Progression Ladder: Science

Science Intent

Our scheme is formed from the statutory Framework for the EYFS and the National Curriculum. The scheme of work is knowledge-based but we have placed skills, and in particular, working scientifically, at the heart of scheme. We have planned in community projects and visits to make the science curriculum as real to the children as possible. The children for example, visit the science and industry museum and Poole's Cavern.

We have gone further than the requirements of the National Curriculum to build a scheme of work that is ambitious but give our children a world perspective, for example, by incorporating famous scientists into the scheme of work. The needs of our children mean that we have made reading, language and vocabulary development to be key features of our curriculum. The subject has been designed and planned to give children the knowledge and skills that they need for later life such as: questioning, problem solving, freethinking, resilience, confidence and presenting skills and curiosity.
In science we have planned end points for pupils to attain by the end of the topic and year and these are written as knowledge and key skills. These skills have been carefully sequenced to enable our children to know more and remember more. There is more repetition than in the NC requirements to help pupils to retain knowledge and skills. Topics, for example, such as sound are completed more frequently than in the NC programmes of study.

The subject has been planned and to develop pupils' personal development such as their social skills, empathy, compassion, respect and British Values. The scheme of work embeds personal development expectations such as e-safety discussions and learning. Through science, we develop pupils' spiritual, moral and cultural understanding. Equality and diversity are important to us at St Margaret's. The curriculum has been designed to give pupils an understanding of different groups in modern society such as different genders including gender identity, disability, culture, faith, ethnicity, sexuality and different ages.

The scheme of work has been designed and planned to develop pupils' practical skills and provide learning experiences they would not normally be able to access. We have a number of international new arrivals. These children will as much as possible, follow the same curriculum as others, however for the first few months transitioning into school their curriculum will be focused more heavily on reading, writing and language acquisition. The pupils who are disadvantaged and who have special needs and/or disabilities cover the same content as all pupils. Some pupils, who have specific needs or physical needs, these will be withdrawn occasionally from lessons for specific exercises or interventions. Where a pupil has severe needs, they will have a bespoke curriculum matched to their ECHP plan.

Science	Nursery	Reception	Year one	Year two	Year three	Year four	Year five	Year six
Knowledge – by the end of the year pupils should know:								
Autumn One **Non-statutory guidance*	GROWTH • To know how they have grown from a baby to a child. • To know the different body parts that they have e.g. head, legs, arms, body, feet, toes, fingers. SEASONS • To name the different seasons. • To notice and talk about the changes in the seasons; specifically the changes in the weather. • Autumn vocab: E.g. rain, sun, cold, warm. Working scientifically skills: • Observing closely body parts and seasonal changes. • Asking simple questions and using observations to help answer questions.	GROWTH • To know how the children have grown from a baby to a child to being an adult. This is will specifically look at the growth of body parts e.g. head, legs, arms, body, feet, toes, fingers. SEASONS • To recap the naming of the different seasons. • To know and name the different senses. • To talk about the different weather that happens in the different seasons; specifically be able to talk about Autumn • To use weather specific language e.g. mild, drizzle, overcast. To talk about the effect that the weather has on plants. Working scientifically skills: • Observing closely body	ANIMALS INC HUMANS • identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense *(One sense per lesson)* Working scientifically skills: • Observing a body and identify different body parts. • Ask simple questions about the body e.g. do all eyes look the same? • Record the different types of eyes in a class using a pictogram. Use this to answer the question. • Use their hands to help sort and classify different objects in a 2 part Venn diagram based on touch. • Create a hypothesis about sound e.g. I think there will be more different sounds in the lunch hall than	PLANTS *(Consolidate Y1 parts of a plant)* • 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. LIVING THINGS & HABITATS • explore and compare the differences between things that are living, dead, and things that have never been alive Working scientifically skills: • To ask simple questions and create hypothesises around healthy plants. • Carry out an pre-planned investigation into healthy plants. • Use non-standard units of	ROCKS • 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. • *Know that different types of rock can be measured on the hardness scale* • *Know the different types of rock and how they are formed (metamorphic, igneous sedimentary)* • *Know the names of some rocks* • *Know some of the uses of stone e.g. roofs, walls, etc* Working scientifically skills: • Use secondary sources to	ANIMALS INC HUMANS • 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 Working scientifically skills: • Make careful observations. • Identify differences, similarities and changes relating to scientific ideas. • Ask relevant questions and use scientific enquiry to answer them. • Set up simple practical enquiries, comparative and fair tests. • Report on findings from enquiries, including oral and written explanations	MATERIALS & THEIR PROPERTIES • compare and group together everyday materials on the basis of their properties, including their hardness, solubility, transparency, conductivity (electric and thermal), and response to magnets • give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials including metals, wood and plastic • *know what soluble means and how to test for it.* • *Know what conductivity means, transparency mean.* • *Know that materials are used for different jobs based on their properties.*	LIVING THINGS & HABITATS • 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. • *Know what a germ and bacteria are* • *Know there are many microorganisms* • *Know how they help things to decay, rot and break down* • *Know what a fungus is* Working scientifically skills: • Reading and reporting data gathered from

	• Gathering and recording data to help answer questions e.g. recording what the weather is like in different seasons.	parts and seasonal changes. • Asking simple questions and using observations to help answer questions. • Gathering and recording data to help answer questions e.g. recording what the weather is like in different seasons.	in the playground. Set up and perform a test to test their hypothesis. Record their findings in a table and use the findings to come to a conclusion. • Carry out a pre-planned investigation into the different tastes of foods. Classify foods in a table according to their tastes.	measurement to record data. E.g. length of strong to record the height of plants or the number of cubes. Record their results in a table. • Pupils explain why changing variables may lead to an unfair test. • Classify objects into living, dead or never alive. Use sorting circles to do this with an oral explanation.	research rock formation and present findings using written explanations and labelled diagrams. • Set up simple practical enquiries to investigate the harness of rocks. Present findings in a table and use the evidence to come to a conclusion which can be presented as a written explanation. • Make observations to compare, sort and classify rock types. Ask simple questions which can be used to help classify rocks using a classification key. • Make predictions about the permeability of different soils based	and conclusions. • Use evidence from experiments carried out to support their findings.	<u>Working scientifically skills:</u> • Classifying materials based on if they are natural or man-made and magnetic or non-magnetic. • Take measurements of the hardness of materials. Record findings in a table. Write an explanation about what they have concluded. • Pupils write a hypothesis about which materials are magnetic based on real life experiences and prior learning. • Pupils carry out their own investigation into the materials properties and record findings in a table.	classification keys with increasing accuracy. • Create a written report which can be presented orally on the role of good and bad bacteria. • Plan an investigation where variables will be controlled while investigating fungus. Include a hypothesis beforehand. • Observe changes over a period of time and record these results. Use results to present their findings to support or refute their hypothesises. • Use online sources to research viruses and present a report.

					on observations. • Set up a simple investigation to test the permeability and record measurements using standard units. • Use the data gathered to present it in a bar chart and support their conclusions. • Carry out a simple investigation to create a fossil. Provide written and oral explanations about how fossils are formed. • Report scientific knowledge from the unit as a poster and present this to the class.		• Record data using a data logger to identify the level of transparency of materials. • Orally discuss the transparency of materials and suitability for certain uses. • Pupils will set up their own experiment to investigate if materials are conductors or insulators as well as soluble or insoluble. They will recognise and control variables where necessary. • Write hypothesise before experiments which will then be tested and use their observations and data as evidence to support or	

							refute their predictions.	
Autumn Two **Non-statutory guidance*	SEASONS • To name the different seasons. • To notice and talk about the changes in the seasons; specifically the changes in the weather. • Winter vocab: E.g. snow, frost, cold, rain, clouds. Working scientifically skills: • To ask different questions about seasonal change. • Observe the changes in the seasons. • Record data to help answer questions related to the seasons.	SEASONS • To recap the naming of the different seasons. • To name the different seasons. • To know and name the different senses. • To talk about the different weather that happens in the different seasons; specifically be able to talk about Winter • To use weather specific language e.g. freezing, cold, ice, hail, snow • To talk about the effect that the weather has on plants. Working scientifically skills: • To ask different questions about seasonal change. • Observe the changes in the seasons.	ANIMALS INC HUMANS • 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) Working scientifically skills: • Create a hypothesis about which animals we will see in our local area. • Carry out an investigation	ANIMALS INC HUMANS • 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. Working scientifically skills: • Make observations and compare different lifecycles of animals. • Use secondary sources to research how to provide the right	PLANTS • 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 (ait, light, water, nutrients from soil, 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 • *Know where plants grow and know that some plants such as air plants, the cactus need less water than other plants.*	SOUND • 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 the vibrations that produced it • know that sounds get fainter as the distance from the sound source increases • *understand how sound can be insulated* Working scientifically skills: • Set up simple and practical	MATERIALS & THEIR 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 decide how mixtures might be separated including through filtering, sieving and evaporating • 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, inc changes associated with burning and the action of acid on bicarbonate of soda	ANIMALS INC HUMANS • identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • describe the ways in which nutrients and water are transported within animals, including humans Working scientifically: • Take accurate measurements while making *blood* using the measuring cylinders. • Create a model of the circulatory system and present this orally to another group/class.

		• Record data to help answer questions related to the seasons.	where they observe animals seen locally. • Compare common animals and state what is similar and different about each one. Use these comparisons to group and classify animals according to characteristics e.g. do they have wings? • Use secondary sources to come to conclusions about if an animals is an herbivore, carnivore or omnivore. • Report scientific knowledge as a poster on a chosen animal.	nutrition to animals. • Make a hypothesis about what will happen to our bodies after exercise. • Carry out an experiment and observe the changes before and after exercise. Revisit hypothesis and come to a conclusion. • Make comparison between meals and come to conclusions about which are healthy or unhealthy. • Report an oral explanation about the importance of hygiene and diet.	<u>Working scientifically skills:</u> • Use scientific knowledge to answer questions and present written explanations e.g. what would happen if a plant didn't have any roots? • Present knowledge about plants using labelled diagrams. • Set up a simple experiment to investigate plant growth. Consider dependent, independent and controlled variable to make the test fair. • Make observations over time and record findings using written explanations and standard units of	enquiries to answer questions. • Make predictions and use scientific evidence to support their findings. • Take accurate measurements using standard units and a range of equipment including data loggers. • Record findings and present them using a line graph. • Use results from investigations to support conclusions. • Report findings from enquiries, including oral and written explanations.	• *know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution* • *know that solids, liquids and gases can be separated, including through filtering, sieving and evaporating* <u>Working scientifically skills:</u> • Demonstrate reversible changes using a labelled scientific diagram. • Pupils develop their own hypothesis, investigation and record data to study solubility and saturation. • Make hypothesise about how materials can be separated. Devise an investigation with given equipment to test. Carry out the	• Make careful observations and use equipment to dissect a heart. Present their dissected heart on a display board showing the different parts.

					measurement . • Ask relevant scientific questions and make predictions based on scientific knowledge. • Take careful observations of a flower and report scientific knowledge through labelled diagrams.		investigation controlling variables where necessary. Revisit the hypothesis and draw conclusion from what has been observed during the investigation. • Repeat the investigation where necessary.	
Spring One **Non-statutory guidance*	MATERIALS • To name the different types of material e.g. plastic, fabric, stone, sand • To use senses to explore a range of materials. • To begin to talk about their different properties e.g. thick,	MATERIALS • To name the different types of materials e.g. wood, plastic, metal, paper, cotton (wool), glass • To begin to talk about their different properties e.g. waterproof. • To understand the terms floating and sinking.	MATERIALS & THEIR PROPERTIES • 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 Working scientifically skills: • Observe a range of different materials and identify/classify them according to	MATERIALS & THEIR PROPERTIES • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses *Particular use - which materials make a good bridge?* Working scientifically skills:	MAGNETS • 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	LIVING THINGS & HABITATS • 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 ANIMALS INC HUMANS • construct and interpret a variety of food chains, identifying	LIVING THINGS & HABITATS • describe the differences in the life cycles of a mammal, an amphibian, an insect and a bird Working scientifically skills: • Make observations of a hatchery over time. • Ask key questions based on relevant science knowledge. • Draw labelled diagrams to show	ANIMALS INC HUMANS • recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function *(including legal and illegal drugs)* Working scientifically: • Make a prediction about the recommended portion size of cereal. • Use scales to take accurate measurements when weighing cereal. Present the findings in a table.

	thin, rough, smooth. • To understand the terms light and dark. Working scientifically skills: • To observe different materials closely. • To group identify and classify different materials.	GROWTH • To know what healthy choices are and the positive impact this on the body e.g. sleep for growth Working scientifically skills: • To observe different materials closely. • To group identify and classify different materials. • To carry out simple tests relating to floating and sinking. • To use information and observations to suggest answers to questions regarding	their materials. Singular sorting circles at first then two part Venn diagrams for common objects made of more than one material. • Ask questions and create hypothesises then carry out a simple pre-planned investigation. • Make observations of typical paper and the recycled paper they make. What is the same and what is different?	• Make a hypothesis about the most common material found in the classroom. • Make close observations to identify the materials of different objects. • Identify and classify the materials used on different objects. Record this in a table. • Revisit the hypothesis and come to a conclusion on the evidence collected. • Give explanations based on scientific	attract or repel each other, depending on which poles are facing Working scientifically skills: • Set up a simple enquiry and use observation skills to identify the different poles on a magnet. • Make predictions about if materials will be magnetic or not using real life experiences. • Carry out a simple investigation to find out which materials are magnetic and which are not.	producers, predators and prey • *understand the predator prey relationship* • *know that some animals are herbivores, carnivores or omnivores* • *know what a producer is and how these appear on food chains* Working scientifically skills: • Make observations and use grouping and classifying skills to sort animals according to characteristics . (Carrol diagrams). • Ask relevant questions about animals when	the life cycles of different animals. • Report the findings of the lifecycles of different animals. Oral presentation on the lifecycle of chickens as a mock documentary. • Use secondary sources to investigate the size of an animals and its lifespan. Plot the data on a scatter graph and use the data to create conclusion of any correlation.	• Use the cereal boxes' nutritional information as a source to write a conclusion about the nutritional information of the cereal. • While investigating the impact of exercise on the way the body functions pupils should: write a hypothesis, set up and perform a test, while controlling variables, record the data using a line graph and use the evidence to support or refute the hypothesis and write a conclusion. • Group and classify drugs into different categories.

		healthy diets and lifestyles.		knowledge about the suitability of materials for different purposes. • Carry out a fair test to test the strength of bridges. Make close observations to conclude the best material.	Record these findings in a table. Orally discuss the findings and compare what they have noticed compared to their predictions. • Independently set up an investigation to see what common items are magnetic and which are not. Group and classify the objects based on the results in a table of their own design. • Pupils write a simple hypothesis based on magnets to test the strength e.g. the larger the magnet the stronger it will be. Pupils set up a simple experiment to test the hypothesis e.g. see how many paper	classifying them. • Record findings using simple scientific language, drawings and labelled diagrams. • Gathering data from nearby locations and making careful observations of animals in their habitats. • Identify similarities and differences relating to animal classification.		*(Y5 Materials)* • *know that some materials will dissolve in liquid to form a solution, and describe how to recover a substance from a solution)* • *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.* <u>Working scientifically:</u> • While investigating solubility pupils should: write a hypothesis, set up and perform a test, while controlling variables, record the data using a bar chart and use

					clips it can pick up or see how far away the magnet needs to be to attract the paperclips. • Record their data using standard measurements and present in a bar chart. Use the evidence they have collected to come to a conclusion.			the evidence to support or refute the hypothesis and write a conclusion.
Spring Two **Non-statutory guidance*	SEASONS • To name the different seasons. • To notice and talk about the changes in the seasons; specifically the changes in the weather. • Spring vocab: E.g. rain, sun, warm, cool	FORCES • To name the forces push and pull. • To know the directions in which the forces travel e.g. push away from you, pull towards you.	MATERIALS & THEIR PROPERTIES • 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. Working scientifically skills:	MATERIALS & THEIR PROPERTIES • identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses	ANIMALS INC HUMANS • 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	MATERIALS & THEIR PROPERTIES • 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	LIVING THINGS & HABITATS • describe the life process of reproduction in some plants and animals ANIMALS INC HUMANS • describe the changes as humans develop to old age	EVOLUTION AND INHERITANCE • recognise that living things have changed over time and that fossils provide information about living things that inhabited the Earth millions of years ago

	SENSES • To know what the senses are and which body parts we use for our senses. <u>Working scientifically skills:</u> • To ask different questions about seasonal change. • Observe the changes in the seasons. • Record data to help answer questions related to the seasons.	SEASONS • To recap the naming of the different seasons. • To name the different seasons. • To know and name the different senses. • To talk about the different weather that happens in the different seasons; specifically be able to talk about Spring • To use weather specific language e.g. warm, cloudy • To talk about the effect that the weather has on plants . <u>Working scientifically skills:</u> • To carry out simple tests relating to the forces of pushing and pulling. • To ask different questions about seasonal change. • Observe the changes in the seasons. • Record data to help answer questions related to the seasons.	• Make observations to classify materials by their properties e.g. hard or soft. • Give verbal explanations about why objects have been grouped in a particular way. • Sort and classify materials by more than one property e.g. transparent and hard. • Carry out simple planned tests to test a property e.g. is an object is waterproof. Use observation skills to come to conclusions. • Use non-standard units of measurement to come to a conclusion.	*Particular use - which materials make a good boat?* <u>Working scientifically skills:</u> • Record the properties of materials in a table by carrying out tests on a range of materials. • Make a hypothesis about which materials will float based on real life experiences. Orally discuss how to make it a fair test. • Make observations about the stiffness, transparency and buoyancy of materials. • Report findings on the best materials for a boat with a labelled diagram and oral explanation.	skeletons and muscles for support, protection and movement. <u>Working scientifically skills:</u> • Sort foods into a table to show their different nutritional value. • Pupils ask relevant questions based on the nutritional value of foods. Use the sources (food labels) to answer their questions. • Make careful observations to sort animals into two scientific groups e.g. vertebrate and invertebrates. • Use labelled diagrams and written explanations to show how muscles work. • Pupils set up and carry out a simple experiment based on a previous	which this happens in degrees Celsius(°C) • *know what a solid is and some types of solid.* • *know what a liquid is and some different types of liquid* • *know what a gas is and different types of gas* • *know the names of some liquids, gases and solids from the periodic table such as neon, hydrogen, nitrogen, methane* • *know that some materials can be found in all three states such as water* <u>Working scientifically skills:</u> • Make systematic and careful observations of different materials. Use observations to sort, group and classify materials with explanations. • Carry out simple practical enquiries involving	<u>Working scientifically skills:</u> • Create labelled diagrams to demonstrate the reproduction of animals. • Use secondary sources to produce a written explanation of the reproduction of animals. • Create a labelled and step-by-step diagram of the different parts of a plant. Use secondary sources to support scientific research. • Pupils create a hypothesis around asexual plant reproduction they can investigate e.g. a plant clipping will grow best in a pot of water. Pupils plan their own experiment to answer their hypothesis. Make observations and take measurements and present their data in a table/graph. • Pupils revisit hypothesis and use their scientific data to support of refute.	• recognise that living things produce offspring of the same kind, but normally offspring vary and are not identical to their parents • identify how animals and plants are adapted to suit their environment in different ways and that adaptation may lead to evolution. <u>Working scientifically skills:</u> • Use careful observations of different plants and animals to identify adaptations. • Present findings of adaptations through a concept map. • While investigating how bird beaks are adapted for particular food, pupils should: write

					hypothesis e.g. taller people can jump further or people with bigger hands can pick up more marbles. • Pupils take careful observations and use standard units of measurements where necessary. • Pupils report findings in an appropriate method relating to the investigation and report their conclusions as written explanations.	melting, heating and evaporation. Control variables such as mass of chocolate and recognise the variables e.g. temperature. • Draw conclusions from observations made and report finding in written and verbal explanations. • Ask questions and make predictions based on scientific knowledge. • Take measurements during investigations using standard units of measurement.	• Create labelled diagram and written explanations to demonstrate the timeline of humans. • Report findings from the unit in an oral presentation on the reproduction of plants.	a hypothesis, set up and perform a test, while controlling variables, record the data using a table and use the evidence to support or refute the hypothesis and write a conclusion. • Use secondary sources to identify different stages of human evolution.

Summer One **Non-statutory guidance*	GROWTH ***Animals*** • To learn about a caterpillars life cycle. ***Health*** • To understand that food fuels our bodies and begin to make healthy choices. Working scientifically skills: • To ask simple questions about food and animals. • Closely observe caterpillars. • Use observations to help answer simple questions about the life cycle of a caterpillar and food for fuel.	GROWTH ***Health*** • To know and talk about how to keep our teeth healthy. • To know and talk about tooth decay. • To know and talk about how we can prevent tooth decay. • To know how to implement the knowledge we have around healthy choices and how we would make a 'healthy plate'. ***Plants*** • To know the names of some parts of the plants e,g. roots, leaves, flower Working scientifically skills: • To observe teeth closely and ask simple questions. • Identify and classify foods which would make a 'healthy plate'.	PLANTS • 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. Working scientifically skills: • Make observations about different seeds/bulbs. Group different seeds and bulbs according to their properties and observations e.g. order in size, colour, shape etc. • Sort and classify leaves, plants, fruits and vegetables according to colour, size and shape using observation skills. • Use a labelled diagram to show the	LIVING THINGS & HABITATS *(Consolidate Y2 Aut1: 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 • 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. *(Cover one habitat per lesson – wood, rainforest, pond, coast, polar regions, ocean)*	LIGHT • recognise that they need light in order to see things and that dark is the absence of light • notice that light is reflected from surfaces • recognise that light from the sun can be dangerous and that there are ways to protect their eyes • recognise that shadows are formed when the light from a light source is blocked by an opaque object • find patterns in the way that the size of shadows change. Working scientifically skills: • Pupils ask relevant questions and create hypothesises about why we can see objects or why we can't in the dark. • Make careful observations and uses these to come to conclusions about how	*(Consolidate Y3 LIGHT objectives)* ELECTRICITY • identify appliances that run on electricity • construct a simple series electrical circuit, identifying and naming its basic parts, including cells, wires, bulbs, switches and buzzers • know if 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. • *Know what a cell is and its importance in a circuit* Working scientifically skills:	FORCES • explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object EARTH AND SPACE • 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. • *describe the movement of the Earth, relative to the sun, and how this creates seasons* Working scientifically skills:	SOUND *(Y4 Sound revision:* • *identify how sounds are made, associating some of them with something vibrating* • *recognise that vibrations from sounds travel through a medium to the ear)* Working scientifically skills: • Create a hypothesis about and set up a test relating to sound amplification. • Record data using data loggers and present in a table. • Use data to support or refute their hypothesis and come to a conclusion. LIGHT • 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

	.	• To ask questions about plants. • To closely observe parts of a plant and use the observations to suggest answers to their questions.	different parts of a plant. • Create a hypothesis of plants we will see in our local area. Observe plants and test their hypothesis. Draw images of their plants from their own observations.	Working scientifically skills: • Use secondary sources to research woodland habitats. • Make hypothesise about microhabitats we will see around school and what animals will live there. • Use observation skills to investigate and record what animals are found in microhabitats around school. Revisit hypothesise and see if they were correct. • Group and classify animals as producers and consumers. • Make observations of a habitat e.g. pond and identify how	light travels to help us see. • Take measurements using standard units using data loggers. • Record light measurement in a table and bar chart. • Use the data to come to a conclusion about the reflectiveness of different items. • Report findings through a written explanation and labelled diagrams to explain how light reflects off mirrors. • Pupils set up simple enquiries to investigate shadows and present their findings orally. • Test a hypothesis involving shadows by setting up an investigation and making careful	• Ask relevant questions about electricity based on observations and prior knowledge. • Use a range of electrical equipment to construct simple series circuits. Make observations and be able to troubleshoot problems through scientific knowledge and investigation. • Set up simple investigations using switches and record their findings through written explanations and drawings. • Make predictions about if circuits will work and what materials will be effective conductors and insulators and use equipment to investigate if	• Create a hypothesis to test e.g. the greater the mass of an object the greater the weight. • Pupils set up and perform a test to investigate the hypothesis. Take measurements with accuracy from Newton meters taking repeat measurements if needed. • Revisit the hypothesis and use the data recorded to refute or support. • Use keys to classify and sort planets. • Use scientific language and labelled diagrams to demonstrate the movement of planets, moon and explain phenomena such as day	our or reflect light into our 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 • *know how light enters the eye.* • *know the parts of an eye and ear and how they work* • *understand how different animals hear and see* Working scientifically skills: • Make observations about how light travels through pin holes. Write a hypothesis and carry out a pre-planned investigation to test it. Draw a diagram to demonstrate the findings. • Make comparisons between animals using secondary sources and report these findings

				it is a suitable habitat for the animals which live there.	observations. E.g. if an object is closer to the light source the shadow will be clearer/smaller etc. • Report light knowledge using a poster and present this to the class or for display.	their predictions are correct. Record written explanations.	and night or the seasons.	through a model and presentation.
Summer Two **Non-statutory guidance*	ANIMALS • To know what an animal is. • To know what animals need to survive. • To know that animals live in a variety of places. e.g. jungle, ocean, farm. • To know some different features of animals e.g. feathers, scales, fur. Working scientifically skills:	SPACE • To know the difference between the sun and moon. • To know that we live on Earth. • To understand how humans have travelled to space. SEAONS • To recap the naming of the different seasons. • To name the different seasons. • To know and name the different senses. • To talk about the different weather that	SEASONAL CHANGE • observe changes across the four seasons • observe and describe weather associated with the seasons and how day length varies. Working scientifically skills: • Use images taken from throughout the year to observe changes to plants and locations. • Compare the different changes in weather and temperature throughout the year. Non-standard units	MATERIALS & THEIR PROPERTIES • find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching. Working scientifically skills: • Create a hypothesis about what materials will have certain properties e.g. flexibility. • Carry out a test to investigate the properties of materials over a series of lessons. Record the observations in a table.	FORCES • compare how things move on different surfaces • notice that some forces need contact between two objects, but magnetic forces can act at a distance • *Know that to make something move you need a force such as push and pull.* • *Say when balanced or unbalanced forces are acting on an object and predict what will happen to the object* • *Know that magnetism is a force that can make things move.*	MATERIALS & THEIR PROPERTIES • identify the part played by evaporation and condensation in the water cycle and associate the rate of evaporation with temperature. • *Linking the water cycle and climate change* Working scientifically skills: • Recording findings using scientific language and labelled diagrams. Written explanations will be used to explain prior knowledge of the water cycle.	FORCES • 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. Working scientifically skills: • Pupils set up a hypothesis of which shoe will be the best running trainer. Pupils will set up and take accurate measurements with a	LIGHT • use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them Working scientifically skills: • Plan and set up an investigation into shadows. Control variables to answer a hypothesis and record data and observations using diagrams and a table. Present data in a line graph. Use the data to support or refute hypothesis and come to a conclusion.

	• To ask different questions about animals, their habitats and appearance. • Closely observe different animals. • Use observations to identify and classify animals.	happens in the different seasons; specifically be able to talk about Summer • To use weather specific language e.g. hot, heat wave, • To talk about the effect that the weather has on plants. Working scientifically skills: • To ask simple questions about space, the Sun, moon and Earth. • Identify and classify different weathers which happen in different seasons. • To use observations about the weather to suggest answers to its impact on plants.	to measure e.g. how do the seasons impact what clothing we wear? • Draw and label a garden in different seasons. • Discuss orally how the length of our days change throughout the year and pupils make observations about when it is light or dark. • Sort and classify images of the different seasons based on known characteristics.	• Conclude at the end if their hypothesis was correct. • Carry out pre-planned experiment on the most effective way to release water from a material. Make non-standard measurement about which materials hold the most water. • Use the results to come to an oral or written explanation.	Working scientifically skills: • Asking relevant questions and setting up simple tests to answer them. E.g. which sports use a push force and which use a pull force? • Make careful observations when investigating and record observations in a table. • Come to conclusions from the evidence provided when looking at balanced or unbalanced forces. Provide written explanations to showcase their	• Plan and set up simple enquiries with dependent, independent and controlled variables. • Make predictions based on scientific knowledge and use the evidence from investigations to support their conclusions. • Take accurate readings and observations using standard units of measurements. • Record findings using bar charts and tables. LIVING THINGS & HABITATS • recognise that environments can change and that this can sometimes pose dangers to living things • *Natural and human changes to the environment* • *How changes can be beneficial and harmful*	Newton meter of different shoes or different surfaces. • Record the data in a table and use this to support or refute the hypothesis. Report their findings orally. • Pupils will devise and set up their own test to investigate air and water resistance. This will include a hypothesis, experiments, accurate data gathering and conclusion. • Use diagrams and scientific language to demonstrate how gears, levers and pulleys work.	ELECTRICITY • 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 positions of switches • use recognised symbols when representing a simple circuit in a diagram Working scientifically skills: • Make a hypothesis about how a buzzer will impact on a circuit. Carry out the investigation and make observations which will be written up to form a conclusion. • Write their own hypothesis

					scientific knowledge. • Present data gathered through the mass of an object in water in a graph. • Use standard units of time to measure the effectiveness of parachutes. Use this data, presented in a table, to come to a written conclusion.	<u>Working scientifically skills:</u> • Use secondary sources to carry out research to help classify manmade and natural phenomena. • Verbal explanations on climate change using scientific knowledge gained from research. • Report findings orally. • Identify differences, similarities and changes between scientific concepts e.g. animal adaptations around the world.		about an electric topic. Plan an investigation to answer their hypothesis. Make observations and take records however appropriate and present findings and draw on a conclusion.

Science	Nursery	Reception	Year one	Year two	Year three	Year four	Year five	Year six
Working Scientifically Skills – by the end of the year pupils should be able to:								
Investigation Structure			*Question* *How to do it* *What we found*	*Question* *Predictions* *How to do it* *What we found*	*Question* *Predictions* *Method (child led)* *Observations* *Conclusions*	*Question* *Prediction* *Method (fair test)* *Results* *Conclusions*	*Question* *Hypothesis* *Equipment* *Variables* *Method* *Results* *Conclusion* *Evaluation*	*Question* *Hypothesis* *Equipment* *Variables and controls* *Method* *Results* *Conclusion* *Evaluation*
Autumn One			- Noticing similarities and differences about body parts, sounds in different locations. - Set up a test to find out about eye colour, sounds in different locations and saying what they have learned - Explain what they observed/what data has been gathered about eye colour, sounds in different locations - Classifying objects according to their texture - Classifying sounds according to their volume - Classifying foods according to their taste	- Ask a question about how plants grow - Observe how plants grow in different conditions over time - Help to set up a fair test to see what plants need to grow healthily - Make predictions about which plants will grow healthily - Draw conclusions and say what plants need to grow healthily - Classify objects into living, dead or never lived and explain why	- Using secondary sources to find out how rocks are formed - Use the hardness scale to sort rocks - Classify rocks using a dichotomous key - Begin to decide how to enquire about what soils are made from - Help to decide how to set up a fair test into what soils are made from - Help to decide what observations should be made to test what soils are made from - Use a measuring cylinder to measure the volume of water - Classify soils using findings from an enquiry - Record findings in a table - Report findings using written explanations	- Explains about the criteria for classifying teeth - Decide how to set up a fair test into which foods cause the most tooth decay - Decide which observations to make and when to make them - Record findings using scientific language - Report on findings using written explanation - Use results to draw conclusions about which food causes most decay - Using secondary sources of information to find out about the digestive system	- Use information to classify materials into natural and man-made - Use the hardness scale to describe the hardness of materials - Take measurements of light intensity using a data logger - Recording data about the transparency of materials in a table - Recording data about magnetic/non-magnetic materials in a table - Recording data about insulators/conductors in a table - Plan and carry out a scientific enquiry to test which materials are soluble, including which variables need to be controlled - Present data about the thermal conductivity of a material on a line graph	- Use a key to classify living things - Use scientific language and illustrations to communicate scientific ideas about bacteria, viruses - Talk about the discovery of penicillin in mould. - Plan and carry out a scientific enquiry to find out what makes mould grow, including drawing conclusions from findings - Present written findings from secondary sources of information about the prevention and

								treatment of disease? -
Autumn Two			- Make predictions about the animals observed in our local area - Say what data has been gathered on animals in our local area - Notice a pattern about animals in our local area - Grouping animals using a key - Notice similarities and differences between animals - Choosing how to sort animals - Classifying animals according to diet	- Noticing similarities and differences between life cycles - Similarities and differences between groups of animals - Help to set up and carry out an enquiry into the effect of exercise on pulse, including how to make it a fair test and using oximeters to take a measurement - Classify meals into healthy/unhealthy, compare them and give a reason - Similarities and differences between other animals and humans and how they keep themselves clean	- Help to set up and carry out an enquiry to find out what plants need to grow healthily - Help to set up and carry out an enquiry into the transportation of water in plants - Making careful observations of a dissected flower - Classify seeds into methods of seed dispersal, using their features - Reporting findings using scientific language and diagrams - Reporting findings using written explanations	- Plan and carry out a scientific enquiry into the volume of sounds in different locations around school using a data logger - Reporting on findings about how sound travels through different mediums - Reporting on findings about how to make a higher/lower volume sound - Plan and carry out a scientific enquiry into the volume of sounds recording at different distances - Report on findings about pitch and the size of the object creating the sound	- Recording results about reversible changes in state using a diagram - Plan and carry out an enquiry into the saturations points of solutes, including making precise measurements of the solute - Recording results about the saturation points of solutes using a table and bar chart - Use results about dissolving to raise further questions about reversible changes - Recording results about mixing as reversible change using a diagram - Plan and carry out an enquiry into rusting (an irreversible change).	- Using scientific language and illustrations to communicate the functions of the organs in the circulatory system and how the organs in the gut and kidney are linked to them - Use scientific language to communicate how the heart pumps blood - Identify similarities and differences between the human digestive system and those of other animals
Spring One			- Observing and identifying different materials - Noticing patterns about the uses of materials - Noticing patterns about the properties of materials	- Make predictions about the most common material in the classroom - Recording data about the materials used in our classroom.	- Set up a practical enquiry to find out which pole is north and which is south - Help to set up and carry out a practical enquiry to find out which materials are magnetic - Help to set up and carry out a practical enquiry to	- Classifying and explaining the classification of living things - Recording data about invertebrates in a table and presenting the data in a bar chart	- Raise questions about life cycles - Communicate ideas using scientific language and illustrations about the life cycle of chickens, frogs, insects, mammals - Record data about the size of animals and their life	- Recording data about quantities of food in a table - Use relevant scientific language to communicate ideas about different illnesses

			- Recording data about the materials of objects in a table - Asking questions about pollution and the environment	- Noticing patterns about the uses of materials - Identifying the properties of materials - Help to set up a fair test to see which material would make a good bridge	find out which metals are magnetic - Help to set up and carry out a practical enquiry to find out about the strength of different magnets - Selecting appropriate groups of materials to make a magnetic game	- Classifying and explaining the classification of living things into predator/prey and consumer/producer. - Classifying and explaining the classification of animals into herbivore, omnivore and carnivore. -	span in a table and present data as a scatter graph - Report the conclusions from data on animal size and life span using a written explanation - Identify how this data supports a scientific argument	- Presenting findings about diet, exercise and drugs as a leaflet - Plan and carry out an enquiry into the saturations points of solutes, including making precise measurements of the solute - Recording results about the saturation points of solutes using a table and bar chart - Planning and carrying out a scientific enquiry into recovering substances from a solution to answer their own scientific question
Spring Two			- Notice similarities and differences between the properties of materials - Classifying the materials into opaque, translucent and transparent - Set up a simple test to find out which materials are waterproof - Set up a simple test to find out which materials are absorbent	- Classifying objects and materials according to their properties - Recording information about the properties of materials in a table - Help to set up a fair test to find out which materials would make a good boat	- Report findings about the nutrients in food in a table - Ask a relevant questions about nutrients in food - Plan and carry out a scientific enquiry into the nutrients in food - Classifying animals into vertebrates and invertebrates - Classifying animals into Exoskeletons, endoskeletons and hydrostatic skeletons	- Classify and explain classification of materials into solids, non-solids - Plan and carry out an enquiry into the melting point of butter, white chocolate and dark chocolate, including how to make it a fair test and using thermometers to measure.	- Using secondary sources to write an explanation of reproduction in animals - Using a secondary source to write an explanation of sexual reproduction in plants - Plan and carry out a scientific enquiry into asexual reproduction in plants	- Reporting findings on inherited characteristics - Identifying scientific evidence that has been used to support inheritance - Identifying scientific evidence that has been used to support evolution (i.e.

					- Recording findings about different muscles using scientific language and drawings - Plan and carry out a scientific enquiry into how our skeleton can affect the way we move , including taking measurements with measuring tapes/meter wheels	- Identifying changes related to solids, liquids and gases. - Plan and carry out an enquiry into the processes involved the water cycle. - Plan and carry out an enquiry into how temperature affects the rate of evaporation		adaptations, fossils) - Plan and carry out a scientific enquiry into the adaptations of a finch's beak. - Discussion of Darwin's theory of evolution over time
Summer One			- Ask questions about what they notice in plants. - Notice similarities and differences between flowers, leaves, plants, fruit, and vegetables. - Set up a simple test to find out what happens to seeds as they grow and say what they've learned and found out. - Classify/group: - Plants, flowers, trees, leaves - Fruit/vegetables - Deciduous/evergreen - Make predictions about what will happen to a seed as it grows.	- Give a reason why you have classified into living, dead, never lived, producer, consumer. - Observing animals in habitats. - Finding out information using secondary sources. - Make predictions about why animals need their microhabitats. - Recording data in a table. - Noticing patterns in food chains.	- Planning and carrying out a scientific enquiry to answer – which colours reflect light best? Which material reflects light best? Which material creates the best shadow? How do the size of shadows change? - Recording findings of light intensity in a bar chart. - Communicate scientific findings through written and oral explanations, as well as illustrations. - Raising further questions about reflective materials. - Talk about criteria for sorting light sources	- Planning and carrying out a scientific enquiry to answer – which materials are conductors and insulators? - Experiment with how to construct a simple series electric circuit - experiment with and without wires - Experiment with the effect of more than one cell - Experiment with bulb, battery, buzzer, wire in different place - Experiment with different conductors and insulators	- Use scientific language and illustrations to discuss and communicate ideas. - Use measurements to understand the size and position of the planets in the solar system. - Classify and group the planets in different ways according to the different properties. - Observe features of the moon. - Identify scientific evidence that has been used to support or refute ideas about the Earth in space. - Plan and carry out an investigation into how weight/mass effects objects falling to earth - Take repeat readings of the time it takes objects to fall to earth to increase a degree of trust.	- Planning and carrying out a scientific enquiry to answer – do larger objects amplify sound? - Recognising and controlling variables in an enquiry about sound - Taking accurate measurements, using data loggers. - Choosing how to record data. - Using test results to make predictions and suggest further testing. - Talk about how scientific ideas have developed over time (Key Person). - Identifying how findings support a scientific argument.

								- Using scientific language and illustrations to communicate scientific ideas.
Summer Two			- Notice similarities/differences about plants, weather, temperature and human behaviour during the different seasons - Asking a question about what they notice about sunshine and temperature - Set up a simple test about sunshine and temperature, including making a prediction, using a thermometer and saying what data has shown	- Plan and carry out an enquiry into which materials can be squashed, bent, twisted and stretched including making it a fair test, predicting and saying what the data has shown - Plan and carry out a scientific enquiry into which force releases the most water, including taking measurements	- Making observations of and classifying push/pull forces - Recording findings in a table? - Making predictions about the change of speed/direction of an object, based on the forces applied - Communicating findings using a scientific diagram of balanced/unbalanced forces - Plan and carry out a scientific enquiry into whether objects always have the same weight (in and out of water) including making it a test, deciding how to record data, presenting data on a bar chart and drawing a conclusion - Plan and carry out a scientific enquiry into how the size of a parachute affects how quickly it falls, including how to make it a fair test, deciding what measurements to take, deciding what	- Record findings about the water cycle and global temperature using a written explanation and a labelled diagrams - Plan and carry out an enquiry to investigate temperature and evaporation, including how to set up a fair test, deciding which observations to make, deciding which equipment to use, gathering and recording data, presenting data on a car chart, drawing conclusions, suggesting improvements, suggesting further questions to be investigated - Grouping weather/disaster events into natural/man-made and explain they have been grouped - Using secondary sources of information to record findings	- Plan and carry out an enquiry into the effects of friction, including recognising which variables need controlling, taking accurate measurements using a newton meter, identifying when further comparative tests are needed - Plan and carry out an enquiry into the effects of air resistance, including recognising which variables need controlling, deciding which observations/measurements to take, identifying when further tests are needed, - Plan and carry out an enquiry into the effects of water resistance, including recognising which variables need controlling, deciding which observations/measurements to take, taking repeat readings, deciding how record the data, presenting data on a bar chart, drawing written conclusions - Plan and carry out an enquiry into the effects of viscosity on water resistance, including recognising which variables need controlling,	- Plan and carry out an enquiry into the size and shape of shadows, including controlling variables, taking measurements and presenting data on a line graph - Identifying how evidence supports a scientific argument - Using results from previous circuit changes to make predictions about other circuit changes - Using scientific language to communicate explanations of the change in function of the bulb and buzzer - Plan and carry out an enquiry to answer their own question about the function of components

					equipment will be needed, taking measurements with a timer, recording data in a table and drawing a conclusion	about changing environments in a table - Presenting findings about changing environments orally	deciding which observations/measurements to take, take repeat readings, deciding how to record the data, presenting the data on a bar chart, drawing written conclusions from findings, identifying when further comparative fair tests might be needed - Classifying mechanism - Recording findings about mechanisms in a table - Using scientific language about mechanisms to communicate ideas	- Choose the most appropriate equipment to use - Use test results to set up further tests into the varying function of components - Report findings using a scientific diagra - Report on the degree of trust in findings into the varying function of components

Science	Nursery	Reception	Year one	Year two	Year three	Year four	Year five	Year six
Vocabulary								
Autumn One			head, eye, ear, nose, mouth, arm, leg, hand, foot, see, hear, taste, smell, feel	seed, bulb, grow, seedling, seed dispersal, root, shoot, plant, water, light, temperature, warmth, living, dead, never lived, reacts, air, feed,, reproduce, waste	Igneous, metamorphic, sedimentary, heat, pressure, lava, Permeable, hardness scale, hard, soft, scratch, Classify, small shells, layers, oolites, sandy, clay, chalky, peat, fossil, imprint, skeleton, amber, glacier	Stomach. Digestion. Oesophagus. Small intestine, large intestine, Kidneys. Liver. Canine, molar, incisor, wisdom. Gum, enamel, root. rotate, decay, saliva, bile, urine, bladder, rectum	Absorbent. Transparent, translucent, opaque. Man-made, natural, material, hardness, scratch, magnetic, non-magnetic, attract, electrical conductor, electrical insulator, insoluble, soluble, solids, dissolve	Microbe, germ, bacteria, decay, rot, key, microorganism, fungus, mould, spread, vector, immune system,
Autumn Two			fish, amphibians, reptiles, birds, mammals, carnivores, herbivores, omnivores, diet, habitat, features, magpie, blackbird, pigeon, squirrel, dog, cat, humans, ants, flies, slugs, snails, beak, fin, gills, scales, feather, root, fruit, seed, leaf	life cycle, reproduction, baby, young, adult, survival, water, food, air, exercise, nutrition, nutrients, food groups, healthy, hygiene, germs, babyhood, childhood, adolescence, adulthood, carnivore, heart rate, pulse, pulse meter, herbivore, omnivore, diet, balanced diet, carbohydrates, fruit, vegetables, proteins, fats, clean, unwell, microorganisms, spread,	Air, light, water, nutrients, oxygen. stem, leaves, roots, flower, trunk, branch, water, sunlight, warmth, soil, space, transport Temperature, absorb, reproduce, petal, sepal, stamen, anther, filament, stigma, style, ovary, ovule, pollen, pollination, fertilisation, parent plant, seed dispersal	Pitch. Vibrate, Outer, middle and inner ear. Conductor, , volume, decibel, air particles, sound wave, solid, liquid, gas, loud, quiet, sound source Distance, soundproof, insulate	Solid, liquid gas. Separate, filtrate, sieve. Properties Solubility. Dissolve States of matter, , water cycle, evaporation, condensation, changes in state, physical changes, melting, reversible, , soluble, insoluble, , solution, suspension, solute, solvent, saturation, mixture, filter, irreversible change, chemical change, reactant, product, rust	Liver, stomach, intestines, blood vessels, lungs, heart. blood, red blood cells, oxygen, white blood cells, infection, platelets, plasma, nutrients, circulatory system, water, waste products, harmful substances, brain, gut, kidneys, arterial blood vessels/arteries, venous blood vessels/veins, capillaries, energy, right ventricle, pulmonary artery, pulmonary vein, left atrium, left

								ventricle, aorta, venae cavae, right atrium, carbohydrates, fats, proteins, villi, absorb, small intestine, large intestine filter,
Spring One			object, material, wood, metal, plastic, glass, fabric, rock, properties, hard/soft, rough/smooth, stretchy/stiff, transparent/opaque, waterproof/absorbent, bumpy/smooth, brittle/firm, shiny/dull, water, pollution, reduce, reuse, recycle, environment, Earth, paper,	As Y1 and… use, property, suitable, bridge, boat, float, sink, brick cardboard,	Pole, north pole, south pole, Magnetic. Attract, repel, magnet, push, pull, non-magnetic material, magnetism, metal, gold, silver, aluminium, brass, copper, steel, iron, nickel, bar, cylindrical, horseshoe, button, ring, square, arc, bar chart,	Producer, consumer, predator, prey. Omnivore, carnivore, herbivore, Venn diagram, Carroll diagram, classification key, vertebrates, invertebrate survey, bar chart, food chain, primary consumer, secondary consumer, tertiary consumer, quaternary consumer, : food web vegetarian, vegan	Amphibian, arachnid, mollusc, sponge, fish, vertebrate and invertebrate, bird, egg, hatch, young, adult, opposite sex, mates, complete metamorphosis, incomplete metamorphosis, insect, larva, pupa nymph, gestation, life span	Drug, medicine, alcohol, nicotine, tar, addictive, illness, disease, recreational drugs, tablet, smoke, inhale, drink, diet, nutrition, food groups, exercise, heart, blood, oxygen, carbon dioxide, pulse, balanced diet, oximeter dissolve, solution, solute, solvent, suspensions, reversible change
Spring Two					Skeleton, bone, muscle, fin, wing, angle, knee, elbow. Nutrients. diet, balanced diet, carbohydrates,	Solid, liquid gas. Classify Evaporate, condense. particles, row, vibrate, flow, pour,	Life cycle, puberty, young, elder, pupae, cocoon, living process, sexual reproduction, sex	Fossil, DNA, genetics, cloning. inherit, parent, offspring, characteristics, variation,

					protein, fibre, fats, vitamins, minerals, water, carnivores, herbivores, omnivores. saturated fat, unsaturated fat, nutritional information, skeleton, function, vertebrate, invertebrate, exoskeleton, endoskeleton, hydrostatic skeleton, bones, muscles, voluntary muscles, involuntary muscles, tendons, pairs, bicep, triceps, relax, contract, hamstring, quadriceps, femur	state of matter, melting, temperature, freezing, oxygen, helium, boiling, water vapour, condensation, rate of evaporation, water cycle heat, cooling, precipitation, river, sea, sun, cloud	cell, male gamete, sperm, female gamete, ovum, egg, fertilisation, zygote, foetus, plants, pollen pollination, seed, asexual reproduction, offspring, cuttings, root, stem, leaf, bulb, side shoots, tuber, runner, branch, plantlets, infancy, childhood, adolescence, adulthood, old age, changes, reproduce,	adaptation, evolution,
Summer One			plant, tree, flower, petal, stem, leaf, root, trunk, branch, leaf, root, blossom, seed, bulb, gladioli, beans, carrots, tomatoes, sunflowers, dahlias, deciduous, evergreen, bud, petal, fern, moss, blossom, rose, lavender, allium, cow parsley, daisy, bluebell, pansy, peony, wild plants, garden plants, fruit, vegetable	habitat, need, food, water, shelter, microhabitat, forest, rainforest, ocean, pond, river, field, food chain, source of food, living, dead, never lived, air, food, grow, reproduce, offspring, oak tree, woodpecker, beetle, squirrel, badger, rainforest banana plant, howler monkey,	Light, source, opaque, shadow, transparent, translucent. dark, see, sun, bulb, UV ray, straight line, reflect, mirror, smooth, shiny, flat, angle, scatter, block Earth, rotate	Cell/battery Conductor and insulator. Buzzer, bulb, wire, switch, electricity, electric current, flow, charge, appliance, power, mains, primary energy source, secondary energy source, fossil fuels (coal, oil, natural gas) wind power, solar polar, nuclear power, hydro	Planet, asteroid, rotates, axis, orbit, satellite, star, constellation, solar system, gravity, gravitational pull, mass, kilograms, weight, newtons, scales, newton meters, sun, planets, orbit, year, gas giants, ice giants, terrestrial planets, composition, spherical, season,	Sound, echo, inner and outer ears. Conductivity. Light, vibration, particles, sound wave, medium, solid, liquid, gas, vacuum, amplification, volume, Ear canal, Ear drum, Hammer, anvil and stirrup, cohclea, Auditory nerve, Brain, light source, reflect, straight lines, eye,

			broccoli, rhubarb, potato	fruit tree, butterfly, polar, moss, polar bear, arctic fox, snowy owl, lichen, seal, penguin, cold, windy, snow, ice, camouflage, carnivore, herbivore, omnivore, producer, consumer, ocean fish, octopus, seaweed, algae, plankton, whale, pond dragonfly, duck, water lily, fresh water, suited, desert acacia tree, camel, gecko, scorpion		power, geothermal power, renewable, non-renewable, component, circuit, complete circuit, incomplete circuit, motor, closed switch, open switch, conductor, insulator	winter, summer, northern hemisphere, southern hemisphere, axis, north pole, south pole, weather, equator, day, night, time zone, rotate, moon, dark side, straight lines moon phase, new Moon, waxing crescent, first quarter, waxing gibbous, full Moon, waning gibbous, third quarter and waning crescent.	iris, pupil, lens, retina, rod, cone, optic nerve, sense cells, shape, colour, image, high pitch, low pitch, frequency, range, ear,
Summer Two			seasons, spring, summer, autumn, winter, sun, rain, wind, snow, hail, dry, months, shadow length, day light, forecast, year, plant, tree, deciduous, evergreen, leaves, flower, shoot, bud, , weather, mild, warm, hot, cool, cold, , temperature	object, shape, change, forces, bending, compressing, heating, stretching, twisting, balance, equal forces, push, pull, squash, tool, material, metal, plastic, wood, stone, cardboard, hard, soft, rigid, stiff, absorbent	Push, pull, slide, force. Surface. Lift, lower, speed, direction, shape, magnetic force, balanced forces, unbalanced forces, weight, gravity, newtons, newton meter, upthrust, parachute, friction rough, smooth	Condensation Precipitation Evaporation Deposition, transportation, transpiration, climate change, water cycle, water vapour, temperature, weather, storm, hurricane, flood, volcano, wildfire, drought, natural,	Force, friction, resistance, gravitational pull, gravity, water resistance, streamlining, slow, rough, smooth, newton meter, surface, air resistance, air particles, balanced forces, unbalanced forces, water resistance,	Opaque, shadow, resistor, light source, sun, Earth, rotates, axis, electricity, energy, source, series circuit, cell, wire, electrons, current, amps, positive, negative, voltage, volts, device, bulb, buzzer, brighter, dimmer, components, motor,

			degrees Celsius, thermometer, daylight hours, sunrise, sun set, east, west, light, dark, hat, sun cream, shade, sunhat, hat, gloves, scarf, waterproof, ice,			man-made, human activity, global temperature, rainfall, environment, deforestation, air pollution, light pollution, noise pollution, littering, urbanisation, invasive species, wet season, dry season, extreme, tropical rainforest, competition	water particles liquid, thick, viscosity, solution, mechanism, lever, arm, fulcrum, pivot, load, effort, pulley, wheel, fixed axel, groove, gear, teeth,	conductor, insulator, resistance, parallel circuit, electrons, static electricity, atoms, electrons, particles, attract, electromagnet, magnetised,

Science	Nursery	Reception	Year one	Year two	Year three	Year four	Year five	Year six
Texts and Scientists								
Autumn One			My Body by Marha Rustad Dr Ranj (CBBC)	Battle of the Vegetables by Matthieu Sylvander Beatrix Potter (author and natural scientist)	'Rocks and Soil' by Franklin Watts Friedrock Mohs	Teeth by Rebecca Rissman Hippocrates	Straight Forward with Science: Materials and Properties - Straight Forward with Science' by Peter Riley Andrei Geim and Kostya Novoselov	'Germs' by Jessica Rose Edward Jenner Antonie van Leeuwenhoek
Autumn Two			The Lighthouse Keeper's Lunch by Ronda and David Armitage The Rainbow Fish by Marcus Pfister (One book per animal group?) David Attenborough	Keeping Healthy by Peter Riley Dina Asher Smith (British sprinter)	'My first book of nature: Trees' Diana Beresford-Kroeger	Sound by Angela Rowston Alexander Graham Bell	Mixing and Separating Materials - Working with Materials 6' by Chris Oxlade Sherien Elagroudy, Egypt, Environmental Engineering, Ain Shams University	'From arm pits to zits' by Paul Mason Gertrude Elion
Spring One			Everyday Materials by Peter Riley Ole Kirk Christiansen (Lego inventor)	3 Billy Goats Gruff John Boyd Dunlop (inventor – tyres)	'Magnets Sticking Together' by Wendy Saddler Maglev inventor Eric Laithwaite	'Cycles in Nature: Food Chains - Cycles in Nature' by Theresa Greenaway. Jane Goodall	'fish boy' By Chloe Dakin Jacques Cousteau	'Drugs' by Joanna Watson Alexander Fleming
Spring Two				Titanic - DK Eyewitnes – Ernest Shackleton (Antarctic explorer)	Stuff You Should Know about The Human Body by John Farndon Al-Razi	Solids, Liquids and Gases by Michelle Houts Anders Celcius	'Life on Earth' By Andrew Solway Monty Don	'Genetics' by Anna Claybourne. Charles Darwin Rosalind Franklin

Summer One			Oh Say Can You Seed? by Bonnie Worth Frances Tophill (TV Gardening Presenter)	Tadpole's Promise by Jeanne Willis Joy Adamson (author of Born Free)	Light by Sally Walker Patricia Era Bath	'Electricity' By Sally Walker Benjamin Franklin	'Space' By Chris Oxlade Tim Peake	'Light and sound' by Anna Claybourne. Leonardo Da Vinci
Summer Two			The Black Rabbit by Phillippa Leathers Omar Khayyam (contributed to the creation of our calendar)	The Enormous Turnip Merlin Crossingham - director of "Morph"	Look Up by Nathan Bryon Galileo Galilei	'Cycles in Nature: Water Cycle' by Theresa Greenaway Boyan Slat	'Forces' By Ian Rohr Isaac Newton	'Electricity' by Sue Barraclough Michael Faraday

Science	Nursery	Reception	Year one	Year two	Year three	Year four	Year five	Year six
General skills								
	•	•	•	•	• Curiosity – about the properties and type of rock, plants, magnets, animals, shadows, forces. • Imagination – what could rocks be used for? How do we use plants? How can we use magnets to make things move? How can we make shadow puppets? How can you stop a rolling car? • Moral – was it right for farmers to take parts of Hadrian's wall to make their own houses and farms? Is it right to cut down trees? Is it right to respect people's skeletons?	• Social - How to work and cooperate with others in experimenting and testing. Valuing others' contributions. Sharing equipment and letting others go first. • Moral and cultural. What people do with teeth around the world. Should we litter? Should we recycle every piece of plastic? • Answering bog questions such as – what would happen if all insects died? • Curiosity – ask and answer questions e.g. why do we have echoes, why does an ambulance	• Ability to ask and then research the answers to their own questions. • Presenting skills and creating a format to presentations to others • Imagination and curiosity. • Research skills. • Respect and appreciation of the elderly.	• Working with others as a team, taking on different roles and responsibilities • Exercise skills • The rule of law – knowing the different laws regarding legal and illegal drugs, smoking, drinking etc.

					• Spiritual and Cultural – how rocks are used in different cultures: The Blarney Stone; The Rock of Gibralter; The Grand Canyon; Uluru; the Kaaba; Mount Rushmore. Cactii in Arizona, Venus flytraps, corpse flower; Tea; Rice; Rose as the national flower of Britain, the thistle, daffodil and Shamrock. Magnets – fridge magnets, pinboards, compass, trains. Asian shadow puppet theatre.	siren change tone? • Presenting skills – presenting their finding o others		
			Year One	**Year Two**	**Year Three**	**Year Four**	**Year Five**	**Year 6**
Trips/Workshops/Experiences								

Autumn One				Farm trip Allotment visit	Blue John Cave trip			Doctor/pharmacist visit
Autumn Two			Blackpool zoo trip	Sportsperson interview	Hulme Garden Centre trip/Eden Project virtual workshop	Eureka trip (sound workshop)		Manchester Museum trip – body worlds
Spring One			Sharston recycling centre trip	Sharston recycling centre trip	Fab Science workshop	Alexandra Park Ranger visit	Chick hatchery (Happy Chick Company)	STEM/UoM Outreach workshop (Contact – Matthew Russell) School nurse visit
Spring Two					Manchester Museum (skeletons) trip	Fab science workshop	Visit to the school garden (asexual reproduction).	Natural History Museum virtual workshop
Summer One			Visit to the school garden. Visit to Alexandra Park.	Pond dipping at Alexandra Park	MOSI trip (light workshop)	Talk with Electricity North West	Jodrell Bank trip	Optician visit
Summer Two							Manchester velodrome trip	Science Lab experience trip to Chorlton High School