Knowledge and Skills progression in Science

Didsbury CE Primary School

	Year 1	Year 2	Year 3	Year 4	Year 5	Year 6
Biology	**Animals, including humans** identify and name a variety of common animals including fish, amphibians, reptiles, birds and mammals identify and name a variety of common animals that are carnivores, herbivores and omnivores describe and compare the structure of a variety of common animals (fish, amphibians, reptiles, birds and mammals including pets) identify, name, draw and label the basic parts of the human body and say which part of the body is associated with each sense	**Animals, including humans** notice that animals, including humans, have offspring which grow into adults find out about and describe the basic needs of animals, including humans, for survival (water, food and air) describe the importance for humans of exercise, eating the right amounts of different types of food, and hygiene	**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	**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	**Animals, including humans** describe the changes as humans develop to old age	**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 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

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	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	**Plants** observe and describe how seeds and bulbs grow into mature plants find out and describe how plants need water, light and a suitable temperature to grow and stay healthy	**Plants** 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 investigate the way in which water is transported within plants explore the part that flowers play in the life cycle of flowering plants, including pollination, seed formation and seed dispersal			**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 - peppered moths (soot in London), Galapagos finches 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/ evolved to suit their environment in different ways and that adaptation may lead to evolution – birds – wading birds/ birds of prey
		Living things and their habitats explore and compare the differences between things that are living, dead, and things that have never been alive identify that most living things live in habitats to which they are suited and describe how different habitats provide for the basic needs of different kinds of animals and plants, and how they depend on each other		**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 and that this can	**Living things and their habitats** 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	**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

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		identify and name a variety of plants and animals in their habitats, including microhabitats describe how animals obtain their food from plants and other animals, using the idea of a simple food chain, and identify and name different sources of food		sometimes pose dangers to living things		

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Chemistry	**Everyday materials** distinguish between an object and the material from which it is made identify and name a variety of everyday materials, including wood, plastic, glass, metal, water, and rock describe the simple physical properties of a variety of everyday materials compare and group together a variety of everyday materials on the basis of their simple physical properties	**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	**Rocks** compare and group together different kinds of rocks on the basis of their appearance and simple physical properties describe in simple terms how fossils are formed when things that have lived are trapped within rock recognise that soils are made from rocks and organic matter	**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	**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 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, including changes associated with burning	

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					and the action of acid on bicarbonate of soda	
Physics	**Seasonal changes** observe changes across the 4 seasons observe and describe weather associated with the seasons and how day length varies		**Light** recognise that they need light in order to see things and that dark is the absence of light notice that light is reflected from surfaces recognise that light from the sun can be dangerous and that there are ways to protect their eyes recognise that shadows are formed when the light from a light source is blocked by an opaque object find patterns in the way that the size of shadows change	**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	**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	**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.
			Forces and magnets compare how things move on different surfaces notice that some forces need contact between 2 objects, but magnetic forces can act at a distance observe how magnets attract or repel each other and attract some materials and not others	**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 or not a lamp will light in a simple	**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 effects of air resistance, water resistance and friction, that act between moving surfaces	**Electricity** associate the brightness of a lamp or the volume of a buzzer with the number and voltage of cells used in the circuit compare and give reasons for variations in how components function, including the brightness of bulbs, the loudness of buzzers and the on/off position of switches

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			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 2 poles predict whether 2 magnets will attract or repel each other, depending on which poles are facing	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	recognise that some mechanisms including levers, pulleys and gears allow a smaller force to have a greater effect	use recognised symbols when representing a simple circuit in a diagram.

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Identification and classifying	**Identifying and classifying** compare observable and behavioural features of living things, materials and objects answer simple yes/no questions about a mystery object they have chosen once they have decided sorting criteria explain where further additional items could be placed use simple Venn diagrams to help sort things and record the groupings	**Identifying and classifying** sort and group in own way using both observable and behavioural features even when differences are slight sort into two groups in which one group has a feature and the other doesn't use simple Venn diagrams to help sort things and record the groupings	**Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions** use Carroll and Venn diagrams to help sort things and record the groupings, sometimes re-sorting using different criteria carry out simple tests and sort and group based on the evidence of the results found.	**Gathering, recording, classifying and presenting data in a variety of ways to help in answering questions** make simple branching data bases/ classification keys to for a few (3-6) things with easily observable differences and that I can name use simple classification keys/ branching data bases to identify unknown items that have easily observable differences in their features	**Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.**	**Recording data and results of increasing complexity using scientific diagrams and labels, classification keys, tables, scatter graphs, bar and line graphs.** be aware of the term kingdom and know that most scientists classify things into five kingdoms. through direct observations where possible classify animals into vertebrates and invertebrates. make keys and branching databases with 4 or more items evaluate how well keys and databases work and make changes to improve them explain why it is important to classify and why it is useful to scientists plan what to test, how to test and collect evidence in order to classify

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Scientific enquiry	**Plan** **asking simple questions and recognising that they can be answered in different ways and using different types of scientific enquiries to answer them** with help begin to choose ways to try and answer a question recognise when simple test' s unfair make simple prediction if appropriate (based on something they have observed before but without an explanation)	**Plan** **asking simple questions and recognising that they can be answered in different ways and using different types of scientific enquiries to answer them** take a few guided planning decisions make own suggestions on how to collect data once the data needed has been outlined	**Plan** **ask relevant questions set up simple practical enquiries, comparative and fair tests** begin to choose ways to try and answer a question suggest ways of making the test fair or if it can't be fair how they will answer it by looking for a pattern make simple predictions based on everyday experience and knowledge	**Plan** **ask relevant questions set up simple practical enquiries, comparative and fair tests** put forward own ideas and make some planning decisions from a selection say what equipment is needed suggest the type of data needed to be collected	**Plan** **planning different types of scientific enquiries, including recognising and controlling variables where necessary to answer questions** ask a variety of types of scientific questions list all the equipment needed make predictions based on scientific knowledge	**Plan** **planning different types of scientific enquiries, including recognising and controlling variables where necessary to answer questions** choose the most appropriate scientific enquiry method to answer a question and outline the method decide what data to collect and how much of it is needed
	Do **observe closely, using simple equipment perform simple tests** make observations related to the task or test use simple equipment provided	**Do** **observe closely, using simple equipment perform simple tests** measure using uniform non- standard units (e.g. straws) or simple standard units and measuring equipment - meter stick , cm, kg masses, l, jugs & second timer compare 3 or more things read scales to nearest labelled division.	**Do** **Making systematic and careful observations and where appropriate taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** carry out a fair test or pattern seeking enquiry with help compare 3 or more things use simple standard measures; m, cm, mm, kg, g, cm3, minutes, seconds, Newton.	**Do** **Making systematic and careful observations and where appropriate taking accurate measurements using standard units, using a range of equipment, including thermometers and data loggers** measure to the nearest whole or half unit or mixed units read scales to the nearest division labelled and unlabelled..	**Do** **Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** make a series of measurements adequate for the task select appropriate measuring equipment compare 5 or more things read scales with precision and accuracy appropriate to the task -	**Do** **Taking measurements, using a range of scientific equipment, with increasing accuracy and precision, taking repeat readings when appropriate** use standard measures as in including use of fractions and mixed units and decimals to one place. read scales with increased accuracy select apparatus and use with care repeat readings & find averages

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		Record **gather and record data to help in answering questions** draw pictures of results/ take photos help teacher make a class table or chart complete a simple chart or two column table make practical block graphs/pictograms make/draw a block graph with a 1:1 scale	**Record** **gathering, recording, classifying and present data in a variety of ways to help in answering questions** **recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables** construct a simple 2 column table	**Record** **gathering, recording, classifying and present data in a variety of ways to help in answering questions** **recording findings using simple scientific language, drawings, labelled diagrams, bar charts, and tables** draw bar charts 1:1, 1:2, 1:5 and 1:10 scale & begin to plot line graphs	**Record** **recording data and results of increasing complexity using scientific diagrams, labels, classification keys tables, scatter graphs, bar and line graphs, and models** present information clearly in tables including for repeat readings record observations and measurements systematically draw bar graphs more complex scales possibly involving fractions or decimals e.g. 1:2.5	**Record** **recording data and results of increasing complexity using scientific diagrams, labels, classification keys tables, scatter graphs, bar and line graphs, and models** draw line graphs, possibly involving fractions and decimals

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	Review **use their observations and ideas to suggest answers to questions** describe observations say what they have found out	**Review** **use their observations and ideas to suggest answers to questions** say whether what happened was what they expected	**Review** **reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions, making predictions for new values** **using results to draw simple conclusions and suggest improvements, and raise further questions new questions identifying differences, similarities or changes related to simple scientific ideas and processes**	**Review** **reporting on findings from enquiries, including oral and written explanations, displays or presentations of results and conclusions, making predictions for new values** **using results to draw simple conclusions and suggest improvements, and raise further questions new questions identifying differences, similarities or changes related to simple scientific ideas and processes** say what they have found out and give an explanation for observations and simple patterns based on everyday experience	**Review** **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, explanations of the degree of trust in results, in oral and written forms such as displays and other presentations** **using test results to make predictions to set up further comparative & fair tests** **identify scientific evidence that has been used to support or refute ideas or arguments.** use graphs to spot and interpret patterns/trends in results offer simple explanations for differences in repeated measurements/ observations	**Review** **reporting and presenting findings from enquiries, including conclusions, causal relationships and explanations of results, explanations of the degree of trust in results, in oral and written forms such as displays and other presentations** **using test results to make predictions to set up further comparative & fair tests** **identify scientific evidence that has been used to support or refute ideas or arguments.** draw conclusions using these patterns and begin to relate conclusions to scientific knowledge and understanding consistent with the evidence