Block	Year 4 - Key NC Science Objectives
Autumn 1 – Electricity - **It's Electric!** Learn all about electrical circuits and test materials ability to conduct electricity. Put your knowledge of circuits on display by building your own circuit to create a buzz-wire game. Then use your game to try to defeat a challenger. Who can remain 'disconnected' on the game? You will need to impress with your electrical knowhow.	**Electricity** • 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 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 a lamp lights in a simple series circuit. • recognise some common conductors and insulators, and associate metals with being good conductors. **Working Scientifically** • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. • using straightforward scientific evidence to answer questions or to support their findings.
Autumn 2 – States of Matter **States of Matter Scientists** Develop and showcase an understanding of all areas of states of matter, including how materials can change from one state to another, through a large range of simple practical enquiries.	**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, 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. **Working Scientifically** • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using straightforward scientific evidence to answer questions or to support their findings

Spring 1 – Sound **Listen Up!** Find out all you can about sound; how it travels, pitch and volume. Then investigate materials to see which will provide the best insulation against sound. Be ready to present your ideas to a famous panel.	**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 of the vibrations that produced it. • recognise that sounds get fainter as the distance from the sound source increases. **Working Scientifically** • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. • using straightforward scientific evidence to answer questions or to support their findings
Spring 2 – Living things and their habitats - **Help our Habitats!** Look at local land use and decide how improvements could be made to unused land Which plants and animals would have lived here? What do they need to be able to live here again? Learn about wildlife and their habitats. How have their environments changed? How has climate change impacted the area? What can we do to help them?	**Living things and their habitats** • recognise that environments can change and that this can sometimes pose dangers to living things. **Working Scientifically** • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. • using straightforward scientific evidence to answer questions or to support their findings

Summer 1 – Animals, including humans **Excuse me, are these your teeth?** Excuse me, are these your teeth? Who did this poo? Am I a predator? Find the answers to these and other peculiar questions about digestion and food chains.	**Animals, including 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. • construct and interpret a variety of food chains, identifying producers, predators and prey. **Working Scientifically** • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying and presenting data in a variety of ways to help in answering questions. • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. • using straightforward scientific evidence to answer questions or to support their findings
Summer 2 – Living Things and their Habitats **Name that living thing!** Use of classification keys to help group, identify and name a variety of living things! Learn about the 7 characteristics of a living thing; sort living things in a number of ways; make a dichotomous classification key to identify local invertebrates; make observational drawings and a group large-scale drawing of an insect.	**Living things and their 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. **Working Scientifically** • asking relevant questions and using different types of scientific enquiries to answer them. • setting up simple practical enquiries, comparative and fair tests • making systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers • gathering, recording, classifying, and presenting data in a variety of ways to help in answering questions. • recording findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables • reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions. • using results to draw simple conclusions, make predictions for new values, suggest improvements, and raise further questions. • identifying differences, similarities or changes related to simple scientific ideas and processes. • using straightforward scientific evidence to answer questions or to support their findings

Types of Investigations

'Working Scientifically' is the continuous area of study in the National Curriculum for Science in England. This aims to ensure that children have greater exposure to a range of enquiry types and that they recognize when the various forms of enquiry are taking place. This is to enable them to decide for themselves which type to use in order to tackle the question they are investigating. The following types of enquiry are included in Hamilton Science planning.

Exploring:
Discovering what happens through play and exploration, e.g. what happens when you add water to fabric?

Observing over time:
Often linked to exploring but with a time variable included, e.g. using a thermometer to observe temperature changes of water.

Sorting, classifying and identifying:
Putting things into groups based on their characteristics, e.g. in how many ways can you sort these materials?

Fair test:
Used when we can control all the variables except the one we are changing, e.g. which 'towel' material will absorb the most water?

Pattern seeking:
Used when there are too many variables to control and so a true fair test is not possible, e.g. do some people have stronger muscles because they use them more?

Problem solving:
Using the science we know to solve a problem, e.g. Using what you have learned about how sounds are made and the loudness of sounds made by different materials, design an effective bird scarer that uses wind chimes or similar.

Researching and analysing secondary sources
Using secondary sources to help answer scientific questions that cannot be answered through practical investigations, e.g. which materials are biodegradable?