Science Overview 2024-2025

INTENT

At Bassingbourn Community Primary School, all children will have the opportunity to learn about the world around them so as to become scientifically literate citizens. All children will have the opportunity to observe, question, investigate and interpret the world around them using a variety of approaches and experiences. Through their learning, children will be able to build their knowledge, skills and understanding, equipping them with the diverse cultural capital required to be successful citizens in the modern world.

IMPLEMENTATION

At Bassingbourn, we plan our science based on the Kapow scheme of work, as a whole school approach. The whole school overview ensures that there is progression throughout the school and that children are building upon knowledge learnt in previous years. The units are designed so that pupils develop knowledge, skills and understanding of the world they live in. The science curriculum is designed to provide our children with science capital which refers to all the science-related resources, experiences and ideas that a child might have. We recognise that within classes, there is a wide variety of abilities and teachers provide suitable learning opportunities that are matched to the needs of all children. Teaching will be supplemented with trips, visits, assemblies as well as a yearly Science Week which will link the importance of science applied to other disciplines. In the Early Years Foundation Stage (EYFS), science is linked to different learning areas within the EYFS Framework.

IMPACT

Science is assessed using end of unit assessment tasks based on the units taught, in addition to teacher assessment and exemplification material. Children's attainment is recorded and analysed termly in order to track progression and provide intervention where appropriate. Teachers make use of curriculum journeys in order to help children track their own learning progress where children are encouraged to record their experiences and feelings - which they are also encouraged to discuss with their peers. Further information regarding assessment of impact is available in the Assessment Guidance.

Curriculum Overview

	Aut 1	Aut 2	Spr 1	Spr 2	Sum 1	Sum 2

Reception	**All about me** Our bodies and keeping them healthy	**Seasons** Discuss changes in the natural environment	**Seasons** Discuss changes in the natural environment	**Water** How do we use water?	**People who help us in the community** Teeth and tooth health	**Minibeasts** Identify, classifying and life cycles of minibeasts
	Be able to name some parts of their body with focus on facial features Know how to keep their bodies health and safe Know how to keep our teeth healthy and what can happen to our teeth if we don't look after them. Know some of the ways the seasons change throughout the year. Begin to talk about the idea of water pollution and how we can prevent it/keep ocean animal safe through the sharing of books Know the names of some sea/ocean creatures. Begin to understand how we use water and why we need water to survive Begin to talk about animals that are familiar to them with a focus on minibeast Be able to identify simple minibeasts and look for them in their environment, know how to safely look at minibeast and ensure no damage is done to them when looking in the local environment. Begin to develop their knowledge of the plant life cycle and some minibeasts e.g. butterfly, frog.					
Knowledge and skills	To know simple parts of the body. To know what they can do to keep themselves healthy and safe. Know that they used to be a baby and that they can do lots of things now they couldn't do when they were a baby.	Know some of the key features of autumn and identify them in their environment. Begin to link seasons with celebrations within them.	Know some of the key features of winter and spring and identify them in their environment		Know what a dentist is and how they help us to keep our teeth healthy. Know that a doctor could help us when we are poorly.	To know the names of some common minibeasts. To know where we might find some common minibeasts. To know the life cycle of a butterfly To know the life cycle of a simple flowering plant eg. sunflower.

Vocabulary	eyes, nose, mouth, ear, hair, head, arms, legs, feet, toes. healthy, food, fruit, vegetables, water, drink, sleep, eat, wash, brush, exercise baby, toddler, child, then, now, grow, younger, older	falling leaves, pinecones, conkers, colder, bonfire night, Christmas, Halloween,				
Year 1	**Forces and space -** Seasonal changes	**Materials -** Everyday materials	**Animals -** Sensitive bodies	**Animals -** Comparing animals	**Plants -** Introduction to plants	**Making connections -** Investigating science through stories
Knowledge	The name and order of the four seasons: spring, summer, autumn and winter. That it is unsafe to look directly at the Sun. The weather associated with the four seasons and how it changes (in the UK). That day length varies across the	Objects are items or things. A material is what an object is made from. A variety of everyday materials, including wood, plastic, glass, metal, water and rock. Property refers to how a material can be described.	The key parts of the human body (including head, neck, arms, elbows, legs, knees, face, ears, eyes, hair, mouth and teeth). The five main senses: sight, smell, hearing, taste and touch. The skin is used for touch, the tongue is used for taste, the nose is used for	A variety of common animals (including fish, amphibians, reptiles, birds and mammals). The main body parts of common animals (arms, legs, wings, tails, fins, head, trunk, horns, tusks and shell). A carnivore is an animal that eats other animals and to	A variety of common plants and how they differ. That deciduous trees lose their leaves seasonally but evergreen trees do not. The basic structure, including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches and stem, of a variety of	This unit revises the key knowledge from the previous Year 1 units.

	four seasons, with fewer daylight hours in the winter and more in the summer. About a range of jobs and careers that use scientific knowledge and methods, e.g. weather reporter.	Materials can be grouped based on their physical properties.	smell, the eyes are used for sight and the ears are used for hearing. A range of jobs and careers that use scientific knowledge and methods. About the work of modern-day scientists. There are spiritual, moral, social and cultural links with Science.	give some examples. A herbivore is an animal that eats only plants and to give some examples. An omnivore is an animal that eats both animals and plants and to give some examples. About famous scientists throughout history.	common plants, including flowering plants and trees. To begin to understand how plants grow and change over time. About famous scientists throughout history. About the work of modern-day scientists. There are spiritual, moral, social and cultural links with Science.	
Skills	Exploring the world around them and raising their own simple questions. Suggesting what might happen, often justifying with personal experience. Using their senses to describe, in simple terms, what they notice or what has changed.	Responding to suggestions on how to answer questions. Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable.	Recognising there are different types of enquiry (ways to answer a question). Using their senses to describe, in simple terms, what they notice or what has changed. Using non-standard units to measure and compare.	Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. With support, deciding if suggested observations are suitable.	Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. With support, deciding if suggested	This unit revises the key skills from the previous Year 1 units.

	Gathering specific information from one simplified, specified source. Using a prepared table to record tally frequency. Representing data using pictograms. Using their results to answer simple questions.	Suggesting what might happen, often justifying with personal experience. Using their senses to describe, in simple terms, what they notice or what has changed. Using a prepared table to record results including simple observations. Grouping based on visible characteristics. Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	Drawing and labelling simple diagrams. Using a prepared table to record results including numbers and simple observations. Grouping based on visible characteristics. Using their results to answer simple questions.	Using their senses to describe, in simple terms, what they notice or what has changed. Gathering specific information from one simplified, specified source. Drawing and labelling simple diagrams. Grouping based on visible characteristics. Representing data using pictograms and block charts. Using their results to answer simple questions.	observations are suitable. Ordering a simple method. Suggesting what might happen, often justifying with personal experience. Using their senses to describe, in simple terms, what they notice or what has changed. Using non-standard units to measure and compare. Gathering specific information from one simplified, specified source. Drawing and labelling simple diagrams. Using a prepared table to record results including: numbers; simple observations.	

					Grouping based on visible characteristics. Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	
Vocabulary	deciduous tree evergreen tree season weather	absorbent fabric glass group material metal object plastic rock tough waterproof wood	compare group hearing pattern sense(s) sight smell taste touch	amphibian bird carnivore compare diet difference fish group herbivore mammal observe omnivore reptile scientist similarity	bulb deciduous diagram evergreen flower fruit garden plants group growth leaf measure observe roots seed stem trunk wild plants	This unit revises the key vocabulary from the previous Year 1 units.
Year 2	**Living things -** Habitats	**Living things -** Microhabitats	**Materials -** Use of everyday materials	**Animals -** Life cycles and health	**Plants -** Plants growth	**Making connections -** Plant-based materials

Knowledge	To begin to understand some of the life processes, including movement, reproduction, sensitivity, growth, excretion and nutrition. To know the difference between things that are living, dead, and things that have never been alive, using some of the life processes. To know a variety of plants and animals and describe some differences. To name a variety of habitats, including woodland, ocean, rainforest and coastal. To know that a habitat is the environment where an animal or plant lives/grows because it provides what they need to survive.	A variety of plants and animals and describe some differences. That a habitat is the environment where an animal or plant lives/grows, because it provides what they need to survive. That a microhabitat is a very small habitat (e.g. under stones, logs and leaf litter). That living things depend upon each other (e.g. for food, shelter).	Objects are made from materials that suit their uses. One material can be used for a range of purposes. Different materials can be used for the same purpose. A push or pull must be applied to change the shape of a solid object. Solid objects can be stretched, twisted, bent or stretched. Different solid objects may take different amounts of force to change shape. A range of jobs and careers that use scientific knowledge and methods. Science in the news and recent discoveries. Spiritual, moral, social and cultural links with Science.	That baby, toddler, child, teenager and adult are human life cycle stages. There are differences in the life cycles of different animals. Humans grow as they age. The basic survival needs of animals are air, water and food. Personal hygiene prevents the spread of germs. Washing our hands and changing our clothes are ways to keep clean. Exercise can improve performance and well-being. The five food groups are	Seeds and bulbs grow into seedlings by producing roots and shoots. Seedlings grow into mature plants by developing parts such as roots, stems, leaves and flowers. Seeds need water and warmth to germinate. Plants need water, light and a suitable temperature for growth and health. A range of jobs and careers that use scientific knowledge and methods. There are spiritual, moral, social and cultural links with Science.	This unit revises the key knowledge from the previous Year 2 units.

	To know that living things depend upon each other (e.g. for food, shelter.) To understand that a food chain can be used to show how animals obtain food from eating either plants and/or other animals.			carbohydrates, fruits and vegetables, dairy and alternatives, protein and oils and spreads. Humans require a balanced diet to stay healthy.		
Skills	Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Gathering specific information from one simplified, specified source. Using a prepared table to record results including simple observations. Grouping based on visible characteristics.	Exploring the world around them and raising their own simple questions. Recognising that there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. With support, deciding if suggested observations are suitable. Ordering a simple method.	Recognising there are different types of enquiry (ways to answer a question). Using non-standard units to measure and compare. Using a prepared table to record results including numbers. Grouping based on visible characteristics. Representing data using pictograms and block graphs. Using their results to answer simple questions.	Recognising there are different types of enquiry (ways to answer a question). Beginning to use standard units and read simple scales to measure and compare. Beginning to use simple measuring equipment to make approximate measurements. Gathering specific information from one simplified, specified source.	Exploring the world around them and raising their own simple questions. Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable.	This unit revises the key skills from the previous Year 2 units.

		Suggesting what might happen, often justifying with personal experience. Using their senses to describe, in simple terms, what they notice or what has changed Gathering specific information from one simplified, specified source. Recording results using simple observations and tally frequency. Organising questions to create a simple classification key. Using results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.		Using a prepared table to record results including numbers. Using their results to answer simple questions.	Suggesting what might happen, often justifying it with personal experience. Using their senses to describe, in simple terms, what they notice or what has changed. Beginning to use standard units and read simple scales to measure and compare. Beginning to use simple measuring equipment to make approximate measurements. Drawing and labelling simple diagrams. Using a prepared table to record results including: numbers; simple observations. Using their results to answer simple questions. Beginning to recognise when	

					results or observations do not match their predictions.	
Vocabulary	alive carnivore (Y1) dead depend diet (Y1) energy food chain growth (Y1) habitat herbivore (Y1) life processes mammal (Y1) omnivore (Y1) predator prey shelter sort (Y1)	food chain microhabitat minibeast research results test	elastic fabric (Y1) flexible glass (Y1) material (Y1) metal (Y1) object (Y1) plastic (Y1) property rock (Y1) suitable wood (Y1)	basic needs egg health hygiene life cycle live young pupa spawn survive teenager toddler tadpole	bulb (Y1) diagram (Y1) energy flower (Y1) germinate growth (Y1) leaf (Y1) life cycle nutrient observe (Y1) seed (Y1) shoot stem (Y1)	This unit revises the key vocabulary from the previous Year 2 units.
Year 3	**Animals -** Movement and nutrition	**Forces and space -** Forces and magnets	**Materials -** Rocks and soils	**Energy -** Light and shadows	**Plants -** Plant reproduction	**Making connections -** Does hand span affect grip strength?
Knowledge	Animals can be grouped based on the presence of a skeleton. The skeleton in humans and some animals is used for movement, protection and support.	Examples of contact and non-contact forces. Some forces are a result of contact between two surfaces but some forces can act at a	That rocks can be grouped based on their appearance or properties (e.g. colour, texture, hardness and permeability). That rocks may contain grains, crystals or fossils.	Light travels from a source (e.g. the Sun, light bulbs and torches). Light is needed to see things and that dark is the absence of light.	The functions of the basic parts of a plant and the relationship between structure and function. Water is transported within a plant from the root, through the stem, to the leaves.	This unit revises the following key knowledge from the previous Year 3 units.

	The muscular system in humans and some animals works with the skeleton for movement. The main bones in the body. Animals, including humans, need the right types and amount of nutrition. Humans cannot make their own food; therefore, they eat to get the nutrition needed. There are nutrient groups (carbohydrates, protein, fats, fibre, vitamins, minerals and water) with their own functions in the body. A balanced diet should include all nutrient groups. Animals have different diets.	distance (e.g. magnetism). Magnets have a north and south pole. Some examples of magnetic materials, including iron and nickel, and how they react to a magnet and each other. Some different examples of magnets, including bar, horseshoe, button and ring. Some uses of magnets. Friction is a contact force that acts between two surfaces to slow an object down. Magnetism is a non-contact force that affects objects containing magnetic metal.	That grains and crystals appear differently and can be used to classify rocks. That soils are made from rocks and dead matter. The relationship between the properties of rocks and their uses. That fossils can form from the remains of living things. That rocks can change over time (e.g. erosion and weathering).	Light from the Sun can be dangerous and how to protect their eyes. All materials reflect light. Shadows form when the light from a light source is blocked by an opaque object. Shadows change as a result of changing the position of the light source and changing the distances between the light source, object and surface. Shadows change position and length throughout the day as the Sun changes position in the sky. Famous scientists throughout history. A range of jobs and careers use scientific knowledge and methods. There are spiritual, moral, social and	Plants need water, light, air, nutrients and a suitable temperature for growth and health. The needs for growth and health vary from plant to plant. The life cycle of a plant from seed to mature plant. Flowers are the reproductive organs of a plant. Pollination is the transfer of pollen to the female (part of the) flower. The process of seed formation is the growth of a seed after pollination. Different methods of seed dispersal and the benefits of each.	

	There are famous scientists throughout history. There are a range of jobs and careers that use scientific knowledge and methods. Scientific work is taking place with modern-day scientists. There are science events in the news and recent discoveries. There are methods and equipment used by scientists throughout history that have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of Science. There is current scientific research taking place with aims for the future.	The opposite poles of a magnet attract one another and like poles repel one another. Rougher surfaces have more friction between them than smoother surfaces. The strength of different magnets may vary.		cultural links with Science. Methods and equipment used by scientists throughout history and how these have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of Science. Collaboration and peer reviewing are essential for effective scientific progress.		

Skills	Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. Gathering specific information from a variety of sources. Using a prepared table to record results including more detailed observations. Grouping based on visible characteristics and measurable properties. Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to identify new questions that would further the enquiry.	Beginning to select from options which variables will be changed, measured and controlled. Suggesting what observations to make and how long to make them for. Planning a simple method, verbally and in writing. Gathering specific information from a variety of sources. Beginning to draw more scientific diagrams by labelling with more scientific vocabulary and using arrows. Representing data using bar charts. Writing a conclusion to summarise findings using simple scientific vocabulary.	Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. Gathering specific information from a source. Beginning to draw more scientific diagrams by: Drawing in 2D to produce simple line diagrams. Labelling with more scientific vocabulary. Grouping based on visible characteristics and measurable properties. Representing data using bar charts. Beginning to suggest how one variable may have affected another.	Beginning to raise further questions during the enquiry process. Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered. Making predictions about what they think will happen by using scientific knowledge and/or personal experience to explain their prediction. Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed.	Beginning to raise further questions during the enquiry process. Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered. Beginning to suggest what observations to make and how long to make them for. Making predictions about what they think will happen by using scientific knowledge and/or personal experience to explain their prediction. Using their senses to describe, in more	This unit revisits the working scientifically skills covered in Year 3, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.

		Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Exploring the uses of friction and magnets in everyday life and industry.	Beginning to quote results as evidence of relationships. Beginning to use identified patterns to predict new values or trends.	Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. Using a prepared table to record results including more detailed observations. Using tables with more than two columns. Identifying and adding headings to tables. Beginning to design simple results tables. Grouping based on visible characteristics and measurable properties.	detail and with simple scientific vocabulary, what they notice or what has changed. Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. Using a prepared table to record results including more detailed observations. Using tables with more than two columns. Identifying and adding headings to tables. Beginning to design simple results tables. Grouping based on visible characteristics and	

				Reading the value of bars with greater accuracy. Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Identifying data that does not fit a pattern (anomalous data). Recognising when results or observations do not match their predictions. Beginning to use identified patterns to predict new values or trends. Beginning to identify steps in the method that need changing	measurable properties. Reading the value of bars with greater accuracy. Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships. Identifying data that does not fit a pattern (anomalous data). Recognising when results or observations do not match their predictions. Beginning to use identified patterns to predict new values or trends.	

				and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them. Beginning to identify new questions that would further the enquiry.	Beginning to identify steps in the method that need changing and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them.	
Vocabulary	balanced diet bone carbohydrate conclusion fat fibre invertebrate joint measure (Y1) mineral movement muscle nutrient protection protein record research (Y2) skeleton support vertebrate vitamin	attract bar chart conclusion contact force diagram (Y1) force friction investigation magnet magnetic material magnetism method non-contact force north pole plan (Y1) results (Y2) record repel south pole variable	bar chart conclusion crystal diagram (Y1) fossil grain group (Y1) hard hardness observe (Y1) predict (Y2) record research (Y2) rock sediment sedimentary rock sedimentation soft soil	bar chart cast (a shadow) conclusion group (Y1) investigation light source luminous non-luminous observe (Y1) opaque measure (Y1) patten (Y1) predict (Y2) record reflect reflection reflective (shiny) results table shadow the Sun translucent transparent trustworthy variable	bar chart conclusion female flower (Y1) flowering plant fruit (Y1) male pattern (Y2) pollen pollination predict (Y2) record reproduction results table seed (Y1) seed dispersal transport variable	bar chart bone carbohydrate conclusion evaluate fat flower fruit friction grip strength joint light source material muscle nutrition opaque predict property protein seed shadow trustworthy variable

Year 4	**Animals -** Digestion and food	**Energy -** Electricity and circuits	**Materials -** States of matter	**Energy -** Sound and vibration	**Living things -** Classification and changing habitats	**Making connections -** How does the flow of liquids compare?
Knowledge	The main organs of the human digestive system are the mouth, teeth, tongue, oesophagus, stomach, small and large intestines and have different functions. The different types of human teeth are incisors, canines, premolars and molars and have different functions. Teeth can be damaged by sugary and acidic food, for example. It is important to brush your teeth twice a day, make good food choices and visit the dentist regularly. The teeth of carnivores and herbivores are	That all electrical appliances need a power source, including batteries or mains electricity. That an electrical circuit needs a complete path for the electrical charge to flow through. The main components in a series circuit. The precautions for working safely with electricity. That some materials allow electric charge to pass through them quickly and these are known as electrical conductors (e.g. metals). That some materials do not allow electrical charge to pass through them easily and these are	All substances around us can exist as solids, liquids and gases. A property of a solid is that it keeps its shape unless a force is applied to it. A property of a liquid is that it can flow freely and take on the shape of a container. A property of a gas is that it does not have a fixed shape and can escape from an unsealed container. Heating causes solids to turn into liquids (melting) and liquids to turn into gases (evaporating). Cooling causes gases to turn into liquids (condensing)	Sound is a result of vibrations. Vibrations from sounds travel through mediums to the ear. An insulating material reduces the amount of vibrations that pass through it and this can be used to protect the ears from damaging sounds. Different materials provide different amounts of insulation against sound. A variety of ways to change the pitch or volume of a sound. Quicker vibrations cause higher-pitched sounds and slower vibrations cause lower-pitched sounds.	Living things can be grouped in different ways. A classification key can be used to group and identify plants and animals. Vertebrates are animals that have a backbone and invertebrates are animals that do not have a backbone. Plants can be grouped into flowering or non-flowering varieties. Flowering plants include grasses and non-flowering plants include ferns and mosses. There are five main vertebrate groups: birds, mammals, reptiles, amphibians and fish.	This unit revises the key knowledge from the previous Year 4 units

	different for a reason. Predators hunt for their food and prey are the animals being hunted. Producers make their own food. Food chains begin with a producer, followed by consumers and arrows to show the energy passed on. Famous scientists throughout history. There are a range of jobs and careers that use scientific knowledge and methods. There is work taking place by modern-day scientists. There are spiritual, moral, social and cultural links with science. There are different methods and equipment used by	known as electrical insulators (e.g wood and plastic). That metals are used for cables and wires because they are good conductors of electricity. That plastic is used to cover cables and wires because it is a good insulator. That an open switch breaks a series circuit so the components will be off. That a closed switch completes a series circuit so the components will be on. The relationship between bulb brightness and the number of bulbs in a circuit.	and liquids to turn into solids (freezing). Water can exist as a solid, a liquid or a gas. The melting point of water is zero degrees Celsius and the boiling point of water is 100 degrees Celsius. Water flows around the world in a continuous process called the water cycle. In the water cycle, evaporation is when bodies of water are heated and turn into water vapour. In the water cycle, condensation is the process of water vapour cooling to form water droplets in clouds, which can result in precipitation. The rate of evaporation increases as the temperature rises.	Stronger vibrations cause louder sounds and weaker vibrations cause quieter sounds. Sounds get fainter as the distance from the sound source increases.	Invertebrate groups include snails, slugs, worms, spiders and insects. Habitats can change throughout the year, which can be dangerous for living things. Humans can have both a positive and negative impact on the environment.	

	scientists throughout history and these have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of science.					
Skills	Beginning to select from options which variables will be changed, measured and controlled. Beginning to design simple results tables. Grouping based on visible characteristics and measurable properties. Beginning to suggest how one variable may have affected another. Beginning to use identified patterns to predict new values or trends. Beginning to identify steps in the method	Considering what makes a testable question. Beginning to recognise that there are different types of enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered. Planning a simple method, verbally and in writing. Beginning to write a simple method in numbered steps. Selecting and beginning to decide	Considering what makes a testable question. Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Drawing in 2D to produce simple line diagrams. Labelling diagrams with more scientific vocabulary. Gathering specific information from a variety of sources. Beginning to use identified patterns to	To suggest what observations to make and how long to make them for. To observe closely how different instruments create a sound. To research how cetaceans communicate underwater. To present results using a bar chart. To design simple results tables. To identify when results or observations do not match predictions.	Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. Recording data in Carroll and Venn diagrams. Using a prepared table to record results, including more detailed observations. Using tables with more than two columns. Grouping based on visible characteristics and measurable properties.	This unit revisits the working scientifically skills covered in Year 4, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.

	that need changing and suggest improvements. Beginning to identify which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by reflecting on the quality of results (accurate measurements and maintaining control variables).	what simple equipment might be used to aid observations and measurements. Making predictions about what they think will happen by predicting a trend by considering how the changing variable will affect the measured variable. Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. Beginning to draw scientific diagrams that are in 2D and simple line diagrams. Using a prepared table to record results including more detailed observations. Using tables with more than two columns.	predict new values or trends. Writing a conclusion to summarise findings using simple scientific vocabulary.		Populating a pre-prepared branching and number key. Choosing appropriate questions for classification keys. Gathering specific information from a variety of sources.	

		Identifying and adding headings to tables. Beginning to design simple results tables. Grouping based on visible characteristics and measurable properties. Writing a conclusion to summarise findings using simple scientific vocabulary. Beginning to suggest how one variable may have affected another. Beginning to use identified patterns to predict new values or trends.				
Vocabulary	absorb canine carnivore digest faeces food chain herbivore incisor large intestine	ammeter appliance battery bulb buzzer cell circuit component electrical conductor	boiling point climate change compress condensation condensing condensing point drought evaporating evaporation rate	air decibels (dB) decibel meter ear eardrum ear protectors gas hertz (Hz) high pitch	Carroll diagram classification key classify conservation conservationist deforestation earthquake endangered flood	bar chart condensing cell/battery conclusion evaluate evaporating gas insect

	molar mouth oesophagus omnivore predator premolar prey producer saliva small intestine stomach	electrical insulator electricity hazard mains material motor power source precaution property safety series circuit switch wire	flood force freezing freezing point gas gaseous liquid matter melting melting point precipitation rate solid state steam temperature thermometer the water cycle volume water vapour	insulator of sound liquid loud low pitch matter medium musical instrument pitch quiet solid sound sound proofing vibration volume	flowering plants human impact invertebrate observe nature reserve non-flowering plants pollution seasonal changes taxonomist uprooted vertebrate Venn diagram waterlogged wildfire	liquid medicine motor pharmacology pharmacologist precipitation predict solid switch temperature the water cycle trustworthy variable viscosity water vapour
Year 5	**Materials -** Mixtures and separation	**Materials -** Properties and changes	**Forces and Space -** Earth and space	**Living things -** Life cycles and reproduction	**Forces and space -** Unbalanced forces	**Animals -** Human timeline **Making connections -** Does the size of an asteroid affect the size of its impact crater?
Knowledge	Some substances will dissolve in a liquid to form a solution.	To describe a broader range of materials and their properties, including hardness, solubility, transparency,	The Sun is a star at the centre of our Solar System. The Sun, Earth and Moon are	A life cycle shows the changes an animal or plant goes through until the reproduction of a new generation	Gravity is a non-contact force that pulls objects together.	How to describe the human life cycle, including the stages of growth and development (baby, toddler, child,

	The factors that affect the time taken to dissolve, including temperature and stirring. Some liquids and solids can be separated using sieving, filtering and evaporation and to describe these processes.	conductivity and response to magnets. Dissolving, mixing and changes of state are reversible changes. Some changes result in the formation of new materials, which are usually irreversible (e.g. burning, rusting, the action of acid on bicarbonate of soda).	approximately spherical bodies. The names, order and relative positions of the planets and other main celestial bodies. A moon is a celestial body that orbits a planet and give examples of moons that orbit other planets. The Earth and other planets orbit around the Sun. The tilt of the Earth and its orbit around the Sun causes the seasons. The Moon orbits around the Earth. How the Earth's rotation causes day and night and the apparent movement of the Sun across the sky. To know about famous scientists throughout history.	when the cycle starts again. All living things must reproduce for the species to survive. Sexual reproduction requires two parents whereas asexual reproduction only requires one parent. There are different processes plants and animals use to reproduce (asexual and sexual reproduction). There are a range of jobs and careers that use scientific knowledge and methods. There is current scientific research taking place with aims for achievement in the future. Scientific evidence is used to support or refute ideas or arguments.	Air resistance and water resistance are both types of friction. Unsupported objects fall towards the Earth because of gravity. Friction, air resistance and water resistance act in the opposite direction of a moving object. When forces are unbalanced, the speed, shape or direction of an object changes. When forces are balanced, the speed, shape or direction of an object stays the same. Some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. Rougher surfaces have more friction	teenager, adult, elderly). How to describe changes that occur during puberty (in boys and girls). Gestation periods vary across mammals. A range of jobs and careers that use scientific knowledge and methods. The methods and equipment used by scientists throughout history and how these have led to modern methods.

			To know how scientific knowledge has changed over time, leading to the current understanding of Science. To know that mistakes can lead to new discoveries. To know about the work of modern day scientists. To know about science in the news and recent discoveries. To know about the methods and equipment used by scientists throughout history and how these have led to modern methods. To know about current scientific research and what it aims to achieve in the future. To know that collaboration and		between them than smoother surfaces and how that may affect movement. The larger the surface area of an object, the greater the air or water resistance it creates. About famous scientists throughout history.	

			peer reviewing is essential for effective scientific progress.			
Skills	Gathering answers to open-ended questions from a variety of sources. Labelling with a broader range of scientific vocabulary. Annotating diagrams to explain concepts and convey opinions. Selecting the most appropriate enquiry method to answer questions and give justification. Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. Suggesting which variables will be changed, measured and controlled.	Writing a method including detail about how to ensure control variables are kept the same. Making increasingly scientific predictions by: using previous scientific knowledge and evidence to inform their predictions; using scientific language to describe a potential outcome or explain why they think something will happen; making links between topics to evidence a prediction. Using standard units to measure and compare with increasing precision (decimals).	Raising questions throughout the enquiry process. Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification. Drawing scientific diagrams by: Using a wider range of standard symbols. Drawing with increasing accuracy. Labelling with a broader range of scientific vocabulary. Annotating diagrams to explain concepts and convey opinions.	Raising questions throughout the enquiry process. Identifying testable questions. Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for. Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. Using standard units to measure and compare with increasing precision (decimals).	Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for. Writing a method that includes details about how to ensure control variables are kept the same. Writing a method that considers reliability by planning repeated readings. Suggesting the most appropriate equipment to make observations and measurements and justifying their choices.	Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Using identified patterns to predict new values or trends.

	Making and explaining decisions about what observations to make and how long to make them for.	Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Identifying which variables were difficult to control and suggesting how to better control them. Commenting on the degree of trust by also reflecting on: accuracy (human error with equipment); reliability (repeating results).	Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Using identified patterns to predict new values or trends.	Gathering answers to open-ended questions from a variety of sources. Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value Drawing scientific diagrams by: using a wider range of standard symbols; drawing with increasing accuracy; labelling with a broader range of scientific vocabulary; annotating diagrams to explain concepts and convey opinions. Using tables with columns that allow for repeat readings.	Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. Using tables with columns that allow for repeat readings. Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may	Commenting on the degree of trust by also reflecting on the sources of information (e.g. websites, books). Deciding what data to collect to further test direct relationships.

				Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. of plotted points with greater accuracy. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Using identified patterns to predict new values or trends.	have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends. Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to control them better.	

					Commenting on the degree of trust by also reflecting on: accuracy (human error with equipment); reliability (repeating results); sources of information (e.g. websites, books). Deciding what data to collect to test direct relationships further	
Vocabulary	control variable crystallising dissolve evaporation evaporation method filtering insoluble mixture particle sieve sieving soluble solution variable	burning change of state circumference condensing conductor dissolve electrical conductivity evaporating freezing hard hardness insulator irreversible change light intensity light meter melting mixture opaque property	force full moon gnomon gravity horizon Jupiter last quarter moon Mars Mercury midday moon natural satellite Neptune new moon night (nighttime) phase planet Pluto orbit our Solar System	adolescence adult amphibian asexual reproduction bird birth bulb carnivore characteristic chrysalis cocoon conclusion cuttings egg estimating extrapolating fertilisation fledgling flowering stage	aerodynamics air resistance amplify balanced contact force distance effort force friction gear gravity lever load machine mass matter non-contact force pivot pulley streamlining	adolescence adolescent adult adulthood child childhood foetus gestation period hormones infant life cycle newborn old age period (menstruation) puberty toddler

		reversible change rust rusting soft states of matter trustworthy thermal conductivity translucent transparency transparent	reflect rotate Saturn season shadow Solar System space space junk spherical star summer sundial sunrise sunset table the Sun the Moon tilt Uranus Venus winter year	four-legged tadpole four-stage life cycle frog froglet germination stage gestation gills hatch hatchling herbivore incubation infancy insect juvenile larva leaf growing stage life cycle line graph line of best fit lungs mammal mating metamorphosis nest nestling newborn nymph offspring ovule pollen pollination predict pupa reproduction seed dispersal seed stage seedling stage seed sexual reproduction	surface area unbalanced water resistance	

				species tadpole three-stage life cycle tuber two-legged tadpole		
Year 6	**Living things -** Classifying big and small	**Energy -** Light and reflection	**Living things -** Evolution and inheritance	**Energy -** Circuits, batteries and switches	**Animals -** Circulation and health	**Making connections -** Are some sunglasses safer than others?
Knowledge	To know that 'organism' is a term used to refer to an individual living thing. To know that micro-organisms are incredibly small and cannot usually be seen by the naked eye. To know the characteristics of the different groups of vertebrates and commonly found invertebrates. To know about famous scientists throughout history.	Light travels in a straight line from a light source. Luminous objects are seen as a result of light directly entering the eye, whereas non-luminous objects reflect light into the eye. Shiny surfaces reflect light uniformly. When light is reflected off a surface, its direction changes. Mirrors and periscopes work using reflection of	Living things have changed over time. Fossils provide information about living things that inhabited the Earth millions of years ago. Characteristics are passed from parents to their offspring, but all offspring vary from their parents. Over time, variation in offspring can affect animals' chances of survival in particular environments.	A variety of components in a series circuit (including buzzer and motor). Conventions are used to draw circuit diagrams, including the recognised symbols for common components and using straight lines. The voltage of a circuit can be changed and this affects bulb brightness (or buzzer volume). A range of jobs and careers that use	The main parts of the human circulatory system (heart, blood vessels and blood). The heart pumps blood around the body. Blood vessels transport blood around the body. Blood transports vital substances around the body, including oxygen and nutrients. The relationships between different organ systems.	This unit revises key knowledge from the previous Year 6 units.

		light on smooth surfaces. Shadows have the same shape as the objects that cast them as a result of light travelling in straight lines. There are relationships between light sources, objects and shadows. The distance between the object and the screen affects the size of the shadow. The angle of a reflected ray is affected by the angle of the incoming ray on a smooth surface.	Animals and plants have adapted to suit their environment over many millions of years and this process can be called evolution. Famous scientists throughout history. A range of jobs and careers use scientific knowledge and methods. The work of modern-day scientists. There are spiritual, moral, social and cultural links with Science. Methods and equipment used by scientists throughout history and how these have led to modern methods. Scientific knowledge has changed over time, leading to the current understanding of Science.	scientific knowledge and methods. How scientific evidence is used to support or refute ideas or arguments.	The impact of diet, exercise, drugs and lifestyle on the way a body functions. The heart rate is the number of beats per minute. Exercise increases heart rate. There are famous scientists throughout history. There are a range of jobs and careers that use scientific knowledge and methods. Science is in the news with recent discoveries. There are spiritual, moral, social and cultural links with Science. There were methods and equipment used by scientists throughout history and these have led to modern methods.	

			Collaboration and peer reviewing are essential for effective scientific progress. Scientific evidence is used to support or refute ideas or arguments.		Scientific knowledge has changed over time, leading to the current understanding of Science. Current scientific research is taking place with specific aims for the future	
Skills	Grouping in a broader range of contexts. Organising the layout of number and branching keys. Formulating appropriate questions for classification keys.	Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification. Suggesting which variables will be changed, measured and controlled. Writing a method including detail about how to ensure control variables are kept the same. Using their senses to describe, in detail and with a broader range of scientific vocabulary, what	Raising questions throughout the enquiry process. Selecting the most appropriate enquiry method to answer questions and give justification. Suggesting which variables will be changed, measured and controlled. Using senses to describe, in detail and with a broader range of scientific vocabulary, what is noticed or what has changed. Using tables with columns that allow for repeat readings.	Suggesting which variables will be changed, measured and controlled. Writing a method including details about ensuring control variables are kept the same. Writing a method that considers reliability by planning repeated readings. Suggesting the most appropriate equipment to make observations and measurements and justifying their choices.	Suggesting which variables will be changed, measured and controlled. Making and explaining decisions about what observations to make and how long to make them for. Writing a method including detail about how to ensure control variables are kept the same. Writing a method that considers reliability by planning repeated readings. Suggesting the most appropriate	This unit revises key skills from the previous Year 6 units.

		they notice or what has changed. Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. Drawing scientific diagrams with increasing accuracy, labelling with a broader range of scientific vocabulary and annotating diagrams to explain concepts and convey opinions. Using tables with columns that allow for repeat readings. Calculating the mean average. Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy.	Calculating the mean average. Grouping in a broader range of contexts. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Identifying steps in the method that need changing and suggesting improvements.	Using previous scientific knowledge and evidence to inform their predictions. Using scientific language to describe a potential outcome or explain why they think something will happen. Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. Drawing scientific diagrams by using a wider range of standard symbols and drawing with	equipment to make observations and measurements and justifying their choices. Making increasingly scientific predictions by using previous scientific knowledge and evidence to inform their predictions, using scientific language to describe a potential outcome or explain why they think something will happen and making links between topics to evidence a prediction. Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales	

		Reading the value of plotted points with greater accuracy. Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Identifying anomalies in repeat data and excluding results where appropriate. Using identified patterns to predict new values or trends. Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were	Identifying which variables were difficult to control and suggesting how to control them better. Commenting on the degree of trust by reflecting on accuracy (human error with equipment) and reliability (repeating results). Posing new questions in response to the data that would extend the enquiry.	increasing accuracy. Using tables with columns that allow for repeat readings. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships.	with unmarked intervals between numbers. Gathering answers to questions from a variety of sources. Using tables with columns that allow for repeat readings. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy.	

		difficult to control and suggesting how to control them better. Commenting on the degree of trust by reflecting on accuracy (human error with equipment) and reliability (repeating results).		Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends. Identifying steps in the method that need changing and suggesting improvements. Identifying which variables were difficult to control and suggesting how to control them better.	Recognise the following across a broader range of contexts and in more complexity: naturally occurring patterns and relationships, changes over time and relevant secondary data. Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may have affected another. Quoting relevant data as evidence of relationships. Identifying anomalies in repeat data and excluding results where appropriate. Comparing individual, class	

					and/or model data to the prediction and recognising when they do not match. Using identified patterns to predict new values or trends. Commenting on the degree of trust by also reflecting on the reliability (repeating results) and sources of information (e.g. websites, books).	
Vocabulary	amphibian binomial system bird characteristic classify classification key cold-blooded conifer exoskeleton fern fish flowering plant insect invertebrate life process Linnaean system mammal micro-organism microscopic moss	cast incoming ray light ray light source luminous mirror non-luminous opaque periscope pupil ray diagram reflected ray reflective shadow straight	adaptation ancestor characteristic competition environmental evidence evolution extinct fossil gene habitat inherit natural selection offspring peer review population reproduce scientific theory selective breeding species	ammeter appliance battery bulb buzzer cell circuit circuit diagram component current electricity motor power source resistance switch voltage voltmeter wire	balanced diet blood bloodstream blood vessels carbon dioxide circulatory system diet drug exercise fitness health heart heart rate lifestyle lungs mass nutrient oxygen pulse pump (verb)	This unit revises key vocabulary from the previous Year 6 units.

	organism reptile snail spider vertebrate warm-blooded worm		specimen survival survival of the fittest variation		rate resting heart rate transport water	