Subject' curriculum overview and progression of skills/knowledge

EYFS/KS1	Autumn	Spring	Summer
EYFS			
	Investigating own house and home. – teaching the differences and similarities between children. **The human body:** - Developing the skills of using senses. - Understanding of the different body parts and their purposes. **Key skills** Identify body parts. Explain their purpose. Use senses to explore how body parts work. Knowledge Head, shoulders, knees, toes Sight, hearing, taste, smell, touch **Seasons:** - Autumn walks to explore the current seasonal changes in their environment. - How these changes will differ in the four seasons. - Observe the changes in their environment. **Key skills** Explore the autumnal environment for seasonal changes. Observe/identify plant, animal and weather changes in the environment. Knowledge Leaves, hibernation, environment, Weather, season	Bean planting: -What a plant needs to grow. -Changes over time. -Care for living things etc. **Key skills** Identify plant parts. Explain what conditions for growth plants need. Observe changes in the seed and roots/shoots/flowers appear. Recognise what happens if plants are not cared for eg stem, leaves droop without water, and sun/warmth help the plant grow taller and grow leaves, soil helps roots cling to help stem stand upright. Knowledge Seed, roots, shoots, stem, flower/petals. Warmth/sun, water, soil. , sproutingX -> seed germination/splits open. Learning about spring – minibeasts, new life, life cycles, seasonal changes • Growth, blossom, life cycle • Non-magnetic and magnetic, waterproof materials. • Key material names, experiments	Exploring changes seeds make to grow into plants. • Buds, leaves, flower fruit. • Exploring animal life cycles. – butterflies. • Caterpillar, cocoonx chrysalis • Looking at all four seasons and comparing the differences. • Science - floating and sinking. • Heavy, light, materials • Changes of matter – freezing/melting • Melt, freeze, solid, liquid **ELG: the natural world** • Make observations and drawing pictures of animals and plants • Know some similarities and differences between the natural world around them and contrasting environments • Understand changes in the natural world around them - seasons, changes states of matter

Year 1			
	Animals, including Humans NC objectives Identify and name a variety of common animals including fish, 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. Key Skills Identify some of the differences between different animals. Identify and name a variety of common animals (birds, fish, amphibians, reptiles, mammals, invertebrates) Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Identify the main parts of the human body and link them to their senses. Classify animals by what they eat (carnivore, herbivore, omnivore) Identify the main parts of the human body and link them to their senses. Name the parts of the human body that they can see.	**Everyday Materials** NC objectives 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 NC objectives Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies. Working Scientifically Materials Distinguish between objects & materials Identify & name common materials wood, plastic, glass, metal, water, and rock Describe simple properties of some materials Compare & classify materials Explaining what some everyday materials are made from and describing their materials' properties. hard/soft; stretchy/stiff; shiny/dull; rough/smooth; bendy/not bendy;	**Plants** NC objectives 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. Seasonal Changes NC objectives Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies. Working Scientifically Plants Identify basic plants – deciduous and evergreen trees, common garden and wild plants. Identify basic plant parts (roots, leaves, flowers, stem etc.) – including leaves, flowers (blossom), petals, fruit, roots, bulb, seed, trunk, branches, stem. Know and use vocabulary associated with plants (deciduous and evergreen). Seasonal Changes

	Draw & label basic parts of the human body. Name the parts of an animal's body. Name a range of domestic animals. Compare the bodies of different animals. Describe how an animal is suited to its environment Sort photographs of living things and non-living things. significant historical events, people and places in their own locality. **Knowledge** Eye, mouth, stomach, hand, leg, foot, head, ear, arm, finger, knee, toe. Nose-smell; Ears-hear; Tongue-taste; Skin-touch; Eyes-see. Cow, rabbit, goldfish, seagull, cat, lion, human, spider, deer, shark, frog, toad, penguin, lizard, snake, elephant. **Seasonal Changes** **NC objectives** Observe changes across the 4 seasons. Observe and describe weather associated with the seasons and how day length varies. **Animals Inc. Humans** Identify & name basic body parts. Say which part of the body is associated with each sense. Identify, name and compare common animals.	waterproof/not waterproof; absorbent/not absorbent; opaque/transparent **Seasonal Changes** Observe weather associated with changes of season. **Knowledge** Winter and Spring. What are the common signs? What is the weather like? Dangers of looking directly at sun. Key Skills Distinguish between an object and the material from which it is made. Describe materials using their senses. Describe materials using their senses, using specific scientific words. Explain what material objects are made from. Explain why a material might be useful for a specific job. Name some different everyday materials. e.g. wood, plastic, metal, water and rock Sort materials into groups by a given criterion. Explain how solid shapes can be changed by squashing, bending, twisting and stretching. Describe things that are similar and different between materials. Explain what happens to certain materials when they are heated, e.g. bread, ice, chocolate. Explain what happens to certain materials when they are cooled, e.g. jelly, heated chocolate.	Observe weather associated with changes of season. **Knowledge** Summer. - what are the common signs? Dangers of looking directly at sun. Longer days, warmer temps and this link to pants and animals in the environment knowledge Key Skills Name the petals, stem, leaf, bulb, flower, seed, stem and root of a plant. Identify and name a range of common plants and trees. Recognise deciduous and evergreen trees. Name the trunk, branches and root of a tree. Describe the parts of a plant (roots, stem, leaves, and flowers). Key Skills For Spring -> Summer . . . Observe changes across the four seasons. Name the four seasons in order. Observe and describe weather associated with the seasons. Observe and describe how day length varies

	Know and use vocabulary associated with animals (carnivore, herbivore and omnivore). **Seasonal Changes** **Knowledge** Observe weather associated with changes of season. Autumn. day lengths, dangers of looking directly at sun, animals, plants, temperature changes. Key Skills For Summer --→ Autumn… Observe changes across the four seasons. Name the four seasons in order. Observe and describe weather associated with the seasons. Observe and describe how day length varies	Key Skills For Winter → Spring … Observe changes across the four seasons. Name the four seasons in order. Observe and describe weather associated with the seasons. Observe and describe how day length varies	
Year 2			
	Animals, inc. Humans NC objectives - Notice that animals, including humans, have offspring which grow into adults: chicken (egg, chick, adult chicken)), frog (frog spawn, tadpole, adult frog), human (baby, toddler, child, teenager, adult human), fly (egg, maggot, pupa, adult fly. - 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	**Uses of Everyday Materials** NC Objectives - identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses - find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Skills Describe the simple physical properties of a variety of everyday materials.	**Living Things and their Habitats** NC Objectives - explore and compare the differences between things that are living, dead, and things that have never been alive - identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other - identify and name a variety of plants and animals in their habitats, including microhabitats

	different types of food, and hygiene. (Eat well plate, types of food, carbohydrate, diary, protein, fat, fruit and vegetables.) **Skills** Describe what animals need to survive. Explain that animals grow and reproduce. Explain why animals have offspring which grow into adults. Describe the life cycle of some living things. Explain the basic needs of animals, including humans for survival? (water, food, air) Describe why exercise, balanced diet and hygiene are important for humans. W Sc: Suggest how to find things out? W Sc: Finding things out using secondary sources of information W Sc: Use appropriate scientific vocabulary. Knowledge **Working scientifically** • 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	Compare and group together a variety of materials based on their simple physical properties. Explore how the shapes of solid objects can be changed (squashing, bending, twisting, stretching) - Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses. - Explain how things move on different surfaces. W Sc: Organise things into groups W Sc: Find simple patterns W Sc: Say whether things happened as they expected W Sc: Use appropriate scientific vocabulary. Knowledge Difference between a material and its properties, vocabulary to describe the properties of materials. (Rough, smooth, absorbent, waterproof etc.), some materials are used for more than one object e.g. spoons (plastic, wood, metal. Multi-use of a material e.g. metal (coins, spoon, can, car, key, foil). **Famous Scientist – Thomas Edison** Knowledge Who he was and his contributions towards inventions) find out about people who developed useful new materials (John Dunlop, Charles Macintosh, John McAdam)	- 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. **Skills** W Sc: Organise things into groups e.g. match certain living things to the habitats they are found in. Explain the differences between living and non-living things. Describe some of the life processes common to plants and animals, including humans. Decide whether something is living, dead or non-living. Describe how a habitat provides for the basic needs of things living there e.g. food using basic food chains Describe a range of different habitats. Describe how plants and animals are suited to their habitat. Name some characteristics of an animal that help it to live in a particular habitat. W Sc: See, touch, smell, hear to taste to help them answer questions W Sc: Use appropriate scientific vocabulary. Knowledge Knowledge of the characteristics that make something living – MRSGREN. Be aware of the following main habitats: forest, grassland, desert, mountains, polar and aquaticX **ocean.** Be able to identify and name common animals from each of the main habitats:

	• Gathering and recording data to help in answering questions/record findings. **Famous Scientist – Rosalind** **Franklin** Knowledge Who she was, when she was born and why she is famous. The term DNA and a basic understanding of what it does and where it is.	**Plants** **NC Objectives** - 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. **Skills** Describe what plants need to Survive - and link it to where they are found. Observe and describe how seeds and bulbs grow into mature plants. W Sc: Investigate & describe how plants need water, light soil and a suitable temperature to grow and stay healthy. What is the impact of removing these? W Sc: Observing changes over time. W Sc: Use some scientific words to describe what they have seen and measured. W Sc: Say whether things happened as they expected and if not why no W Sc: Recording findings (use text, diagrams, pictures, tables to record their observations) Knowledge Plants need water, light and a suitable temperature Equipment needed to grow plants Vocabulary of parts of a plant (seed, roots, stem, leaf, flower) to describe how they grow.	forest, grassland, desert, mountains, polar and aquaticX **ocean.** Knowledge of microhabitats: leaf litter and logs. The needs of animals and how they change. Know and understand the terms, carnivore, herbivore and omnivore. ***Working scientifically*** *- Observe closely* *Suggest ways of finding out through listening, hearing, smelling, touching and tasting* *- Performing tests* *Explain why it might not be fair to compare two thing* *- Recording findings* *Measure using simple equipment.* **Famous Scientist – Louis Pasteur** (made milk safe to drink) Edward Jenner (found a way to stop smallpox) Knowledge Who he was, when he was born and why he is famous.

Year 3/4			
Cycle 1 Working scientifically: Planning Observing Investigating NC Objectives • 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 • 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	Cycle 1 Forces and Magnets: NC objectives • compare how things move on different surfaces ▪ notice that some forces need contact between two objects, but magnetic forces can act at a distance ▪ observe how magnets attract or repel each other and attract some materials and not others ▪ compare and group together a variety of everyday materials on the basis of whether they are attracted to a magnet, and identify some magnetic materials ▪ describe magnets as having two poles ▪ predict whether two magnets will attract or repel each other, depending on which poles are facing. Key skills Observe magnetic forces transmitting without direct contact Classify which materials are attracted to magnets and which are not Recognise that some forces need contact between two objects, but magnetic forces can act at a distance Identify some magnetic materials Explain that magnets have having two poles W Sc: Make and record a prediction before testing W Sc: take accurate measurements using different equipment and units of measure	Cycle 1 Rocks: NC objectives ▪ 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. Key skills Compare and group together different rocks on the basis of their appearance and simple physical properties Describe and explain how different rocks can be useful to us Describe and explain the differences between sedimentary and igneous rocks, considering the way they are formed 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 W Sc: Describe what they have found using scientific language W Sc: Classify objects in different ways W Sc: Use different ideas and suggest how to find something out W Sc: Use appropriate scientific vocabulary.	Cycle 1 Animals inc. Humans (Yr3) NC objectives ▪ 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. Key skills Explain the importance of a nutritionally balanced diet Describe how nutrients, water and oxygen are transported within animals and humans Identify that animals, including humans, cannot make their own food: they get nutrition from what they eat Describe and explain the skeletal system of a human Describe and explain the muscular system of a human Explain how the muscular and skeletal systems work together to create movement W Sc: Describe what they have found using scientific language W Sc: Describe what they have found out using secondary sources

Key skills/knowledge ▪ Explore the work of Scientists and appreciate the impact this has had on Science.	**W Sc:** Explain what they have found out and use their measurements to say whether it helps to answer their question **W Sc:** Record their observations in different ways e.g. labelled diagrams, table **W Sc:** Use appropriate scientific vocabulary. Knowledge: Name some magnetic and non magnetic materials, know that magnets have 2 poles (N and S), predict whether two magnets will attract or repel each other, know that friction affects the speed and needs contact between two objects to have an effect. **Electricity:** **NC objectives** ● 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	Knowledge: Know 3 types of rock and explain how they are formed and what they are used for, fossil formation, what soils are made from. **States of Matter:** **NC objectives** ▪ compare and group materials together, according to whether they are solids, liquids or gases ▪ observe that some materials change state when they are heated or cooled, and measure or research the temperature at which this happens in degrees Celsius (°C) ▪ identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. **Key skills** Compare and group materials together, according to whether they are solids, liquids or gases Group and classify a variety of materials according to the impact of temperature on them Relate temperature to the change of state of materials Use measurements to explain changes to the state of water **W Sc:** Use a range of scientific equipment to take accurate measurements or readings Associate the rate of evaporation with temperature to explain water cycle	Knowledge: Different types of nutrition, know 8 scientific names of main bones in the human body, skeletons and muscles help support, protect and move. **Animals inc. Humans (Yr4)** **NC objectives** ▪ 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. **Key skills** Identify, name, describe the simple functions of the basic parts of the digestive system in humans Identify the simple function of different types of teeth in humans Compare the teeth of herbivores and carnivores Explain what a simple food chain shows **W Sc:** Identify, construct and interpret a variety of food chains, identifying producers, predators and prey **W Sc:** Identify differences, similarities or changes related to simple scientific ideas or processes **W Sc:** Use appropriate scientific vocabulary. Knowledge:

	▪ recognise some common conductors and insulators, and associate metals with being good conductors. **Key skills** Construct a simple series electric circuit Identify and name the basic part in a series circuit (cells, wires, bulbs, switches, buzzers) Identify whether a lamp will light in a simple series circuit, the lamp is part of a complete loop with a battery Associate a switch opening with whether or not a lamp lights in a simple series circuit Associate metals with being good conductors Recognise insulators **W Sc:** Plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated **W Sc:** Suggest improvements to their investigations **W Sc:** Use appropriate scientific vocabulary. Knowledge: Recognise components in an electrical circuit, name some electrical conductors and insulators, understand that a switch breaks or closes the circuits.	**W Sc:** Explain what happens over time to materials such as puddles on the playground or washing hanging on a line **W Sc:** Record data using diagrams, labels, tables, bar graphs **W Sc:** Use appropriate scientific vocabulary. Knowledge: Recognise properties of, and how to group solids, liquids or gases, heating and cooling changes state, evaporation and condensation part of Water Cycle and evaporation linked to temperature.	Know the basic process of digestion, types of teeth and their functions, simple food chains, producers, predators and prey.
Cycle 2 **Working scientifically:** Planning Observing Investigating **NC Objectives**	Cycle 2 **Light:** **NC objectives** ▪ 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	Cycle 2 **Plants:** **NC objectives** ▪ 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,	Cycle 2 **Living things and their Habitats:** **NC objectives** ▪ 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

• 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 • 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 **Key skills/knowledge** ▪ Explore the work of Scientists and appreciate the impact this has had on Science.	▪ 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. **Key skills** • Recognise that they need light in order to see things • Recognise that dark is the absence of light • Explain why lights need to be brighter or dimmer according to need • Explain the difference between transparent, translucent and opaque • Observe that light is reflected. • Recognise shadow formation by blocked light. W Sc: Identify patterns in shadow sizes W Sc: Describe what they have found using scientific language W Sc: Record their observations in different ways e.g. labelled diagrams W Sc: Use appropriate scientific vocabulary. **Knowledge:** Light sources, how shadows are formed, how light is reflected to allow us to see, materials that are transparent, translucent and opaque, dangers of sunlight.	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. **Key skills** • Classify a range of common plants according to many criteria (environment found, size, climate required, etc.) Identify and describe plant part functions. • Explore plant life and growth. • Investigate water transportation • Explore part played by flowers in life cycles. W Sc: Explain what they have found out and use their measurements to say whether it helps to answer their question W Sc: Set up a simple test to make comparisons W Sc: Use appropriate scientific vocabulary. **Knowledge:** Name the roots/stem/trunk/leaves and flowers and describe their function, name the 7 life processes, explain plant life cycle -the role of sticky stigma, style, ovary, pollen - , classify common plants (dandelion, cleaver plant, oak, sycamore) water transportation,	of living things in their local and wider environment ▪ recognise that environments can change and that this can sometimes pose dangers to living things. **Key skills** Explore and use a classification key to group, identify and name a variety of living things Compare the classification of common plants and animals to living things found in other places (under the sea, prehistoric) Give reasons for how they have classified animals and plants, using their characteristics and how they are suited to their environment Recognise that environments can change, and this can sometimes pose a danger to living things Explain how environmental changes have an impact on living things Explain how people, weather and the environment can affect living things Explain how certain living things depend on one another to survive W Sc: Record data using diagrams, labels, classification keys, tables, bar graphs. W Sc: Explain their findings in different ways W Sc: Use appropriate scientific vocabulary. • Explore the work of pioneers in classification e.g. Carl Linnaeus **Knowledge:**

	Sound: **NC objectives** ▪ 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. **Key skills** Explain how sounds are made - with something vibrating Explain how to change a sound - (louder/softer) Explain changes in pitch Recognise how vibrations from sound travel through a medium to an ear Compare sources of sounds and say how the sounds differ Work out which materials give the best insulation for sound **W Sc**: Investigating how different materials can affect the pitch and volume of sounds **W Sc**: Find patterns between the volume of the sound and the strength of the vibrations **W Sc**: Plan and set up a fair test and isolate variables, explaining why it was fair and which variables have been isolated		Group living things (humans, isects, Mammals Animal as vertebrates (fish amphibians reptiles, birds mammals) and invertebrates (snails & slugs, worms, spiders, insects) use classification keys (flowering & non-flowering) plants, vertebrates, invertebrates), explain how the environment can change and create food chains/webs for common animals. environmental changes – positive and negative human impact

	W Sc: Evaluate what they have found using scientific language, drawings, labelled diagrams, bar charts and tables Knowledge: To know that sound is caused by vibrations which travel in waves, to know what pitch and volume are and how they can be affected and how to insulate against sound.		
Year 5/6			
Cycle 1 Science Working Scientifically: Planning Observing Investigating NC objectives • 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	Cycle 1 Living Things and their Habitats NC objectives - 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 (Y6) - Give reasons for classifying plants and animals based on specific characteristics (Y6) Key skills 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 W Sc: Classify more complex classification groups using scientific diagrams, classification keys, tables, W Sc: Use appropriate scientific vocabulary	Cycle 1 Properties and Changes of Materials NC objectives - Compare and group everyday materials based on as range of properties. - 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 separate mixtures including through filtering, sieving and evaporating. - Give reasons for particular uses of everyday materials, including metals, wood and plastic. - Demonstrate that dissolving, mixing and changes of state are reversible changes. - Some changes result in the formation of new materials, and this change is not usually reversible e.g. burning, acid on bicarbonate of soda. Key skills Compare and group together everyday materials on the basis of their properties,	Cycle 1 Evolution and Inheritance NC objectives - Living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago - 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. Key skills Recognise the 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

of and degree of trust in results, in oral and written forms such as displays and other presentations ▪ identifying scientific evidence that has been used to support or refute ideas or arguments. **Key skills/knowledge** ▪ Explore the work of Scientists and appreciate the impact this has had on Science.	Knowledge Living things are classified into broad groups, observable characteristics and based on similarities and differences, including microorganisms (Bacteria, Protists, fungi), plants (Flowering, Non-flowering inc. sub groups) and animals (*Vertebrates:* Mammals, Fish, Birds, Amphibians, Reptiles. *Invertebrates:* Annelids, Cnidarians, Arthropods {Insects, Arachnids, Crustations}, Mollusca, Echinoderms) **Animals inc. Humans** **NC objectives** - 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. **Key skills** Identify and name the main parts of the human circulatory system Describe the functions of the heart, blood vessels and blood. Recognise the impact of diet, exercise, drugs and lifestyle on the way our bodies function Describe the ways in which nutrients and water are transported within animals, including humans	including hardness, solubility, transparency, conductivity (electrical and thermal), and response of materials to magnets W Sc: Investigate and explain how some materials dissolve in liquid to form a solution W Sc: Investigate and explain what happens when dissolving occurs Use their knowledge of solids, liquids and gases to decide and describe how mixtures might be separated, including through filtering, sieving, evaporating W Sc: Practical investigation of mixtures that might be separated, including through filtering, sieving, evaporating W Sc: Give reasons based on evidence for comparative and fair tests for the particular uses of everyday materials, including metals, wood and plastic W Sc: Investigating absorbency for nappies; suitability of insulating materials. W Sc: Demonstrate that dissolving, mixing and changes of state are reversible changes Explain that some changes result in the formation of new materials, this change is not usually reversible, . . . W Sc: including changes associated with burning and the action of acid on bicarbonate of soda Use the terms reversible and irreversible' when. . . W Sc: describing the outcome of changes of state W Sc: Use appropriate scientific vocabulary e.g. evaporation, condensation, S L G, changes of state, reversible, irreversible, variables, explaining results	W Sc: Comparing photographs, talking to and observing sets of twins in our school Give reasons why offspring are not identical to each other or to their parents W Sc: Explain the process of evolution and describe the evidence for this W Sc: Identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution W Sc: Record more complex data and results using scientific diagrams, tables, models e.g. horse fossil record W Sc: Explain, in simple terms, a scientific idea and what evidence supports it e.g. horse fossil record W Sc: Use appropriate scientific vocabulary Knowledge Living things have changed over time, fossils provide information about living things that inhabited Earth millions of years ago. Living things produce offspring of the same kind: normally offspring vary and are not identical to their parents. Observe how animals and plants are adapted to suit their environment and that adaptation may lead to evolution. **Forces (Year 5 focus)** **NC objectives** - Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object

	W Sc: Explain, in simple terms, a scientific idea and the evidence which supports it W Sc: Use appropriate scientific vocabulary Knowledge Identify, name and give functions of heart, lungs, blood, blood vessels. Understand the relationship between diet, exercise, drugs (+ -) and lifestyle on impact of the body functioning. Water and nutrient transportation in animals and humans.	that may support or refute data collected, drawing conclusions W Sc: Plan and carry out a scientific enquiry to answer questions, including recognising and controlling variables where necessary W Sc: Make a prediction with reasons W Sc:: Use test results to make predictions to set up comparative and fair tests W Sc: Take repeat readings when appropriate W Sc: Record more complex data and results using scientific diagrams, labels, table, bar and line graphs Knowledge Compare and group everyday materials based on as range of properties. Some materials dissolve in liquid (a solution), recover a substance from a solution. Use knowledge of solids, liquids and gases to separate mixtures incl. through filtering, sieving and evaporating. Uses of everyday materials, incl. metals, wood and plastic. Dissolving, mixing and changes of state are reversible changes. Some changes result in forming new materials, such changes not usually reversible e.g. burning, acid on bicarbonate of soda.	- 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. Key skills Observe and explain unsupported objects fall to Earth because of gravity acting between the earth and the falling object Identify effects of air resistance, water resistance and friction that act between moving surfaces. W Sc: Investigate practically to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect W Sc: Use appropriate scientific vocabulary W Sc: Present a report of their findings through writing and presentation using appropriate scientific vocabulary Knowledge Gravity pulls down on objects. Definitions and effects of water, air resistance and friction. Levers, pulleys and gears use smaller forces to have a greater effect.
Cycle 2 Science Working Scientifically: Planning Observing Investigating NC objectives	**Cycle 2** Electricity NC objectives	**Cycle 2** Living Things and their Habitats NC objectives	**Cycle 2** Light NC objectives - Recognise that light appears to travel in straight lines

• 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 ▪ identifying scientific evidence that has been used to support or refute ideas or arguments. **Key skills/knowledge** ▪ Explore the work of Scientists and appreciate the impact this has had on Science.	- 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. **Key skills** Identify and name the basic parts of a simple electric series circuit (cells, wires, bulbs, switches, buzzers) Associate link between voltage and number of cells affecting electrical components Investigate bulb brightness, buzzer loudness and motor speeds Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzer Give reasons how on/off positions of switches affect the functions of components and electrical flow in a circuit Use recognised circuit symbols to represent components in circuit diagrams **W Sc:** Vary one factor whilst keeping the others the same in an investigation e.g. alter the brightness of bulbs. Explain why they do this **W Sc:** Find a pattern from their data and explain what it shows **W Sc:** Suggest how to improve their work and say why they think this **W Sc:** Record more complex data and results using tables, bar charts. **W Sc:** Draw conclusions from their work	- Describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird (Y5) - Describe the life process of reproduction in some plants and animals. (Y5) **Key skills** Describe and compare life cycle differences for mammals, birds, insects, amphibians, fish Observe life cycle changes in living things Identify 7 Life Processes in plants and animals and describe comparisons Identify the reproduction differences in some plants (Sexual and asexual e.g. runners) and animals (internally and externally) Describe the life cycles of common plants **W Sc:** Use appropriate scientific vocabulary **W Sc:** Explore the work of well-known naturalists and animal behaviourists (David Attenborough and Jane Goodall) **W Sc:** Present a report of their findings through writing, display and presentation Knowledge Vocabulary definitions: offspring, reproduction, life cycle, stages. Why do all living things need to grow and reproduce? Extinction. Life cycle presentation, Stages show growth changes, Similarities (born, young, adults) and differences (number of stages/growth changes*, length of stages.	- 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. **Key skills** Recognise that light travels in straight lines. Identify link between this and seeing objects. . . i Explain that objects are seen by giving out or reflecting light. ii Explain we see things because light travels from sources to our eyes why OR from light sources to objects and then into our eyes. iii Explain shadows have the same shape as the objects that cast them (due to light travelling in straight lines). **W Sc:** Record more complex data and results using tables, bar charts. **W Sc:** Find a pattern from their data and explain what it shows. **W Sc:** Draw conclusions from their work. **W Sc:** Use appropriate scientific vocabulary. Knowledge Light travels in straight lines.

	W Sc: Use appropriate scientific vocabulary Knowledge Definition of components (electrical devices allow electrical current to flow through and connect to make circuits): batteries/cells, motors, bulbs, buzzers, switches, wires used to connect. Components above give heat/light, sound, movement. Understand what voltage is (power in a cell) and how components are affected as this increases or decreases. Variations in components: Bulb brightness (inc. change wattage), buzzer loudness and motor speed: alter number of cells (voltage), thickness or length of wires, number of each component, series or parallel, position of cells + - Switch controls electrical current in circuits, creates gap which break flow if open. Circuit symbols represent each component in a circuit diagram; recognised world-wide.	Complete (butterfly, ladybird, *frog) and incomplete metamorphosis (dragonfly, locust)) between animal groups. Complete Metamorphosis where offspring look completely different from adults; incomplete where nymphs (young) look the same as adults. Birds: Migration being part of life cycle of some birds e.g. thrush from Scotland to S England, From Northern & Southern hemisphere e.g. Canadian Bluebird, cuckoo, magpie Compare – birds, humans, cats/kittens. Insects: butterfly, ladybird, locust. Compare 2 life cycle types - metamorphosis. Butterfly vs bird. Amphibian: frog, 2-stage habitat linked to herbivore or carnivore eating & body organs eg lungs to breathe on land. Life processes of reproduction in plants and animals. Knowledge 7 Life Processes. Animals: reproduction internally or externally; comparison with male seahorse. Plants: one plant to another-pollination or same plant – spores or cuttings. sexual and asexual reproduction, runners (strawberry or spider plants. Plant reproduction vocabulary definitions. Compare animal and plant reproduction. **Animals inc. Humans** **NC objectives**	Objects are seen by giving out or reflecting light. We see objects because they give off light (a light source), which travels to our eyes, or light reflects from them. Shadows replicate shape of object. **Forces (Year 5 focus)** **NC objectives** - 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. **Key skills** Observe and explain unsupported objects fall to Earth because of gravity acting between the earth and the falling object Identify effects of air resistance, water resistance and friction that act between moving surfaces. **W Sc:** Investigate practically to recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect. **W Sc:** Use appropriate scientific vocabulary. **W Sc:** Present a report of their findings through writing and presentation using appropriate scientific vocabulary. Knowledge

		- describe the changes as humans develop to old age (Y5) **Key skills** Describe changes as humans develop to old age Give reason for general ages for each stage Identify where development of humans requires parental up-bringing and support /allows independence W Sc: Identify patterns between animal lifespans and gestation periods W Sc: Record more complex data and results bar charts & line graphs. W Sc: Use a graph to answer scientific questions W Sc: Use appropriate scientific vocabulary Knowledge Life cycle vocab now to include foetus. Whether looked after by parents or independent. Where life cycle repeats again. ~ages for each stage. Compare & contrast with other mammals: Mammals: kangaroo, dog, **duck-billed platypus, **spiny anteater. ** egg-layers to make comparisons with bird & fish lifecycles. Compare with the other animal groups. **Earth and Space** **NC objectives**	Gravity pulls down on objects. Definitions and effects of water, air resistance and friction. Levers, pulleys and gears use smaller forces to have a greater effect.

		- Describe the movement of the Earth, and other planets, relative to the Sun in the solar system -Describe the movement of the Moon relative to the Earth - Describe the Sun, Earth and Moon as 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. **Key skills** Describe the Sun, Earth, Moon as spherical bodies W Sc: Use evidence from secondary sources to identify evidence to prove ideas Identify and explain the movement of the Earth and other planets relative to the sun in the solar system W Sc: Create a scientific model to demonstrate relative distances and movements of other planets in relation to the Sun Explain how seasons and the associated weather is created W Sc: Record daylight data using lines graphs; compare northern and southern hemispheres with equatorial countries W Sc: Use a graph to answer scientific questions Explain day and night using the idea of the Earth's rotation W Sc: Drama of day and night and create a scientific model to demonstrate the rotation of Earth on its axis Explain the Sun's apparent movement across the sky using the idea of the Earth's rotation	

		Describe and explain the movement of the Moon in relation to Earth **W Sc:** Create a scientific model to demonstrate Moon phases during a Lunar month **W Sc:** Use appropriate scientific vocabulary <u>Knowledge</u> Earth, Sun and Moon are spherical. Earth spins on its axis once every 24 hours, Explain why night and day do not happen at the same time in different parts of the world. Earth orbits the Sun as it rotates on its own axis. Movement of the Moon in relation to the Earth. Movement of the Earth, and other planets in relation to the Sun.	