Subject: Science (Using Kapow Primary)

<table>
<tr><th colspan="4">National Curriculum Links</th></tr>
<tr><td colspan="4">Aims
The national curriculum for science aims to ensure that all pupils:
• develop scientific knowledge and conceptual understanding through the specific disciplines of biology, chemistry and physics
• develop understanding of the nature, processes and methods of science through different types of science enquiries that help them to answer scientific questions about the world around them
• are equipped with the scientific knowledge required to understand the uses and implications of science, today and for the future.</td></tr>
<tr><th>Early Years Foundation Stage (EYFS)</th><th>Key Stage One (KS1)</th><th>Lower Key Stage Two (KS2)</th><th>Upper KS2</th></tr>
<tr>
<td>Understanding the World
• Explore the natural world around them, making observations and drawing pictures of animals and plants.
• Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class.
• Understand some important processes and changes in the natural world around them including the season and changing states of matter</td>
<td>Working Scientifically
During years 1 and 2, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:
• asking simple questions and recognising that they can be answered in different ways
• observing closely, using simple equipment
• performing simple tests
• identifying and classifying
• using their observations and ideas to suggest answers to questions
• gathering and recording data to help in answering questions.

<u>Year 1</u>
Plants
Pupils should be taught to:
• identify and name a variety of common wild and garden plants, including deciduous and evergreen trees
• identify and describe the basic structure of a variety of common flowering plants, including trees.

Animals, including humans
Pupils should be taught to:
• identify and name a variety of common animals including fish,</td>
<td>Working scientifically
During years 3 and 4, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:
• asking relevant questions and using different types of scientific enquiries to answer
them
• setting up simple practical enquiries, comparative and fair tests
• making systematic and careful observations and, where appropriate, taking accurate
measurements using standard units, using a range of equipment, including thermometers and data loggers
• gathering, recording, classifying and presenting data in a variety of ways to help in
answering questions
• recording findings using simple scientific language, drawings, labelled diagrams,
keys, bar charts, and tables
• reporting on findings from enquiries, including oral and written explanations, displays
or presentations of results and conclusions</td>
<td>Working scientifically
During years 5 and 6, pupils should be taught to use the following practical scientific methods, processes and skills through the teaching of the programme of study content:
• planning different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary
• taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate
• recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs
• using test results to make predictions to set up further comparative and fair tests
• reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of and degree of trust in results, in oral and written forms such as displays and other presentations</td>
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	amphibians, reptiles, birds and mammals • identify and name a variety of common animals that are carnivores, herbivores and omnivores • describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals, including pets) • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense. **Everyday materials** Pupils should be taught to: • distinguish between an object and the material from which it is made • identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock • describe the simple physical properties of a variety of everyday materials • compare and group together a variety of everyday materials on the basis of their simple physical properties. **Seasonal changes** Pupils should be taught to: • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies <u>Year 2</u> **Living things and their habitats** Pupils should be taught to: • explore and compare the differences between things that are living, dead, and things that have never been alive	• using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions • identifying differences, similarities or changes related to simple scientific ideas and processes • using straightforward scientific evidence to answer questions or to support their findings. <u>Year 3</u> **Plants** Pupils should be taught to: • identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant • investigate the way in which water is transported within plants • explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal. **Animals, including humans** Pupils should be taught to: • 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 • identify that humans and some other animals have skeletons and muscles for support, protection and movement.	• identifying scientific evidence that has been used to support or refute ideas or arguments. <u>Year 5</u> **Living things and their habitats** Pupils should be taught to: • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird • describe the life process of reproduction in some plants and animals. **Animals, including humans** Pupils should be taught to: • describe the changes as humans develop to old age. **Properties and changes of materials** Pupils should be taught to: • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), 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 solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic

	• identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other • identify and name a variety of plants and animals in their habitats, including 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. **Plants** Pupils should be taught to: • observe and describe how seeds and bulbs grow into mature plants • find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. **Animals, including humans** Pupils should be taught to: • notice that animals, including humans, have offspring which grow into adults • find out about and describe the basic needs of animals, including humans, for survival (water, food and air) • describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene. **Uses of everyday materials** Pupils should be taught to: • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	**Rocks** Pupils should be taught to: • compare and group together different kinds of rocks on the basis of their appearance and simple physical properties • describe in simple terms how fossils are formed when things that have lived are trapped within rock • recognise that soils are made from rocks and organic matter. **Light** Pupils should be taught to: • recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows change. **Forces and magnets** Pupils should be taught to: • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • observe how magnets attract or repel each other and attract some materials and not others • compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet,	• demonstrate that dissolving, mixing and changes of state are reversible changes • explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, including changes associated with burning and the action of acid on bicarbonate of soda. **Earth and space** Pupils should be taught to: • describe the movement of the Earth, and other planets, relative to the Sun in the solar system • describe the movement of the Moon relative to the Earth • describe the Sun, Earth and Moon as approximately spherical bodies • use the idea of the Earth's rotation to explain day and night and the apparent movement of the sun across the sky. **Forces** Pupils should be taught to: • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object • identify the effects of air resistance, water resistance and friction, that act between moving surfaces • recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. <u>Year 6</u>

	• find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	and identify some magnetic materials • describe magnets as having two poles • predict whether two magnets will attract or repel each other, depending on which poles are facing. <u>Year 4</u> **Living things and their habitats** Pupils should be taught to: • recognise that living things can be grouped in a variety of ways • explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • recognise that environments can change and that this can sometimes pose dangers to living things. **Animals, including humans** Pupils should be taught to: • 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 **States of matter** Pupils should be taught to: • 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	**Living things and their habitats** Pupils should be taught to: • describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including microorganisms, plants and animals • give reasons for classifying plants and animals based on specific characteristics. **Animals, including humans** Pupils should be taught to: • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • describe the ways in which nutrients and water are transported within animals, including humans. **Evolution and inheritance** Pupils should be taught to: • 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.

		temperature at which this happens in degrees Celsius (°C) • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Sound** Pupils should be taught to: • identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • find patterns between the pitch of a sound and features of the object that produced it • find patterns between the volume of a sound and the strength of the vibrations that produced it • recognise that sounds get fainter as the distance from the sound source increases. **Electricity** Pupils should be taught to: • identify common appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit	**Light** Pupils should be taught to: • 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. **Electricity** Pupils should be taught to: • associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • use recognised symbols when representing a simple circuit in a diagram.

		• recognise some common conductors and insulators, and associate metals with being good conductors.	

Year group: EYFS (Nursery/Reception)

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	All About Me	Being a Hero	Me and my world	Super creatures	Once upon a time	All at Sea
Skills **ELG: Understanding the World** *Explore the natural world around them, making observations and drawing pictures of animals and plants. *Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class. *Understand some important processes and changes in the natural world around them including the season and changing states of matter	**Nursery** *To use their senses to explore the outdoor environment and natural features *To introduce the vocabulary for seasons (Autumn) **Reception** *To ask questions about the natural environment. *To respect and care for the natural environments *To talk about Autumn and talk about features of this.	**Nursery** *To use their senses to explore the outdoor environment and natural features **Reception** *To know about and recognise the signs of Autumn *To know about features of the world and Earth	**Nursery** *To introduce the vocabulary for seasons (Winter) **Reception** *To identify Winter as one of the four seasons. *To talk about the environmental changes in Winter and why this happens *To know some important processes and changes in the natural world including states of matter (freezing)	**Nursery** *To introduce the vocabulary for seasons (Spring) **Reception** *To talk about the environmental changes in Spring and why this happens *To identify Spring as one of the four seasons. *To understand and describe the changes in a butterfly's life cycle using developing vocabulary *To learn about lifecycles of animals *To know about different habitats	**Reception** *To know that a globe is a representation of the Earth **Nursery** *To plant seeds and care for them over time **Reception** *To plant seeds and care for them over time, discussing the growing process *To learn about lifecycles of plants	**Nursery** *To introduce the vocabulary for seasons (summer) *To show care and respect for our environment by recycling *To explore different collections of materials and identify their properties e.g. shells and pebbles for the beach **Reception** *To identify Summer as one of the four seasons *To explore and understand floating and sinking *To understand the problems of plastic pollution in the oceans *To understand the importance of recycling and why we recycle
Key knowledge	Know they have senses Know that Autumn is a season	Know they have senses Know that Autumn is a season	Know that Winter is a season Know some changes that happen in Winter	Know that Spring is a season Know some changes that happen in Spring	Know that plants grow from seeds Know some things that plants need to grow	Know that Summer is a season Know some changes that happen in Summer

	Know some parts of the natural world	Know some changes that happen in Autumn Know some natural features of the world	Know that water freezes and becomes ice and that ice melts and becomes water	Know the main parts of a butterfly life cycle Know that animals live in different habitats		Know some key words to describe materials Know the difference between floating and sinking Know some key ways we can look after the environment Know what recycling means.
Key vocabulary	Same, different, colours, body parts, emotions, family structures and relations, equality, respect, kindness. Seasons – Autumn, Autumn objects and features, Harvest	remembrance, jobs, emergency services and roles, 999, diversity, cultures, Nativity, Mary, Joseph, Jesus, Bethlehem, stable. Star.	Winter, cold, snow, ice, frost Chinese New Year, celebration, year, months, weeks, days. names of countries, world, map, village, town, city, London. Measure, height, weight, heavy, light	Poem, poetry, rhymes, Farm animals and their young, minibeasts, habitats and descriptions. Healthy, unhealthy, fit, exercise, habits, fruit, vegetables, healthy plates. Oral hygiene – teeth, enamel, tartar, toothpaste, toothbrush, cleaning Seasons – Spring, growth, new life Lifecycle of a caterpillar- egg, caterpillar, chrysalis/cocoon, butterfly	Past, present, old, young, now, then, Food names and country origin of food from different cultures, Character, setting, events, prediction (make a guess). Adjectives to describe characters and settings.	Recycling, names and uses of materials, climate, plastic, single use plastic, pollution, sea, ocean, marine, sea creatures names and facts Seasons – Summer
Assessment of progress	Ongoing assessment through Tapestry End of year assessment EYFS assessment					

Subject: Science

Year group: Year 1

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topics	Forces and space: Seasonal changes	Materials: Everyday materials	Animals: Sensitive bodies	Animals: Comparing animals	Plants: Introduction to plants	Making Connections: Investigating Science through stories
Skills	To raise questions about observations. To predict an outcome using their own experiences. To observe and gather data and to make comparisons between seasons. To begin to understand how measurements can be taken, i.e. using a thermometer. To begin to draw pictograms. To begin to analyse data in a pictogram by comparing the seasons. To use a pictogram to answer questions. To begin to draw conclusions. To explore 'Science in action' by considering the role of a weather reporter and how information about the weather is useful in everyday life.	**Posing questions** Responding to suggestions on how to answer questions. **Planning** Deciding if observations are suitable. Beginning to recognise how to make a test fair. **Predicting** Suggesting what might happen. **Observing** Using their senses to describe what they notice. **Recording** Recording results using simple observations. **Grouping and classifying** Sorting objects into groups based on observations. **Analysing and drawing conclusions** Using results to answer simple questions. Recognising when results do not match predictions.	**Observing** Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring** Using non-standard units to measure and compare. **Recording (diagrams)** Drawing and labelling simple diagrams. **Recording (tables)** Using a prepared table to record results including numbers and simple observations. **Grouping and classifying** Grouping based on visible characteristics. **Analysing and drawing conclusions** Using their results to answer simple questions.	**Posing questions** Recognising there are different types of enquiry (ways to answer a question). Responding to suggestions on how to answer questions. **Planning** Deciding if observations are suitable. **Observing** Using their senses to describe what they notice. **Measuring (quantitative data)** Reading simple numbered scales. **Researching** Gathering specific information from one simplified, specified source. **Recording** Drawing and labelling simple diagrams. **Grouping and classifying** Grouping based on visible characteristics. **Graphing**	**Posing questions** 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. **Planning** Ordering a simple method. **Predicting** Suggesting what might happen, often justifying with personal experience. **Observing** Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring (quantitative data)** Using non-standard units to measure and compare. **Researching** Gathering specific information from one	**Posing questions** 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. **Planning** Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable. **Predicting** Suggesting what might happen, often justifying with personal experience. **Observing** Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring (quantitative data)**

				Representing data using pictograms and block charts. **Analysing and drawing conclusions** Using their results to answer simple questions.	simplified, specified source. **Recording (diagrams)** Drawing and labelling simple diagrams. **Recording (tables)** Using a prepared table to record results including: numbers; simple observations. **Grouping and classifying** Grouping based on visible characteristics. **Analysing and drawing conclusions** Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.	Beginning to use standard units to measure and compare. Beginning to use simple measuring equipment to make approximate measurements. Reading simple numbered scales. **Researching** Gathering specific information from one simplified, specified source. **Recording (tables)** Using a prepared table to record results including: numbers; simple observations. **Grouping and classifying** Grouping based on visible characteristics. **Analysing and drawing conclusions** Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.
Key knowledge	To know the name and order of the four seasons; spring, summer, autumn and winter. To know that it is unsafe to look directly at the Sun. To know weather associated with the four seasons and how it changes (in the UK).	To know: That objects are items or things. That a material is what an object is made from. A variety of everyday materials, including wood, plastic, glass, metal, water and rock. That property refers to how a material can be described.	To know: 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	To know: 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	To know: 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,	**This unit revises the following key knowledge from the previous Year 1 units:** <u>Plants</u> To know: The basic structure, including leaves, flowers (blossom), fruit, roots, bulb, seed, trunk, branches and stem, of a variety of common plants,

	To understand that day length varies across the four seasons, with fewer daylight hours in the winter and more in the summer.	Materials can be grouped based on their physical properties.	nose is used for smell, the eyes are used for sight and the ears are used for hearing. To know: 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.	and to 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. **Science in action** To know: About famous scientists throughout history.	bulb, seed, trunk, branches and stem, of a variety of common plants, including flowering plants and trees. To begin to understand how plants grow and change over time. **Science in action** To know: About famous scientists throughout history. About the work of modern-day scientists. There are spiritual, moral, social and cultural links with Science.	including flowering plants and trees. How plants grow and change over time. <u>Animals, including humans</u> To know: 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). The diets of carnivores, herbivores and omnivores and give examples. <u>Everyday materials</u> To know: A variety of everyday materials, including wood, plastic, glass, metal, water and rock. Property refers to how a material can be described. The physical properties of a variety of everyday materials. <u>Seasonal changes</u> To know: The name and order of the four seasons: spring, summer, autumn and winter. The weather associated with the four seasons and how it changes (in the UK). <u>Science in action</u> To know about a range of jobs and careers that use

						scientific knowledge and methods.
Key vocabulary	conclusion data deciduous tree evergreen tree pictogram predict record season sunrise sunset symbol temperature thermometer weather	absorbent data fabric glass group material metal object opaque plastic property rock tough transparent waterproof wood	action bitter blind body compare data direction distance feeling group hearing investigation loud obstacle pattern quiet research salty sense senses sensitive sight smell sour sweet taste touch volume	amphibian bird block chart body carnivore compare data diet differences feature fish group herbivore hunt mammal observe omnivore pet record reptile research scientist similarities tally	data deciduous diagram edible evergreen feature fruit flower garden plants grouping growth investigation leaf measure observe plant prediction roots research seed shoot stem trunk wild plants	amphibian bird carnivore compare data diet difference feature fish group herbivore hunt life cycle mammal material measure natural object omnivore pattern predict property reptile season similarity test trunk waterproof weather
Assessment of progress	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser End of year teacher assessment

Subject: Science

Year group: Year 2

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topics	Living things: Habitats	Living things: Microhabitats	Materials: Uses of everyday materials	Animals: Life cycles and health	Plants: Plant growth	Making connections: Plant-based materials
Skills	To ask simple questions, recognising that they can be answered in different ways. To classify objects into groups. To gather and record data in a simple table. To carry out research to find answers to questions.	**Posing questions** Raising their own simple questions. Recognising that there are different types of enquiry. Responding to suggestions of how to answer questions. **Planning** Deciding if observations are suitable. Ordering a simple method. **Predicting** Suggesting what might happen. **Observing** Using their senses to describe what they notice.	**Posing questions** Recognising there are different types of enquiry. **Measuring** Using non-standard units to measure and compare. **Recording** Recording results using numbers. **Graphing** Representing data using block graphs. **Analysing and drawing conclusions** Using results to answer simple questions	**Posing questions** Recognising there are different types of enquiry. **Measuring** Using simple measuring equipment. **Recording** Recording results using numbers. **Analysing and drawing conclusions** Using results to answer simple questions. **Researching** Gathering information from a secondary source.	**Posing questions** 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. **Planning** Beginning to recognise whether a test is fair. With support, deciding if suggested observations are suitable. **Predicting** Suggesting what might happen, often justifying it with personal experience. **Observing** Using their senses to describe, in simple terms, what they notice or what has changed. **Measuring (quantitative data)** Beginning to use standard units to measure and compare. Beginning to use simple measuring equipment to make	**Posing questions** 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. **Planning** Beginning to recognise whether a planned test is fair. With support, deciding if suggested observations are suitable. **Predicting** Suggesting what might happen, often justifying it with personal experience. **Observing** Using their senses to describe, in simple terms, what they notice or what has changed. **Researching** Gathering specific information from one simplified, specified source. **Recording (tables)**

					approximate measurements. Reading simple numbered scales. **Recording (diagrams)** Drawing and labelling simple diagrams. **Recording (tables)** Using a prepared table to record results including: numbers; simple observations. **Analysing and drawing conclusions** Using their 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; simple observations. **Grouping and classifying** Grouping based on visible characteristics. **Analysing and drawing conclusions** Using their results to answer simple questions. Beginning to recognise when results or observations do not match their predictions.
Key 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	To know: 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).	To know: 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. To know: A range of jobs and careers that use	To know: 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 carbohydrates, fruits and vegetables,	To know: 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. **Science in action** To know: A range of jobs and careers that use scientific knowledge and methods. There are spiritual, moral, social and cultural links with Science.	<u>Plants</u> To know: Seeds and bulbs grow into seedlings by producing roots and shoots. Seeds need water and warmth to germinate. Plants need water, light and a suitable temperature for growth and health. <u>Living things and their habitats</u> To know: Some of the life processes, including movement, reproduction, sensitivity, growth, excretion and nutrition. The difference between things that are living, dead and things that have never

	because it provides what they need to survive. 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.		scientific knowledge and methods. Science in the news and recent discoveries. Spiritual, moral, social and cultural links with Science.	dairy and alternatives, protein and oils and spreads. Humans require a balanced diet to stay healthy.		been alive, using some of the life processes. <u>Materials</u> To know: Why objects are made from particular materials and to give examples of their suitability. One material can be used for a range of purposes (and to give examples.) Different materials can be used for the same purpose (and to give examples.) Why certain materials are unsuitable for particular objects. Solid objects can be squashed, bent, twisted or stretched. <u>Science in action</u> To know: About famous scientists throughout history. About the work of modern-day scientists.
Key vocabulary	alive analyse camouflage carnivore classify coastal dead depend diet energy excretion food chain growth habitat herbivore life process mammal	botanist camouflage characteristics classification key classify comparative/fair test conclusion criteria data food chain identify invertebrate method microhabitat minibeast research results	bend block graph elastic fabric flexible glass material metal object plastic property pull push record rock squash stretch	adult air baby basic needs butterfly child carbohydrates caterpillar dairy egg exercise fitness food frog froglet fruit germs	bulb comparative test conclusion condition diagram energy flower germinate growth leaf life cycle measure nutrient observe plant shoot seed	alive bubble wrap eco-friendly dead excretion fabric flexible germinate growth human-made life process material movement natural nutrition paper plastic

	movement nutrition ocean omnivore predator prey producer rainforest reproduction sensitivity shelter woodland	species survey tally test	suitable twist wood	growth health height hygiene lamb life cycle live young measure offspring oils proteins pupa sheep spawn spreads stage survive tadpole teenager toddler vegetables water	seedling seed coat stem wilt	property recycle reduce reproduction reuse seed sensitivity soil strong suitable sunlight tin foil warmth water waterproof wood
Assessment of progress	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser End of year teacher assessment

Subject: Science

Year group: Year 3

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	Animals: Movement and nutrition	Forces and space: Forces and magnets	Materials: Rocks and soil	Energy: Light and shadows	Plants: Plant reproduction	Making connections: Does hand span affect grip strength?
Skills	**Measuring** Using standard units to measure and compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. **Recording** Using a prepared table to record results including more detailed observations. **Analysing** Writing a conclusion to summarise findings using simple scientific vocabulary. **Evaluating** 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. Beginning to suggest how one variable may have affected another. Beginning to quote results as evidence of relationships.	**Observing** Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Researching** Gathering specific information from a source. **Recording** Beginning to draw more scientific diagrams by: Drawing in 2D to produce simple line diagrams. Labelling with more scientific vocabulary. **Grouping and classifying** Grouping based on visible characteristics and measurable properties. **Graphing** Representing data using bar charts. **Analysing and drawing conclusions** Beginning to suggest how one variable may	**Posing questions** 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. **Planning** Making predictions about what they think will happen by using scientific knowledge and/or personal experience to explain their prediction. **Observing** Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Measuring** Using standard units to measure and	**Posing questions** 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. **Planning** Making predictions about what they think will happen by using scientific knowledge and/or personal experience to explain their prediction. **Observing** Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Measuring** Using standard units to measure and	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.

		To explore 'Science in action' by exploring the uses of friction and magnets in everyday life and industry.	have affected another. Beginning to quote results as evidence of relationships. Beginning to use identified patterns to predict new values or trends.	compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. **Recording** 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 and classifying** Grouping based on visible characteristics and measurable properties. **Graphing** Reading the value of bars with greater accuracy. **Analysing and drawing conclusions** 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	compare. Using measuring equipment with increasing accuracy. Reading scales with unmarked intervals between numbers. **Recording** 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 and classifying** Grouping based on visible characteristics and measurable properties. **Graphing** Reading the value of bars with greater accuracy. **Analysing and drawing conclusions** 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. **Evaluating** 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.	to use identified patterns to predict new values or trends. **Evaluating** 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.	
Key knowledge	To know that animals can be grouped based on the presence of a skeleton. To know that the skeleton in humans and some animals is used for movement, protection and support. To know that the muscular system in humans and some animals works with the skeleton for movement. To know the main bones in the body. To know that animals, including humans, need the right types and amount of nutrition. To understand that humans cannot make their own food and therefore eat to get the nutrition needed. To know the main food groups (carbohydrates, protein, fats, fibre,	To know: Examples of contact and non-contact forces. That some forces are a result of contact between two surfaces but some forces can act at a distance (e.g. magnetism). The 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	To know: 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. 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).	To know: 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. 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. **Science in action** To know: Famous scientists throughout history. A	To know: 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. 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.	**This unit revises the following key knowledge from the previous Year 3 units:** <u>Movement and nutrition</u> To know: The muscular system in humans and some animals works with the skeleton for movement. The main food groups (carbohydrates, protein, fats and oils, fibre, vitamins, minerals and water) and their simple functions. <u>Forces and magnets</u> To know: Friction is a contact force that acts between two surfaces to slow an object down. Rougher surfaces have more friction between them than smoother surfaces. <u>Rocks and soil</u> To understand the relationship between

	vitamins, minerals and water) and their simple functions. To know that a balanced diet should include all food groups. To describe the diets of different animals.	containing magnetic metal. Understand that the opposite poles of a magnet attract one another and like poles repel one another. That rougher surfaces have more friction between them than smoother surfaces. That the strength of different magnets may vary.		range of jobs and careers use scientific knowledge and methods. 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. Collaboration and peer reviewing are essential for effective scientific progress.		the properties of rocks and their uses. <u>Light and shadows</u> To know that shadows are formed when the light from a light source is blocked by an opaque object. <u>Plant reproduction</u> To know: Flowers are the reproductive organs of a plant. The process of pollination is the transfer of pollen to the female (part of the) flower.
Key vocabulary	balanced diet bone carbohydrate endoskeleton exoskeleton fat fibre invertebrate joint mineral movement muscle nutrient nutrition protection protein skeleton support vertebrate vitamin water	force contact force non-contact force friction magnetism magnet north pole south pole magnetic material non-magnetic material attract repel electromagnet	absorbency acid rain bone boulder chalk clay clay soil crystal earthworm era fossil fossil record grain granite hard hardness impermeable igneous rock imprint lava loam soil magma marble metamorphic rock mineral molten rock	cast a shadow dangerous light source luminous non-luminous opaque protect reflect reflection reflective (shiny) shadow shadow puppet translucent transparent	absorb air animal dispersal carrying conclude disperse dropping eating evaluate female flower fruit germination improve leaves male nutrients petal pollen pollination roots soil seed seed formation shaking space	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

			organic matter paelantologist peaty soil pebble permeable rate rock sandy sandstone sandy soil sediment sedimentary sedimentation silt slate soft soil stone		stem/trunk sunlight support testable transport water water dispersal wind dispersal	
Assessment of progress	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser End of year teacher assessment

Subject: Science

Year group: Year 4

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	Animals: Digestion and food	Energy: Electricity and circuits	Materials: States of matter	Energy: Sound and vibration	Animals: classification and changing habitats	Making connections: How does the flow of liquids compare?
Skills	**Planning** Beginning to select from options which variables will be changed, measured and controlled.	**Posing questions** Considering what makes a testable question. Beginning to recognise that there are different types of	**Posing questions** Considering what makes a testable question. **Measuring**	**Planning** To suggest what observations to make and how long to make them for. **Observing**	**Observing** Using their senses to describe, in more detail and with simple scientific vocabulary,	This unit revisits the working scientifically skills covered in Year 4, including:

	Recording Beginning to design simple results tables. **Grouping and classifying** Grouping based on visible characteristics and measurable properties. **Analysing and drawing conclusions** Beginning to suggest how one variable may have affected another. Beginning to use identified patterns to predict new values or trends. **Evaluating** 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. Commenting on the degree of trust by reflecting on the quality of results (accurate measurements and maintaining control variables).	enquiry and that they are suitable for different questions. Beginning to make suggestions about how different questions could be answered. **Planning** Planning a simple method, verbally and in writing. Beginning to write a simple method in numbered steps. Selecting and beginning to decide what simple equipment might be used to aid observations and measurements. **Predicting** Making predictions about what they think will happen by predicting a trend by considering how the changing variable will affect the measured variable. **Observing** Using their senses to describe, in more detail and with simple scientific vocabulary, what they notice or what has changed. **Recording** 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 standard units to measure and compare. Using measuring equipment with increasing accuracy. **Recording** Drawing in 2D to produce simple line diagrams. Labelling diagrams with more scientific vocabulary. **Researching** Gathering specific information from a variety of sources. **Analysing and drawing conclusions** Beginning to use identified patterns to predict new values or trends. Writing a conclusion to summarise findings using simple scientific vocabulary.	To observe closely how different instruments create a sound. **Researching** To research how cetaceans communicate underwater. **Recording** To present results using a bar chart. To design simple results tables. **Analysing and drawing conclusions** To identify when results or observations do not match predictions.	what they notice or what has changed. **Recording** 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 and classifying** Grouping based on visible characteristics and measurable properties. Populating a pre-prepared branching and number key. Choosing appropriate questions for classification keys. **Researching** Gathering specific information from a variety of sources.	Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.

		Using tables with more than two columns. Identifying and adding headings to tables. Beginning to design simple results tables. **Grouping and classifying** Grouping based on visible characteristics and measurable properties. **Analysing and drawing conclusions** 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.				
Key knowledge	To know the main organs of the human digestive system (mouth, teeth, tongue, oesophagus, stomach, small and large intestines) and describe their simple functions. To know the different types of human teeth (incisor, canine, premolar and molar) and their simple functions. To know that teeth can be damaged, including the effect of sugary and acidic food. To know that it is important to brush	To know: 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	To know That all substances around us can exist as solids, liquids and gases. That a property of a solid is that it keeps its shape unless a force is applied to it. That a property of a liquid is that it can flow freely and take on the shape of a container. That a property of a gas is that it does not have a fixed shape and can escape from an unsealed container. That heating causes solids to turn into liquids (melting) and liquids to	To know: 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	To know: 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.	**This unit revises the following key knowledge from the previous Year 4 units:** <u>States of matter</u> To know: How to compare and group materials together, according to whether they are solids, liquids or gases. The part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. <u>Classification and changing habitats</u> To know:

	teeth twice a day, make good food choices and visit the dentist regularly. To describe the teeth of carnivores and herbivores, and understand why they are different. To know that predators hunt for their food and prey are the animals being hunted. To know that producers make their own food. To know that food chains begin with a producer followed by consumers, and arrows to show the energy passed on.	conductors (e.g. metals). That some materials do not allow electrical charge to pass through them easily and these are 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.	turn into gases (evaporating). That cooling causes gases to turn into liquids (condensing) and liquids to turn into solids (freezing). That water can exist as a solid, a liquid or a gas. That the melting point of water is zero degrees Celsius and the boiling point of water is 100 degrees Celsius. That water flows around the world in a continuous process called the water cycle. That in the water cycle, evaporation is when bodies of water are heated and turn into water vapour. That in the water cycle, condensation is the process of water vapour cooling to form water droplets in clouds, which can result in precipitation. That the rate of evaporation increases as temperature rises.	sounds and slower vibrations cause lower-pitched sounds. Stronger vibrations cause louder sounds and weaker vibrations cause quieter sounds. Sounds get fainter as the distance from the sound source increases.	There are five main vertebrate groups: birds, mammals, reptiles, amphibians and fish. 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.	And use classification keys to help group, identify and name a variety of living things in their local and wider environment. Environments can change and that this can sometimes pose dangers to living things. <u>Electricity and circuits</u> To know: A switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit. Some common conductors and insulators, and associate metals with being good conductors. <u>Sound and vibrations</u> To know: How sounds are made, associating some of them with something vibrating. Vibrations from sounds travel through a medium to the ear. <u>Digestion and food</u> To know the simple functions of the basic parts of the digestive system in humans.
Key vocabulary	absorb canine carnivore digest faeces food chain herbivore incisor	ammeter appliance battery bulb buzzer cell circuit component	boiling point climate change compress condensation condensing condensing point drought evaporating	air decibels (dB) decibel meter ear eardrum ear protectors gas hertz (Hz)	Carroll diagram classification key classify conservation conservationist deforestation earthquake endangered	bar chart condensing cell/battery conclusion evaluate evaporating gas insect

	large intestine molar mouth oesophagus omnivore predator premolar prey producer saliva small intestine stomach	electrical conductor electrical insulator electricity hazard mains material motor power source precaution property safety series circuit switch wire	evaporation rate 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	high pitch insulator of sound liquid loud low pitch matter medium musical instrument pitch quiet solid sound sound proofing vibration volume	flood 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
Assessment of progress	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser End of year teacher assessment

Subject: Science

Year group: Year 5

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	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 diameter of its impact crater?
Skills	**Researching** Gathering answers to open-ended questions from a variety of sources. **Recording (diagrams)** Labelling with a broader range of scientific vocabulary. Annotating diagrams to explain concepts and convey opinions. **Posing questions** Selecting the most appropriate enquiry method to answer questions and give justification. **Observing (qualitative data)** Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. Planning Suggesting which variables will be	**Planning** Writing a method including detail about how to ensure control variables are kept the same. **Predicting** 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. **Measuring (quantitative data)** Using standard units to measure and compare with increasing precision (decimals). **Recording (tables)**	**Posing questions** Raising questions throughout the enquiry process. Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification. **Recording** 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. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of	**Posing questions** Raising questions throughout the enquiry process. Identifying testable questions. **Planning** 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. **Observing** 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). Using their senses to describe, in detail and	**Planning** 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. **Measuring** Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales	<u>Human Timeline</u> **Graphing** Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** 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. **Evaluating**

	changed, measured and controlled. 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. **Analysing and drawing conclusions** Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. **Evaluating** 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).	variables where applicable. **Analysing and drawing conclusions** Using identified patterns to predict new values or trends.	with a broader range of scientific vocabulary, what they notice or what has changed. **Researching** Gathering answers to open-ended questions from a variety of sources. **Recording** Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** 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.	with unmarked intervals between numbers. **Recording** 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. Suggesting headings to tables, including units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. **Graphing** Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing	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. <u>Making connections</u> This unit revisits the working scientifically skills covered in Year 5, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.

					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. **Evaluating** 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.	
Key knowledge	To know that some substances will dissolve in a liquid to form a solution.	To describe a broader range of materials and their properties, including hardness, solubility,	To know that the Sun is a star at the centre of our solar system. To know that the Sun, Earth and Moon are	To know: A life cycle shows the changes an animal or plant goes through until the reproduction	To know: Gravity is a non-contact force that pulls objects together. Air resistance and	<u>Human Timeline</u> To know: How to describe the human life cycle, including the stages of

	To know the factors that affect the time taken to dissolve, including temperature and stirring. To know that some liquids and solids can be separated using sieving, filtering and evaporation and to describe these processes.	transparency, conductivity and response to magnets. To know that dissolving, mixing and changes of state are reversible changes. To know that some changes result in the formation of new materials and that these are usually irreversible. (e.g. burning, rusting, the action of acid on bicarbonate of soda.)	approximately spherical bodies. To know the names, order and relative positions of the planets and other main celestial bodies. To know that a moon is a celestial body that orbits a planet and give examples of moons that orbit other planets. To know that the Earth and other planets orbit around the Sun. To know that the tilt of the Earth and its orbit around the Sun causes the seasons. To know that the Moon orbits around the Earth. To understand how the Earth's rotation causes day and night and the apparent movement of the Sun across the sky.	of a new generation 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).	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 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. **Science in action** To know: About famous scientists throughout history.	growth and development (baby, toddler, child, teenager, adult, elderly). How to describe changes that occur during puberty (in boys and girls). Gestation periods vary across mammals. **Science in action:** To know: 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. <u>Making connections</u> **This unit revises the following key knowledge from the previous Year 5 units:** <u>Earth and space</u> To know: The movement of the Earth, and other planets, relative to the Sun in the solar system. The Sun, Earth and Moon are approximately spherical bodies. <u>Life cycles and reproduction</u> To know the differences in the life cycles of a mammal, an amphibian, an insect and a bird.

						<u>Properties and changes</u> To understand how to compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electrical and thermal), and response to magnets. <u>Unbalanced forces</u> To know: Unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. The effects of air resistance, water resistance and friction, that act between moving surfaces. <u>Mixtures and separation</u> To understand how to use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating.
Key vocabulary	control variable crystallising dissolve evaporation evaporation method filtering insoluble mixture particle sieve	burning change of state circumference condensing conductor dissolve electrical conductivity evaporating freezing hard	artificial satellite axis calibrate celestial bodies climate change day daytime (daylight) data Earth elliptical	adolescence adult amphibian asexual reproduction bird birth bulb carnivore characteristic chrysalis	aerodynamics air resistance amplify balanced contact force distance effort force friction gear	<u>Human timeline</u> adolescence adolescent adult adulthood child childhood foetus gestation period hormones

	sieving soluble solution variable	hardness insulator irreversible change light intensity light meter melting mixture opaque property reversible change rust rusting soft states of matter trustworthy thermal conductivity translucent transparency transparent	face first quarter moon 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 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	cocoon cuttings egg estimating extrapolating fertilisation fledgling flowering stage 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 of best fit lungs mammal mating metamorphosis nest nestling newborn nymph offspring ovule pollen pollination pupa reproduction seed dispersal seed stage seedling stage seed sexual reproduction species tadpole	gravity lever load machine mass matter non-contact force pivot pulley streamlining surface area unbalanced water resistance	infant life cycle newborn old age period (menstruation) puberty toddler <u>Making connections</u> accurate air resistance asteroid celestial bodies conclusion crater diameter evaluate fair test force gravity hardness material predict property spherical reliable trustworthy variable

				three-stage life cycle tuber two-legged tadpole		
Assessment of progress	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser End of year teacher assessment

Subject: Science

Year group: Year 6

	Term 1	Term 2	Term 3	Term 4	Term 5	Term 6
Topic	Living things: Classifying big and small	Energy: Light and reflection	Living things: Evolution and inheritance	Energy: Circuits, batteries and switches	Animals: Circulation and exercise	Making connections: Are some sunglasses safer than others?
Skills	**Grouping and classifying** Grouping in a broader range of contexts. Organising the layout of number and branching keys. Formulating appropriate questions for classification keys.	**Posing questions** Identifying testable questions. Selecting the most appropriate enquiry method to answer questions and give justification. **Planning** Suggesting which variables will be changed, measured and controlled. Writing a method including detail about how to ensure control variables are kept the same. **Observing** Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they	**Posing questions** Raising questions throughout the enquiry process. Selecting the most appropriate enquiry method to answer questions and give justification. **Planning** Suggesting which variables will be changed, measured and controlled. **Observing** Using senses to describe, in detail and with a broader range of scientific vocabulary, what is noticed or what has changed. **Recording**	**Planning** 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. **Predicting** Using previous scientific knowledge and evidence to inform their	**Planning** 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 equipment to make observations and	This unit revisits the working scientifically skills covered in Year 6, including: Posing questions. Planning. Predicting. Observing. Measuring. Recording. Graphing. Analysing and drawing conclusions. Evaluating.

		notice or what has changed. **Measuring** Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. **Recording** 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. **Graphing** Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** Writing a conclusion to summarise findings using increasingly complex scientific vocabulary. Suggesting with increasing independence how one variable may	Using tables with columns that allow for repeat readings. Calculating the mean average. **Grouping and classifying** Grouping in a broader range of contexts. **Analysing and drawing conclusions** 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. **Evaluating** 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 reflecting on accuracy (human error with equipment) and reliability (repeating results).	predictions. Using scientific language to describe a potential outcome or explain why they think something will happen. **Observing and measuring** 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. **Recording** Drawing scientific diagrams by using a wider range of standard symbols and drawing with 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. **Analysing and drawing conclusions**	measurements and justifying their choices. **Predicting** 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. **Observing** Using their senses to describe, in detail and with a broader range of scientific vocabulary, what they notice or what has changed. **Measuring** Using standard units to measure and compare with increasing precision (decimals). Reading a wider variety of scales with unmarked intervals between numbers. **Researching** Gathering answers to questions from a variety of sources. **Recording (tables)** Using tables with columns that allow for repeat readings. Suggesting headings to tables, including	

		have affected another. Identifying anomalies in repeat data and excluding results where appropriate. Using identified patterns to predict new values or trends. **Evaluating** 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 reflecting on accuracy (human error with equipment) and reliability (repeating results).	Posing new questions in response to the data that would extend the enquiry.	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. **Evaluating** 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.	units. Designing results tables with increasing independence with consideration of variables where applicable. Calculating the mean average. **Graphing** Representing data by using line graphs and scatter graphs. Plotting points with greater accuracy. Reading the value of plotted points with greater accuracy. **Analysing and drawing conclusions** 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. **Evaluating** Commenting on the degree of trust by also reflecting on the reliability (repeating results) and sources of information (e.g. websites, books).	
Key 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: 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 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	To know: 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. Animals and plants have adapted to suit their environment over many millions of years and this process can be called evolution. To know: Famous scientists throughout history. A range of jobs and careers use scientific knowledge and	To know: 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). **Science in action** To know: A range of jobs and careers that use scientific knowledge and methods. How scientific evidence is used to support or refute ideas or arguments.	To know: 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. 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. **Science in action** To know: There are famous scientists throughout history. There are a range of jobs and	To revise knowledge from previous Year 6 units

		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.	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. Collaboration and peer reviewing are essential for effective scientific progress. Scientific evidence is used to support or refute ideas or arguments.		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. 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.	
Key vocabulary	organism characteristics classification	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 specimen survival survival of the fittest	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) rate resting heart rate transport	adaptation amphibian bar chart bird bulb characteristic circuit circuit diagram classify component conclusion control variable electrical circuit evaluate evidence fish habitat health inherit insect invertebrate lifestyle light ray

			variation		water	light source luminous mammal method opaque predict reflection refute reptile support translucent transparent trustworthy ultraviolet unit variable vertebrate
Assessment of progress	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser	Quizlets Knowledge catcher Knowledge organiser End of year teacher assessment