Catton Grove Primary School KS1 & KS2 Science Endpoint Document

YEAR 1

Year 1 Seasonal Change			
Concept: The Universe			
Unit of Work	**NC Objectives**	**Endpoints**	
Seasonal Change	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: **Seasons-** Spring, Summer, Autumn, Winter. Hot, cold, sunny, rain, snow, windy, wet, dry Temperature, Degrees Celsius, Thermometer **Working Scientifically Vocabulary:** compare, identify, measure, record, test, investigate, observe over time, classify.	• Observe changes across the four seasons. • Observe and describe weather associated with the seasons and how day length varies.	• There are four seasons and the weather also changes with the seasons. Pupils will be able to- • Name the 4 seasons (Spring, Summer, Autumn and Winter). • Name weather patterns associated with each season. • Say which season their birthday is in. • Say that there are more daylight hours in the summer than in winter and that these increase or decrease during the year.	• Recognise that questions can be answered in different ways. • Identify how a question could be answered: (Survey, Classifying put things into groups, Investigation over time, Secondary source) • To be able to perform simple tests. • Complete a fair test to observe and measure how far a bubble travels. • Record the distance the bubbles travel each time and say which travelled the furthest and which travelled the shortest. • Observe closely, using simple equipment (thermometer, gauge) • Record the amount of rain water in their rain gauge each week and then record which week had the most rainfall. • To gather data and record the temperatures they read from a thermometer.

Year 1 Materials			
Concept: Materials			
Unit of Work	**NC Objectives**	**Endpoints**	
Materials	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: **Types of materials-** wood, plastic, glass, metal, water, rock etc. **Properties of materials-** hard/soft, stretchy/not stretchy, shiny/dull, rough/smooth, bendy/not bendy, absorbent. **Verbs-** crumble, squash, bend, stretch, twist, melt, burn, heat **Senses-** touch, see, hear, smell and taste **Working Scientifically Vocabulary:**	• Distinguish between an object and the material from which it is made. • Identify and name a variety of everyday materials, including wood, plastic, glass, 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 physical properties.	• All objects are made of one or more materials. • Materials can be described by their properties. Pupils will be able to- • Name the materials an object is made from (metal, plastic etc) • Describe the properties of materials. (The wooden car is hard and heavy, the plastic car is hard and light.) • Sort objects depending on their properties (hard, soft, bendy, stretchy).	• Identify and classify objects by their materials. • Ask simple questions about which materials would be most suitable for a purpose. • Make predictions about which material is the most/least shock absorbent, most/least waterproof. • Make predictions about which material melts the quickest/slowest. • Perform simple tests to find out which material is the most/least shock absorbent, most/least waterproof. • Perform simple tests to find out which material will melt the quickest/slowest. • Observe changes to materials. • Measure the height a material moves. • Record findings in a table.

observe, changes, sort, group, compare, identify, measure, chart, test, investigate,			

Year 1 Plants			
Concept: The Natural World- The Survival of Plants			
Unit of Work	**NC Objectives**	**Endpoints**	
Plants	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Roots, shoots, soil, stability, plant, leaves, stem, petal, tree, trunk, branch, leaf, root, bark. evergreen, deciduous **Working Scientifically Vocabulary:** observe, change, sort, compare, investigate, explore.	• Identify and name a variety of common plants, including garden plants, wild plants and trees, and those classified as deciduous and evergreen. • Identify and describe the basic structure of a variety of common plants including roots, stem/trunk, leaves and flowers.	• Plants have common parts, which vary depending on the type of plant. • Some trees keep their leaves all year (evergreen) while other trees drop their leaves during autumn and grow them again during spring (deciduous). Pupils will be able to- • Name the parts of a plant. • Say which trees are deciduous and evergreen when they observe seasonal changes	• Observe plants and parts of plants closely. • Ask simple questions and recognise that they can be answered in different ways. (Survey, Classifying put things into groups, Investigation over time, Secondary source) • Observe carefully using simple equipment (magnifying glasses) • To be able to use parts of the plant to identify and classify it. • To be able to use simple features of a plant to sort and group them

Year 1 Animals Including Humans

Concept: The Natural World- The Survival of Animals and Humans, Identifying Living Things			
Unit of Work	**NC Objectives**	**Endpoints**	
Animals including humans	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Senses, hear, sight, taste, smell and touch bird, vertebrate, invertebrate, minibeast, fish, amphibians, reptiles, mammals, herbivores, carnivores and omnivores. **Working Scientifically Vocabulary:** grouping, sort, compare, identify , Venn diagram, test, classifying,	• 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.	• Humans (and other animals) find out about the world using their senses. Humans have five senses – sight, touch, taste, hearing and smelling. • Animals and humans eat certain things - some animals are carnivores, some omnivores, some herbivores. • Living things are different from non-living things. A living thing can be categorised as needing certain things to survive and be alive. Pupils will be able to- • Say that omnivores eat plants and animals • Say that herbivores eat plants • Say that carnivores eat animals • Name the 5 senses • Name what a living thing needs to survive (air, water, food, shelter) • Say that somethings are living and some things are not and name living things and non-living things	• Observe closely, using simple equipment. • Observe and record findings in a table. • Identify, name and sort animals. • To be able to record data in simple ways (chart). • Record data in simple ways to sort animals into groups using Venn diagrams.

YEAR 2

Year 2 Living things and their habitat			
Concept: The Natural World- Identifying Living Things, Survival of Plants			
Unit of Work	**NC Objectives**	**Endpoints**	
Living things and their habitat	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Habitat, microhabitat, living, dead, never been alive, suited, basic needs, food chain, shelter. Organism – plant, animal Invertebrate **Names of local habitats** e.g. pond, woodland etc. **Names of micro-habitats** e.g. under logs, in bushes etc. **Working Scientifically Vocabulary:** observe, group, sort, identify, compare, data, record, table,	• 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 micro-habitats • 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.	• All objects are either living, dead or have never been alive. • Animals and plants live in a habitat to which they are suited. • There are specific names used for different infant and adult animals. • To grow into healthy adults they need the right amounts and types of food and exercise.	• To ask simple questions and recognise that they can be answered in different ways. • To be able to observe habitat in the school grounds closely. • To sort a range of materials and matter into living, dead or have never been alive. • To be able to gather and record data to help answer a question. • To be able to record data in a tally chart. • To be able to record data in a bar chart. • To be able to observe using a microscope/hand lens. • To be able to use observations to suggest answers to questions.

chart, magnifying glass.			

Year 2			
Concept: Materials			
Unit of Work	**NC Objectives**	**Endpoints**	
Materials	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: **Names of materials –** wood, metal, plastic, glass, brick, rock, paper, cardboard **Properties of materials –**opaque, transparent and translucent, reflective, non-reflective, flexible, rigid Shape- twist, squash, bend, stretch **Working Scientifically Vocabulary**	• 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.	• All objects are made of one or more materials that are chosen specifically because they have suitable properties for the task. • When choosing what to make an object from, the properties needed are compared with the properties of the possible materials. • A material can be suitable for different purposes and an object can be made of different materials. • Objects made of some materials can be changed in shape by bending, stretching, squashing and twisting.	• To be able to ask simple questions and recognise that they can be answered in different ways. • To be able to use their observations and ideas to suggest answers to questions. • To be able to gather and record data to help in answering questions. • To be able to perform simple tests. • To use their observations and ideas to suggest answers to questions. • To be able to use simple measurements to gather data.

observe, compare, test, investigate, measure, data, results, table.			

Year 2 Animals Including Humans			
Concept: The Natural World- The Survival of Animals and Humans			
Unit of Work	**NC Objectives**	**Endpoints**	
Animals Including Humans	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Classification, offspring, reproduction, growth, stages of life, **Life processes-** growth, nutrition, respiration. Exercise, heartbeat, hygiene, germs, disease, food types **Working Scientifically Vocabulary:** Observe, group, sort, compare, identify, measure, data, record, table, tally chart.	• 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.	• Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be young that grow into adults. • In other animals, there may be eggs laid that hatch to young or other stages which then grow to adults. • The young of some animals do not look like their parents e.g. tadpoles. • All animals, including humans, have the basic needs of feeding, drinking and breathing in order to survive. • To grow into healthy adults, they also need the right amounts and types of food and exercise. • Good hygiene is also important in	• To be able to use observations to suggest answers to questions. • To be able to record data (flow diagram). • To be able to make observations and record observations through diagrams and words (diaries). • To be able to record data (table). • To be able to perform a simple test. • To be able to record data (tally chart).

		preventing infections and illnesses.	

Year 2 Plants			
Concept: The Natural World- The Survival of Plants			
Unit of Work	**NC Objectives**	**Endpoints**	
Plants	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Year 1 Vocab + light, shade, sun, heat, cool, water, grow, healthy, temperature **Parts of plants –** Roots, trunk, stalk, leaf, flower, petal, seeds, bulbs. Trees, plants, wild, flowering, garden **Working Scientifically Vocabulary:** Observe, sort, compare, identify, measure, data, record.	• 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.	• Plants may grow from either seeds or bulbs. These then germinate and grow into seedlings which then continue to grow into mature plants. • These mature plants may have flowers which then develop into seeds, berries,fruits etc. • Seeds and bulbs need to be planted outside at particular times of year and they will germinate and grow at different rates. • Some plants are better suited to growing in full sun and some grow better in partial or full shade. • Plants also need different amounts of water and space to grow well and stay healthy.	• To be able to observe closely using simple equipment (magnifying glass) • To be able to sort objects using observable features. • To be able to recognise that questions can be answered in a range of ways. • To be able to gather and record data to help in answering a question. • To use their observations and ideas to suggest answers to questions.

YEAR 3

Year 3 Forces and Magnets			
Concept: Pushes and Pulls (Forces)			
Unit of Work	**NC Objectives**	**Endpoints**	
Forces and Magnets	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: **Force -** push, pull, contact force, non-contact force, magnetic force, **Magnets -** strength, attract, repel, magnetic material, poles, north pole, south pole. **Working Scientifically Vocabulary:** Bar chart, comparative test, fair test, conclusion, interpret	• 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.	• A force is a push or a pull. • When an object moves on a surface, the texture of the surface and the object affect how it moves. • A magnet attracts magnetic material. • The strongest parts of a magnet are the poles. Magnets have two poles – a north pole and a south pole. • If two like poles are brought together they will push away from each other – repel. • If two unlike poles, e.g. a north and south, are brought together they will pull together – attract. • For some forces to act, there must be contact . • Some forces can act at a distance e.g. magnetism.	• Set up a simple fair-test. • Record findings in a bar chart. • Identify changes related to scientific ideas. • To be able to draw simple conclusions based on their results. • To be able to orally recall their findings. • To be able to make systematic and careful observations.

Year 3 Light

Concept: Energy			
Unit of Work	**NC Objectives**	**Endpoints**	
Light	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Light, light source, bright, dark, absence of light, transparent, translucent, opaque, shiny, surface, shadow, reflect, sunlight. **Working Scientifically Vocabulary:** Estimate, data, bar chart, accurate.	• 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 a solid object. • Find patterns in the way that the sizes of shadows change.	• We see objects because our eyes can sense light. Dark is the absence of light. • We cannot see anything in complete darkness. • Some objects, for example, the sun, light bulbs and candles are sources of light. • Objects are easier to see if there is more light. Some surfaces reflect light. • The light from the sun can damage our eyes and therefore we should not look directly at the sun and can protect our eyes. • Shadows are formed on a surface when an opaque or translucent object is between a light source and the surface and blocks some of the light. • The size of the shadow depends on the position of the source, object and surface.	• Set up a simple fair test. • Record the darkness of shadows using tables and drawings. • Record how an object can be seen using drawings. • Make systematic and careful observations and measurements. • Record findings as a bar chart. • Make predictions for further values. •

Year 3 Animals including Humans
Concept: The Natural World- The Survival of Animals and Humans

Unit of Work	NC Objectives	Endpoints	
Animals including Humans	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Nutrition, nutrients, diet Vitamins, minerals, fats, proteins and carbohydrates **Functions of skeletons** – protect, support and movement, bones, joints, muscles. **Working Scientifically Vocabulary:** Comparative, diagrams, data	• 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 animals have skeletons and muscles for support, protection and movement.	• Animals need to eat in order to get the nutrients they need. • Food contains a range of different nutrients – carbohydrates, protein, vitamins, minerals, fats, sugars, water – and fibre that are needed by the body to stay healthy. • A piece of food will often provide a range of nutrients. • Humans, and some other animals, have skeletons and muscles which help them move and provide protection and support.	• Record what would happen to a human who did not eat using drawings. • Report on findings from enquiries. • Use evidence to answer questions. • Set up a comparative test. • Record data in a table. • Asking questions and to identify the correct type of enquiry to answer a question.

Year 3 Rocks			
Concept: Materials			
Unit of Work	**NC Objectives**	**Endpoints**	
Rocks	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**

Vocabulary: Rock, grain, crystals, layers, texture, absorb,erode, fossil, minerals, soil, classify **Types** – Sedimentary, metamorphic, igneous. **Properties** – Hard/soft, permeable/impermeable. **Working Scientifically Vocabulary:** Characteristics, properties, similarity, difference, comparative	• 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.	• Rock is a naturally occurring material. • There are different types of rock which have different properties. • Rocks can be hard or soft. They have different sizes of grain or crystal. They may absorb water. • Soils are made up of pieces of ground down rock which may be mixed with plant and animal material (organic matter). The type of rock, size of rock pieces and the amount of organic matter affect the property of the soil. • Some rocks contain fossils. Fossils were formed millions of years ago. When plants and animals died, they fell to the seabed. They became covered and squashed by other material.	• Make careful observations about a variety of rocks and soil. • Measure using beakers and syringes. • Set up simple comparative tests based on the physical properties of rocks. • Classify and present information.

Year 3 Plants			
Concept: The Natural World- The Survival of Plants			
Unit of Work	**NC Objectives**	**Endpoints**	
Plants	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**

Vocabulary: Pollen, pollination, seed, dispersal, nutrients, soil, absorb, transport. **Parts of plants** – roots, stalk, leaf, flower, petal, seeds. **Parts of a flower** – petal, stamen (anther + filament), carpel (stigma + style + ovary + ovule). **Working Scientifically Vocabulary:** Identification, diagram, bar chart, fair test, accurate	• Identify and describe the functions of different parts of plants; roots, stem, leaves and flowers. • Explore the requirements of plants for life and growth (air, light, nutrients from soil and room to grow) and how they vary from plant to plant. • Investigate the ways in which water is transported within plants. • Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	• Many plants, but not all, have roots, stems/trunks, leaves and flowers/blossom. • The roots absorb water and nutrients from the soil and anchor the plant in place. • The stem transports water and nutrients around the plant and holds the leaves and flowers up in the air.. • The leaves use sunlight and water to produce the plant's food. Some plants produce flowers which enable the plant to reproduce. • Pollen, which is produced by the male part of the flower, is transferred to the female part of other flowers (pollination). • This forms seeds which are then dispersed in different ways. • Different plants require different conditions for growth.	• Set up a simple practical enquiry. • Make systematic and careful observations on the roots of a plant. • Use results to draw simple conclusions. • Gather and record data. • Make systematic and careful observations on the function of a flower and how a flower changes over time. • To report on findings from observations

YEAR 4

Year 4 Electricity			
Concept: Energy			
Unit of Work	**NC Objectives**	**Endpoints**	
Electricity	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**

Vocabulary: Electricity, electrical appliances, circuit, complete, series, conductor, insulator. **Components-** battery, cell, bulb, bulb holder, buzzer, crocodile clip, motor, wires, switch. **Switches** – open, close. **Working Scientifically Vocabulary:** Prediction, diagram, fair test, accurate, similarities and differences.	• Identify common appliances that run on electricity • Construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • Identify whether or not a lamp will light in a simple series circuit, based on whether or not the lamp is part of a complete loop with a battery • Recognise that a switch opens and closes a circuit and associate this with whether or not a lamp lights in a simple series circuit • Recognise some common conductors and insulators, and associate metals with being good conductors.	• Many household devices and appliances run on electricity. Some plug in to the mains and others run on batteries. • An electrical circuit consists of a cell or battery connected to a component using wires. • If there is a break in the circuit, a loose connection or a short circuit, the component will not work. • A switch can be added to the circuit to turn the component on and off. • Metals are good conductors so they can be used as wires in a circuit. Non-metallic solids are insulators.	• Set up a simple practical enquiry using the appropriate electrical components. • Use results to make predictions. • Record findings using drawings.

Year 4 States of Matter			
Concept: Materials			
Unit of Work	**NC Objectives**	**Endpoints**	
States of Matter	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Solid, liquid, gas, particles, heating, cooling, state change, melting,	• Compare and group materials together, according to whether they are solids, liquids or gases.	• A solid keeps its shape and has a fixed volume. A liquid has a fixed volume but changes in shape to fit the container.	• Measure liquids accurately. • Make careful observations to deduce whether it is a solid, liquid or gas.

freezing, boiling, evaporation, condensation, temperature, water cycle. **Working Scientifically Vocabulary:** Properties, thermometer, accuracy, reason, relationship.	• 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.	• A liquid can be poured and keeps a level, horizontal surface. • A gas fills all available space; it has no fixed shape or volume. • Melting is a state change from solid to liquid. Freezing is a state change from liquid to solid. The freezing point of water is 0oC. • Boiling is a change of state from liquid to gas that happens when a liquid is heated to a specific temperature and bubbles of the gas can be seen in the liquid. Water boils when it is heated to 100oC. • Evaporation is the same state change as boiling (liquid to gas), but it happens slowly at lower temperatures and only at the surface of the liquid. • Condensation is the change back from a gas to a liquid caused by cooling.	• Sort and classify solids, liquids and gases based on their properties. • Set up a simple scientific enquiry. • To be able to use results to draw simple conclusions. • Make predictions about what will happen to ice cubes and justify them based on previous knowledge. • Ask scientific questions on the water cycle. • To be able to use straightforward scientific evidence to answer questions or to support their findings.

Year 4 Sound			
Concept: Energy			
Unit of Work	**NC Objectives**	**Endpoints**	
Sound	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**

Vocabulary: Sound, source, vibrate, vibration, travel, pitch (high, low), volume, faint, loud, insulation. **Working Scientifically Vocabulary:** Interpret, similarities, differences, data logger, practical, fair testing, accurate, data	• Identify how sounds are made, associating some of them with something vibrating • Recognise that vibrations from a sound 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.	• A sound produces vibrations which travel through a medium from the source to our ears. • The vibrations cause parts of our body inside our ears to vibrate, allowing us to hear (sense) the sound. • The loudness (volume) of the sound depends on the strength (size) of vibrations which decreases as they travel through the medium. • Therefore, sounds decrease in volume as you move away from the source. • Pitch is the highness or lowness of a sound and is affected by features of objects producing the sounds. For example, smaller objects usually produce higher pitched sounds.	• Set up a simple practical enquiry. • Set up a fair test • Interpret information from line graphs. • Answer a question on sound based on the findings from an enquiry. • Make systematic and careful measurements with a data logger. • Report on findings from an enquiry using explanations and drawings. • Identify differences, similarities or changes related to sounds based on simple scientific ideas.

Year 4 Animals Including Humans			
Concept: The Natural World- The Survival of Animals and Humans			
Unit of Work	**NC Objectives**	**Endpoints**	
Animals Including Humans	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: **Digestive system** – oesophagus, stomach, acid, small and large intestine, saliva, nutrients.	• 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.	• Food enters the body through the mouth. • Digestion starts when the teeth start to break the food down. • The food is swallowed and passes	• Make careful observations on the different types of teeth. • Produce a written and oral explanation of the stages of the digestive system.

Teeth – Incisors, canines, premolars, molars,function **Food Chain** – producer, consumer, predator, prey, herbivore, carnivore, omnivore. **Working Scientifically Vocabulary:** Interpret, diagrams	• Construct and interpret a variety of food chains, identifying producers, predators and prey.	down the oesophagus to the stomach. Here the food is broken down further and other chemicals are added. • The food passes into the small intestine. Here nutrients are removed from the food and leave the digestive system to be used elsewhere in the body. • The rest of the food then passes into the large intestine. Here the water is removed for use elsewhere in the body. What is left leaves the body. • Humans have four types of teeth: incisors for cutting; canines for tearing; and molars and premolars for grinding (chewing).	• Use evidence of previous learning on animals to support findings. • Record findings using labelled diagrams. • To ask questions that can be answered using a scientific enquiry

Year 4 Living Things and Their Habitats			
Concept: The Natural World- Identifying Living Things			
Unit of Work	**NC Objectives**	**Endpoints**	
Living Things and Their Habitats	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Classification, classification keys, environment, habitat, human impact, positive, negative, migrate, hibernate, observe, mammal,	• 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	• Living things can be grouped (classified) in different ways according to their features. • Classification keys can be used to identify and name living things. • Living things live in a habitat which provides an environment to which they	• Make predictions on prior knowledge. • Make careful observations on the differences between vertebrates and invertebrates. • To classify and record data using venn diagrams.

amphibian, reptile, bird, fish, invertebrates. **Working Scientifically Vocabulary:** similarity, difference, characteristics, properties, diagram, key, chart	• Recognise that environments can change and that this can sometimes pose dangers to living things.	are suited. • These environments may change naturally e.g. through flooding, fire, earthquakes etc. Humans also cause the environment to change. • These environments also change with the seasons; different living things can be found in a habitat at different times of the year.	• To be able to gather, record, classify and present data in a variety of ways to help in answering questions. • To be able to report on findings from enquiries, including oral and written explanations. • To interpret and communicate on the effectiveness of classification keys.

YEAR 5

Year 5 Forces			
Concept: Pushes and Pulls			
Unit of Work	**NC Objectives**	**Endpoints**	
Forces	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Force, gravity, friction, air resistance, water resistance, upthrust. Newtons (N), push, pull, balance, grams and kilograms. **Mechanical devices** – gears, levers, pulleys,	• 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.	• A force causes an object to start moving, stop moving, speed up, slow down or change direction. • Everything is pulled to the Earth by gravity. This causes unsupported objects to fall. • Air resistance, water resistance and friction are contact forces that act between moving surfaces. • A mechanism is a device that allows a	• Identify scientific evidence that has been used to support or refute ideas or arguments. • Take repeated accurate measurements using a stopwatch. • Explain the degree of trust in results. • To be able to use test results to make predictions to set up further fair tests. • To be able to plan a fair test; identifying

springs. **Working Scientifically Vocabulary:** Justify, control variables		small force to be increased to a larger force. • Pulleys, levers and gears are all mechanisms, also known as simple machines.	the control variables. • Record data accurately using charts and tables. • Use test results to make predictions.

YEAR 5

Year 5 Properties and Changes			
Concepts: Materials			
Unit of Work	**NC Objectives**	**Endpoints**	
Properties and Changes	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Change of state, reversible/non-reversible change, **Thermal conductivity** – thermal conductor, thermal insulator. **Electrical conductivity** – electrical conductor, electrical insulator	• 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	• Materials have different uses depending on their properties and state (liquid, solid, gas). • Some materials will dissolve in a liquid and form a solution while others are insoluble and form sediment. • Mixtures can be separated by filtering, sieving and evaporation. • Some changes to materials such as dissolving, mixing and changes of state are reversible, but some changes such	• Take accurate measurements using a data-logger. • Measure accurately using a thermometer. • To be able to report and present findings from enquiries, including conclusions, causal relationships and explanations. • To be able to record data in a line graph. • Use test results to make predictions • Recognise control variables when planning a fair test

Dissolving – soluble, insoluble, solid, liquid, particles. **Separating materials**- filter, evaporate, condense. **Working Scientifically Vocabulary:** Line graph, relationship, independent variable, dependent variable.	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. ● 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.	as burning wood result in the formation of new materials and these are not reversible.	● Evaluate an enquiry in terms of the amount of trust one can have in it. ● Plan a scientific enquiry that will answer a question.

Year 5 Earth and Space			
Concepts: The Universe			
Unit of Work	**NC Objectives**	**Endpoints**	
Earth and Space	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: **Day and night** - Earth, axis, rotate **Solar system** – Star = Sun, Planets = Mercury, Venus,	● 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.	● The Sun is a star. It is at the centre of our solar system. There are 8 planets that travel around the Sun in fixed orbits. ● Earth takes 365 ¼ days to complete its orbit around the Sun.	● To be able to plan a scientific enquiry to answer a question. ● To be able to report a presentation of an explanation.

Earth, Mars, Jupiter, Saturn, Uranus, Neptune **Phases of the Moon** e,g full moon, half moon, crescent moon. Lunar month, orbit, planets.	• 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.	• The Earth rotates (spins) on its axis every 24 hours. As Earth rotates half faces the Sun (day) and half is facing away from the Sun (night). • As the Earth rotates, the Sun appears to move across the sky. • The Moon orbits the Earth. It takes about 28 days to complete its orbit.	

Year 5 Animals Including Humans			
Concepts: The Natural World- The Survival of Animals and Humans			
Unit of Work	**NC Objectives**	**Endpoints**	
Animals Including Humans	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Gestation, Foetus, Fertilisation, Species, Baby, Toddler, Adolescent, Adult, Elderly person, Puberty, Hormones. **Working Scientifically Vocabulary:**	• Describe the changes as humans develop from birth to old age. (This unit of study will need to be taught in conjunction with the school's sex education policy.)	• When babies are young, they grow rapidly. They are very dependent on their parents. • As they develop, they learn many skills. At puberty, a child's body changes and develops primary and secondary sexual characteristics. • This enables the adult to reproduce.	• To be able to raise different types of questions (non-statutory). • To be able to communicate data using a scatter graph. • To be able to present conclusions. • To be able to use evidence to refute or support an idea. • To be able to record data within tables. • To be able to record data using line graphs.

evidence, justify, argument, scatter graph.			

Year 5 Living Things and their Habitats			
Concepts: The Natural World- Identifying Living things, Survival of Plants			
Unit of Work	**NC Objectives**	**Endpoints**	
Living Things and their Habitats	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Life cycle, reproduce, sexual, asexual, **Animals –** amphibians, reptiles, birds, mammals, insects, fish **Animal development –** egg, larva, offspring, adult, metamorphosis **Parts of a flower** – petal, stamen, carpel. **Processes** – pollination,	• 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.	• As part of their life cycle, plants and animals reproduce. • Most animals reproduce sexually. This involves two parents where the sperm from the male fertilises the female egg. • Animals, including humans, have offspring which grow into adults. In humans and some animals, these offspring will be born alive, such as babies or kittens, and then grow into adults. • In other animals, such as chickens or snakes, there may be eggs laid that hatch to young which then grow to adults. • Some young undergo a further change before becoming adults e.g. caterpillars	• To be able to plan the correct enquiry to answer a question. • To be able to recognise which secondary sources will be most useful to their research (non-statutory). • To be able to use scientific diagrams and labels. • To be able to explain findings.

fertilisation, germination **Working Scientifically Vocabulary:** evidence, justify, control variable.		to butterflies. This is called a metamorphosis. • Plants reproduce both sexually and asexually. Asexual plant reproduction which involves only one parent. • Sexual reproduction occurs through pollination, usually involving wind or insects.	

YEAR 6

Year 6 Light			
Concepts: Energy			
Unit of Work	**NC Objectives**	**Endpoints**	
Light	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Light source, light ray, transparent, translucent, opaque, straight line, shadow, reflect, absence of light. **Working Scientifically Vocabulary:**	• 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	• Light appears to travel in straight lines, and we see objects when light from them goes into our eyes. • The light may come directly from light sources, but for other objects some light must be reflected from the object into our eyes for the object to be seen. • Objects that block light, opaque, (are not fully transparent) will cause shadows.	• To plan a scientific enquiry that proves light travels in a straight line. • Use scientific evidence to prove to support an idea. • To use test results to make predictions whether a shadow size will increase or decrease. • To plan a scientific enquiry accurately to measure the size of a shadow.

independent variable, dependent variable, control variable, bar chart, relationship, justify.	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.	● Because light travels in straight lines, the shape of the shadow will be the same as the outline shape of the object.	● Use equipment to accurately measure the size of a shadow (rulers and measuring tapes) and the amount of light that passes through a material (data loggers). ● To accurately record and label scientific diagrams of a light ray. ● To record data accurately from a data logger onto a table. ● To be able to plan a fair test; recognising and controlling variables.

Year 6 Electricity			
Concepts: Energy			
Unit of Work	**NC Objectives**	**Endpoints**	
Electricity	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Circuit, complete circuit, circuit diagram, symbol, cell, battery, bulb, buzzer, motor, switch, voltage/volts **Effects of electricity**: Light, sound, movement, heat	● 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	● Adding more cells/battery with a higher voltage to a complete circuit will make a bulb brighter, a motor spin faster or a buzzer make a louder sound. ● Adding more bulbs to a circuit will make each bulb less bright. Using more motors or buzzers, each motor will spin more slowly and each buzzer will be quieter. ● Turning a switch off (open) breaks a circuit so the circuit is not complete and	● Record diagrams of electrical circuits with symbols. ● Take repeat measurements of data with precision (including using a data-logger). ● Explain the degree of trust can be had in results using a data logger. ● Plan a scientific enquiry on an electrical circuit based on their own question. ● Plan a fair test by recognising the control

Working Scientifically Vocabulary: independent variable, dependent variable, control variable, reliability, accuracy, precision, data logger.	diagram.	electricity cannot flow. ● You can use recognised circuit symbols to draw simple circuit diagrams.	variables when creating an electrical circuit. ● Use predictions based on the prior key learning to set up their own enquiry. ● Choose their own method for recording their results ● To evaluate the fairness, accuracy and reliability of their own experiment question.

Year 6 Animals and Humans			
Concepts: The Natural World- The Survival of Animals and Humans			
Unit of Work	**NC Objectives**	**Endpoints**	
Animals and Humans	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: **Circulatory system –** heart, pulse, rate, pumps, blood, blood vessels, veins, artertries, transported, lungs, oxygenated, deoxygenated, nutrients. **Diet –** balanced, vitamins, minerals,	● Identify and name the main parts of the human circulatory system, and explain 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.	● The heart is part of the circulatory system and is responsible for pumping oxygenated and deoxygenated blood around the body. ● Blood carries oxygen, water and nutrients in order to survive. ● Diet, exercise, drugs and lifestyle have an impact on the way our bodies function. ● Some conditions are caused by deficiencies in our diet e.g. lack of	● Label the components and explain the function of the heart, blood and blood vessels within the circulatory system. ● Plan pattern-seeking enquiry relating to different types of exercises. ● Report causal relationships between different types of exercise. ● Record results using a line graph. ● Present findings from research.

proteins, carbohydrates, sugars, fats. Exercise, drugs, lifestyle **Working Scientifically Vocabulary:** Relationship Line Graph Scatter Graph		vitamins.	

Year 6 Evolution and Inheritance			
Concepts: The Natural World- Identifying Living Things			
Unit of Work	**NC Objectives**	**Endpoints**	
Evolution and Inheritance	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Evolve, survival, offspring, reproduction, vary, characteristics, suited, adapted, environment, inherited, species, fossils. **Working Scientifically**	• 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	• All living things have offspring of the same kind, as features in the offspring are inherited from the parents. • Plants and animals have characteristics that make them suited (adapted) to their environment. • Over time, these inherited characteristics become more dominant within the population. Over a very long period of time, these characteristics may be so	• Identify scientific evidence to support an idea: - Identifying features within fossils. - To draw animal offspring. - Why have bird beaks evolved over time? • Plan an enquiry that will answer a question. • Record data in a table and display data in an appropriately chosen graph. • Recognise which secondary sources

Vocabulary: Justify, evidence, graph	may lead to evolution.	different to how they were originally that a new species is created. This is evolution. ● Fossils give us evidence of what lived on the Earth millions of years ago.	will be most useful to research ideas.

Year 6 Living Things and their habitats			
Concepts: The Natural World- Identifying living things, The Survival of Plants.			
Unit of Work	**NC Objectives**	**Endpoints**	
Living Things and their habitats	**Pupils at the Expected Standard will:**	**Key Knowledge** **Pupils will know:**	**Working Scientifically Skills** **Pupils will be able to:**
Vocabulary: Classification, vertebrate, invertebrate **Kingdoms:** animal, plant, 'micro-organism' **Classes:** amphibian, reptile, bird, mammal, Flowering plant, non-flowering plant **Working Scientifically Vocabulary:** Justify, evidence.	● 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.	● Living things can be formally grouped according to characteristics. ● Plants and animals are two main groups but there are other living things that do not fit into these groups e.g. micro-organisms Plants can make their own food whereas animals cannot. ● Animals can be divided into two main groups: those that have backbones (vertebrates); and those that do not (invertebrates). ● Vertebrates can be divided into five small groups: fish; amphibians; reptiles; birds; and mammals. ● Invertebrates can be divided into a number of groups, including insects,	● Make a key to classify plants. ● Present information by creating and using an accurate classification key. ● Identify scientific evidence that has been used to support or refute ideas or arguments.

		spiders, snails and worms. ● Plants can be divided broadly into two main groups: flowering plants; and non-flowering plants.	