St Matthew's Science Progression Document

EYFS	Early Learning Goal	Working Scientifically 22 -36 Months	Working Scientifically 30 – 50 Months	Working Scientifically 40 – 60 Months
Physical development Health and Self-care	Children know the importance for good health of physical exercise and a healthy diet and talk about ways to keep healthy.		Observe the effects of activity on their body.	Eats a healthy range of foodstuffs and understands the need for variety in food. Show some understanding that good practices with regard to exercise, eating ,sleeping and hygiene can contribute to good health
Understanding the world people and communities	They know about similarities and differnces between themselves and others.	Learn that they have similarities and differences that connect them to and distinguish them from others.	Know some of the things that make them unique	
The world	Children know about similarities and differences in relation to places, objects, materials and living things. They make observations of animals and plants and explain why some things occur and talk about changes.		Show care and concern for living things and the environment. Comments and asks questions about aspects of their familiar world such as the place where they live on the natural world. Can talk about some of the things that they have observed such as plants, animals, natural and found objects. Talk about why things happen and how things work. Develop an understanding of growth decay and changes over time.	Look closely at similarities, differences, patterns and change.
Expressive arts and design. Exploring and using media and materials	Children safely explore and use a variety of materials, experimenting with colour, texture and form.	Show an interest in the way musical instruments sound.	Explores and learns how sounds can be changed. Explores colour and how colour can be changed. Begins to be interested in and describe the texture of things	Explore the different sounds of instruments. Explores what happens when they mix colours. Experiments to create different textures. Understands that media can be combined to create a new effect.

Year 1	Knowledge progression. By the end of year 1 children will know.	Working Scientifically ***Plan***	Working Scientifically ***DO***	Working Scientifically ***Record***	Working Scientifically ***Review***
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.	**Begin asking simple questions and recognising that they can be answered in different ways.** ask questions designed to help place things in groups based on similar observable or behavioural features With support recognise they will need to make observations/ measurements over a longer time Begin to suggest how to collect the identified data needed	**Observe closely, using simple equipment.** **Identify and classify.** begin to make comparisons to group similar things /organisms together begin classify things into two groups so that one group containing things/organisms that have an observable feature the other doesn't observe or measure changes using simple measuring equipment in uniform non-standard units (e.g. straws)	**Gather and recording data to help in answering questions.** begin record appropriately using tables, sorting circles and simple Venn diagrams to help distinguish sets of similar things/organisms begin to draw pictures/take photos/write simple sentences/complete simple charts such as sequential picture charts make practical graphs (e.g. using ribbon to show the height of a sunflower each week)	**Use their observations and ideas to suggest answers to questions.** can identify which group an additional object / organism should be placed in describe how things/organisms have been sorted describe /sequence simple changes
Animals including humans	Identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals (including pets). Identify and name a variety of common animals that are carnivores, herbivores and omnivores. Describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals. Including pets). Identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense.	**Begin asking simple questions and recognising that they can be answered in different ways.** ask questions designed to help place things in groups based on similar observable or behavioural features	**Observe closely, using simple equipment.** **Identify and classify.** begin to make comparisons to group similar things /organisms together begin classify things into two groups so that one group containing things/organisms that have an observable feature the other doesn't	**Gather and recording data to help in answering questions.** begin record appropriately using tables, sorting circles and simple Venn diagrams to help distinguish sets of similar things/organisms	**Use their observations and ideas to suggest answers to questions.** can identify which group an additional object / organism should be placed in describe how things/organisms have been sorted
Everyday materials	Distinguish between an object and the material from which it is made. Compare and group together a variety of everyday materials on the basis of their simple physical properties. Describe the simple physical properties of a variety of everyday materials. Identify and compare the uses of a variety of everyday materials, including wood, metal,	**Begin asking simple questions and recognising that they can be answered in different ways.** ask questions designed to help place things in groups based on similar observable or behavioural features begin to recognise when a simple comparison/test is unfair	**Observe closely, using simple equipment.** **Perform simple tests.** **Identify and classify.** begin to make comparisons to group similar things /organisms together begin classifying things into two groups so that one group containing	**Gather and recording data to help in answering questions.** begin record appropriately using tables, sorting circles and simple Venn diagrams to help distinguish sets of similar things/organisms draw pictures/take photos/write simple sentences/complete simple charts such as two column tables	**Use their observations and ideas to suggest answers to questions.** can identify which group an additional object / organism should be placed in describe how things/organisms have been sorted describe observations/data

	plastic, glass, brick, rock, paper and cardboard for particular uses.	with support suggest how to collect the identified data needed begin to make a simple prediction when appropriate (based on something similar they have observed previously	things/organisms that have an observable feature the other doesn't measure using simple measuring equipment in uniform non-standard units (e.g. straws		say what they have found out if initially predicted say whether what happened was what was expected
Seasonal changes	Observe changes across the four seasons. Observe and describe weather associated with the seasons and how day length varies.	**Begin asking simple questions and recognising that they can be answered in different ways.** With support recognise they will need to make observations/ measurements over a longer time Begin to suggest how to collect the identified data needed when appropriate (based on something similar they have observed)make a simple prediction about what will change over time	**Observe closely, using simple equipment.** observe or measure changes using simple measuring equipment in uniform non-standard units (e.g. straws)	**Gather and recording data to help in answering questions.** begin record appropriately using tables, sorting circles and simple Venn diagrams to help distinguish sets of similar things/organisms begin to draw pictures/take photos/write simple sentences/complete simple charts such as sequential picture charts make practical graphs (e.g. using ribbon to show the height of a sunflower each week)	**Use their observations and ideas to suggest answers to questions.** describe /sequence simple changes

Year 2	Knowledge progression. By the end of year 2 children will know.	Working Scientifically ***Plan***	Working Scientifically ***Do***	Working Scientifically ***Record***	Working Scientifically ***Review***
Living things in their habitats	Explore and compare the differences between things that are living, dead, and things that have never been alive. Identify and name a variety of plants and animals in their habitats, including micro-habitats. 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. 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.	**Asking simple questions and recognising that they can be answered in different ways.** ask questions designed to help place things in groups based on similar observable or behavioural features	**Observe closely, using simple equipment.** **Identify and classify.** make comparisons to group similar things /organisms together classify things into two groups so that one group containing things/organisms that have an observable feature the other doesn't	**Gather and recording data to help in answering questions.** record appropriately using tables, sorting circles and simple Venn diagrams to help distinguish sets of similar things/organisms	**Use their observations and ideas to suggest answers to questions.** can identify which group an additional object / organism should be placed in describe how things/organisms have been sorted describe observations/data say what they have found out
Plants	Find out and describe how plants need water, light and a suitable temperature to grow and stay healthy. Observe and describe how seeds and bulbs grow into mature plants.	**Asking simple questions and recognising that they can be answered in different ways.** recognise they will need to make observations/ measurements over a longer time suggest how to collect the identified data needed when appropriate (based on something similar they have observed) make a simple prediction recognise when a simple comparison/test is unfair with support begin to choose the appropriate inquiry between fair test and pattern seeking	**Observe closely, using simple equipment.** **Perform simple tests.** **Identify and classify.** observe or measure changes using simple measuring equipment in uniform non-standard units (e.g. straws) or simple standard units (Y2) such as metre sticks, kg masses, L jugs and second timers read scale to the nearest labelled division (Y2)	**Gather and recording data to help in answering questions.** record appropriately using tables, sorting circles and simple Venn diagrams to help distinguish sets of similar things/organisms draw pictures/take photos/write simple sentences/complete simple charts such as sequential picture charts make practical graphs (e.g. using ribbon to show the height of a sunflower each week) draw a block graph with a 1:1 scale (Y2)	**Use their observations and ideas to suggest answers to questions.** describe /sequence simple changes if initially predicted say whether the change was what was expected describe observations/data say what they have found out describe simple patterns
Animals including humans	Notice that animals, including humans, have offspring which grow into adults.	**Asking simple questions and recognising that they can be answered in different ways.**	**Observe closely, using simple equipment.** **Identify and classify.**	**Gather and recording data to help in answering questions.** record appropriately using tables, sorting circles and simple Venn diagrams	**Use their observations and ideas to suggest answers to questions.** can identify which group an additional object / organism should be placed in

	Find out about and describe the basic needs of animals, including humans, for survival (water, food, air). Describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene.	ask questions designed to help place things in groups based on similar observable or behavioural features	make comparisons to group similar things /organisms together classify things into two groups so that one group containing things/organisms that have an observable feature the other doesn't	to help distinguish sets of similar things/organisms	describe how things/organisms have been sorted describe observations/data say what they have found out
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. Find out how the shapes of solid objects made from some materials can be changed by squashing, bending, twisting and stretching.	**Asking simple questions and recognising that they can be answered in different ways.** ask questions designed to help place things in groups based on similar observable or behavioural features recognise they will need to make observations/ measurements over a longer time suggest how to collect the identified data needed recognise when a simple comparison/test is unfair make a simple prediction when appropriate (based on something similar they have observed previously With support begin to choose the appropriate inquiry between fair test and pattern seeking	**Observe closely, using simple equipment.** **Perform simple tests.** **Identify and classify.** make comparisons to group similar things /organisms together classify things into two groups so that one group containing things/organisms that have an observable feature the other doesn't observe or measure changes using simple measuring equipment in uniform non-standard units (e.g. straws) or simple standard units (Y2) such as metre sticks, kg masses, L jugs and second timers read scale to the nearest labelled division (Y2)	**Gather and recording data to help in answering questions.** record appropriately using tables, sorting circles and simple Venn diagrams to help distinguish sets of similar things/organisms draw pictures/take photos/write simple sentences/complete simple charts such as two column tables make practical block graphs (e.g. using Lego)/pictograms with a 1:1 scale -draw a block graph with a 1:1 scale (Y2)	**Use their observations and ideas to suggest answers to questions.** can identify which group an additional object / organism should be placed in describe how things/organisms have been sorted if initially predicted say whether the change was what was expected describe observations/data say what they have found out describe simple patterns

Year 3	Knowledge progression. By the end of year 3 children will know.	Working Scientifically ***Plan***	Working Scientifically ***Do***	Working Scientifically ***Record***	Working Scientifically ***Review***
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 (air, light, water, nutrients from soil, and room to grow) and how they vary from plant to plant.	**Ask relevant questions and use different types of scientific enquiries to answer them.** Begin to suggest ways of making the test fairer Begin to suggest data needing to be collected	**Set up (and carry out) simple practical enquiries, comparative and fair tests.** **Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.**	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.**	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use straightforward scientific evidence to answer questions or to support their findings.**

	Investigate the way in which water is transported within plants. Explore the role of flowers in the life cycle of flowering plants, including pollination, seed formation and seed dispersal.	From a selection, begin to identify what equipment is needed make predictions based on everyday experiences and knowledge decide to answer a question by observing/measuring changes over a longer period of time Begin to suggest how long to make periodic observations or take measurements for Begin to identify the right type of inquiry between fair test and pattern seeking	Begin to use simple standard measures :m, cm, mm, kg, g, cm3, minutes, seconds, Newton measuring to the nearest half unit Begin to read scales to the nearest division even when unlabelled	Begin to choose an appropriate way to record results including choosing a two column table Begin to draw bar charts with simple scales e.g. 1:2, 1:5, 1:10, 1:100 Begin to make simple branching data bases/classification keys for a limited number of things (maximum 6) with easily observable differences	**Use results to draw simple conclusions and raise further questions.** Begin to describe alternative/ improved ways to sort /group/classify Begin to notice links/patterns between two sets of data say whether the changes were what was expected explain any differences
Animals including 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 skeletons and muscles for support, protection and movement.	**Ask relevant questions and use different types of scientific enquiries to answer them.** ask questions relating to how things/ organisms should be grouped, what things/organisms are and if there are similar things/ organisms	**Make systematic and careful observations and , where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** use results of simple tests to sort and group things by how they behave.	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** Begin to use Carroll and Venn diagrams to help sort and record groupings Begin to make simple branching data bases/classification keys for a limited number of things (maximum 6) with easily observable differences choose an appropriate way to record results including a table	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use straightforward scientific evidence to answer questions or to support their findings.** **Use results to draw simple conclusions and raise further questions.** Begin to describe alternative/ improved ways to sort /group/classify Begin to notice links/patterns between two sets of data say whether the changes were what was expected explain any differences
Rocks	Compare and group together different kinds of rocks on the basis of their simple physical properties. Recognise that soils are made from rocks and organic matter.	**Ask relevant questions and use different types of scientific enquiries to answer them.** ask questions relating to how things/ organisms should be grouped, what	**Set up (and carry out) simple practical enquiries, comparative and fair tests.** **Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of**	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.**	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use straightforward scientific evidence to answer questions or to support their findings.**

	Describe in simple terms how fossils are formed when things that have lived are trapped within rock.	things/organisms are and if there are similar things/ organisms when appropriate (based on something similar they have observed) make a simple prediction about a possible pattern recognise they are looking for a pattern decide to answer a question by observing/measuring changes over a longer period of time Begin to suggest how long to make periodic observations or take measurements for	**equipment, including thermometers and data loggers.** use results of simple tests to sort and group things by how they behave	Begin to use Carroll and Venn diagrams to help sort and record groupings Begin to make simple branching data bases/classification keys for a limited number of things (maximum 6) with easily observable differences choose an appropriate way to record results including a table	**Use results to draw simple conclusions and raise further questions.** Begin to describe alternative/ improved ways to sort /group/classify Begin to explain differences between what has been observed. Were changes what was expected? Begin to notice links/patterns between two sets of data say whether the changes were what was expected explain any differences
Forces and magnets	Compare how things move on different surfaces. Notice that some forces need contact between two objects, but magnetic forces 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.	**Ask relevant questions and use different types of scientific enquiries to answer them.** Begin to suggest ways of making the test fairer Begin to suggest data needing to be collected From a selection, begin to identify what equipment is needed make predictions based on everyday experiences and knowledge decide to answer a question by observing/measuring changes over a longer period of time Begin to suggest how long to make periodic observations or take measurements for Begin to identify the right type of inquiry between fair test and pattern seeking	**Set up (and carry out) simple practical enquiries, comparative and fair tests.** **Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** Begin to use simple standard measures: m, cm, mm, kg, g, cm3, minutes, seconds, Newton measuring to the nearest half unit Begin to read scales to the nearest division even when unlabelled use results of simple tests to sort and group things by how they behave	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** Begin to choose an appropriate way to record results including choosing a two-column table Begin to draw bar charts with simple scales e.g. 1:2, 1:5, 1:10, 1:100 Begin to use Carroll and Venn diagrams to help sort and record groupings	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use straightforward scientific evidence to answer questions or to support their findings.** **Use results to draw simple conclusions and raise further questions.** **Begin to identify differences, similarities or changes related to simple scientific ideas and processes.** Begin to describe alternative/ improved ways to sort /group/classify Begin to notice links/patterns between two sets of data Begin to explain differences between what has been observed. say whether the changes were what was expected explain any differences

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 shadows are formed when a light source is blocked by a solid object. Find patterns in the way that the size of shadows changes. Recognise that light from the Sun can be dangerous and that there are ways to protect our eyes.	**Ask relevant questions and use different types of scientific enquiries to answer them.** Begin to suggest ways of making the test fairer Begin to suggest data needing to be collected From a selection, begin to identify what equipment is needed make predictions based on everyday experiences and knowledge decide to answer a question by observing/measuring changes over a longer period of time Begin to suggest how long to make periodic observations or take measurements for Begin to identify the right type of inquiry between fair test and pattern seeking	**Set up (and carry out) simple practical enquiries, comparative and fair tests.** **Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** Begin to use simple standard measures: m, cm, mm, kg, g, cm3, minutes, seconds, Newton measuring to the nearest half unit Begin to read scales to the nearest division even when unlabelled use results of simple tests to sort and group things by how they behave	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** Begin to choose an appropriate way to record results including choosing a two-column table Begin to draw bar charts with simple scales e.g. 1:2, 1:5, 1:10, 1:100	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use straightforward scientific evidence to answer questions or to support their findings.** **Use results to draw simple conclusions and raise further questions.** **Begin to identify differences, similarities or changes related to simple scientific ideas and processes.** Begin to describe alternative/ improved ways to sort /group/classify Begin to explain differences between what has been observed. say whether the changes were what was expected explain any differences Begin to notice links/patterns between two sets of data

Year 4	Knowledge progression. By the end of year 4 children will know.	Working Scientifically ***Plan***	Working Scientifically ***Do***	Working Scientifically ***Record***	Working Scientifically ***Review***
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.	**Ask relevant questions and use different types of scientific enquiries to answer them.** ask questions relating to how things/ organisms should be grouped, what things/organisms are and if there are similar things/ organisms decide to answer a question by observing/measuring changes over a longer period of time suggest how long to make periodic observations or take measurements for	**Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** use results of simple tests to sort and group things by how they behave	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** use Carroll and Venn diagrams to help sort and record groupings make simple branching data bases/classification keys for a limited number of things (maximum 6) with easily observable differences choose an appropriate way to record results including a table draw bar charts and line graphs (Y4) with simple scales e.g. 1:2, 1:5, 1:10, 1:100	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Identify differences, similarities or changes related to simple scientific ideas and processes.** **Use straightforward scientific evidence to answer questions or to support their findings.** say whether the changes were what was expected explain any differences describe alternative/ improved ways to sort /group/classify use simple classification keys/branching data bases to identify unknown items that have easily observable differences in their features
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. Recognise that environments can change constantly changing and that this can sometimes pose dangers to specific habitats.	**Ask relevant questions and use different types of scientific enquiries to answer them.** (Suggest data needing to be collected, Make predictions based on everyday experiences/Knowledge including likely patterns)) ask questions relating to how things/ organisms should be grouped, what things/organisms are and if there are similar things/ organisms decide to answer a question by observing/measuring changes over a longer period of time make prediction about a likely observable change based on everyday experiences and knowledge	**Make systematic and careful observations and , where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** use results of simple tests to sort and group things by how they behave	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** use Carroll and Venn diagrams to help sort and record groupings make simple branching data bases/classification keys for a limited number of things (maximum 6) with easily observable differences choose an appropriate way to record results including a table draw bar charts and line graphs (Y4) with simple scales e.g. 1:2, 1:5, 1:10, 1:100	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Identify differences, similarities or changes related to simple scientific ideas and processes.** **Use straightforward scientific evidence to answer questions or to support their findings.** say whether the changes were what was expected explain any differences describe alternative/ improved ways to sort /group/classify use simple classification keys/branching data bases to identify unknown items that have easily observable differences in their features

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.	**Ask relevant questions and use different types of scientific enquiries to answer them.** suggest ways of making the test fairer suggest data needing to be collected from a selection identify what equipment is needed make predictions based on everyday experiences and knowledge decide to answer a question by observing/measuring changes over a longer period of time suggest how long to make periodic observations or take measurements for make prediction about a likely observable change based on everyday experiences and knowledge Identify the correct type of enquiry between fair test and pattern seeking	**Set up (and carry out) simple practical enquiries, comparative and fair tests.** **Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** use results of simple tests to sort and group things by how they behave (e.g. waterproof or not) use simple standard measures: m, cm, mm, kg, g, cm3, minutes, seconds, Newton measuring to the nearest half unit read scales to the nearest division even when unlabelled	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** use Carroll and Venn diagrams to help sort and record groupings make simple branching data bases/classification keys for a limited number of things (maximum 6) with easily observable differences choose an appropriate way to record results including a table draw bar charts, scatter graphs and line graphs (Y4) with simple scales e.g. 1:2, 1:5, 1:10, 1:100	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.** **Identify differences, similarities or changes related to simple scientific ideas and processes.** **Use straightforward scientific evidence to answer questions or to support their findings.** notice links between cause and effect notice links between two sets of data and suggest ways the test could be improved say whether the changes were what was expected explain any differences suggest ways the test could be improved
Electricity	Identify common appliances that run on electricity Construct a simple series electrical circuit identifying and naming the basic parts of a simple electrical circuit, 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.	**Ask relevant questions and use different types of scientific enquiries to answer them.** suggest ways of making the test fairer suggest data needing to be collected from a selection identify what equipment is needed make predictions based on everyday experiences and knowledge (This includes making predictions about likely patterns) decide to answer a question by observing/measuring changes over a longer period of time	**Set up (and carry out) simple practical enquiries, comparative and fair tests.** **Make systematic and careful observations and , where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** use results of simple tests to sort and group things by how they behave (e.g. waterproof or not) use simple standard measures: m, cm, mm, kg, g, cm3,	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** choose an appropriate way to record results including a table draw bar charts, scatter graphs and line graphs (Y4) with simple scales e.g. 1:2, 1:5, 1:10, 1:100	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.** **Identify differences, similarities or changes related to simple scientific ideas and processes.** **Use straightforward scientific evidence to answer questions or to support their findings.** notice links between cause and effect notice links/patterns between two sets of data and suggest ways the test could be improved

	Recognise some common conductors and insulators, and associate metals with being good conductor.	suggest how long to make periodic observations or take measurements for Identify the correct type of enquiry between fair test and pattern seeking	minutes, seconds, Newton measuring to the nearest half unit read scales to the nearest division even when unlabelled		say whether the changes were what was expected explain any differences suggest ways the test could be improved
Sound	Identify how sounds are made, associating some of them with something vibrating. Recognise that vibrations from sound travel through a medium to the ear. Recognise that sounds get fainter as the distance from the sound source increases. 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.	**Ask relevant questions and use different types of scientific enquiries to answer them.** suggest ways of making the test fairer suggest data needing to be collected from a selection identify what equipment is needed make predictions based on everyday experiences and knowledge (this includes making predictions about likely patterns) decide to answer a question by observing/measuring changes over a longer period of time suggest how long to make periodic observations or take measurements for Identify the correct type of enquiry between fair test and pattern seeking	**Set up (and carry out) simple practical enquiries, comparative and fair tests.** **Make systematic and careful observations and, where appropriate, taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers.** use results of simple tests to sort and group things by how they behave (e.g. waterproof or not) use simple standard measures: m, cm, mm, kg, g, cm3, minutes, seconds, Newton measuring to the nearest half unit read scales to the nearest division even when unlabelled	**Gather, record, classify and present data in a variety of ways to help in answering questions.** **Record findings using simple scientific language, drawings, labelled diagrams, keys, bar charts, and tables.** choose an appropriate way to record results including a table draw bar charts, scatter graphs and line graphs (Y4) with simple scales e.g. 1:2, 1:5, 1:10, 1:100	**Report on findings from enquiries, include oral and written explanations, displays or presentations of results and conclusions.** **Use results to draw simple conclusions, make predictions for new values, suggest improvements and raise further questions.** **Identify differences, similarities or changes related to simple scientific ideas and processes.** **Use straightforward scientific evidence to answer questions or to support their findings.** notice links between cause and effect notice links between two sets of data and suggest ways the test could be improved say whether the changes were what was expected explain any differences suggest ways the test could be improved

Year 5	Knowledge progression. By the end of year 5 children will know.	Working Scientifically ***Plan***	Working Scientifically ***Do***	Working Scientifically ***Record***	Working Scientifically ***Review***
Animals including humans	Describe the changes as humans develop to old age.	**Plan different types of scientific enquiries to answer questions.** know why an observation/measurement over time is appropriate to answer the question Predict based on scientific knowledge	**Take measurements, using a range of scientific equipment, with increasing accuracy and precision.** Explore the work of scientists and scientific research	**Record data and results of increasing complexity using scientific diagrams and labels, classification keys and tables.** record data accurately and appropriately including in tables choose the appropriate type of graph if necessary	**Report and present findings from enquiries, including conclusions, 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.** use graphs when spotting and interpreting how things change recognise the effect of sample size on reliability explain the relationship between two sets of data
Living things and their habitats	Describe the difference 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.	**Plan different types of scientific enquiries to answer questions.** plan to use an identification key to identify an unknown organism plan what to test and how to test and what evidence to collect in order to classify predict which phylum (mammal, bird, reptile, amphibian, fish) a vertebrate belongs in from initial observation know why an observation/measurement over time is appropriate to answer the question	**Take measurements, using a range of scientific equipment, with increasing accuracy and precision.** use identification keys to identify unknown organisms select appropriate measuring equipment allowing for accurate measurement use standard measures including fractions, decimals and mixed units read scales with precision and accuracy use a variety of tests/pieces of evidence to identify and classify materials /organisms	**Record data and results of increasing complexity using scientific diagrams and labels, classification keys and tables.** make own keys and branching data bases record data accurately and appropriately including in tables choose the appropriate type of graph if necessary	**Report and present findings from enquiries, including conclusions, 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.** explain that sorting/grouping/classifying is very useful to help predict where things/ organisms belong and how they will behave evaluate how well keys work and suggest changes/improvements Confirm or reject initial predictions around the phylum a vertebrate belongs in based on more detailed observations use graphs when spotting and interpreting how things change recognise the effect of sample size on reliability explain the relationship between two sets of data
Properties and changes of materials	Compare and group together everyday materials based on evidence from comparative and fair tests, including their hardness, solubility, transparency,	**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, taking repeat readings when appropriate.**	**Record data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs, bar and line graphs.**	**Report and present findings from enquiries, including conclusions, causal relationships and explanations results, explanations of and degree of trust in results, in oral and written forms such as displays and other presentations.**

	conductivity (electrical and thermal), and response to magnets. Know that some materials will dissolve in liquid to form a solution and describe how to recover a substance from a solution. Use knowledge of solids, liquids and gases to decide how mixtures might be separated, including through filtering, sieving and evaporating. Give reasons, based on evidence from comparative and fair tests, for the particular uses of everyday materials, including metals, wood and plastic. Demonstrate that dissolving, mixing and changes of state are reversible changes. Explain that some changes result in the formation of new materials, and that this kind of change is not usually reversible, include changes associated with burning and the action of acid on bicarbonate of soda.	**Use test results to make predictions to set up further comparative and fair tests.** know why an observation/measurement over time is appropriate to answer the question choose the to carry out a fair test when appropriate list all the equipment needed decide what and how much data to collect understand why variables can't be controlled and suggest using a pattern seeking enquiry decide types and large amount of data needed to be collected to ensure a reasonable sample size predict the pattern/trend based on scientific knowledge	select appropriate measuring equipment allowing for accurate measurement Begin to use standard measures including fractions, decimals and mixed units read scales with precision and accuracy	record data accurately and appropriately including tables allowing for repeat readings and averages choose the appropriate type of graph draw bar and line graphs with complex scales possibly involving fractions or decimal e.g. 1:2 ½ or 1:1.5	**Identify scientific evidence that has been used to support or refute ideas or arguments.** use graphs when spotting and interpreting trends and patterns offer explanations for differences in repeat readings use graphs when spotting and interpreting how things change explain the effect of changing the time and/or number of observations /measurements suggest improvements in experimental method recognise the effect of sample size on reliability explain the relationship between two sets of data
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.	**Plan different types of scientific enquiries to answer questions.** know why an observation/measurement over time is appropriate to answer the question Predict based on scientific knowledge	**Take measurements, using a range of scientific equipment, with increasing accuracy and precision.** Explore the work of scientists and scientific research	**Record data and results of increasing complexity using scientific diagrams and labels, classification keys and tables.** record data accurately and appropriately including in tables choose the appropriate type of graph	**Report and present findings from enquiries, including conclusions, 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.** use graphs when spotting and interpreting how things change explain the relationship between two sets of data
		Plan different types of scientific enquiries to answer questions,	**Take measurements, using a range of scientific equipment, with increasing**	**Record data and results of increasing complexity using scientific diagrams**	**Report and present findings from enquiries, including conclusions, causal relationships and**

Forces	Explain that unsupported objects fall towards the Earth because of the force of gravity acting between the Earth and the falling object. Identify the effect 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.	**including recognising and controlling variables where necessary.** **Use test results to make predictions to set up further comparative and fair tests.** know why an observation/measurement over time is appropriate to answer the question choose the to carry out a fair test when appropriate list all the equipment needed decide what and how much data to collect understand why variables can't be controlled and suggest using a pattern seeking enquiry decide types and large amount of data needed to be collected to ensure a reasonable sample size predict the pattern/trend based on scientific knowledge	**accuracy and precision, taking repeat readings when appropriate.** select appropriate measuring equipment allowing for accurate measurement Begin to use standard measures including fractions, decimals and mixed units read scales with precision and accuracy	**and labels, tables, scatter graphs, bar and line graphs.** record data accurately and appropriately including tables allowing for repeat readings and averages choose the appropriate type of graph draw bar and line graphs with complex scales possibly involving fractions or decimal e.g. 1:2 ½ or 1:1.5	**explanations results, explanations of and degree of trust in 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.** use graphs when spotting and interpreting trends and patterns offer explanations for differences in repeat readings use graphs when spotting and interpreting how things change explain the effect of changing the time and/or number of observations /measurements suggest improvements in experimental method recognise the effect of sample size on reliability explain the relationship between two sets of data

Year 6	Knowledge progression. By the end of year 6 children will know.	Working Scientifically ***Plan***	Working Scientifically ***Do***	Working Scientifically ***Record***	Working Scientifically ***Review***
Animals including humans	Identify and name the main parts of the human circulatory system, and describe the functions of the heart, blood vessels and blood (including the pulse and clotting). 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.	**Plan different types of scientific enquiries to answer questions.** know why an observation/measurement over time is appropriate to answer the question Predict based on scientific knowledge	**Take measurements, using a range of scientific equipment, with increasing accuracy and precision.** Explore the work of scientists and scientific research	**Record data and results of increasing complexity using scientific diagrams and labels, classification keys and tables.** record data accurately and appropriately including in tables choose the appropriate type of graph if necessary	**Report and present findings from enquiries, including conclusions, 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.** use graphs when spotting and interpreting how things change recognise the effect of sample size on reliability explain the relationship between two sets of data
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.	**Plan different types of scientific enquiries to answer questions.** know why an observation/measurement over time is appropriate to answer the question Predict based on scientific knowledge plan to use an identification key to identify an unknown organism	**Take measurements, using a range of scientific equipment, with increasing accuracy and precision.** Explore the work of scientists and scientific research use identification keys to identify unknown organisms	**Record data and results of increasing complexity using scientific diagrams and labels, classification keys and tables.** record data accurately and appropriately including in tables choose the appropriate type of graph if necessary	**Report and present findings from enquiries, including conclusions, 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.** use graphs when spotting and interpreting how things change recognise the effect of sample size on reliability explain the relationship between two sets of data
Living things and their habitats	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.	**Plan different types of scientific enquiries to answer questions.** plan to use an identification key to identify an unknown organism plan what to test and how to test and what evidence to collect in order to classify	**Take measurements, using a range of scientific equipment, with increasing accuracy and precision.** use identification keys to identify unknown organisms select appropriate measuring equipment allowing for accurate measurement	**Record data and results of increasing complexity using scientific diagrams and labels, classification keys and tables.** make own keys and branching data bases record data accurately and appropriately including in tables	**Report and present findings from enquiries, including conclusions, 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.** explain that sorting/grouping/classifying is very useful to help predict where things/ organisms belong and how they will behave

		predict which phylum (mammal, bird, reptile, amphibian, fish) a vertebrate belongs in from initial observation know why an observation/measurement over time is appropriate to answer the question	use standard measures including fractions, decimals and mixed units read scales with precision and accuracy use a variety of tests/pieces of evidence to identify and classify materials /organisms		evaluate how well keys work and suggest changes/improvements Confirm or reject initial predictions around the phylum a vertebrate belongs in based on more detailed observations use graphs when spotting and interpreting how things change recognise the effect of sample size on reliability
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.	**Plan different types of scientific enquiries to answer questions, including recognising and controlling variables where necessary.** **Use test results to make predictions to set up further comparative and fair tests.** know why an observation/measurement over time is appropriate to answer the question choose the to carry out a fair test when appropriate list all the equipment needed decide what and how much data to collect understand why variables can't be controlled and suggest using a pattern seeking enquiry decide types and large amount of data needed to be collected to ensure a reasonable sample size predict the pattern/trend based on scientific knowledge	**Take measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate.** select appropriate measuring equipment allowing for accurate measurement Begin to use standard measures including fractions, decimals and mixed units read scales with precision and accuracy	**Record data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs, bar and line graphs.** record data accurately and appropriately including tables allowing for repeat readings and averages choose the appropriate type of graph draw bar and line graphs with complex scales possibly involving fractions or decimal e.g. 1:2 ½ or 1:1.5	**Report and present findings from enquiries, including conclusions, causal relationships and explanations results, explanations of and degree of trust in 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.** use graphs when spotting and interpreting trends and patterns offer explanations for differences in repeat readings use graphs when spotting and interpreting how things change explain the effect of changing the time and/or number of observations /measurements suggest improvements in experimental method recognise the effect of sample size on reliability explain the relationship between two sets of data
Electricity	Associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit.	**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,**	**Record data and results of increasing complexity using scientific diagrams and labels, tables, scatter graphs, bar and line graphs.**	**Report and present findings from enquiries, including conclusions, causal relationships and explanations results, explanations of and degree**

	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.	**Use test results to make predictions to set up further comparative and fair tests.** know why an observation/measurement over time is appropriate to answer the question choose the to carry out a fair test when appropriate list all the equipment needed decide what and how much data to collect understand why variables can't be controlled and suggest using a pattern seeking enquiry decide types and large amount of data needed to be collected to ensure a reasonable sample size predict the pattern/trend based on scientific knowledge	**taking repeat readings when appropriate.** select appropriate measuring equipment allowing for accurate measurement Begin to use standard measures including fractions, decimals and mixed units read scales with precision and accuracy	record data accurately and appropriately including tables allowing for repeat readings and averages choose the appropriate type of graph draw bar and line graphs with complex scales possibly involving fractions or decimal e.g. 1:2 ½ or 1:1.5	**of trust in 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.** use graphs when spotting and interpreting trends and patterns offer explanations for differences in repeat readings use graphs when spotting and interpreting how things change explain the effect of changing the time and/or number of observations /measurements suggest improvements in experimental method recognise the effect of sample size on reliability explain the relationship between two sets of data