Marlcliffe Primary
Science Progression Map

EYFS	Key Skills	EYFS ELG
	In FS2 • Describe what they see, hear & feel whilst outside – *Autumn walk to the park, Secret garden each term* • Observational drawings of the natural world – *Observational drawings of plants* • Discuss how to care for the living things & their habitats *-regular visits to the secret garden* • Observe how flora & fauna behave differently as the seasons change *regular visits to the secret garden* • Examine change over time – *Daily weather chart, seasons tuff tray* • Use correct terms e.g. chrysalis, pupa when observing life cycle of butterfly *-Summer term observe caterpillars turning into butterflies, trip to the butterfly house* • Express opinions on natural & built environments & opportunities to hear different points of view on the quality of the environment. Use words such as busy, quiet, pollution – *Trip to the Green Shop/Mama Panya's Pancakes* • All plants need water, light and warmth to grow and survive – *Secret Garden growing plants* • A seed produces roots to allow water to get into the plant and shoots to produce leaves to collects the sunlight. *Grow Sunflower seeds* • Extend vocabulary: blossom, buds, bulb, roots *Secret Garden repot plants, grow potatoes,* • Describe what they see, hear & feel whilst outside *Secret garden, trip to the Butterfly house* • Name & describe some plants *Secret garden, cooking and tasting fruit and vegetables* • Draw pictures of plants – *Summer topic plants and animals* • Understand the effect of changing seasons on the natural world around the d*aily weather chart, seasons tuff tray, Secret garden* • Shows some understanding that good practices with regard to exercise, eating, drinking water, sleeping & hygiene can contribute to good health *All about me* • Describe what they see, hear & feel- *All about Me* • Be able to show care and concern for living things – *Secret Garden* • Know the effects exercise has on their bodies – *All about me topic and People who help us* • Have some understanding of growth and change • Talk about things they have observed including animals • Observational drawings of animals – *owl babies* • Observe & interact with natural processes, such as ice melting, a sound causing a vibration, light travelling through transparent material, an object casting a shadow, a magnet attracting an object & a boat floating on water – *Dark den with shadow puppets, transport topic* • Notice & discuss patterns around them e.g. the effect of seasons on flora & fauna **Themes** Autumn – All about Me and People How help us Spring – Traditional Tales/Transport Summer- My World – Plants and Animals	**ELG: The Natural World** Children at the expected level of development will: • Explore the natural world around them, making observations and drawing pictures of animals and plants • Know some similarities and differences between the natural world around them and contrasting environments, drawing on their experiences and what has been read in class • Understand some important processes and changes in the natural world around them, including the seasons **Educational Programmes from Statutory Framework** **Understanding the World** Understanding the world involves guiding children to make sense of their physical world and their community. The frequency and range of children's personal experiences increases their knowledge and sense of the world around them – from visiting parks, libraries and museums to meeting important members of society such as police officers, nurses and firefighters. In addition, listening to a broad selection of stories, non-fiction, rhymes and poems will foster their understanding of our culturally, socially, technologically and ecologically diverse world. As well as building important knowledge, this extends their familiarity with words that support understanding across domains. Enriching and widening children's vocabulary will support later reading comprehension.

	KS1	Middle Phase (Y3/4)	Upper Phase (Y5/6)
Cycle A Themes	**Autumn 1: observing seasons and weather** **Autumn 2: animals, including humans** **Spring 1: materials and their properties** **Spring 2: animals, including humans** **Summer 1: plants, including trees** **Summer 2: plants and habitats**	**Autumn 1: Rocks, fossils and soils** **Summer 1 & 2: How Plants Grow** **Spring 2: States of matter** **Spring 1: Forces and magnets** **Autumn 2: Living in environments**	**Properties and changes of materials** **Classifying organisms** **Forces in action**
Cycle B Themes	**Autumn 1: observing seasons and weather animals, including humans** **Autumn 2: everyday materials** **Spring 1: animals, including humans** **Spring 2: materials and their properties** **Summer 1: animals, including humans, materials** **Summer 2: animals and their habitats**	**Autumn 1: Light and shadow** **Autumn 2: Circuits and Conductors** **Spring 1 & 2: Changing Sounds** **Summer 2: Health and Movement** **Summer 1 &2: Eating and Digestion**	**Autumn 1: Earth and space** **Autumn 2: Light** **Spring 1: Evolution and inheritance** **Healthy Bodies** **Life Cycles** **Changing Circuits**
Working Scientifically	**Develop (Y1)/ Deepen (Y2)** • ask simple questions and recognising that they can be answered in different ways. • observe closely, using simple equipment. • perform simple tests. • identify and classify. • use their observations and ideas to suggest answers to questions. • gather and record data to help in answering questions. *Investigative unit every half term linked to the Science theme.*	**Develop (Y3)/ Deepen (Y4)** • ask relevant questions and use different types of scientific enquiries to answer them e*.g. testing changes over time: effect of UV light, identifying electrical conductors, classifying animals, comparing speed of melting or brightness of light, researching electricity on the natural world.* • set up simple practical enquiries, comparative and fair tests *(covered in all units e.g. testing and comparing brightness of different light sources).* • make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers e.g. *use of sound level meters to measure sound, measurement of plant growth, use of force meters to measure forces etc.* • gather, record, classify and present data in a variety of ways to help in answering questions e.g. *investigating amount of force needed to move objects across different surfaces.* • record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables e.g. *investigating amount of force needed to move objects across different surfaces, drawing diagrams of circuits.* • report on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions i.e. c*overed in a range of investigations throughout the units.* • use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions i.e. c*overed in a range of investigations throughout the units.* • identify differences, similarities or changes related to simple scientific ideas and processes. • use straightforward scientific evidence to answer questions or to support their findings.	**Develop (Y5)/ Deepen (Y6)** • plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary. • take measurements, using a range of scientific equipment, with increasing accuracy and precision *e.g. height of shadows/temperature of water in thermal insulators.* • record data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, and bar and line graphs *e.g. scatter graph for shadows; label diagram of eye; diagram of light travelling.* • use test results to make predictions to set up further comparative and fair tests. • use simple models to describe scientific ideas *e.g. Solar System model.* • report and present findings from enquiries, including conclusions, causal relationships and explanations of results, in oral and written forms such as displays and other presentations. • identify scientific evidence that has been used to support or refute ideas or arguments *e.g. Heliocentric vs Geocentric.*

Types of Enquiry	*Observation over time* *Magnifying Guy* *Pattern seeking* *Super Sam*	*Identifying, classifying and grouping* *Cool Chloe* *Comparative and fair testing* *Brilliant Betty*	*Research using secondary sources* *Book Boy*
Biology	**Y1 Animals including Humans** • Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals *(Beside the Seaside)* • Identify and name a variety of common animals that are carnivores, herbivores and omnivores *(Made in Sheffield; Do we still need zoos today?)* • Describe and compare the structure of a variety of common animals e.g. fish, amphibians, reptiles, birds and mammals, including pets *(Beside the Seaside; Do we still need zoos today?)* **Y2 Living things and their habitat** • Explore and compare the differences between things that are living, dead, and things that have never been alive *(Do we still need zoos today?)* • 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 *(Beside the Seaside; The Secret Garden – habitats of plants; Blooms and Bees – habitats of minibeasts)* • Identify and name a variety of plants and animals in their habitats, including micro-habitats *(Blooms and Bees – habitats of plants and minibeasts)* • 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 *(Do we still need zoos today? and Blooms and Bees)*	**Y4 Living in environments** • Recognise that living things can be grouped in a variety of ways *e.g. vertebrates and invertebrates* • Explore and use classification keys to help group, identify and name a variety of living things in their local and wider environment • Construct and interpret a variety of food chains, identifying producers, predators and prey • Recognise that environments can change and that this can sometimes pose dangers to living things *e.g. climate change during Geography Survivors*	**Y6 Classifying organisms** • Describe how living things are classified into broad groups according to common observable characteristics and based on similarities and differences, including micro-organisms, plants and animals • Give reasons for classifying plants and animals based on specific characteristics **Y6 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 • 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
	Y1 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 *(Schools in the Past)* **Y2 Plants** • Observe and describe how seeds and bulbs grow into mature plants *(The Secret Garden)* • Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy *(The Secret Garden)*	**Y3 How Plants Grow** • Identify and describe the functions of different parts of flowering plants: roots, stem/trunk, leaves and flowers • Explore the requirements of plants for life and growth (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant *e.g. investigation into room to grow using onion bulbs, investigation of soils* • Investigate the way in which water is transported within plants *e.g. dyed water and white carnation or celery* • Explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal *e.g. look at the different ways plants disperse seeds*	**Y5 Life Cycles** • Describe the life process of reproduction in some plants and animals
	Y1 Animals including 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 *(Busy Bodies)* **Y2 Animals including Humans** • Notice that animals, including humans, have offspring which grow into adults *(Busy Bodies)* • Find out about and describe the basic needs of animals, including humans, for survival (water, food and air) *(Real Life Superheroes)* • Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene *(Busy Bodies – spread of germs; Real Life Superheroes – experiment to see which exercise makes your heart beat fastest; also covered in PSHE)*	**Y3 Health and Movement** • Identify that animals, including humans, need the right types and amount of nutrition, and that they cannot make their own food; they get nutrition from what they eat • Identify that humans and some other animals have skeletons and muscles for support, protection and movement. **Y4 Eating and Digestion** • Describe the simple functions of the basic parts of the digestive system in humans *e.g. digestive system demonstration* • Identify the different types of teeth in humans and their simple functions *e.g. tooth decay investigation*	**Y6 Healthy Bodies** • Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood • Recognise the impact of diet, exercise, drugs and lifestyle on the way their bodies function • Describe the ways in which nutrients and water are transported within animals, including humans **Y5 Life Cycles** • 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 • <u>Y5 Changes and reproduction (this builds on the learning in Life Cycles)</u> • Describe the changes as humans develop to old age
Chemistry	**Y1 Everyday materials** • Distinguish between an object and the material from which it is made *(Mary Anning and Fossils)* • Identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock *(Mary Anning and Fossils)* • Describe the simple physical properties of a variety of everyday materials *(Mary Anning and Fossils; Grand Designs; Made in Sheffield; Pirates and the Sea)* • Compare and group together a variety of everyday materials on the basis of their simple physical properties *(Mary Anning and Fossils; Grand Designs; Pirates and the Sea)*	**Y4 States of matter** • 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 *(e.g. melting investigation),* 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 **Y3 Rocks, fossils and soils** • 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	**Y5 Properties and changes of materials** • 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 • Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic **Reversible and Irreversible** • 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, including changes associated with burning and the action of acid on bicarbonate of soda

	Y2 Uses of everyday materials • Identify and compare the suitability of a variety of everyday materials, including wood, metal, plastic, glass, brick, rock, paper and cardboard for particular uses *(Pirates and the Sea – materials to make a boat; Mary Anning and Fossils – make protection for an egg that is to be dropped; Grand Designs – best material for a chair for Goldilocks)* • Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching *(Made in Sheffield)*		
Physical Processes	**Y1 Seasonal Change** • Observe changes across the four seasons • Observe and describe weather associated with the seasons and how day length varies *(ongoing throughout the year)*	**Y3 Forces and magnets** • 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 **Y4 Changing Sounds** • Identify how sounds are made, associating some of them with something vibrating • recognise that vibrations from sounds travel through a medium to the ear • Find patterns between the pitch of a sound and features of the object that produced it • Find patterns between the volume of a sound and the strength of the vibrations that produced it • Recognise that sounds get fainter as the distance from the sound source increases	**Y5 Forces in action** • 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 **Levers, Pulleys and Gears** • Recognise that some mechanisms, including levers, pulleys and gears, allow a smaller force to have a greater effect **Y5 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
		Y4 Circuits and Conductors • 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	**Y6 Changing Circuits** • Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit • Compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches • Use recognised symbols when representing a simple circuit in a diagram
		Y3 Light and shadow • 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	**Y6 Seeing 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 out or reflect light into the eye • Explain that we see things because light travels from light sources to our eyes or from light sources to objects and then to our eyes • Use the idea that light travels in straight lines to explain why shadows have the same shape as the objects that cast them