify a range of plants using ID charts. Observe how plants and animals grow and record findings. Notice similarities and differences. Use observations and ideas to suggest answers to questions. Use standard units to estimate and measure. Use rulers, scales, thermometers and measuring vessels	Make systematic and careful observations. Select own equipment for observing including digital cameras. Look for naturally occurring patterns. Collect data from own observations. Can make observations and decide how to record them to answer a question. Take accurate measurements using standard units. Use a range of equipment and begin to read digital measurements	Make systematic and careful observations to ask questions and group objects using classification keys. Observe closely and explain processes. Identify similarities, differences or changes related to simple scientific ideas or processes. Take and record accurate measurements using standards units to 2dp. Use data loggers to	Observe carefully and make comparisons. Observe changes over a period of time. Make decisions about what to observe to answer questions. Use observation skills and ID kits to identify plants and animals. Take repeat measurements where appropriate. Can find the average of data. Select measuring equipment and use accurately e.g. ruler, tape	Can make accurate drawings of plants and animals based on observations. Take measurements using a range of scientific equipment with increasing accuracy and precision, taking repeat readings where appropriate. When collecting measurements decide whether to increase sample size for validity and reliability.

				with a degree of accuracy.	from data loggers and stop watches	record. Use volt metres and begin to gather repeat readings to increase accuracy.	measure, trundle wheel, force metres.	Record measurements to 3dp. Use protractors, rulers, force metres, volt meters accurately
	Planning enquiries	Test out ideas and take risks through trial and error. Engage in open ended activities. Choose resources they need for their activity from their environment. Find ways to solve problems.	Begin to recognise ways they may answer scientific questions. Experience different types of enquiry including practical activities. Use resources provided by the teacher and suggest some resources of their own e.g. pipettes.	Can plan and carry out simple tests linked to the different types of enquiry. They can carry out a simple comparative test using some of their own ideas. Can suggest their own resources to carry out tests.	Can set up practical enquiries using comparative and fair tests. Use a range of scientific enquiry. Can investigate and answer on questions linked to shared planning frame. Understand some of the variables needed to be controlled with support. Use a range of equipment e.g. thermometers and data loggers.	Can identify the type of enquiry needed to answer a question. Follow a plan to carry out observations and tests. Use a planning approach with more independence identifying variables and what needs measuring. Children choose their method to carry out their investigation.	Recognise when and how to set up comparative and fair tests and explain which variables need to be controlled and changes. Understand what type of scientific enquiry is needed to answer and prove/disprove scientific questions or phenomenon.	Children choose the type of enquiry needed to carry out their investigation. Children can pose and answer their own questions, controlling variables where necessary independently. Decide whether sample size needs to be increased for validity. Identify a range of factors which may affect their investigation.
	Recording	Draw pictures or objects in their own environment. Can take photos of things that interest them. Can count results and start to make marks to record results. Can sort in at least 2 groups. Can create a class pictogram using pictures and objects.	Begin to show some accuracy in drawings, observations and use simple labels. Use scientific vocabulary provided by the teacher. Can complete a simple prepared table with some support and scaffolding. Can add marks to a chart to complete data.	Gather and record data to help answer questions. Record observations using photo video, drawings, labelled diagrams or in writing. Count results using tally charts. Use prepared tables to record results more independently. Use simple keys based on yes and no questions. Can sort into 2 groups with own categories and explain reason for choices. Record using prepared bar charts.	Record findings using scientific language, drawings and labelled diagrams including detailed labelling and written explanations based on observations. Can complete a table where they can add own headings and results. Use simple classification keys and Venn diagrams. Can use Carroll diagrams and give reasons for criteria. Can produce bar charts adding own	Record findings using systematic and careful observational drawings and labelled diagrams using scientific vocabulary. Children to present the same data in different ways. Can create own tables with headings. Can record using classification keys. Can use Venn and Carroll diagrams with accuracy. Can use discrete and continuous data using	Present results in a variety of ways to help answer questions. Can decide how to record from a range of approaches. Can record ideas using accurate diagrams using scientific language. Create own results table including cause and effect. Record results systematically and repeat readings. Use and develop classification keys. Can classify in a number of ways.	Record data and results with increasing complexity e.g. accuracy of measurements. Use scientific diagrams, models and labels accurately with clarity and using precise scientific language. Calculate mean and rage of a set of data. Can use and produce classification keys independently by posing questions. Can independently collect data and

					axis labels and headings.	line/scatter graphs. Can construct bar chart independently.	Use line or scatter graphs to calculate range in a set of data using different scales. Can produce line graphs with various increments.	produce scatter and line graphs. Can create bar charts and pie charts to present data.
	Interpreting and concluding	Offer explanations for why things happen- making use of some recently introduced scientific vocabulary. Develop own narrative and explain by connecting ideas or events. Develop vocabulary which meets the breadth of their experiences.	Can use evidence from simple tests when answering questions. With help begin to notice patterns and relationships. Talk about what they have found out and how they found it out. Can make comparisons and recognise biggest/smallest, most effective/least effective from data. Can use simple models to explain processes e.g. seasonal changes, lifecycles.	Communicate findings to an audience using relevant scientific language and illustrations. Can identify casual relationships and patterns in results. Can identify which results do not fit the overall pattern and explain findings. Refers to the table of results when describing what has happened. Draws a basic conclusion (with support from the teacher) using own scientific knowledge, observations and comparisons. Uses results of investigations to answer enquiry questions.	Draws conclusions based on observations. Can compare something using results and the conclusion is consistent with the data. Able to adjust opinion and predictions based on results. Can give reasons for results including any anomalies. Use simple scientific language to discuss ideas and communicate their findings in ways appropriate for different audiences orally and written	Draws simple conclusions from results to answer questions and support their ideas. Look for casual relationships in data and identify evidence that refutes/supports ideas. Report on findings to an audience orally and in writing using appropriate scientific vocabulary for a range of audiences. Children use evidence to suggest values for different items tested using the same method. Draw conclusions based on straightforward evidence and current subject knowledge to support their findings, Suggest improvements	Identify patterns and casual relationships that may be found in the natural environment. Children interpret data to generate simple comparative statements based on evidence. Use results to draw conclusions and can identify external factors that cannot be controlled e.g.temperature inside and outside. Use scientific language and illustrations to discuss, communicate and justify scientific ideas. Can use comparative statements to explain results and how things work.	Look for patterns and relationships using a suitable sample. Use oral and written forms such as displays to report conclusions, casual relationships and give an explanation of the degree of trust in their results. Makes suggestions for ideas that can be explored using pattern seeking. Can spot anomalies and identify results that do not fit the overall pattern. Use data to refute or support ideas or arguments. Focuses on scientific reasons for overall pattern rather than a comparison. Uses labelled diagrams to support their explanation. Use ideas from secondary sources to support their ideas, choosing

						and raise further questions.		appropriate websites. Create detailed models to explain processes such as circulatory system and lifecycles.
	Evaluating	Develop own narrative and explanations by connecting ideas or events. Talk about what they have found and say what worked well. Describe how things work in simple terms and make basic alterations and suggest things that did not work (e.g. this button does not work so press this one) Question why things happen. Come up with alternative ways of doing things through exploration. They can say or indicate by smiley faces/scale if they have achieved the learning objective.	With scaffolding and prompting can suggest simple improvements to their enquiries. Talk about some changes that could be made. Use simple success ladders to evaluate their tests or understanding against the learning objective.	With support can suggest improvements to their enquiries. Suggest some things that could be changed and evaluate why things went wrong. Use success ladders with multiple criteria to evaluate the test or their understanding against the learning objective.	Suggest improvements and raises further questions Use evidence and subject knowledge to refute statements. Make suggest improvements from enquiries. Make basic statements about what worked well and what they would change. Use success ladders confidently to evaluate their tests or understanding against multiple criteria and suggest simple next steps.	Evaluate and communicate their methods and findings. Suggest ways to improve what they have already done. Begin to evaluate different aspects of their enquiries such as equipment. Begin to understand how the enquiry improves outcomes from their questions. Use different charts to evaluate such as ranking scales, star diagrams and success ladders. Suggest points for development based on the weakest aspects.	Evaluate and decide when further observations, comparative and fair tests might be needed. Evaluate different aspects of their enquiries such as equipment and accuracy of measurements. State how the enquiry improves outcomes from their questions. Can relate their results to the question and state if their test has enabled them to answer it. Use a range of charts to evaluate such as ranking scales, star diagrams including those with negative numbers. Suggest next steps based on the weakest aspects and state how this will help them or the test progress or give different results.	Can describe and evaluate their own and other people's scientific ideas using evidence from a range of sources. Evaluate their choice of method, the control of variables, the precision and accuracy of measurements and the credibility of secondary sources. Use scientific language and evaluate how their enquiry has answered the question.